

**APPENDIX A**  
**Study Advisory Members**

## Study Advisory Members

### Subregional Priority Roadway Study: Route 53 in Norwell

| Name             | Affiliation                                | Email  |
|------------------|--|--|
| Ellen Allen      | Norwell Board of Selectmen                 | <a href="mailto:ellenallennorwell@comcast.net">ellenallennorwell@comcast.net</a>       |
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| Andrew Reardon   | Norwell Fire Chief (retired)               | <a href="mailto:areardon@norwellfire.org">areardon@norwellfire.org</a>                 |
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## **APPENDIX B**

### **Summary of Survey Results by Questions and Answers**

## Summary of Route 53 Survey Results by Question and Answer

| <b>AIQ 1. How do you typically travel on Route 53? (Check all that apply.)</b>   | <b>217 Total Responses</b> |       |
|--|----------------------------|-------|
| 1 <i>Drive alone in an automobile</i>  | 194                        | 89.4% |
| 2 <i>Drive others or travel as a passenger in an automobile</i>  | 141                        | 65.0% |
| 3 <i>Walk</i>  | 34                         | 15.7% |
| 4 <i>Bicycle</i>   | 18                         | 8.3%  |
| 5 <i>Travel to take the Plymouth &amp; Brockton commuter bus</i>   | 7                          | 3.2%  |
| 6 <i>Other (please specify)</i>  | 6                          | 2.8%  |
| Drive to commuter rail in East Weymouth  |                            |       |
| shopping   |                            |       |
| Running for exercise; and my kids walk and bike on the sidewalk; and we live on Farrar Farm Rd which is right off of Washington St |                            |       |
| Also run   |                            |       |
| Motorcycle   |                            |       |
| shopping   |                            |       |

| <b>AIQ 2. Please indicate the purpose of your usual trips on Route 53. (Check all that apply.)</b>   | <b>217 Total Responses</b> |       |
|--|----------------------------|-------|
| 1 <i>Work</i>  | 118                        | 54.4% |
| 2 <i>Shopping (including trips for pharmacy, banking, and .....)</i>   | 206                        | 94.9% |
| 3 <i>Dining</i>  | 152                        | 70.0% |
| 4 <i>School/daycare</i>  | 53                         | 24.4% |
| 5 <i>Social/recreation</i>   | 115                        | 53.0% |
| 6 <i>Exercises and health improvement activities</i>   | 85                         | 39.2% |
| 7 <i>Other (please specify)</i>  | 18                         | 8.3%  |
| St Helen Church, Highway Access (via Grove St)   |                            |       |
| Own property   |                            |       |
| Live off Washington St, so use it multiple times per day.  |                            |       |
| I live off of Washington Street so I am on it countless times throughout the day. Please don't add a turning lane on this residential section of Washington Street-it will only encourage people to drive faster. This is a cut through for many, but this is OUR neighborhood! If they don't want to have to wait for someone to turn into a business or street then they can hop of Route 3 at the Home Depot and get off at The Hanover Mall. |                            |       |
| traveling to another town  |                            |       |
| Doctors & Dentists. Also we live in a neighborhood off Rt 53 so we have to use it every time we leave the house.   |                            |       |
| passing through  |                            |       |
| Home   |                            |       |
| Church and Meetings  |                            |       |
| Healthcare providers   |                            |       |
| Going to Rte 3 South   |                            |       |
| I live in Jacobs Trail, so by definition, I must drive or walk on 53 to go anywhere at all.  |                            |       |
| To access route 3  |                            |       |
| To get home  |                            |       |
| Library  |                            |       |
| church   |                            |       |

| <b>AIQ 3. Please indicate the destination of your usual trips on Route 53. (Check all that apply.)</b> | <b>216 Total Responses</b> |       |
|--|----------------------------|-------|
| 1 <i>North Section (Pond Street-Oak Street)</i>  | 148                        | 68.5% |
| 2 <i>Middle Section (Oak Street-Hall Drive)</i>  | 140                        | 64.8% |
| 3 <i>South Section (Hall Drive-Assinippi Avenue)</i>   | 168                        | 77.8% |
| 4 <i>North of Pond Street</i>  | 121                        | 56.0% |
| 5 <i>South of Assinippi Avenue</i>   | 158                        | 73.1% |
| 6 <i>Other (please specify)</i>  | 11                         | 5.1%  |
| Queen Anne's Corner  |                            |       |

## Summary of Route 53 Survey Results by Question and Answer

Washington Street  
 Farrar Farm Road-that is where we live, right off of Washington Street  
 I live close to it and use it to get to everywhere in my life.  
 Transit to Hingham/Hanover  
 travel through to Brockton  
 I live in Jacobs Trail, so by definition, I must drive or walk on 53 to go anywhere at all.  
 I usually travel between Rts 3 and 123, but occasionally from Assinippi Ave. to Rt 3 at  
 Derby St Interchange  
 Oak to 228  
 reside off of Route 53, travel to all locations

**A/Q 4. While driving on Route 53, what problems do you encounter? (Check all that apply.)**

**216 Total Responses**

|   |     |       |
|---|-----|-------|
| 1 Long wait times at intersections with signals             | 109 | 50.5% |
| 2 High volume of traffic (congestion)                       | 152 | 70.4% |
| 3 Safety concerns, such as crashes and aggressive drivers   | 65  | 30.1% |
| 4 Difficulty turning into and out of side streets           | 117 | 54.2% |
| 5 Difficulty turning into and out of stores and restaurants | 163 | 75.5% |
| 6 Poor sight distance                                       | 28  | 13.0% |
| 7 Poor street lighting                                      | 28  | 13.0% |
| 8 Other (please specify)                                    | 32  | 14.8% |

lane merges and drivers who don't get left to turn left or right to turn right  
 Other drivers running red lights  
 The lane dividers are getting "washed" out and are tough to see at night especially when it is raining.  
 Excessive entrances and exits  
 Speeding  
 Overall appearance if this major thoroughfare.  
 Often when you are waiting to turn into a side street or store people will try to drive around your car causing a dangerous situation. If there was a sidewalk on both sides of the street cars would no longer be able to try to squeeze past cars to get around-they would just have to wait 30 seconds to a minute for you to turn!!  
 I work at 515 Washington and often encounter people blowing through the right hand stop sign from 123 to 53. It makes it impossible to safely pull out of my office.  
 poorly marked and enforced merging  
 when it snows a lot snow banks are difficult to see around when pulling out of stores. The noise of the traffic on 53 wakes me up in the morning and i am on Prouty Ave  
 Driver's don't understand how to use the turning lane  
 corner  
 We live in Jacob Shores neighborhood & even though there is a light, people drive extremely fast trying to make the light & often run it.  
 Poor pedestrian accommodations  
 Occasionally there is traffic during typical commute times but I have never really had a problem.  
 very long wait times to turn left from washington street on to Pond St  
 The one section between grove and pond street that goes to one lane backs up a lot and is dangerous. Drivers get impatient and drive erratically.  
 very slow moving traffic  
 worn painted lines on edge of road  
 Too many signs and lights too bright  
 poor turn signal use  
 drivers sometimes cut through corner businesses to dodge traffic light at intersections  
 1. Traffic on the weekends is backed up from QA Corner all the way to the Catholic Church. 2. I work at NEC bldg (#167 Washington @ Oak) - VERY hard to turn left out of our driveway. 3. @ the Stop & Shop light, there is a lane on the SB side for turning left into Jacobs Trail. But people on the NB side use this as a turning lane for the Beijing House plaza. Dangerous (and rude).

## Summary of Route 53 Survey Results by Question and Answer

Trying to pull out of the neighborhood at Jacobs Trail is hard since people are running the red light constantly

Pot holes

speeding

traffic literally stopped from and backed up at various times of the day from High Street down past Oak towards the fire station because of the light

THE LIGHT NEAR STOP & SHOP -- GET BACKED UP ON 53 GOING NORTH

Speed to fast

Too many temporary signs, both temporary and permanent that obstruct vision. Safe biking is confined to sidewalks which causes other problems.

### A\Q 5. While bicycling or walking along Route 53, what particular problems do you regularly encounter? (Check all that apply.)

**215 Total Responses**

|   |    |       |
|---|----|-------|
| 1 Lack of bike lanes or useable shoulders   | 47 | 21.9% |
| 2 Lack of sidewalks   | 59 | 27.4% |
| 3 Lack of midblock crossings or difficulty crossing Route 53  | 50 | 23.3% |
| 4 Lack of accessible curb/wheelchair ramps  | 13 | 6.0%  |
| 5 Sidewalks too narrow or in poor condition.  | 42 | 19.5% |
| 6 Too many commercial driveways   | 32 | 14.9% |
| 7 High volume of traffic  | 72 | 33.5% |
| 8 High speed of vehicles  | 65 | 30.2% |
| 9 Insufficient pedestrian crossing times at intersections with signals                              | 35 | 16.3% |
| 10 Poor street lighting   | 23 | 10.7% |
| 11 Poor connectivity to a destination, such as a workplace, school, recreational area, or residence | 22 | 10.2% |
| 12 Other (please specify)   | 22 | 10.2% |

Insufficient crosswalks by Queen Anne's corner on Washington St.

Vehicle drivers who don't respect bicyclists right to ride on the road.

See walkers on sidewalks. Never see bikes!!

I would never walk or bicycle on that road - way too dangerous

My kids are always nervous when biking on the sidewalks because cars are going so fast past them-my kids wouldn't even think of riding their bike on the actual side of the street because of the fast cars and distracted drivers.

Much too dangerous to bike or walk

It would be good to cut the brush back as you go up the hill toward oak street on 53 for us joggers

Have never walked due to poor connection issue from Main Street in Hanover

unclear pavement markings/signage for lane designations and merges

I would never bike or walk on 53

biking is not safe

question as posed is not applicable to some...personally, I would not want to walk or bicycle on this road as it's not safe, but I do witness locals who do (including children), and also going for a "run" along this road as there are several fitness centers here.

It's too dangerous to walk or bicycle on Route 53

This is not a street for bike riding, unless you want to die.

I live in Jacobs Trail and would LOVE to be riding my bike or walking more for errands, but (1) the road is too scary to cross, sidewalks are nonexistent in some places, and (3) sidewalks are strewn with gravel and dirt.

### A\Q 6. Please indicate any improvements that you would like to see implemented on Route 53. (Check all that apply.)

**215 Total Responses**

|   |     |       |
|---|-----|-------|
| 1 Increase safety for all road users (reduce crashes) | 127 | 59.1% |
| 2 Accommodate pedestrians                             | 99  | 46.0% |
| 3 Improve pedestrian crossings on Route 53            | 98  | 45.6% |
| 4 Accommodate bicyclists                              | 63  | 29.3% |

## Summary of Route 53 Survey Results by Question and Answer

|   |     |       |
|---|-----|-------|
| 5 <i>Reduce traffic congestion</i>  | 150 | 69.8% |
| 6 <i>Add left-turn lanes and improve access to adjacent commercial developments</i> | 137 | 63.7% |
| 7 <i>Improve shuttle and local bus service</i>                                      | 44  | 20.5% |
| 8 <i>Other (please specify)</i>   | 16  | 7.4%  |

I would like to ride my bike to work from Norwell Center to Washington St, but, it's too dangerous. How can we assist with global warming, when we don't have the tools like a safe bike path?

4 or 5lanes between Grove and Queen Anne's corner..

When RT-3 is backed up, people get off the highway onto 53. Causes congestion

Slow traffic down.

reduce driveways

The segment of Washington Street from Rt123(Main St) to Grove Street is a highly residential area in addition to the many shops and businesses. It is very important for the Town of Norwell to maintain the safety of the residents-especially the youth and teenagers of Norwell that live in that area. We can't turn this section into the major roadway like in front of the old Hanover Mall. We need to encourage people to walk to the restaurants, shops, gyms, clothing stores-we need sidewalks on that section on the side of the Norwell Fire/Police Station.

Combine acces points or areas to turn Left onto 53 out of a business. Starbucks area is a challenge to get in and out of especially at high traffic areas

make 53 two lanes in Norwell

traffic calming

better surface for roads

Repaint side lines on streets often

The phrase "accommodate pedestrians" isn't quite right. It should be "encourage multi-modal usage, emphasizing pedestrian and bike usability." Also, this is not transportation-related, but the entire 53 corridor is unsightly. It lacks aesthetic and coherence.

increase police presence? (rarely does this seem to be occurring in Norwell as often as they are seen on lesser busy roadways.)

Queen Anne Corner is a chokepoint

completely eliminate "sandwich board" and other temporary signs that reduce site lines for everyone

**A\Q 7. Please indicate the most important improvement that you would like to see implemented on Route 53. (Check only one.)**

|   | <b>207 Total Responses</b> |       |
|---|----------------------------|-------|
| 1 <i>Increase safety for all road users (reduce crashes)</i>                        | 42                         | 20.3% |
| 2 <i>Accommodate pedestrians</i>  | 12                         | 5.8%  |
| 3 <i>Improve pedestrian crossings on Route 53</i>                                   | 4                          | 1.9%  |
| 4 <i>Accommodate bicyclists</i>   | 10                         | 4.8%  |
| 5 <i>Reduce traffic congestion</i>  | 70                         | 33.8% |
| 6 <i>Add left-turn lanes and improve access to adjacent commercial developments</i> | 47                         | 22.7% |
| 7 <i>Improve shuttle and local bus service</i>                                      | 7                          | 3.4%  |
| 8 <i>Other (please specify)</i>   | 15                         | 7.2%  |

Widen Grove Street to Route 123.

Add lighting between Hall and Oak.

Improve safety for turning Left onto 53 out of businesses

Add more travel lanes to road like Whiting Street in Hingham.

Reduce Allowable Speed

Make two lanes each way between grove and Pond streets

Congestion is a Queen Anne's Corner issue. The larger concern is getting people out of their cars, so yes, more shuttles and bus service would be positive.

fix Queen Anne Corner

slower speeds

remove all temporary signs

## **APPENDIX C**

### **Summary of Survey Comments by Locations and Issues**



**Summary of Route 53 Survey Comments by Location and Issue**

| Index | Location | Issue                        | Comments   |
|-------|----------|------------------------------|--|
| 8     | Corridor | Access                       | Explore ways to combine side by side curb cuts for adjacent properties.<br>Eliminate one-way (in or out) curb cuts. Where they do exist, nobody complies. So what's the point?   |
| 15    | Corridor | Access                       | I don't know how to fix it.....sometimes I am stuck for very long periods of time trying to get out of store parking lots.   |
| 19    | Corridor | Access                       | Third lanes  |
| 61    | Corridor | Access, Bike                 | middle turn lane and bike lane   |
| 143   | Corridor | Access, Bike                 | It is annoying to drive from assinippi to queen anne's and constantly stop for people turning across the oncoming lane to the gym, a street or a business. Then traffic goes 20 to 30 miles an hour for .....? Often those cars causing the slowness turn or end up just going very slow even when traffic is light. Sorry, this is just a complaint and probably not what you are looking for. I am assuming these drivers are jittery or afraid or maybe just overly cautious when they drive which could be their perception that the road is dangerous or ...whatever. This said, the Hanover side of assinippi route 53 moves along quite well. More businesses and less neighborhoods I guess. I bike and yes - I avoid 53 usually. All of it.   |
| 185   | Corridor | Access, Bike, Pedestrian     | A middle turning lane would be helpful, but we still need the sidewalks and some space for runners and bicyclists.   |
| 62    | Corridor | Access, Pedestrian, Speeding | I think it is very important to note that this RESIDENTIAL section of Washington from Main Street (Rt 123) to Grove Street IS the Norwell Town Center for many residents of Norwell. It is so important to help the residents and shops owners to thrive and be safe in their neighborhood.<br>I also think it is very important to have a sidewalk in front of the new Norwell Fire/Police Station and additional crosswalks to get to the station from across Washington Street. Sidewalks on both sides and crosswalks will only encourage more people to walk to get a sandwich at On Rye, BoCafe, or the Juice Barn or Press Juice Bar or dinner at the Fours, Trattoria San Pietro or Norwell Pizza, etc...<br>I do think the lights near Grove and Pond greatly impact the backups that do occur on Washington Street on the weekends. Especially, the left turn only signal at the Pond Street intersection doesn't let enough cars turn left-most people are still turning in the intersection when the light is red. And the Grove Street light seems to get backed up because of it.<br>Maybe there is some way to consolidate entrances/exits for some of the shopping areas that are adjacent to each other so it would be more feasible to have safe sidewalks on both sides of Washington Street. |
| 118   | Corridor | Access, Pedestrian, Speeding | The road design and allowable speeds have been in place since it was much less developed. Needs to slow traffic down and accommodate walkers and turning from side streets   |
| 31    | Corridor | Access, Traffic              | cannot get in or out of anyplace because no one lets drivers out and there are few breaks in traffic. turning lanes would be great, but traffic light timing would be useful too   |
| 74    | Corridor | Access, Traffic              | I live off Washington Park Drive so I use 53 literally every day. It works fairly well most days but the most problems are with the amount of traffic which tends to increase greatly whenever there is high traffic or congestion on Route 3 (think Cape traffic on Friday and Sunday afternoons in the summer). Because the Norwell stretch of 53 is one lane, it can get really backed up.<br>Additionally the stretch of 53 between Route 228 and Grove Street is extremely difficult to enter when using businesses there because there are too few lanes for traffic to flow naturally   |
| 79    | Corridor | Access, Traffic              | The horrible road situation adds to a general unkempt sprawl condition. It's an eyesore and lanes change indiscriminately from 1 to 2 to 3 lanes causing merging backups.  |
| 84    | Corridor | Access, Traffic              | Lane drops create bottlenecks. No turning lane at some traffic lights creates congestion. These issues are most evident in the Hanover/Pembroke stretch of 53.   |
| 109   | Corridor | Access, Traffic              | After Queen Anne's Corner going south, the traffic bottles up because of the reduction in lanes<br>It's always difficult trying to take a left hand turn coming out of the businesses.   |
| 13    | Corridor | Bike                         | Make it better for the cyclists Too!   |
| 121   | Corridor | Bike                         | Please do not consider adding bike lanes unless and until the road is widened along its entire length - at least the Norwell portion. And that makes not much sense unless neighborhood towns - Hingham and Hanover - do the same.<br>There are sidewalks already along 53 - poorly designed and installed but existing.   |
| 141   | Corridor | Bike, Pedestrian             | I would like to see sidewalks and bicycle lanes. The road surface has too many bumps, cracks and holes.  |
| 144   | Corridor | Bike, Pedestrian             | There are no crosswalks or sidewalks in most places.<br>Riding a bike is a deathwish. It'd be good to have that option to run errands without a car like you can do in the city.   |
| 55    | Corridor | Pedestrian                   | Would love sidewalks!  |
| 76    | Corridor | Pedestrian                   | Sidewalks are poorly plowed and maintained. During snow events and after people walk on the road rather than the sidewalk. VERY DANGEROUS.<br>The frustrating part is that it could be easily cured by taking more time to clear the sidewalks   |
| 77    | Corridor | Pedestrian                   | sidewalks  |
| 86    | Corridor | Pedestrian                   | In general, it would be nice to have sidewalks on Route 53 so that Pedestrianestrians can travel along the road, especially with Hanover Crossing coming. Norwell is a town that has lots of kids and allowing families to get from one point to another by walking would be a huge benefit to the town.   |
| 120   | Corridor | Pedestrian                   | I would love to take a walk every day but I don't want to have to get in my car to drive somewhere to feel safe. Summer street is beautiful but not safe for Pedestrianestrians.   |
| 180   | Corridor | Pedestrian                   | there are few sidewalks and that makes the road dangerous for Pedestrianestrians and drivers   |
| 51    | Corridor | Pedestrian, Safety           | I would never walk/go running on Main Street for fear of getting hit by a car  |
| 45    | Corridor | Pedestrian, Zoning           | Reduce the commercial "look"and improve the traffic congestion. This is a highly populated area with families and children. Focus on beautifying it and making it Pedestrianestrian friendly. Encourage community by allowing children and families to safely walk to local businesses. Keep the commercial growth away from densely populated areas and grow the industrial park in our backyard!!  |
| 66    | Corridor | Road Maintenance             | It's not something that needs to be addressed immediately, but would be nice to see general upkeep along the route.  |
| 116   | Corridor | Road Maintenance             | improve the condition of the roads, some areas have a lot of pot holes.  |
| 195   | Corridor | Road Maintenance             | Traffic is awful roads need to be repaired   |
| 125   | Corridor | Safety                       | Traffics and people running lights   |
| 213   | Corridor | Safety                       | People do not obey lights. Increase break between changing lights. More lights along Rt 53 are needed.   |
| 6     | Corridor | Speeding, Enforcement        | In addition to reducing congestion, better traffic enforcement overall. There are lots of speeders, running red lights, especially at the Rt 3 onramp intersection... aggressive driving in general. I never see anyone ever pulled over, but I see tons of violations, or so it seems.  |
| 165   | Corridor | Speeding, Pavement           | Reduce speed, fix the road   |

**Summary of Route 53 Survey Comments by Location and Issue**

|     |                 |                             |  |
|-----|-----------------|-----------------------------|--|
| 14  | Corridor        | Traffic                     | Sometimes the traffic is so backed up you have to wait several changes of lights to proceed.   |
| 17  | Corridor        | Traffic                     | Traffic is stopPedestrian every time a car turns into Starbucks and other restaurants or businesses. Makes travel time extra long.   |
| 18  | Corridor        | Traffic                     | 2 lane roads through all sections of rt 53 would be advantageous   |
| 53  | Corridor        | Traffic                     | Correct timing of traffic lights at all intersections, turning lanes and education on HOW to use them correctly (!)  |
| 54  | Corridor        | Traffic                     | There appear to be too many traffic signals too close to one another. You get stopPedestrian at one light and then when you go to the next one you get stopPedestrian again. They are not timed for traffic and that causes congestion and backup.   |
| 58  | Corridor        | Traffic                     | The lane configuration on Rte. 53 South at Grove Street is poor. 1. Approaching the intersection it is unclear which lane is the through lane. 2. The storage area for left turning traffic onto Grove Street East (toward Scituate) is insufficient during peak volume times. A smarter signal needs to be added that gives left turning traffic a longer left turn signal or two left turning lanes need to be added with perhaps a lane drop near Bay Path Lane. 3. The lane drop from two lanes to one through lane on Rte 53 South is poor - two southbound lanes should continue on Rte 53 South from the Citizens bank past the Kappy's Liquor store.<br>The lane drop on Rte 53 North between Grove Street and Rte 228 needs to be eliminated - two lanes need to be maintained from South of Grove Street to the existing two lanes North of Rte. 228.<br>The left turning lane on Rte 53 North onto Rte 228 West (toward Rte 3) is insufficient and the timing is too short for left turning traffic much of the time. (Many cars run the amber and red left turn light.) Again, a smarter signal needs to be added that gives left turning traffic a longer left turn signal or two left turning lanes need to be added.<br>I realize that my comments do not address Pedestrianestrians or bicyclists but sidewalks do exist in the Queen Anne area and I'm not sure that I have ever seen a bicyclist in this area.<br>While not as bad as the Queen Anne area, the Rte 53 Rte 123 intersection can be annoying. Left turning traffic on Rte 53 North onto Rte 123 West can tie up the intersection and the flow of traffic. Perhaps a dedicated left turn lane on Rte 53 North at Rte 123 would help traffic flow more smoothly. (And moving the lane drop on Rte 53 North past Assinippi Ave. might help also.) |
| 71  | Corridor        | Traffic                     | TOO MUCH TRAFFIC!  |
| 122 | Corridor        | Traffic                     | South of queen annes corner on 53 entire way to Hanover is usually completely congested on a daily basis as well as route 123.   |
| 158 | Corridor        | Traffic                     | Increase the width of the roadway.   |
| 161 | Corridor        | Traffic                     | <b>Better signage to signal a lane reduction in places would also help somewhat.</b> The towns along 53 are allowing too much construction of new business and housing. The problem will continue to get worse unless until they address the over development along route 53. Adding lanes would help, but make it more unsafe. Left hand turn signals would definitely help.  |
| 210 | Corridor        | Traffic                     | It is just the sheer volume of traffic and not sure there is any way to improve that. People use Rte 53 as a way to avoid traffic on Rte 3 in the summer months and then 53 is all jammed up   |
| 94  | Corridor        | Zoning                      | Stop over building on the road .. I would not want it to look like rte 53 at main st by the big y  |
| 90  | Corridor        | Emergency                   | Widen the road in Norwell. I don't want to see what happened in <b>Paradise, California</b> happen here!   |
| 164 | Corridor        | Greenscape                  | I would like to see more greenscape to increase the aesthetic appeal of the commercial areas.  |
| 150 | Corridor        | Light                       | Poor lighting, increased traffic congestion, poor lines painted on sides of streets all especially adjacent to Queen Anne's Corner & High Street   |
| 220 | Corridor        | Pathway                     | Pathway between High School and Cole School as planned by pathway report.  |
| 35  | Corridor        | general                     | The whole route 53 is a disaster, there is not a specific area   |
| 60  | Corridor        | general                     | Between assinippi and queen anne's corner.   |
| 172 | Corridor, Int-5 | Safety, Zoning              | Zoning has resulted in transformation of Route 53 to a strip mall which results in hazardous traffic flows...There is a need to review and revise zoning. Improve traffic flow by better demarcation of lanes. Traffic flow is especially dangerous at the Assinippi intersection. Expand system of sidewalks!   |
| 4   | Int-1           | Pedestrian, Bike            | Impossible to cross Route 53 by Queen Anne's corner. Insufficient cross walks. Dangerous speeds and aggressive drivers. Pedestrianestrians DO NOT have the right of way. If we are going to tackle global warming and climate change, give us the tools to allow us to walk or bike to our destinations. It's inevitable anyway that we will have to go that way. Reduce traffic. Encourage bikes and walking.   |
| 103 | Int-1           | Traffic                     | long wait times due to congestion and short green arrow for left hand turn from washington street on to pond street  |
| 178 | Int-1           | Traffic                     | Traffic light timing at Queen Anne's Corner needs to be re-evaluated.  |
| 182 | Int-1           | Traffic                     | I travel through Queen Anne Corner daily to and from work. The area is too highly congested and a chokepoint to smoothly flowing traffic.  |
| 186 | Int-1           | Traffic                     | I work from home so I time my outings on 53 to avoid traffic. I think Queen Anne Corners could be re-configured better for commuter traffic. I think the recent improvements have made a huge improvement.   |
| 41  | Int-1           | general                     | Queen Anne's Corner  |
| 151 | Int-1           | general                     | Queen Anne's Corner and Pond Street  |
| 83  | Int-1, Int-5    | Traffic                     | Traffic Congestion at Queen Annes Corner and Lack of planning at Assinippi   |
| 176 | Int-1, Int-5    | Traffic, Safety             | Turning from Dunkin Donuts to Pond Street heading to Rockland. Can't cross two lanes easily. Really risky.<br>Don't like the Y on the backside of DD in front of Hingham Savings. Very difficult to join Main Street. Don't like turning from Washington onto Assinippi Avenue to go to HIS.   |
| 127 | Int-2           | Traffic                     | Where a left turn arrow exists, ensure they all turn to a yield (blinking yellow arrow) rather than a red light. This will decrease traffic congestion in many cases, specifically at the intersection of Route 53 and Grove St.   |
| 181 | Int-2, CVS      | Traffic, Access, Pedestrian | Add traffic signal for those heading south along Washington who veer onto High street to avoid when light on Washington and Grove is red. Allow left turn onto High street when exiting the CVS. Add more speed limit signs. More crossing walks with signage stating motorist must stop for pedestrians.  |
| 27  | Int-3           | Traffic                     | It's difficult to turn left obtain Washington St from Hall Drive   |
| 119 | Int-4           | Pedestrian, Safety          | The intersection of Jacobs Trail and Stop and Shop is dangerous for Pedestrianestrians crossing Jacobs Trail. Vehicles exiting the neighborhood cannot see anyone on the sidewalk until they are in the street. This is especially dangerous for baby carriages and bicycles. The line of sight coming up Jacobs Trail to Washington Street needs to be improved so Pedestrianestrians on the sidewalk are visible.  |
| 189 | Int-4           | Safety                      | The light at Jacobs Trail and stop and shop. Hard to get out of neighborhood since people running red lights   |
| 216 | Int-4           | Safety                      | Traveling northbound from Assinippi Avenue, trying to turn into small commercial development containing Beijing House is very confusing because, just there's a left turn lane into the Stop and Shop driveway. It is a very short lane and the entrance to Beijing House (BH) is a short distance beyond. One thinks the left turn lane extends to the BH entrance, but it doesn't. Instead, it turns into a southbound left turn lane into Jacobs Trail. Several times after it was first put in, inadvertently I was over the yellow line encroaching in that wrong lane but there were no oncoming cars, so no conflict. Plus the location is on a sharp curve with little sight distance.<br>I wonder if that curve could be flattened and the turning lanes extended through the intersection and possibly beyond to other close-by commercial developments to promote safer access and turns in that whole section. There looks to be green space on the south side that would limit Right-of-Way impacts for such a change.  |
| 88  | Int-4           | Speeding                    | People speeding to run the red light on Rt 53 at the Jacobs Trail intersection.  |

**Summary of Route 53 Survey Comments by Location and Issue**

|     |                             |                  |   |
|-----|-----------------------------|------------------|---|
| 63  | Int-5                       | Access, Safety   | William Raveis office at 515 Washington St. Northbound cars on 53 ignore the stop sign and make it tricky to pull out of driveway. I've been almost hit MANY times.<br>*Also: PROBLEM WITH YOUR ZIP CODE QUESTION...IT WANTS AN EMAIL!!**   |
| 26  | Sec-1                       | Access           | Left turn out of Starbucks<br>Left turn from strawberry fair, dry cleaner<br>Any crossing between grove and 228   |
| 105 | Sec-1                       | Access           | A majority of the issues are attempting to re-enter the roadways after leaving businesses/restaurants/shops with congestion of traffic.   |
| 152 | Sec-1                       | Access           | trying to get out of places along the rte and poor vision when turning left from Grove Street to Hall Dr.   |
| 154 | Sec-1                       | Access           | Queen Anne's corner down to 7-11 and CVS is congested more times than not. Headed south on 53 in front of Big Y is too wide with not guidance as to what cars should do. You cars aggressively heading south on that stretch thinking it is 2 lanes, but then it merges to one lane in front of Taco Bell without any road lines to anticipate what is happening. Maybe make part of that stretch a right turn lane into the Big Y shopping center  |
| 177 | Sec-1                       | Access           | It's very difficult to exit many shops and businesses on 53. I am afraid to exit some businesses into four lanes of traffic. I often go in the easy direction and u-turn when possible or get to an intersection with a light.  |
| 52  | Sec-1                       | Access, Traffic  | widen from grove to 228. it is so hard to pull out into traffic and cross safely.   |
| 2   | Sec-1                       | Traffic          | the area between the Mobil station and Queen Anne's corner is a mess. It need to be five lanes. Two in each direction and a middle turn lane.   |
| 123 | Sec-1                       | Traffic          | Add two lanes between grove and pond streets.   |
| 130 | Sec-1                       | Traffic          | The bottleneck in front of the Pizza Hut need to be fixed. The roadway goes from 4 lanes to 2 then back to 4 after 100 yards. It should be 4 lanes through to Grove St. An alternative could be a bypass road leading from Pond St directly to the Grove St intersection traveling behind the Big Y supermarket. That would remove about 1/3 of the traffic passing through Queen Anne's Corner.  |
| 198 | Sec-1                       | Traffic          | Congestion is the biggest problem, particularly on the northern end of 53 between Kappys and Queen Anne's Corner.   |
| 211 | Sec-1                       | Traffic          | The stretch between RT53/RT228 and RT53/Grove ST gets congested, causing traffic to backup towards the south on RT53. It also tends to backup on Pond ST when this happens. It can be difficult turning into or out of the street my house is on sometimes.   |
| 221 | Sec-1                       | Traffic          | Reduce congestion, especially between Grove Street, Queen Anne's Corner and Pond St.  |
| 78  | Sec-1, Int-1                | Access, Traffic  | The merge after Big Y and before Alfredo's is dangerous. People do not give an inch.<br>The turn left onto Pond St from Washington. (Queen Ann's Corner) The light cycle is too short.  |
| 38  | Sec-1, Int-2                | Access, Pavement | Grove and Washington improve road condition (potholes and better maintenance of islands to improve visalbility.<br>Queen Anne plaza exit to Washington St eliminate all business exits and provide traffic signals at one common exit.  |
| 87  | Sec-1, Int-2                | Access, Traffic  | I actually don't think 53 is too bad on most days. It gets really backed up when cars exit rte. 3 North at exit 13 to avoid traffic delays. For me <b>the worst location is from High and Grove toward Queen Anne's corner</b> . Practically impossible to take a left hand turn from any of the businesses. Also the cars taking a right from Grove st do not stop/yield to the cars taking a left on the light from High st.. Many times that intersection is completely blocked.<br>Keep 2 lanes from High/Grove to Queens Anne's corner rather than making them merge.  |
| 85  | Sec-2                       | Access, Traffic  | Starbucks entrance, lane delimitation on 123 where it crosses 53, which are turn lanes vs straight, congestion at entrance and ability to exit at Norwell fitness club and my gym children's fitness  |
| 128 | Sec-2, Sec-3                | Safety, Speeding | People using Hall Drive as a cut through from Rt 53 to Assinippi is a huge safety issue. The rate of speed used around the times that children are getting on/off buses is ridiculous.  |
| 131 | Sec-2, Sec-3, Hall Drive    | Safety, Speeding | Hall drive is often used as a cut through. This is a very heavily settled neighborhood and the people who dont live in here FLY at a very high speed and often do not stop at the stop signs. I would like something that deters people who are not coming in the neighborhood and just cutting through to go all the way down 53 instead. Otherwise more stop signs or speed bumps NEED to be put in place before a neighborhood kid gets hit. This includes the fire and police trucks who need to be extra careful when coming down with their sirens on and going fast to get to call as they use it to cut through also. |
| 124 | Sec-3                       | Access           | Trying to take a left from SS Bank onto Route 53.... sometimes will turn right and go to Stop and Shop to get the light!  |
| 9   | Sec-3                       | general          | Norwell improved 53 from Grove street to Queen Anne Corner intersection years ago. Hingham improved 53 from Queen Anne to RT-3. Hanover improved 53 from Assinippi to RT-3. Time to finish the middle section from Assinippi to Grove Street.   |
| 166 | Sec-3, Int-4                | Safety           | The Jacobs Trail/Route 53 intersection is dangerous. <b>Northbound drivers consistently run yellow and red lights</b> . Also, stretches of sidewalk up and down 53 are dirty and covered with gravel and sand (eg. Assinippi Ave/Dunkin Donuts), making it a constant eyesore and harsh for walking. More crosswalks from the sidewalk to the storefronts on the west side of 53 would slow traffic (the speed limit should be decreased, too) and increase safety. Thank you for your attention to 53!   |
| 117 | CVS Driveway at High Street | Access           | ENFORCE no left turn signage at the exit to CVS on to High St and move the No Left Turn sign across the street so it is facing motorists directly.  |
| 16  | Outside Corridor            |                  | Crossing near town offices and middle school. Intersection with Washington Street. Intersection with Prospect.  |
| 29  | Outside Corridor            |                  | Savers traffic is a nightmare. People get frustrated and just go. The turn onto Rt3 is also dangerous. You can't tell when people are going straight and it is dangerous  |

Notes

- Int-1: Route 53 at Route 228 (Pond Street/Main Street)
- Int-2: Route 53 at High Street/Grove Street
- Int-3: Route 53 at Hall Drive
- Int-4: Route 53 at Jacobs Trail/Stop&Shop Driveway
- Int-5: Route 53 at Assinippi Avenue
- Sec-1: Route 53 between Pond Street and Oak Street
- Sec-2: Route 53 Oak Street and Hall Drive
- Sec-3: Route 53 between Hall Drive and Assinippi Avenue

**APPENDIX D**  
**Automatic Traffic Recorder Counts**  
**October 6–11, 2020**

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 00000000022  
Site ID: 000000000101  
Location: Rte.53 NB, West of Rte.228  
Direction: NORTH

STA 1 NB

File: D1006001.prn  
City: Hingham  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 22       | 15       | 15       | 17           | 15        | 21        | 18          | 88    |
| 02:00      |     |          | 7        | 7        | 7        | 7            | 12        | 14        | 9           | 47    |
| 03:00      |     |          | 6        | 5        | 7        | 6            | 7         | 5         | 6           | 30    |
| 04:00      |     |          | 10       | 20       | 19       | 16           | 8         | 4         | 12          | 61    |
| 05:00      |     |          | 53       | 40       | 41       | 45           | 12        | 14        | 32          | 160   |
| 06:00      |     |          | 174      | 143      | 173      | 163          | 67        | 43        | 120         | 600   |
| 07:00      |     |          | 284      | 319      | 314      | 306          | 123       | 90        | 226         | 1130  |
| 08:00      |     |          | 451      | 442      | 446      | 446          | 156       | 100       | 319         | 1595  |
| 09:00      |     |          | 443      | 452      | 446      | 447          | 298       | 176       | 363         | 1815  |
| 10:00      |     |          | 367      | 443      | 396      | 402          | 371       | 273       | 370         | 1850  |
| 11:00      |     | 414      | 418      | 418      | 467      | 429          | 470       | 339       | 421         | 2526  |
| 12:00      |     | 512      | 475      | 530      | 578      | 524          | 555       | 447       | 516         | 3097  |
| 13:00      |     | 571      | 595      | 568      | 602      | 584          | 582       | 713       | 605         | 3631  |
| 14:00      |     | 545      | 536      | 559      | 556      | 549          | 639       | 656       | 582         | 3491  |
| 15:00      |     | 548      | 574      | 540      | 554      | 554          | 555       | 517       | 548         | 3288  |
| 16:00      |     | 565      | 527      | 553      | 555      | 550          | 508       | 438       | 524         | 3146  |
| 17:00      |     | 518      | 497      | 528      | 620      | 541          | 533       | 383       | 513         | 3079  |
| 18:00      |     | 440      | 498      | 621      | 528      | 522          | 470       | 360       | 486         | 2917  |
| 19:00      |     | 394      | 467      | 526      | 486      | 468          | 393       | 363       | 438         | 2629  |
| 20:00      |     | 297      | 343      | 320      | 362      | 330          | 288       | 240       | 308         | 1850  |
| 21:00      |     | 201      | 204      | 223      | 222      | 212          | 161       | 182       | 199         | 1193  |
| 22:00      |     | 115      | 134      | 131      | 133      | 128          | 142       | 85        | 123         | 740   |
| 23:00      |     | 55       | 60       | 66       | 88       | 67           | 95        | 78        | 74          | 442   |
| 24:00      |     | 36       | 29       | 38       | 53       | 39           | 56        | 27        | 40          | 239   |
| TOTALS     |     | 5211     | 7174     | 7507     | 7668     | 7352         | 6516      | 5568      | 6852        | 39644 |
| % AVG WKDY |     | 70.9     | 97.6     | 102.1    | 104.3    |              | 88.6      | 75.7      |             |       |
| % AVG WEEK |     | 76.1     | 104.7    | 109.6    | 111.9    |              | 95.1      | 81.3      |             |       |
| AM Times   |     | 12:00    | 12:00    | 12:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     | 512      | 475      | 530      | 578      | 524          | 555       | 447       | 516         |       |
| PM Times   |     | 13:00    | 13:00    | 18:00    | 17:00    | 13:00        | 14:00     | 13:00     | 13:00       |       |
| PM Peaks   |     | 571      | 595      | 621      | 620      | 584          | 639       | 713       | 605         |       |

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NB 7352  
SB 8603  

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.94.99  
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Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000147  
Site ID: 000000000102  
Location: Rte.53 SB, West of Rte.228  
Direction: SOUTH

STA. 1 SB

File: D1006003.prn  
City: Hingham  
County: Volume

| TIME       | MON   | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-------|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |       |          | 21       | 14       | 20       | 18           | 19        | 22        | 19          | 96    |
| 02:00      |       |          | 13       | 7        | 12       | 11           | 12        | 6         | 10          | 50    |
| 03:00      |       |          | 1        | 4        | 3        | 3            | 6         | 8         | 4           | 22    |
| 04:00      |       |          | 8        | 6        | 9        | 8            | 8         | 2         | 7           | 33    |
| 05:00      |       |          | 18       | 16       | 23       | 19           | 17        | 8         | 16          | 82    |
| 06:00      |       |          | 53       | 44       | 47       | 48           | 28        | 11        | 37          | 183   |
| 07:00      |       |          | 132      | 165      | 171      | 156          | 62        | 39        | 114         | 569   |
| 08:00      |       |          | 393      | 374      | 378      | 382          | 172       | 124       | 288         | 1441  |
| 09:00      |       |          | 432      | 500      | 463      | 465          | 308       | 205       | 382         | 1908  |
| 10:00      |       |          | 403      | 446      | 426      | 425          | 425       | 256       | 391         | 1956  |
| 11:00      |       | 491      | 523      | 509      | 565      | 522          | 602       | 375       | 511         | 3065  |
| 12:00      |       | 649      | 672      | 691      | 693      | 676          | 722       | 515       | 657         | 3942  |
| 13:00      |       | 663      | 688      | 701      | 728      | 695          | 807       | 579       | 694         | 4166  |
| 14:00      |       | 626      | 654      | 684      | 743      | 677          | 746       | 580       | 672         | 4033  |
| 15:00      |       | 649      | 627      | 730      | 859      | 716          | 701       | 636       | 700         | 4202  |
| 16:00      |       | 712      | 755      | 738      | 885      | 772          | 675       | 553       | 720         | 4318  |
| 17:00      |       | 800      | 724      | 794      | 842      | 790          | 574       | 495       | 705         | 4229  |
| 18:00      |       | 723      | 691      | 766      | 770      | 738          | 498       | 437       | 648         | 3885  |
| 19:00      |       | 509      | 554      | 575      | 641      | 570          | 445       | 342       | 511         | 3066  |
| 20:00      |       | 359      | 402      | 378      | 378      | 379          | 325       | 255       | 350         | 2097  |
| 21:00      |       | 328      | 261      | 252      | 272      | 278          | 203       | 110       | 238         | 1426  |
| 22:00      |       | 148      | 110      | 120      | 142      | 130          | 132       | 93        | 124         | 745   |
| 23:00      |       | 85       | 58       | 74       | 70       | 72           | 86        | 71        | 74          | 444   |
| 24:00      |       | 73       | 54       | 37       | 49       | 53           | 43        | 40        | 49          | 296   |
| TOTALS     |       | 6815     | 8247     | 8625     | 9189     | 8603         | 7616      | 5762      | 7921        | 46254 |
| % AVG WKDY |       | 79.2     | 95.9     | 100.3    | 106.8    |              | 88.5      | 67.0      |             |       |
| % AVG WEEK |       | 86.0     | 104.1    | 108.9    | 116.0    |              | 96.1      | 72.7      |             |       |
| AM Times   | 12:00 | 12:00    | 12:00    | 12:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   | 649   | 672      | 691      | 693      | 676      | 722          | 515       | 657       |             |       |
| PM Times   | 17:00 | 16:00    | 17:00    | 16:00    | 17:00    | 13:00        | 15:00     | 16:00     |             |       |
| PM Peaks   | 800   | 755      | 794      | 885      | 790      | 807          | 636       | 720       |             |       |

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000079  
Site ID: 000000000201  
Location: Rte.228 NB, North of Rte.53  
Direction: NORTH

STA. 2 NB

File: D1006004.prn  
City: Hingham  
County: Volume

| TIME       | MON   | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-------|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |       |          | 16       | 14       | 13       | 14           | 30        | 31        | 21          | 104   |
| 02:00      |       |          | 9        | 9        | 8        | 9            | 11        | 10        | 9           | 47    |
| 03:00      |       |          | 7        | 8        | 5        | 7            | 10        | 5         | 7           | 35    |
| 04:00      |       |          | 9        | 14       | 1        | 8            | 9         | 6         | 8           | 39    |
| 05:00      |       |          | 20       | 26       | 19       | 22           | 10        | 10        | 17          | 85    |
| 06:00      |       |          | 69       | 59       | 70       | 66           | 32        | 33        | 53          | 263   |
| 07:00      |       |          | 308      | 353      | 299      | 320          | 94        | 85        | 228         | 1139  |
| 08:00      |       |          | 589      | 633      | 637      | 620          | 262       | 126       | 449         | 2247  |
| 09:00      |       |          | 587      | 604      | 580      | 590          | 364       | 258       | 479         | 2393  |
| 10:00      |       |          | 459      | 493      | 441      | 464          | 467       | 393       | 451         | 2253  |
| 11:00      |       | 497      | 426      | 509      | 504      | 484          | 520       | 439       | 482         | 2895  |
| 12:00      |       | 534      | 453      | 577      | 585      | 537          | 561       | 521       | 538         | 3231  |
| 13:00      |       | 540      | 513      | 573      | 585      | 553          | 634       | 539       | 564         | 3384  |
| 14:00      |       | 540      | 498      | 602      | 569      | 552          | 567       | 557       | 556         | 3333  |
| 15:00      |       | 582      | 577      | 614      | 651      | 606          | 601       | 507       | 589         | 3532  |
| 16:00      |       | 620      | 596      | 661      | 636      | 628          | 543       | 522       | 596         | 3578  |
| 17:00      |       | 573      | 588      | 687      | 621      | 617          | 511       | 451       | 572         | 3431  |
| 18:00      |       | 608      | 664      | 627      | 606      | 626          | 500       | 405       | 568         | 3410  |
| 19:00      |       | 513      | 536      | 583      | 547      | 545          | 419       | 337       | 489         | 2935  |
| 20:00      |       | 308      | 361      | 366      | 337      | 343          | 269       | 257       | 316         | 1898  |
| 21:00      |       | 206      | 213      | 252      | 231      | 226          | 192       | 167       | 210         | 1261  |
| 22:00      |       | 126      | 115      | 128      | 131      | 125          | 139       | 116       | 126         | 755   |
| 23:00      |       | 56       | 57       | 55       | 84       | 63           | 88        | 72        | 69          | 412   |
| 24:00      |       | 31       | 27       | 39       | 51       | 37           | 67        | 49        | 44          | 264   |
| TOTALS     |       | 5734     | 7697     | 8486     | 8211     | 8062         | 6900      | 5896      | 7441        | 42924 |
| % AVG WKDY |       | 71.1     | 95.5     | 105.3    | 101.8    |              | 85.6      | 73.1      |             |       |
| % AVG WEEK |       | 77.1     | 103.4    | 114.0    | 110.3    |              | 92.7      | 79.2      |             |       |
| AM Times   | 12:00 | 08:00    | 08:00    | 08:00    | 08:00    | 08:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   | 534   | 589      | 633      | 637      | 620      | 561          | 521       | 538       |             |       |
| PM Times   | 16:00 | 18:00    | 17:00    | 15:00    | 16:00    | 13:00        | 14:00     | 16:00     |             |       |
| PM Peaks   | 620   | 664      | 687      | 651      | 628      | 634          | 557       | 596       |             |       |

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NB 8062  
SB 8590  
16652  
.94 (.99)  
15,500

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000043  
Site ID: 000000000202  
Location: Rte.228 SB, North of Rte.53  
Direction: SOUTH

STA 2 SB

File: D1006005.prn  
City: Hingham  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 12       | 26       | 15       | 18           | 33        | 34        | 24          | 120   |
| 02:00      |     |          | 8        | 9        | 5        | 7            | 11        | 11        | 9           | 44    |
| 03:00      |     |          | 5        | 2        | 4        | 4            | 8         | 5         | 5           | 24    |
| 04:00      |     |          | 5        | 16       | 7        | 9            | 8         | 6         | 8           | 42    |
| 05:00      |     |          | 32       | 19       | 29       | 27           | 16        | 8         | 21          | 104   |
| 06:00      |     |          | 81       | 90       | 66       | 79           | 54        | 20        | 62          | 311   |
| 07:00      |     |          | 223      | 215      | 219      | 219          | 91        | 63        | 162         | 811   |
| 08:00      |     |          | 518      | 499      | 486      | 501          | 237       | 183       | 385         | 1923  |
| 09:00      |     |          | 546      | 582      | 531      | 553          | 394       | 258       | 462         | 2311  |
| 10:00      |     |          | 516      | 589      | 536      | 547          | 504       | 358       | 501         | 2503  |
| 11:00      |     | 561      | 283      | 537      | 549      | 482          | 637       | 606       | 529         | 3173  |
| 12:00      |     | 576      | 271      | 685      | 566      | 524          | 621       | 590       | 552         | 3309  |
| 13:00      |     | 639      | 534      | 681      | 710      | 641          | 713       | 613       | 648         | 3890  |
| 14:00      |     | 629      | 598      | 721      | 677      | 656          | 696       | 553       | 646         | 3874  |
| 15:00      |     | 796      | 729      | 804      | 871      | 800          | 600       | 535       | 722         | 4335  |
| 16:00      |     | 764      | 801      | 881      | 898      | 836          | 642       | 546       | 755         | 4532  |
| 17:00      |     | 765      | 803      | 766      | 760      | 774          | 616       | 483       | 699         | 4193  |
| 18:00      |     | 746      | 620      | 795      | 647      | 702          | 575       | 354       | 623         | 3737  |
| 19:00      |     | 495      | 467      | 535      | 531      | 507          | 446       | 366       | 473         | 2840  |
| 20:00      |     | 298      | 278      | 315      | 283      | 294          | 316       | 188       | 280         | 1678  |
| 21:00      |     | 174      | 184      | 214      | 220      | 198          | 154       | 119       | 178         | 1065  |
| 22:00      |     | 106      | 95       | 115      | 141      | 114          | 148       | 110       | 119         | 715   |
| 23:00      |     | 36       | 50       | 57       | 100      | 61           | 114       | 63        | 70          | 420   |
| 24:00      |     | 23       | 34       | 39       | 51       | 37           | 59        | 31        | 40          | 237   |
| TOTALS     |     | 6608     | 7693     | 9192     | 8902     | 8590         | 7693      | 6103      | 7973        | 46191 |
| % AVG WKDY |     | 76.9     | 89.6     | 107.0    | 103.6    |              | 89.6      | 71.0      |             |       |
| % AVG WEEK |     | 82.9     | 96.5     | 115.3    | 111.7    |              | 96.5      | 76.5      |             |       |
| AM Times   |     | 12:00    | 09:00    | 12:00    | 12:00    | 09:00        | 11:00     | 11:00     | 12:00       |       |
| AM Peaks   |     | 576      | 546      | 685      | 566      | 553          | 637       | 606       | 552         |       |
| PM Times   |     | 15:00    | 17:00    | 16:00    | 16:00    | 16:00        | 13:00     | 13:00     | 16:00       |       |
| PM Peaks   |     | 796      | 803      | 881      | 898      | 836          | 713       | 613       | 755         |       |



Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000154  
Site ID: 000000000301  
Location: Rte.228 NB, North of Accord Park Dr.  
Direction: NORTH

STA. 3 NB

File: D1006006.prn  
City: Norwell  
County: Volume

| TIME       | MON   | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-------|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |       |          | 31       | 36       | 36       | 34           | 44        | 42        | 38          | 189   |
| 02:00      |       |          | 19       | 11       | 17       | 16           | 25        | 29        | 20          | 101   |
| 03:00      |       |          | 9        | 15       | 20       | 15           | 11        | 14        | 14          | 69    |
| 04:00      |       |          | 22       | 28       | 20       | 23           | 14        | 18        | 20          | 102   |
| 05:00      |       |          | 38       | 49       | 38       | 42           | 29        | 22        | 35          | 176   |
| 06:00      |       |          | 118      | 114      | 125      | 119          | 76        | 54        | 97          | 487   |
| 07:00      |       |          | 426      | 443      | 407      | 425          | 166       | 108       | 310         | 1550  |
| 08:00      |       |          | 914      | 1096     | 797      | 936          | 421       | 190       | 684         | 3418  |
| 09:00      |       |          | 821      | 894      | 755      | 823          | 528       | 374       | 674         | 3372  |
| 10:00      |       |          | 652      | 754      | 729      | 712          | 706       | 519       | 672         | 3360  |
| 11:00      |       | 629      | 682      | 708      | 759      | 694          | 818       | 566       | 694         | 4162  |
| 12:00      |       | 749      | 793      | 793      | 814      | 787          | 863       | 735       | 791         | 4747  |
| 13:00      |       | 804      | 820      | 897      | 851      | 843          | 1105      | 1188      | 944         | 5665  |
| 14:00      |       | 776      | 826      | 931      | 760      | 823          | 812       | 864       | 828         | 4969  |
| 15:00      |       | 820      | 800      | 869      | 1108     | 899          | 757       | 717       | 845         | 5071  |
| 16:00      |       | 839      | 887      | 1136     | 900      | 940          | 762       | 701       | 871         | 5225  |
| 17:00      |       | 856      | 893      | 1017     | 972      | 934          | 678       | 611       | 838         | 5027  |
| 18:00      |       | 810      | 900      | 879      | 821      | 852          | 650       | 538       | 766         | 4598  |
| 19:00      |       | 659      | 718      | 810      | 708      | 724          | 576       | 460       | 655         | 3931  |
| 20:00      |       | 446      | 425      | 470      | 488      | 457          | 415       | 368       | 435         | 2612  |
| 21:00      |       | 260      | 278      | 335      | 342      | 304          | 262       | 248       | 288         | 1725  |
| 22:00      |       | 164      | 148      | 167      | 176      | 164          | 186       | 147       | 165         | 988   |
| 23:00      |       | 87       | 71       | 100      | 130      | 97           | 141       | 96        | 104         | 625   |
| 24:00      |       | 57       | 53       | 57       | 97       | 66           | 84        | 70        | 70          | 418   |
| TOTALS     |       | 7956     | 11344    | 12609    | 11870    | 11729        | 10129     | 8679      | 10858       | 62587 |
| % AVG WKDY |       | 67.8     | 96.7     | 107.5    | 101.2    |              | 86.4      | 74.0      |             |       |
| % AVG WEEK |       | 73.3     | 104.5    | 116.1    | 109.3    |              | 93.3      | 79.9      |             |       |
| AM Times   | 12:00 | 08:00    | 08:00    | 12:00    | 08:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   | 749   | 914      | 1096     | 814      | 936      | 863          | 735       | 791       |             |       |
| PM Times   | 17:00 | 18:00    | 16:00    | 15:00    | 16:00    | 13:00        | 13:00     | 13:00     | 13:00       |       |
| PM Peaks   | 856   | 900      | 1136     | 1108     | 940      | 1105         | 1188      | 944       |             |       |

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NB 11 729

SB 10 150

COMB AWD 21 879

FAC .94(.99)

COMB ADT 20,400

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000019  
Site ID: 000000000302  
Location: Rte.228 SB, North of Accord Park Dr.  
Direction: WEST

STA 3 SB

File: D1006007.prn  
City: Norwell  
County: Volume

| TIME       | MON   | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-------|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |       |          | 24       | 24       | 19       | 22           | 37        | 35        | 28          | 139   |
| 02:00      |       |          | 22       | 17       | 14       | 18           | 20        | 20        | 19          | 93    |
| 03:00      |       |          | 9        | 8        | 8        | 8            | 14        | 7         | 9           | 46    |
| 04:00      |       |          | 16       | 9        | 21       | 15           | 8         | 9         | 13          | 63    |
| 05:00      |       |          | 50       | 40       | 51       | 47           | 17        | 15        | 35          | 173   |
| 06:00      |       |          | 119      | 124      | 125      | 123          | 62        | 28        | 92          | 458   |
| 07:00      |       |          | 277      | 267      | 253      | 266          | 114       | 62        | 195         | 973   |
| 08:00      |       |          | 521      | 476      | 467      | 488          | 261       | 181       | 381         | 1906  |
| 09:00      |       |          | 566      | 617      | 567      | 583          | 438       | 281       | 494         | 2469  |
| 10:00      |       |          | 543      | 630      | 633      | 602          | 576       | 357       | 548         | 2739  |
| 11:00      |       | 582      | 473      | 594      | 599      | 562          | 696       | 594       | 590         | 3538  |
| 12:00      |       | 650      | 531      | 677      | 699      | 639          | 751       | 626       | 656         | 3934  |
| 13:00      |       | 703      | 757      | 765      | 831      | 764          | 784       | 639       | 746         | 4479  |
| 14:00      |       | 782      | 806      | 787      | 815      | 798          | 747       | 587       | 754         | 4524  |
| 15:00      |       | 847      | 849      | 871      | 898      | 866          | 711       | 663       | 806         | 4839  |
| 16:00      |       | 828      | 918      | 933      | 994      | 918          | 798       | 658       | 855         | 5129  |
| 17:00      |       | 863      | 933      | 894      | 903      | 898          | 739       | 599       | 822         | 4931  |
| 18:00      |       | 840      | 762      | 881      | 721      | 801          | 644       | 476       | 721         | 4324  |
| 19:00      |       | 605      | 564      | 715      | 675      | 640          | 619       | 468       | 608         | 3646  |
| 20:00      |       | 450      | 371      | 442      | 434      | 424          | 402       | 291       | 398         | 2390  |
| 21:00      |       | 319      | 310      | 312      | 329      | 318          | 315       | 203       | 298         | 1788  |
| 22:00      |       | 189      | 172      | 180      | 219      | 190          | 206       | 156       | 187         | 1122  |
| 23:00      |       | 87       | 81       | 103      | 130      | 100          | 155       | 69        | 104         | 625   |
| 24:00      |       | 59       | 51       | 47       | 81       | 60           | 66        | 49        | 59          | 353   |
| TOTALS     |       | 7804     | 9725     | 10413    | 10486    | 10150        | 9180      | 7073      | 9418        | 54681 |
| % AVG WKDY |       | 76.9     | 95.8     | 102.6    | 103.3    |              | 90.4      | 69.7      |             |       |
| % AVG WEEK |       | 82.9     | 103.3    | 110.6    | 111.3    |              | 97.5      | 75.1      |             |       |
| AM Times   | 12:00 | 09:00    | 12:00    | 12:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   | 650   | 566      | 677      | 699      | 639      | 751          | 626       | 656       |             |       |
| PM Times   | 17:00 | 17:00    | 16:00    | 16:00    | 16:00    | 16:00        | 15:00     | 16:00     |             |       |
| PM Peaks   | 863   | 933      | 933      | 994      | 918      | 798          | 663       | 855       |             |       |

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000145  
Site ID: 000000000403  
Location: Grove St. EB, East of Bay Path Dr.  
Direction: EAST

STA. 4EB

File: D1006008.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 7        | 19       | 13       | 13           | 21        | 24        | 17          | 84    |
| 02:00      |     |          | 7        | 9        | 12       | 9            | 15        | 17        | 12          | 60    |
| 03:00      |     |          | 4        | 1        | 4        | 3            | 8         | 6         | 5           | 23    |
| 04:00      |     |          | 4        | 3        | 3        | 3            | 4         | 9         | 5           | 23    |
| 05:00      |     |          | 7        | 6        | 9        | 7            | 13        | 4         | 8           | 39    |
| 06:00      |     |          | 21       | 24       | 24       | 23           | 17        | 9         | 19          | 95    |
| 07:00      |     |          | 108      | 99       | 92       | 100          | 50        | 17        | 73          | 366   |
| 08:00      |     |          | 217      | 228      | 219      | 221          | 102       | 58        | 165         | 824   |
| 09:00      |     |          | 278      | 286      | 283      | 282          | 159       | 127       | 227         | 1133  |
| 10:00      |     |          | 231      | 285      | 256      | 257          | 257       | 187       | 243         | 1216  |
| 11:00      |     |          | 266      | 280      | 296      | 281          | 298       | 222       | 272         | 1362  |
| 12:00      |     | 368      | 337      | 438      | 371      | 378          | 384       | 342       | 373         | 2240  |
| 13:00      |     | 401      | 367      | 399      | 396      | 391          | 410       | 332       | 384         | 2305  |
| 14:00      |     | 368      | 390      | 408      | 403      | 392          | 430       | 359       | 393         | 2358  |
| 15:00      |     | 395      | 427      | 435      | 438      | 424          | 430       | 369       | 416         | 2494  |
| 16:00      |     | 488      | 500      | 505      | 528      | 505          | 382       | 354       | 460         | 2757  |
| 17:00      |     | 549      | 535      | 528      | 533      | 536          | 385       | 334       | 477         | 2864  |
| 18:00      |     | 561      | 559      | 552      | 466      | 534          | 321       | 321       | 463         | 2780  |
| 19:00      |     | 449      | 412      | 465      | 414      | 435          | 321       | 256       | 386         | 2317  |
| 20:00      |     | 296      | 285      | 302      | 279      | 290          | 234       | 206       | 267         | 1602  |
| 21:00      |     | 195      | 187      | 215      | 209      | 202          | 150       | 131       | 181         | 1087  |
| 22:00      |     | 102      | 101      | 125      | 119      | 112          | 132       | 90        | 112         | 669   |
| 23:00      |     | 47       | 42       | 50       | 66       | 51           | 76        | 51        | 55          | 332   |
| 24:00      |     | 24       | 32       | 31       | 56       | 36           | 46        | 34        | 37          | 223   |
| TOTALS     |     | 4243     | 5324     | 5693     | 5489     | 5485         | 4645      | 3859      | 5050        | 29253 |
| % AVG WKDY |     | 77.4     | 97.1     | 103.8    | 100.1    |              | 84.7      | 70.4      |             |       |
| % AVG WEEK |     | 84.0     | 105.4    | 112.7    | 108.7    |              | 92.0      | 76.4      |             |       |
| AM Times   |     | 12:00    | 12:00    | 12:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     | 368      | 337      | 438      | 371      | 378          | 384       | 342       | 373         |       |
| PM Times   |     | 18:00    | 18:00    | 18:00    | 17:00    | 17:00        | 14:00     | 15:00     | 17:00       |       |
| PM Peaks   |     | 561      | 559      | 552      | 533      | 536          | 430       | 369       | 477         |       |

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EB 5485  
WB 5852

comb AWD 11 337

FAC .94 (.99)

comb APT 10,600

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000088  
Site ID: 000000000404  
Location: Grove St. WB, East of Bay Path Dr.  
Direction: WEST

*STA. 4WB*

File: D1006009.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 7        | 4        | 6        | 6            | 15        | 13        | 9           | 45    |
| 02:00      |     |          | 1        | 4        | 9        | 5            | 10        | 7         | 6           | 31    |
| 03:00      |     |          | 5        | 4        | 1        | 3            | 5         | 6         | 4           | 21    |
| 04:00      |     |          | 9        | 8        | 12       | 10           | 4         | 4         | 7           | 37    |
| 05:00      |     |          | 60       | 49       | 51       | 53           | 20        | 17        | 39          | 197   |
| 06:00      |     |          | 148      | 139      | 146      | 144          | 45        | 31        | 102         | 509   |
| 07:00      |     |          | 283      | 274      | 288      | 282          | 105       | 72        | 204         | 1022  |
| 08:00      |     |          | 549      | 490      | 471      | 503          | 208       | 129       | 369         | 1847  |
| 09:00      |     |          | 507      | 545      | 475      | 509          | 302       | 202       | 406         | 2031  |
| 10:00      |     |          | 399      | 420      | 416      | 412          | 420       | 272       | 385         | 1927  |
| 11:00      |     |          | 401      | 417      | 441      | 420          | 399       | 330       | 398         | 1988  |
| 12:00      |     | 401      | 466      | 383      | 461      | 428          | 473       | 386       | 428         | 2570  |
| 13:00      |     | 452      | 439      | 435      | 481      | 452          | 425       | 410       | 440         | 2642  |
| 14:00      |     | 362      | 364      | 364      | 420      | 378          | 402       | 372       | 381         | 2284  |
| 15:00      |     | 392      | 460      | 412      | 445      | 427          | 407       | 340       | 409         | 2456  |
| 16:00      |     | 413      | 385      | 413      | 445      | 414          | 340       | 315       | 385         | 2311  |
| 17:00      |     | 368      | 386      | 383      | 351      | 372          | 324       | 269       | 347         | 2081  |
| 18:00      |     | 363      | 397      | 410      | 354      | 381          | 313       |           | 367         | 1837  |
| 19:00      |     | 268      | 243      | 333      | 319      | 291          | 292       |           | 291         | 1455  |
| 20:00      |     | 185      | 128      | 150      | 207      | 168          | 178       |           | 170         | 848   |
| 21:00      |     | 100      | 105      | 108      | 92       | 101          | 131       |           | 107         | 536   |
| 22:00      |     | 40       | 39       | 50       | 55       | 46           | 68        |           | 50          | 252   |
| 23:00      |     | 18       | 33       | 32       | 34       | 29           | 43        |           | 32          | 160   |
| 24:00      |     | 24       | 7        | 17       | 26       | 18           | 29        |           | 21          | 103   |
| TOTALS     |     | 3386     | 5821     | 5844     | 6006     | 5852         | 4958      | 3175      | 5357        | 29190 |
| % AVG WKDY |     | 57.9     | 99.5     | 99.9     | 102.6    |              | 84.7      | 54.3      |             |       |
| % AVG WEEK |     | 63.2     | 108.7    | 109.1    | 112.1    |              | 92.6      | 59.3      |             |       |
| AM Times   |     | 12:00    | 08:00    | 09:00    | 09:00    | 09:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     | 401      | 549      | 545      | 475      | 509          | 473       | 386       | 428         |       |
| PM Times   |     | 13:00    | 15:00    | 13:00    | 13:00    | 13:00        | 13:00     | 13:00     | 13:00       |       |
| PM Peaks   |     | 452      | 460      | 435      | 481      | 452          | 425       | 410       | 440         |       |

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000038  
Site ID: 000000000501  
Location: High St. NB, North of Oak St.  
Direction: NORTH

STA. 5 NB

File: D1006010.prn  
City: Norwell  
County: Volume

| TIME       | MON   | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-------|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |       |          | 3        | 1        | 5        | 3            | 6         | 9         | 5           | 24    |
| 02:00      |       |          | 1        | 3        | 5        | 3            | 6         | 7         | 4           | 22    |
| 03:00      |       |          | 1        | 0        | 3        | 1            | 4         | 4         | 2           | 12    |
| 04:00      |       |          | 4        | 6        | 2        | 4            | 6         | 1         | 4           | 19    |
| 05:00      |       |          | 7        | 5        | 6        | 6            | 5         | 3         | 5           | 26    |
| 06:00      |       |          | 42       | 31       | 38       | 37           | 16        | 8         | 27          | 135   |
| 07:00      |       |          | 95       | 104      | 97       | 99           | 34        | 17        | 69          | 347   |
| 08:00      |       |          | 230      | 232      | 200      | 221          | 80        | 45        | 157         | 787   |
| 09:00      |       |          | 243      | 291      | 261      | 265          | 125       | 74        | 199         | 994   |
| 10:00      |       |          | 189      | 222      | 204      | 205          | 160       | 138       | 183         | 913   |
| 11:00      |       |          | 192      | 218      | 223      | 211          | 216       | 151       | 200         | 1000  |
| 12:00      |       | 307      | 274      | 289      | 258      | 282          | 266       | 194       | 265         | 1588  |
| 13:00      |       | 309      | 295      | 332      | 319      | 314          | 250       | 217       | 287         | 1722  |
| 14:00      |       | 232      | 262      | 265      | 263      | 256          | 279       | 234       | 256         | 1535  |
| 15:00      |       | 268      | 257      | 289      | 272      | 272          | 252       | 210       | 258         | 1548  |
| 16:00      |       | 385      | 315      | 346      | 331      | 344          | 228       | 209       | 302         | 1814  |
| 17:00      |       | 306      | 277      | 348      | 331      | 316          | 177       | 163       | 267         | 1602  |
| 18:00      |       | 290      | 238      | 387      | 279      | 298          | 193       | 134       | 254         | 1521  |
| 19:00      |       | 176      | 172      | 271      | 215      | 208          | 155       | 110       | 183         | 1099  |
| 20:00      |       | 94       | 107      | 117      | 82       | 100          | 87        | 65        | 92          | 552   |
| 21:00      |       | 62       | 56       | 69       | 60       | 62           | 47        | 48        | 57          | 342   |
| 22:00      |       | 21       | 34       | 42       | 26       | 31           | 33        | 34        | 32          | 190   |
| 23:00      |       | 9        | 13       | 20       | 29       | 18           | 32        | 11        | 19          | 114   |
| 24:00      |       | 6        | 8        | 12       | 16       | 10           | 16        | 13        | 12          | 71    |
| <hr/>      |       |          |          |          |          |              |           |           |             |       |
| TOTALS     |       | 2465     | 3315     | 3900     | 3525     | 3566         | 2673      | 2099      | 3139        | 17977 |
| % AVG WKDY |       | 69.1     | 93.0     | 109.4    | 98.9     |              | 75.0      | 58.9      |             |       |
| % AVG WEEK |       | 78.5     | 105.6    | 124.2    | 112.3    |              | 85.2      | 66.9      |             |       |
| AM Times   | 12:00 | 12:00    | 09:00    | 09:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   | 307   | 274      | 291      | 261      | 282      | 266          | 194       | 265       |             |       |
| PM Times   | 16:00 | 16:00    | 18:00    | 16:00    | 16:00    | 14:00        | 14:00     | 16:00     |             |       |
| PM Peaks   | 385   | 315      | 387      | 331      | 344      | 279          | 234       | 302       |             |       |

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NB 3566

SB 3822

Comb AWD 7388

FAC .94(99)

Comb ADT 6,900

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000094  
Site ID: 000000000502  
Location: High St. SB, North of Oak St.  
Direction: SOUTH

STA. 5 SB

File: D1006011.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 4        | 8        | 12       | 8            | 12        | 17        | 11          | 53    |
| 02:00      |     |          | 4        | 3        | 7        | 5            | 5         | 6         | 5           | 25    |
| 03:00      |     |          | 0        | 1        | 0        | 0            | 2         | 3         | 1           | 6     |
| 04:00      |     |          | 1        | 2        | 1        | 1            | 2         | 1         | 1           | 7     |
| 05:00      |     |          | 3        | 4        | 3        | 3            | 4         | 3         | 3           | 17    |
| 06:00      |     |          | 15       | 10       | 15       | 13           | 7         | 2         | 10          | 49    |
| 07:00      |     |          | 37       | 40       | 46       | 41           | 11        | 7         | 28          | 141   |
| 08:00      |     |          | 174      | 158      | 134      | 155          | 46        | 32        | 109         | 544   |
| 09:00      |     |          | 253      | 293      | 188      | 245          | 82        | 61        | 175         | 877   |
| 10:00      |     |          | 171      | 189      | 169      | 176          | 136       | 85        | 150         | 750   |
| 11:00      |     |          | 206      | 203      | 193      | 201          | 188       | 122       | 182         | 912   |
| 12:00      |     | 257      | 278      | 251      | 260      | 262          | 259       | 170       | 246         | 1475  |
| 13:00      |     | 363      | 338      | 356      | 303      | 340          | 297       | 209       | 311         | 1866  |
| 14:00      |     | 323      | 315      | 327      | 352      | 329          | 304       | 226       | 308         | 1847  |
| 15:00      |     | 300      | 331      | 340      | 353      | 331          | 288       | 217       | 305         | 1829  |
| 16:00      |     | 423      | 368      | 415      | 416      | 406          | 239       | 222       | 347         | 2083  |
| 17:00      |     | 342      | 385      | 388      | 355      | 368          | 223       | 172       | 311         | 1865  |
| 18:00      |     | 362      | 326      | 381      | 374      | 361          | 203       | 142       | 298         | 1788  |
| 19:00      |     | 232      | 220      | 298      | 244      | 248          | 189       | 130       | 219         | 1313  |
| 20:00      |     | 145      | 127      | 163      | 145      | 145          | 130       | 72        | 130         | 782   |
| 21:00      |     | 93       | 80       | 96       | 99       | 92           | 83        | 48        | 83          | 499   |
| 22:00      |     | 52       | 43       | 52       | 62       | 52           | 54        | 39        | 50          | 302   |
| 23:00      |     | 12       | 20       | 31       | 41       | 26           | 35        | 20        | 26          | 159   |
| 24:00      |     | 7        | 13       | 18       | 20       | 14           | 22        | 20        | 17          | 100   |
| TOTALS     |     | 2911     | 3712     | 4027     | 3792     | 3822         | 2821      | 2026      | 3326        | 19289 |
| % AVG WKDY |     | 76.2     | 97.1     | 105.4    | 99.2     |              | 73.8      | 53.0      |             |       |
| % AVG WEEK |     | 87.5     | 111.6    | 121.1    | 114.0    |              | 84.8      | 60.9      |             |       |
| AM Times   |     | 12:00    | 12:00    | 09:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     | 257      | 278      | 293      | 260      | 262          | 259       | 170       | 246         |       |
| PM Times   |     | 16:00    | 17:00    | 16:00    | 16:00    | 16:00        | 14:00     | 14:00     | 16:00       |       |
| PM Peaks   |     | 423      | 385      | 415      | 416      | 406          | 304       | 226       | 347         |       |

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 00000000136  
Site ID: 000000060304  
Location: Oak St., West of Rte.53  
Direction: EAST

STA. 6 EB

File: D1006041.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 0        | 1        | 2        | 1            | 1         | 3         | 1           | 7     |
| 02:00      |     |          | 1        | 1        | 1        | 1            | 3         | 3         | 2           | 9     |
| 03:00      |     |          | 1        | 0        | 0        | 0            | 0         | 1         | 0           | 2     |
| 04:00      |     |          | 0        | 0        | 0        | 0            | 0         | 2         | 0           | 2     |
| 05:00      |     |          | 1        | 1        | 1        | 1            | 0         | 0         | 1           | 3     |
| 06:00      |     |          | 10       | 8        | 15       | 11           | 1         | 0         | 7           | 34    |
| 07:00      |     |          | 21       | 17       | 18       | 19           | 6         | 2         | 13          | 64    |
| 08:00      |     |          | 73       | 40       | 36       | 50           | 18        | 16        | 37          | 183   |
| 09:00      |     |          | 55       | 83       | 51       | 63           | 36        | 14        | 48          | 239   |
| 10:00      |     |          | 36       | 44       | 21       | 34           | 29        | 16        | 29          | 146   |
| 11:00      |     |          | 30       | 29       | 34       | 31           | 28        | 22        | 29          | 143   |
| 12:00      |     | 56       | 51       | 69       | 32       | 52           | 26        | 21        | 42          | 255   |
| 13:00      |     | 67       | 43       | 57       | 40       | 52           | 36        | 20        | 44          | 263   |
| 14:00      |     | 51       | 33       | 54       | 32       | 42           | 28        | 23        | 37          | 221   |
| 15:00      |     | 44       | 37       | 46       | 45       | 43           | 30        | 23        | 38          | 225   |
| 16:00      |     | 89       | 58       | 91       | 55       | 73           | 15        | 17        | 54          | 325   |
| 17:00      |     | 60       | 45       | 47       | 29       | 45           | 41        | 21        | 40          | 243   |
| 18:00      |     | 27       | 37       | 35       | 42       | 35           | 22        | 19        | 30          | 182   |
| 19:00      |     | 21       | 24       | 20       | 25       | 22           | 14        | 18        | 20          | 122   |
| 20:00      |     | 13       | 19       | 17       | 17       | 16           | 13        | 5         | 14          | 84    |
| 21:00      |     | 9        | 5        | 9        | 9        | 8            | 7         | 7         | 8           | 46    |
| 22:00      |     | 0        | 3        | 3        | 6        | 3            | 4         | 5         | 4           | 21    |
| 23:00      |     | 3        | 3        | 4        | 6        | 4            | 4         | 1         | 4           | 21    |
| 24:00      |     | 1        | 1        | 3        | 1        | 2            | 3         | 3         | 2           | 12    |
| <hr/>      |     |          |          |          |          |              |           |           |             |       |
| TOTALS     |     | 441      | 587      | 679      | 518      | 608          | 365       | 262       | 504         | 2852  |
| <hr/>      |     |          |          |          |          |              |           |           |             |       |
| % AVG WKDY |     | 72.5     | 96.5     | 111.7    | 85.2     |              | 60.0      | 43.1      |             |       |
| % AVG WEEK |     | 87.5     | 116.5    | 134.7    | 102.8    |              | 72.4      | 52.0      |             |       |
| <hr/>      |     |          |          |          |          |              |           |           |             |       |
| AM Times   |     | 12:00    | 08:00    | 09:00    | 09:00    | 09:00        | 09:00     | 11:00     | 09:00       |       |
| AM Peaks   |     | 56       | 73       | 83       | 51       | 63           | 36        | 22        | 48          |       |
| <hr/>      |     |          |          |          |          |              |           |           |             |       |
| PM Times   |     | 16:00    | 16:00    | 16:00    | 16:00    | 16:00        | 17:00     | 14:00     | 16:00       |       |
| PM Peaks   |     | 89       | 58       | 91       | 55       | 73           | 41        | 23        | 54          |       |

U4

EB 608

WB 682

COMB AWD 1290

FAC .94(.99)

COMB ADT 1,200



Mass Highway Department

WEEKLY SUMMARY FOR LANE 2  
Starting: 10/6/2020

Page: 2

Station #: 000000000136  
Site ID: 000000060304  
Location: Oak St., West of Rte.53  
Direction: WEST

STA. 6 WB

File: D1006041.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 0        | 1        | 1        | 1            | 3         | 1         | 1           | 6     |
| 02:00      |     |          | 0        | 0        | 0        | 0            | 1         | 4         | 1           | 5     |
| 03:00      |     |          | 0        | 0        | 0        | 0            | 0         | 1         | 0           | 1     |
| 04:00      |     |          | 1        | 1        | 1        | 1            | 1         | 1         | 1           | 5     |
| 05:00      |     |          | 0        | 0        | 0        | 0            | 0         | 0         | 0           | 0     |
| 06:00      |     |          | 3        | 3        | 3        | 3            | 1         | 0         | 2           | 10    |
| 07:00      |     |          | 5        | 8        | 9        | 7            | 2         | 0         | 5           | 24    |
| 08:00      |     |          | 30       | 35       | 28       | 31           | 10        | 3         | 21          | 106   |
| 09:00      |     |          | 61       | 89       | 38       | 63           | 20        | 8         | 43          | 216   |
| 10:00      |     |          | 31       | 38       | 30       | 33           | 24        | 22        | 29          | 145   |
| 11:00      |     |          | 34       | 44       | 41       | 40           | 30        | 13        | 32          | 162   |
| 12:00      |     | 56       | 64       | 65       | 37       | 56           | 32        | 25        | 46          | 279   |
| 13:00      |     | 75       | 45       | 78       | 59       | 64           | 29        | 28        | 52          | 314   |
| 14:00      |     | 43       | 45       | 51       | 45       | 46           | 44        | 35        | 44          | 263   |
| 15:00      |     | 55       | 65       | 71       | 51       | 60           | 38        | 35        | 52          | 315   |
| 16:00      |     | 74       | 54       | 70       | 60       | 64           | 39        | 35        | 55          | 332   |
| 17:00      |     | 51       | 53       | 64       | 58       | 56           | 39        | 35        | 50          | 300   |
| 18:00      |     | 41       | 54       | 86       | 55       | 59           | 37        | 29        | 50          | 302   |
| 19:00      |     | 39       | 37       | 64       | 35       | 44           | 21        | 18        | 36          | 214   |
| 20:00      |     | 25       | 18       | 21       | 25       | 22           | 28        | 14        | 22          | 131   |
| 21:00      |     | 17       | 15       | 26       | 7        | 16           | 14        | 7         | 14          | 86    |
| 22:00      |     | 6        | 10       | 6        | 19       | 10           | 12        | 5         | 10          | 58    |
| 23:00      |     | 4        | 5        | 5        | 4        | 4            | 8         | 3         | 5           | 29    |
| 24:00      |     | 0        | 2        | 3        | 2        | 2            | 3         | 3         | 2           | 13    |
| TOTALS     |     | 486      | 632      | 829      | 608      | 682          | 436       | 325       | 573         | 3316  |
| % AVG WKDY |     | 71.3     | 92.7     | 121.6    | 89.1     |              | 63.9      | 47.7      |             |       |
| % AVG WEEK |     | 84.8     | 110.3    | 144.7    | 106.1    |              | 76.1      | 56.7      |             |       |
| AM Times   |     | 12:00    | 12:00    | 09:00    | 11:00    | 09:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     | 56       | 64       | 89       | 41       | 63           | 32        | 25        | 46          |       |
| PM Times   |     | 13:00    | 15:00    | 18:00    | 16:00    | 13:00        | 14:00     | 14:00     | 16:00       |       |
| PM Peaks   |     | 75       | 65       | 86       | 60       | 64           | 44        | 35        | 55          |       |



Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000127  
Site ID: 000000000703  
Location: Hall Dr. EB, West Rte.53  
Direction: EAST

STA. 7 EB

File: D1006012.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE   | WED   | THU   | FRI   | WKDAY | SAT   | SUN   | WEEK  | TOTAL |
|------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |     | 6     | 7     | 8     | 9     | AVG   | 10    | 11    | AVG   |       |
| 01:00      |     |       | 0     | 1     | 3     | 1     | 1     | 3     | 2     | 8     |
| 02:00      |     |       | 0     | 0     | 0     | 0     | 2     | 0     | 0     | 2     |
| 03:00      |     |       | 0     | 1     | 1     | 1     | 0     | 0     | 0     | 2     |
| 04:00      |     |       | 3     | 1     | 1     | 2     | 3     | 1     | 2     | 9     |
| 05:00      |     |       | 3     | 3     | 1     | 2     | 0     | 1     | 2     | 8     |
| 06:00      |     |       | 5     | 5     | 4     | 5     | 2     | 0     | 3     | 16    |
| 07:00      |     |       | 10    | 11    | 12    | 11    | 7     | 5     | 9     | 45    |
| 08:00      |     |       | 33    | 28    | 23    | 28    | 21    | 8     | 23    | 113   |
| 09:00      |     |       | 48    | 54    | 39    | 47    | 32    | 11    | 37    | 184   |
| 10:00      |     |       | 30    | 37    | 43    | 37    | 57    | 17    | 37    | 184   |
| 11:00      |     |       | 23    | 20    | 29    | 24    | 38    | 14    | 25    | 124   |
| 12:00      |     |       | 28    | 32    | 43    | 34    | 30    | 19    | 30    | 152   |
| 13:00      |     | 39    | 36    | 38    | 38    | 38    | 24    | 24    | 33    | 199   |
| 14:00      |     | 35    | 31    | 29    | 31    | 32    | 25    | 21    | 29    | 172   |
| 15:00      |     | 34    | 44    | 40    | 31    | 37    | 26    | 28    | 34    | 203   |
| 16:00      |     | 47    | 41    | 47    | 49    | 46    | 25    | 26    | 39    | 235   |
| 17:00      |     | 27    | 32    | 35    | 33    | 32    | 41    | 22    | 32    | 190   |
| 18:00      |     | 46    | 30    | 35    | 31    | 36    | 33    | 21    | 33    | 196   |
| 19:00      |     | 24    | 25    | 24    | 23    | 24    | 11    | 15    | 20    | 122   |
| 20:00      |     | 15    | 14    | 18    | 19    | 16    | 14    | 14    | 16    | 94    |
| 21:00      |     | 7     | 7     | 10    | 14    | 10    | 8     | 10    | 9     | 56    |
| 22:00      |     | 6     | 2     | 5     | 5     | 4     | 7     | 3     | 5     | 28    |
| 23:00      |     | 5     | 3     | 5     | 10    | 6     | 6     | 5     | 6     | 34    |
| 24:00      |     | 5     | 5     | 1     | 5     | 4     | 3     | 4     | 4     | 23    |
| <hr/>      |     |       |       |       |       |       |       |       |       |       |
| TOTALS     |     | 290   | 453   | 480   | 488   | 477   | 416   | 272   | 430   | 2399  |
| <hr/>      |     |       |       |       |       |       |       |       |       |       |
| % AVG WKDY |     | 60.8  | 95.0  | 100.6 | 102.3 |       | 87.2  | 57.0  |       |       |
| % AVG WEEK |     | 67.4  | 105.3 | 111.6 | 113.5 |       | 96.7  | 63.3  |       |       |
| <hr/>      |     |       |       |       |       |       |       |       |       |       |
| AM Times   |     |       | 09:00 | 09:00 | 10:00 | 09:00 | 10:00 | 12:00 | 09:00 |       |
| AM Peaks   |     |       | 48    | 54    | 43    | 47    | 57    | 19    | 37    |       |
| <hr/>      |     |       |       |       |       |       |       |       |       |       |
| PM Times   |     | 16:00 | 15:00 | 16:00 | 16:00 | 16:00 | 17:00 | 15:00 | 16:00 |       |
| PM Peaks   |     | 47    | 44    | 47    | 49    | 46    | 41    | 28    | 39    |       |

U7

EB 477

WB 484

COMB AWD 961

FAC .94(.99)

COMB ADT 900

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000112  
Site ID: 000000000704  
Location: Hall Dr. WB, West Rte.53  
Direction: WEST

STA. 7 WB

File: D1006013.prn  
City: Norwell  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 0        | 2        | 4        | 2            | 4         | 5         | 3           | 15    |
| 02:00      |     |          | 0        | 0        | 0        | 0            | 1         | 1         | 0           | 2     |
| 03:00      |     |          | 0        | 0        | 0        | 0            | 0         | 0         | 0           | 0     |
| 04:00      |     |          | 1        | 0        | 1        | 1            | 1         | 1         | 1           | 4     |
| 05:00      |     |          | 2        | 3        | 0        | 2            | 0         | 0         | 1           | 5     |
| 06:00      |     |          | 4        | 2        | 1        | 2            | 0         | 0         | 1           | 7     |
| 07:00      |     |          | 6        | 6        | 9        | 7            | 5         | 3         | 6           | 29    |
| 08:00      |     |          | 30       | 30       | 21       | 27           | 14        | 5         | 20          | 100   |
| 09:00      |     |          | 38       | 44       | 34       | 39           | 31        | 12        | 32          | 159   |
| 10:00      |     |          | 31       | 30       | 28       | 30           | 19        | 17        | 25          | 125   |
| 11:00      |     |          | 22       | 26       | 32       | 27           | 23        | 14        | 23          | 117   |
| 12:00      |     |          | 33       | 31       | 46       | 37           | 29        | 19        | 32          | 158   |
| 13:00      |     | 45       | 31       | 39       | 39       | 38           | 37        | 21        | 35          | 212   |
| 14:00      |     | 40       | 32       | 33       | 31       | 34           | 35        | 34        | 34          | 205   |
| 15:00      |     | 31       | 40       | 29       | 28       | 32           | 28        | 22        | 30          | 178   |
| 16:00      |     | 34       | 38       | 40       | 37       | 37           | 29        | 30        | 35          | 208   |
| 17:00      |     | 36       | 45       | 28       | 34       | 36           | 36        | 30        | 35          | 209   |
| 18:00      |     | 55       | 34       | 70       | 42       | 50           | 37        | 20        | 43          | 258   |
| 19:00      |     | 33       | 37       | 33       | 35       | 34           | 19        | 18        | 29          | 175   |
| 20:00      |     | 20       | 12       | 21       | 24       | 19           | 15        | 20        | 19          | 112   |
| 21:00      |     | 11       | 9        | 18       | 15       | 13           | 14        | 9         | 13          | 76    |
| 22:00      |     | 3        | 6        | 8        | 9        | 6            | 11        | 6         | 7           | 43    |
| 23:00      |     | 4        | 6        | 5        | 9        | 6            | 6         | 4         | 6           | 34    |
| 24:00      |     | 5        | 8        | 3        | 5        | 5            | 8         | 5         | 6           | 34    |
| TOTALS     |     | 317      | 465      | 501      | 484      | 484          | 402       | 296       | 436         | 2465  |
| % AVG WKDY |     | 65.5     | 96.1     | 103.5    | 100.0    |              | 83.1      | 61.2      |             |       |
| % AVG WEEK |     | 72.7     | 106.7    | 114.9    | 111.0    |              | 92.2      | 67.9      |             |       |
| AM Times   |     |          | 09:00    | 09:00    | 12:00    | 09:00        | 09:00     | 12:00     | 09:00       |       |
| AM Peaks   |     |          | 38       | 44       | 46       | 39           | 31        | 19        | 32          |       |
| PM Times   |     | 18:00    | 17:00    | 18:00    | 18:00    | 18:00        | 13:00     | 14:00     | 18:00       |       |
| PM Peaks   |     | 55       | 45       | 70       | 42       | 50           | 37        | 34        | 43          |       |

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000096  
Site ID: 000000000801  
Location: Rte.53 NB, South of Assinippi Ave.  
Direction: NORTH

STA. 8 NB

File: D1006014.prn  
City: Hanover  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 5        | 7        | 15       | 9            | 19        | 18        | 13          | 64    |
| 02:00      |     |          | 3        | 6        | 8        | 6            | 3         | 8         | 6           | 28    |
| 03:00      |     |          | 4        | 4        | 3        | 4            | 6         | 4         | 4           | 21    |
| 04:00      |     |          | 4        | 8        | 5        | 6            | 6         | 9         | 6           | 32    |
| 05:00      |     |          | 14       | 19       | 14       | 16           | 7         | 5         | 12          | 59    |
| 06:00      |     |          | 87       | 85       | 90       | 87           | 37        | 31        | 66          | 330   |
| 07:00      |     |          | 168      | 218      | 157      | 181          | 83        | 54        | 136         | 680   |
| 08:00      |     |          | 396      | 406      | 393      | 398          | 162       | 95        | 290         | 1452  |
| 09:00      |     |          | 517      | 517      | 443      | 492          | 331       | 152       | 392         | 1960  |
| 10:00      |     |          | 452      | 483      | 444      | 460          | 406       | 230       | 403         | 2015  |
| 11:00      |     |          | 433      | 471      | 497      | 467          | 487       | 359       | 449         | 2247  |
| 12:00      |     |          | 498      | 530      | 554      | 527          | 530       | 426       | 508         | 2538  |
| 13:00      |     | 550      | 531      | 533      | 563      | 544          | 551       | 658       | 564         | 3386  |
| 14:00      |     | 495      | 575      | 544      | 563      | 544          | 585       | 560       | 554         | 3322  |
| 15:00      |     | 469      | 568      | 542      | 562      | 535          | 576       | 480       | 533         | 3197  |
| 16:00      |     | 540      | 546      | 561      | 576      | 556          | 502       | 451       | 529         | 3176  |
| 17:00      |     | 494      | 510      | 519      | 526      | 512          | 456       | 467       | 495         | 2972  |
| 18:00      |     | 451      | 511      | 826      | 430      | 554          | 408       | 317       | 490         | 2943  |
| 19:00      |     | 351      | 367      | 368      | 362      | 362          | 322       | 244       | 336         | 2014  |
| 20:00      |     | 202      | 233      | 272      | 240      | 237          | 229       | 160       | 223         | 1336  |
| 21:00      |     | 142      | 131      | 162      | 161      | 149          | 141       | 97        | 139         | 834   |
| 22:00      |     | 73       | 88       | 96       | 107      | 91           | 83        | 57        | 84          | 504   |
| 23:00      |     | 38       | 35       | 46       | 49       | 42           | 56        | 50        | 46          | 274   |
| 24:00      |     | 20       | 18       | 26       | 36       | 25           | 26        | 16        | 24          | 142   |
| TOTALS     |     | 3825     | 6694     | 7249     | 6798     | 6804         | 6012      | 4948      | 6302        | 35526 |
| % AVG WKDY |     | 56.2     | 98.4     | 106.5    | 99.9     |              | 88.4      | 72.7      |             |       |
| % AVG WEEK |     | 60.7     | 106.2    | 115.0    | 107.9    |              | 95.4      | 78.5      |             |       |
| AM Times   |     |          | 09:00    | 12:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     |          | 517      | 530      | 554      | 527          | 530       | 426       | 508         |       |
| PM Times   |     | 13:00    | 14:00    | 18:00    | 16:00    | 16:00        | 14:00     | 13:00     | 13:00       |       |
| PM Peaks   |     | 550      | 575      | 826      | 576      | 556          | 585       | 658       | 564         |       |

U7

NB 6804

SB 6820

COMB AWD 13 624

FAC .94 (99)

COMB ADT 12,700

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000142  
Site ID: 000000000802  
Location: Rte.53 SB, South of Assinippi Ave.  
Direction: SOUTH

STA. 8 SB

File: D1006015.prn  
City: Hanover  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 14       | 9        | 15       | 13           | 17        | 18        | 15          | 73    |
| 02:00      |     |          | 6        | 8        | 8        | 7            | 10        | 4         | 7           | 36    |
| 03:00      |     |          | 0        | 4        | 7        | 4            | 1         | 2         | 3           | 14    |
| 04:00      |     |          | 4        | 4        | 6        | 5            | 6         | 2         | 4           | 22    |
| 05:00      |     |          | 14       | 14       | 13       | 14           | 6         | 7         | 11          | 54    |
| 06:00      |     |          | 37       | 38       | 33       | 36           | 28        | 12        | 30          | 148   |
| 07:00      |     |          | 75       | 93       | 92       | 87           | 43        | 29        | 66          | 332   |
| 08:00      |     |          | 220      | 211      | 226      | 219          | 131       | 73        | 172         | 861   |
| 09:00      |     |          | 311      | 347      | 320      | 326          | 231       | 163       | 274         | 1372  |
| 10:00      |     |          | 370      | 399      | 378      | 382          | 359       | 219       | 345         | 1725  |
| 11:00      |     |          | 398      | 435      | 494      | 442          | 476       | 338       | 428         | 2141  |
| 12:00      |     |          | 506      | 554      | 505      | 522          | 587       | 382       | 507         | 2534  |
| 13:00      |     | 536      | 578      | 593      | 593      | 575          | 635       | 448       | 564         | 3383  |
| 14:00      |     | 556      | 577      | 613      | 565      | 578          | 655       | 469       | 572         | 3435  |
| 15:00      |     | 569      | 605      | 600      | 674      | 612          | 598       | 465       | 585         | 3511  |
| 16:00      |     | 573      | 635      | 657      | 698      | 641          | 505       | 425       | 582         | 3493  |
| 17:00      |     | 636      | 640      | 678      | 694      | 662          | 493       | 357       | 583         | 3498  |
| 18:00      |     | 569      | 564      | 593      | 612      | 584          | 403       | 330       | 512         | 3071  |
| 19:00      |     | 407      | 430      | 440      | 430      | 427          | 323       | 267       | 383         | 2297  |
| 20:00      |     | 301      | 283      | 299      | 296      | 295          | 215       | 155       | 258         | 1549  |
| 21:00      |     | 191      | 184      | 217      | 203      | 199          | 151       | 101       | 174         | 1047  |
| 22:00      |     | 98       | 114      | 85       | 120      | 104          | 99        | 59        | 96          | 575   |
| 23:00      |     | 49       | 45       | 50       | 70       | 54           | 73        | 43        | 55          | 330   |
| 24:00      |     | 38       | 22       | 25       | 43       | 32           | 44        | 19        | 32          | 191   |
| TOTALS     |     | 4523     | 6632     | 6966     | 7095     | 6820         | 6089      | 4387      | 6258        | 35692 |
| % AVG WKDY |     | 66.3     | 97.2     | 102.1    | 104.0    |              | 89.3      | 64.3      |             |       |
| % AVG WEEK |     | 72.3     | 106.0    | 111.3    | 113.4    |              | 97.3      | 70.1      |             |       |
| AM Times   |     |          | 12:00    | 12:00    | 12:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     |          | 506      | 554      | 505      | 522          | 587       | 382       | 507         |       |
| PM Times   |     | 17:00    | 17:00    | 17:00    | 16:00    | 17:00        | 14:00     | 14:00     | 15:00       |       |
| PM Peaks   |     | 636      | 640      | 678      | 698      | 662          | 655       | 469       | 585         |       |

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000107  
Site ID: 000000000903  
Location: Assinippi Ave. EB, East of Rte.53  
Direction: EAST

STA. 9 EB

File: D1006016.prn  
City: Hanover  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN<br>11 | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----------|-------------|-------|
| 01:00      |     |          | 1        | 4        | 5        | 3            | 5         | 7         | 4           | 22    |
| 02:00      |     |          | 0        | 3        | 1        | 1            | 3         | 5         | 2           | 12    |
| 03:00      |     |          | 2        | 3        | 1        | 2            | 3         | 2         | 2           | 11    |
| 04:00      |     |          | 1        | 3        | 1        | 2            | 1         | 2         | 2           | 8     |
| 05:00      |     |          | 3        | 8        | 6        | 6            | 0         | 3         | 4           | 20    |
| 06:00      |     |          | 20       | 21       | 13       | 18           | 9         | 6         | 14          | 69    |
| 07:00      |     |          | 41       | 38       | 46       | 42           | 21        | 14        | 32          | 160   |
| 08:00      |     |          | 111      | 118      | 95       | 108          | 39        | 22        | 77          | 385   |
| 09:00      |     |          | 158      | 195      | 171      | 175          | 89        | 40        | 131         | 653   |
| 10:00      |     |          | 122      | 155      | 148      | 142          | 124       | 77        | 125         | 626   |
| 11:00      |     |          | 111      | 141      | 106      | 119          | 142       | 86        | 117         | 586   |
| 12:00      |     |          | 192      | 190      | 150      | 177          | 177       | 132       | 168         | 841   |
| 13:00      |     |          | 166      | 180      | 172      | 173          | 168       | 135       | 164         | 821   |
| 14:00      |     | 138      | 156      | 162      | 170      | 156          | 157       | 138       | 154         | 921   |
| 15:00      |     | 165      | 195      | 203      | 148      | 178          | 148       | 116       | 162         | 975   |
| 16:00      |     | 175      | 177      | 175      | 183      | 178          | 131       | 121       | 160         | 962   |
| 17:00      |     | 145      | 163      | 183      | 158      | 162          | 132       | 116       | 150         | 897   |
| 18:00      |     | 144      | 171      | 165      | 168      | 162          | 129       | 110       | 148         | 887   |
| 19:00      |     | 125      | 94       | 120      | 127      | 116          | 105       | 81        | 109         | 652   |
| 20:00      |     | 50       | 64       | 81       | 79       | 68           | 53        | 40        | 61          | 367   |
| 21:00      |     | 41       | 33       | 37       | 43       | 38           | 50        | 21        | 38          | 225   |
| 22:00      |     | 24       | 15       | 17       | 21       | 19           | 22        | 14        | 19          | 113   |
| 23:00      |     | 10       | 25       | 18       | 14       | 17           | 10        | 11        | 15          | 88    |
| 24:00      |     | 9        | 15       | 12       | 20       | 14           | 18        | 10        | 14          | 84    |
| TOTALS     |     | 1026     | 2036     | 2232     | 2046     | 2076         | 1736      | 1309      | 1872        | 10385 |
| % AVG WKDY |     | 49.4     | 98.1     | 107.5    | 98.6     |              | 83.6      | 63.1      |             |       |
| % AVG WEEK |     | 54.8     | 108.8    | 119.2    | 109.3    |              | 92.7      | 69.9      |             |       |
| AM Times   |     |          | 12:00    | 09:00    | 09:00    | 12:00        | 12:00     | 12:00     | 12:00       |       |
| AM Peaks   |     |          | 192      | 195      | 171      | 177          | 177       | 132       | 168         |       |
| PM Times   |     | 16:00    | 15:00    | 15:00    | 16:00    | 15:00        | 13:00     | 14:00     | 13:00       |       |
| PM Peaks   |     | 175      | 195      | 203      | 183      | 178          | 168       | 138       | 164         |       |

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EB 2076  
WB 2318  
            
Comb AWD 4394  
FAC .94(.99)  
Comb ADT 4,100

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1  
Starting: 10/6/2020

Page: 1

Station #: 000000000023  
Site ID: 000000000904  
Location: Assinippi Ave. WB, East of Rte.53  
Direction: WEST

STA. 9 WB

File: D1006017.prn  
City: Hanover  
County: Volume

| TIME       | MON | TUE<br>6 | WED<br>7 | THU<br>8 | FRI<br>9 | WKDAY<br>AVG | SAT<br>10 | SUN | WEEK<br>AVG | TOTAL |
|------------|-----|----------|----------|----------|----------|--------------|-----------|-----|-------------|-------|
| 01:00      |     |          | 2        | 2        | 5        | 3            | 4         |     | 3           | 13    |
| 02:00      |     |          | 2        | 1        | 1        | 1            | 0         |     | 1           | 4     |
| 03:00      |     |          | 1        | 1        | 0        | 1            | 1         |     | 1           | 3     |
| 04:00      |     |          | 0        | 0        | 0        | 0            | 1         |     | 0           | 1     |
| 05:00      |     |          | 1        | 1        | 1        | 1            | 2         |     | 1           | 5     |
| 06:00      |     |          | 4        | 5        | 13       | 7            | 3         |     | 6           | 25    |
| 07:00      |     |          | 36       | 54       | 43       | 44           | 14        |     | 37          | 147   |
| 08:00      |     |          | 132      | 106      | 84       | 107          | 42        |     | 91          | 364   |
| 09:00      |     |          | 99       | 118      | 120      | 112          | 75        |     | 103         | 412   |
| 10:00      |     |          | 99       | 128      | 112      | 113          | 144       |     | 121         | 483   |
| 11:00      |     |          | 114      | 124      | 183      | 140          | 136       |     | 139         | 557   |
| 12:00      |     |          | 156      | 151      | 258      | 188          | 155       |     | 180         | 720   |
| 13:00      |     |          | 145      | 171      | 285      | 200          | 193       |     | 198         | 794   |
| 14:00      |     | 162      | 175      | 181      | 301      | 205          |           |     | 205         | 819   |
| 15:00      |     | 172      | 168      | 201      | 278      | 205          |           |     | 205         | 819   |
| 16:00      |     | 178      | 185      | 207      | 261      | 208          |           |     | 208         | 831   |
| 17:00      |     | 218      | 210      | 207      | 219      | 214          |           |     | 214         | 854   |
| 18:00      |     | 206      | 215      | 202      | 186      | 202          |           |     | 202         | 809   |
| 19:00      |     | 158      | 146      | 195      | 134      | 158          |           |     | 158         | 633   |
| 20:00      |     | 96       | 92       | 103      | 106      | 99           |           |     | 99          | 397   |
| 21:00      |     | 61       | 54       | 71       | 64       | 62           |           |     | 62          | 250   |
| 22:00      |     | 21       | 18       | 29       | 37       | 26           |           |     | 26          | 105   |
| 23:00      |     | 11       | 11       | 14       | 18       | 14           |           |     | 14          | 54    |
| 24:00      |     | 2        | 9        | 7        | 16       | 8            |           |     | 8           | 34    |
| TOTALS     |     | 1285     | 2074     | 2279     | 2725     | 2318         | 770       |     | 2282        | 9133  |
| % AVG WKDY |     | 55.4     | 89.5     | 98.3     | 117.6    |              | 33.2      |     |             |       |
| % AVG WEEK |     | 56.3     | 90.9     | 99.9     | 119.4    |              | 33.7      |     |             |       |
| AM Times   |     |          | 12:00    | 12:00    | 12:00    | 12:00        | 12:00     |     | 12:00       |       |
| AM Peaks   |     |          | 156      | 151      | 258      | 188          | 155       |     | 180         |       |
| PM Times   |     | 17:00    | 18:00    | 16:00    | 14:00    | 17:00        | 13:00     |     | 17:00       |       |
| PM Peaks   |     | 218      | 215      | 207      | 301      | 214          | 193       |     | 214         |       |

**APPENDIX E**

**Turning Movement Counts  
October 8 and 10, 2020**

**207637-A Washington Street (Route 53) @ Grov... - TMC**

Thu Oct 8, 2020

Full Length (6 AM-10 AM, 2 PM-6 PM, 10 AM-2 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789284, Location: 42.1721, -70.878832

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction<br>Time          | Washington Street (Route 53)<br>Northbound |       |       |    |       |       | Washington Street (Route 53)<br>Southbound |       |       |    |       |      | High Street<br>Eastbound |       |       |       |       |      | Grove Street<br>Westbound |       |       |       |       |      | Int   |
|--------------------------------|--|-------|-------|----|-------|-------|--|-------|-------|----|-------|------|--------------------------|-------|-------|-------|-------|------|---------------------------|-------|-------|-------|-------|------|-------|
|                                | L  | T     | R     | U  | App   | Ped*  | L  | T     | R     | U  | App   | Ped* | L                        | T     | R     | U     | App   | Ped* | L                         | T     | R     | U     | App   | Ped* |       |
| 2020-10-08 6:00AM              | 2  | 190   | 10    | 0  | 202   | 1     | 61   | 99    | 28    | 0  | 188   | 0    | 103                      | 7     | 4     | 0     | 114   | 1    | 11                        | 8     | 233   | 0     | 252   | 1    | 756   |
| 7:00AM                         | 7  | 314   | 23    | 0  | 344   | 0     | 146  | 218   | 108   | 0  | 472   | 0    | 172                      | 42    | 4     | 0     | 218   | 0    | 32                        | 65    | 353   | 0     | 450   | 0    | 1484  |
| 8:00AM                         | 19   | 345   | 41    | 0  | 405   | 4     | 185  | 313   | 183   | 0  | 681   | 0    | 194                      | 56    | 18    | 0     | 268   | 0    | 62                        | 102   | 369   | 0     | 533   | 1    | 1887  |
| 9:00AM                         | 10   | 380   | 52    | 0  | 442   | 0     | 209  | 366   | 147   | 0  | 722   | 0    | 145                      | 46    | 23    | 0     | 214   | 0    | 58                        | 50    | 325   | 0     | 433   | 1    | 1811  |
| 2:00PM                         | 20   | 522   | 78    | 0  | 620   | 0     | 306  | 557   | 263   | 0  | 1126  | 0    | 191                      | 47    | 33    | 0     | 271   | 1    | 73                        | 55    | 253   | 1     | 382   | 0    | 2399  |
| 3:00PM                         | 22   | 488   | 81    | 0  | 591   | 15    | 329  | 562   | 315   | 0  | 1206  | 0    | 230                      | 101   | 29    | 0     | 360   | 0    | 83                        | 85    | 291   | 0     | 459   | 1    | 2616  |
| 4:00PM                         | 15   | 507   | 103   | 0  | 625   | 6     | 340  | 555   | 281   | 0  | 1176  | 0    | 222                      | 100   | 22    | 0     | 344   | 3    | 88                        | 54    | 252   | 0     | 394   | 0    | 2539  |
| 5:00PM                         | 12   | 626   | 64    | 0  | 702   | 5     | 386  | 567   | 279   | 0  | 1232  | 0    | 233                      | 112   | 20    | 0     | 365   | 0    | 69                        | 64    | 301   | 0     | 434   | 0    | 2733  |
| 2020-10-10 10:00AM             | 10   | 436   | 47    | 0  | 493   | 2     | 221  | 446   | 155   | 0  | 822   | 0    | 146                      | 41    | 14    | 0     | 201   | 0    | 42                        | 22    | 319   | 0     | 383   | 4    | 1899  |
| 11:00AM                        | 14   | 507   | 57    | 0  | 578   | 1     | 305  | 544   | 185   | 0  | 1034  | 0    | 191                      | 37    | 12    | 0     | 240   | 1    | 81                        | 50    | 355   | 0     | 486   | 0    | 2338  |
| 12:00PM                        | 12   | 528   | 73    | 0  | 613   | 0     | 308  | 621   | 224   | 0  | 1153  | 0    | 167                      | 40    | 14    | 0     | 221   | 1    | 64                        | 50    | 338   | 0     | 452   | 0    | 2439  |
| 1:00PM                         | 13   | 546   | 78    | 0  | 637   | 1     | 333  | 649   | 232   | 0  | 1214  | 0    | 187                      | 47    | 17    | 0     | 251   | 0    | 63                        | 57    | 323   | 0     | 443   | 1    | 2545  |
| <b>Total</b>                   | 156  | 5389  | 707   | 0  | 6252  | 35    | 3129                                       | 5497  | 2400  | 0  | 11026 | 0    | 2181                     | 676   | 210   | 0     | 3067  | 7    | 726                       | 662   | 3712  | 1     | 5101  | 9    | 25446 |
| <b>% Approach</b>              | 2.5%                                       | 86.2% | 11.3% | 0% | -     | -     | 28.4%                                      | 49.9% | 21.8% | 0% | -     | -    | 71.1%                    | 22.0% | 6.8%  | 0%    | -     | -    | 14.2%                     | 13.0% | 72.8% | 0%    | -     | -    | -     |
| <b>% Total</b>                 | 0.6%                                       | 21.2% | 2.8%  | 0% | 24.6% | -     | 12.3%                                      | 21.6% | 9.4%  | 0% | 43.3% | -    | 8.6%                     | 2.7%  | 0.8%  | 0%    | 12.1% | -    | 2.9%                      | 2.6%  | 14.6% | 0%    | 20.0% | -    | -     |
| <b>Motorcycles</b>             | 0  | 15    | 1     | 0  | 16    | -     | 5  | 15    | 4     | 0  | 24    | -    | 0                        | 1     | 0     | 0     | 1     | -    | 0                         | 2     | 4     | 0     | 6     | -    | 47    |
| <b>% Motorcycles</b>           | 0%   | 0.3%  | 0.1%  | 0% | 0.3%  | -     | 0.2%                                       | 0.3%  | 0.2%  | 0% | 0.2%  | -    | 0%                       | 0.1%  | 0%    | 0%    | 0%    | -    | 0%                        | 0.3%  | 0.1%  | 0%    | 0.1%  | -    | 0.2%  |
| <b>Lights</b>                  | 156  | 5281  | 684   | 0  | 6121  | -     | 3078                                       | 5391  | 2354  | 0  | 10823 | -    | 2137                     | 659   | 207   | 0     | 3003  | -    | 707                       | 643   | 3653  | 1     | 5004  | -    | 24951 |
| <b>% Lights</b>                | 100%                                       | 98.0% | 96.7% | 0% | 97.9% | -     | 98.4%                                      | 98.1% | 98.1% | 0% | 98.2% | -    | 98.0%                    | 97.5% | 98.6% | 0%    | 97.9% | -    | 97.4%                     | 97.1% | 98.4% | 100%  | 98.1% | -    | 98.1% |
| <b>Single-Unit Trucks</b>      | 0  | 79    | 11    | 0  | 90    | -     | 41   | 76    | 32    | 0  | 149   | -    | 36                       | 12    | 2     | 0     | 50    | -    | 14                        | 12    | 45    | 0     | 71    | -    | 360   |
| <b>% Single-Unit Trucks</b>    | 0%   | 1.5%  | 1.6%  | 0% | 1.4%  | -     | 1.3%                                       | 1.4%  | 1.3%  | 0% | 1.4%  | -    | 1.7%                     | 1.8%  | 1.0%  | 0%    | 1.6%  | -    | 1.9%                      | 1.8%  | 1.2%  | 0%    | 1.4%  | -    | 1.4%  |
| <b>Articulated Trucks</b>      | 0  | 10    | 6     | 0  | 16    | -     | 5  | 11    | 6     | 0  | 22    | -    | 3                        | 3     | 0     | 0     | 6     | -    | 3                         | 1     | 4     | 0     | 8     | -    | 52    |
| <b>% Articulated Trucks</b>    | 0%   | 0.2%  | 0.8%  | 0% | 0.3%  | -     | 0.2%                                       | 0.2%  | 0.3%  | 0% | 0.2%  | -    | 0.1%                     | 0.4%  | 0%    | 0%    | 0.2%  | -    | 0.4%                      | 0.2%  | 0.1%  | 0%    | 0.2%  | -    | 0.2%  |
| <b>Buses</b>                   | 0  | 3     | 4     | 0  | 7     | -     | 0  | 4     | 4     | 0  | 8     | -    | 4                        | 1     | 1     | 0     | 6     | -    | 2                         | 4     | 5     | 0     | 11    | -    | 32    |
| <b>% Buses</b>                 | 0%   | 0.1%  | 0.6%  | 0% | 0.1%  | -     | 0%   | 0.1%  | 0.2%  | 0% | 0.1%  | -    | 0.2%                     | 0.1%  | 0.5%  | 0%    | 0.2%  | -    | 0.3%                      | 0.6%  | 0.1%  | 0%    | 0.2%  | -    | 0.1%  |
| <b>Bicycles on Road</b>        | 0  | 1     | 1     | 0  | 2     | -     | 0  | 0     | 0     | 0  | 0     | -    | 1                        | 0     | 0     | 0     | 1     | -    | 0                         | 0     | 1     | 0     | 1     | -    | 4     |
| <b>% Bicycles on Road</b>      | 0%   | 0%    | 0.1%  | 0% | 0%    | -     | 0%   | 0%    | 0%    | 0% | 0%    | -    | 0%                       | 0%    | 0%    | 0%    | 0%    | -    | 0%                        | 0%    | 0%    | 0%    | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -  | -     | -     | -  | -     | 28    | -  | -     | -     | -  | 0     | -    | -                        | -     | -     | 6     | -     | -    | -                         | -     | -     | 7     | -     |      |       |
| <b>% Pedestrians</b>           | -  | -     | -     | -  | -     | 80.0% | -  | -     | -     | -  | -     | -    | -                        | -     | -     | 85.7% | -     | -    | -                         | -     | -     | 77.8% | -     |      |       |
| <b>Bicycles on Crosswalk</b>   | -  | -     | -     | -  | -     | 7     | -  | -     | -     | -  | 0     | -    | -                        | -     | -     | 1     | -     | -    | -                         | -     | -     | 2     | -     |      |       |
| <b>% Bicycles on Crosswalk</b> | -  | -     | -     | -  | -     | 20.0% | -  | -     | -     | -  | -     | -    | -                        | -     | -     | 14.3% | -     | -    | -                         | -     | -     | 22.2% | -     |      |       |

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



**207637-A Washington Street (Route 53) @ Grov... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:15AM - 9:15 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789284, Location: 42.1721, -70.878832

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |    |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | High Street Eastbound |       |       |    |       |      | Grove Street Westbound |       |       |    |       |      | Int   |
|--------------------------------|---|-------|-------|----|-------|------|---|-------|-------|----|-------|------|-----------------------|-------|-------|----|-------|------|------------------------|-------|-------|----|-------|------|-------|
|                                | L                                       | T     | R     | U  | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                     | T     | R     | U  | App   | Ped* | L                      | T     | R     | U  | App   | Ped* |       |
| 2020-10-08 8:15AM              | 6                                       | 88    | 11    | 0  | 105   | 0    | 40                                      | 71    | 51    | 0  | 162   | 0    | 56                    | 9     | 6     | 0  | 71    | 0    | 15                     | 24    | 126   | 0  | 165   | 1    | 503   |
| 8:30AM                         | 4                                       | 92    | 10    | 0  | 106   | 3    | 48                                      | 80    | 47    | 0  | 175   | 0    | 47                    | 8     | 6     | 0  | 61    | 0    | 16                     | 35    | 81    | 0  | 132   | 0    | 474   |
| 8:45AM                         | 6                                       | 88    | 12    | 0  | 106   | 1    | 51                                      | 100   | 34    | 0  | 185   | 0    | 48                    | 22    | 5     | 0  | 75    | 0    | 20                     | 29    | 85    | 0  | 134   | 0    | 500   |
| 9:00AM                         | 0                                       | 99    | 20    | 0  | 119   | 0    | 57                                      | 100   | 36    | 0  | 193   | 0    | 43                    | 15    | 7     | 0  | 65    | 0    | 14                     | 5     | 108   | 0  | 127   | 0    | 504   |
| <b>Total</b>                   | 16                                      | 367   | 53    | 0  | 436   | 4    | 196                                     | 351   | 168   | 0  | 715   | 0    | 194                   | 54    | 24    | 0  | 272   | 0    | 65                     | 93    | 400   | 0  | 558   | 1    | 1981  |
| <b>% Approach</b>              | 3.7%                                    | 84.2% | 12.2% | 0% | -     | -    | 27.4%                                   | 49.1% | 23.5% | 0% | -     | -    | 71.3%                 | 19.9% | 8.8%  | 0% | -     | -    | 11.6%                  | 16.7% | 71.7% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 0.8%                                    | 18.5% | 2.7%  | 0% | 22.0% | -    | 9.9%                                    | 17.7% | 8.5%  | 0% | 36.1% | -    | 9.8%                  | 2.7%  | 1.2%  | 0% | 13.7% | -    | 3.3%                   | 4.7%  | 20.2% | 0% | 28.2% | -    | -     |
| <b>PHF</b>                     | 0.667                                   | 0.927 | 0.663 | -  | 0.916 | -    | 0.860                                   | 0.878 | 0.824 | -  | 0.926 | -    | 0.866                 | 0.614 | 0.857 | -  | 0.907 | -    | 0.813                  | 0.664 | 0.794 | -  | 0.845 | -    | 0.983 |
| <b>Motorcycles</b>             | 0                                       | 0     | 0     | 0  | 0     | 0    | 0                                       | 0     | 0     | 0  | 0     | 0    | 0                     | 0     | 0     | 0  | 0     | 0    | 0                      | 0     | 0     | 0  | 0     | 0    | 0     |
| <b>% Motorcycles</b>           | 0%                                      | 0%    | 0%    | 0% | 0%    | 0%   | 0%                                      | 0%    | 0%    | 0% | 0%    | 0%   | 0%                    | 0%    | 0%    | 0% | 0%    | 0%   | 0%                     | 0%    | 0%    | 0% | 0%    | 0%   | 0%    |
| <b>Lights</b>                  | 16                                      | 353   | 49    | 0  | 418   | -    | 186                                     | 338   | 162   | 0  | 686   | -    | 189                   | 54    | 23    | 0  | 266   | -    | 62                     | 92    | 393   | 0  | 547   | -    | 1917  |
| <b>% Lights</b>                | 100%                                    | 96.2% | 92.5% | 0% | 95.9% | -    | 94.9%                                   | 96.3% | 96.4% | 0% | 95.9% | -    | 97.4%                 | 100%  | 95.8% | 0% | 97.8% | -    | 95.4%                  | 98.9% | 98.3% | 0% | 98.0% | -    | 96.8% |
| <b>Single-Unit Trucks</b>      | 0                                       | 13    | 2     | 0  | 15    | -    | 9                                       | 10    | 6     | 0  | 25    | -    | 5                     | 0     | 0     | 0  | 5     | -    | 2                      | 1     | 6     | 0  | 9     | -    | 54    |
| <b>% Single-Unit Trucks</b>    | 0%                                      | 3.5%  | 3.8%  | 0% | 3.4%  | -    | 4.6%                                    | 2.8%  | 3.6%  | 0% | 3.5%  | -    | 2.6%                  | 0%    | 0%    | 0% | 1.8%  | -    | 3.1%                   | 1.1%  | 1.5%  | 0% | 1.6%  | -    | 2.7%  |
| <b>Articulated Trucks</b>      | 0                                       | 1     | 1     | 0  | 2     | -    | 1                                       | 2     | 0     | 0  | 3     | -    | 0                     | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 5     |
| <b>% Articulated Trucks</b>    | 0%                                      | 0.3%  | 1.9%  | 0% | 0.5%  | -    | 0.5%                                    | 0.6%  | 0%    | 0% | 0.4%  | -    | 0%                    | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.3%  |
| <b>Buses</b>                   | 0                                       | 0     | 1     | 0  | 1     | -    | 0                                       | 1     | 0     | 0  | 1     | -    | 0                     | 0     | 1     | 0  | 1     | -    | 1                      | 0     | 1     | 0  | 2     | -    | 5     |
| <b>% Buses</b>                 | 0%                                      | 0%    | 1.9%  | 0% | 0.2%  | -    | 0%                                      | 0.3%  | 0%    | 0% | 0.1%  | -    | 0%                    | 0%    | 4.2%  | 0% | 0.4%  | -    | 1.5%                   | 0%    | 0.3%  | 0% | 0.4%  | -    | 0.3%  |
| <b>Bicycles on Road</b>        | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 0     | 0     | 0  | 0     | -    | 0                     | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 0     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                       | -     | -     | -  | -     | 4    | -                                       | -     | -     | -  | -     | 0    | -                     | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 1    | -     |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -  | -     | 100% | -                                       | -     | -     | -  | -     | 0    | -                     | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 100% | -     |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                     | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 0    | -     |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -  | -     | 0%   | -                                       | -     | -     | -  | -     | 0%   | -                     | -     | -     | -  | -     | 0%   | -                      | -     | -     | -  | -     | 0%   | -     |

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

**207637-A Washington Street (Route 53) @ Grov... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 4:45PM - 5:45 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789284, Location: 42.1721, -70.878832

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |    |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | High Street Eastbound |       |       |    |       |      | Grove Street Westbound |       |       |    |       |      | Int   |
|--------------------------------|---|-------|-------|----|-------|------|---|-------|-------|----|-------|------|-----------------------|-------|-------|----|-------|------|------------------------|-------|-------|----|-------|------|-------|
|                                | L                                       | T     | R     | U  | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                     | T     | R     | U  | App   | Ped* | L                      | T     | R     | U  | App   | Ped* |       |
| 2020-10-08 4:45PM              | 4                                       | 140   | 28    | 0  | 172   | 0    | 85                                      | 155   | 73    | 0  | 313   | 0    | 58                    | 18    | 2     | 0  | 78    | 0    | 27                     | 12    | 81    | 0  | 120   | 0    | 683   |
| 5:00PM                         | 1                                       | 135   | 18    | 0  | 154   | 3    | 95                                      | 143   | 69    | 0  | 307   | 0    | 49                    | 32    | 9     | 0  | 90    | 0    | 22                     | 21    | 76    | 0  | 119   | 0    | 670   |
| 5:15PM                         | 6                                       | 164   | 12    | 0  | 182   | 2    | 93                                      | 145   | 77    | 0  | 315   | 0    | 60                    | 18    | 6     | 0  | 84    | 0    | 21                     | 19    | 72    | 0  | 112   | 0    | 693   |
| 5:30PM                         | 3                                       | 167   | 18    | 0  | 188   | 0    | 105                                     | 143   | 55    | 0  | 303   | 0    | 64                    | 31    | 3     | 0  | 98    | 0    | 15                     | 13    | 78    | 0  | 106   | 0    | 695   |
| <b>Total</b>                   | 14                                      | 606   | 76    | 0  | 696   | 5    | 378                                     | 586   | 274   | 0  | 1238  | 0    | 231                   | 99    | 20    | 0  | 350   | 0    | 85                     | 65    | 307   | 0  | 457   | 0    | 2741  |
| <b>% Approach</b>              | 2.0%                                    | 87.1% | 10.9% | 0% | -     | -    | 30.5%                                   | 47.3% | 22.1% | 0% | -     | -    | 66.0%                 | 28.3% | 5.7%  | 0% | -     | -    | 18.6%                  | 14.2% | 67.2% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 0.5%                                    | 22.1% | 2.8%  | 0% | 25.4% | -    | 13.8%                                   | 21.4% | 10.0% | 0% | 45.2% | -    | 8.4%                  | 3.6%  | 0.7%  | 0% | 12.8% | -    | 3.1%                   | 2.4%  | 11.2% | 0% | 16.7% | -    | -     |
| <b>PHF</b>                     | 0.583                                   | 0.906 | 0.679 | -  | 0.924 | -    | 0.900                                   | 0.945 | 0.890 | -  | 0.983 | -    | 0.902                 | 0.773 | 0.556 | -  | 0.893 | -    | 0.787                  | 0.774 | 0.948 | -  | 0.952 | -    | 0.986 |
| <b>Motorcycles</b>             | 0                                       | 0     | 0     | 0  | 0     | -    | 1                                       | 2     | 2     | 0  | 5     | -    | 0                     | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 5     |
| <b>% Motorcycles</b>           | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0.3%                                    | 0.3%  | 0.7%  | 0% | 0.4%  | -    | 0%                    | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.2%  |
| <b>Lights</b>                  | 14                                      | 600   | 76    | 0  | 690   | -    | 374                                     | 568   | 269   | 0  | 1211  | -    | 230                   | 99    | 20    | 0  | 349   | -    | 85                     | 64    | 299   | 0  | 448   | -    | 2698  |
| <b>% Lights</b>                | 100%                                    | 99.0% | 100%  | 0% | 99.1% | -    | 98.9%                                   | 96.9% | 98.2% | 0% | 97.8% | -    | 99.6%                 | 100%  | 100%  | 0% | 99.7% | -    | 100%                   | 98.5% | 97.4% | 0% | 98.0% | -    | 98.4% |
| <b>Single-Unit Trucks</b>      | 0                                       | 4     | 0     | 0  | 4     | -    | 3                                       | 14    | 2     | 0  | 19    | -    | 1                     | 0     | 0     | 0  | 1     | -    | 0                      | 1     | 8     | 0  | 9     | -    | 33    |
| <b>% Single-Unit Trucks</b>    | 0%                                      | 0.7%  | 0%    | 0% | 0.6%  | -    | 0.8%                                    | 2.4%  | 0.7%  | 0% | 1.5%  | -    | 0.4%                  | 0%    | 0%    | 0% | 0.3%  | -    | 0%                     | 1.5%  | 2.6%  | 0% | 2.0%  | -    | 1.2%  |
| <b>Articulated Trucks</b>      | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 2     | 1     | 0  | 3     | -    | 0                     | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 3     |
| <b>% Articulated Trucks</b>    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0.3%  | 0.4%  | 0% | 0.2%  | -    | 0%                    | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Buses</b>                   | 0                                       | 1     | 0     | 0  | 1     | -    | 0                                       | 0     | 0     | 0  | 0     | -    | 0                     | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 1     |
| <b>% Buses</b>                 | 0%                                      | 0.2%  | 0%    | 0% | 0.1%  | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Bicycles on Road</b>        | 0                                       | 1     | 0     | 0  | 1     | -    | 0                                       | 0     | 0     | 0  | 0     | -    | 0                     | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 1     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0.2%  | 0%    | 0% | 0.1%  | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                       | -     | -     | -  | -     | 5    | -                                       | -     | -     | -  | -     | 0    | -                     | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 0    | -     |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -  | -     | 100% | -                                       | -     | -     | -  | -     | -    | -                     | -     | -     | -  | -     | -    | -                      | -     | -     | -  | -     | -    | -     |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                     | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 0    | -     |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -  | -     | 0%   | -                                       | -     | -     | -  | -     | -    | -                     | -     | -     | -  | -     | -    | -                      | -     | -     | -  | -     | -    | -     |

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

**207637-B Washington Street (Route 53) @ Oak ... - TMC**

Thu Oct 8, 2020

Full Length (6 AM-10 AM, 2 PM-6 PM, 10 AM-2 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789285, Location: 42.168512, -70.874877

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |      |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | Oak Street Eastbound |       |       |    |       |      | Driveaway Westbound |       |       |    |       |       | Int   |
|--------------------------------|---|-------|-------|------|-------|------|---|-------|-------|----|-------|------|----------------------|-------|-------|----|-------|------|---------------------|-------|-------|----|-------|-------|-------|
|                                | L                                       | T     | R     | U    | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                    | T     | R     | U  | App   | Ped* | L                   | T     | R     | U  | App   | Ped*  |       |
| 2020-10-08 6:00AM              | 5                                       | 190   | 0     | 0    | 195   | 0    | 0                                       | 98    | 2     | 0  | 100   | 0    | 8                    | 1     | 8     | 0  | 17    | 0    | 0                   | 0     | 0     | 0  | 0     | 3     | 312   |
| 7:00AM                         | 34                                      | 341   | 1     | 0    | 376   | 0    | 4                                       | 221   | 9     | 0  | 234   | 0    | 12                   | 1     | 21    | 0  | 34    | 0    | 0                   | 0     | 1     | 0  | 1     | 3     | 645   |
| 8:00AM                         | 77                                      | 408   | 4     | 0    | 489   | 0    | 1                                       | 336   | 15    | 0  | 352   | 0    | 25                   | 3     | 57    | 0  | 85    | 1    | 2                   | 3     | 3     | 0  | 8     | 4     | 934   |
| 9:00AM                         | 28                                      | 407   | 0     | 0    | 435   | 0    | 4                                       | 401   | 16    | 0  | 421   | 0    | 9                    | 1     | 30    | 0  | 40    | 0    | 1                   | 0     | 4     | 0  | 5     | 0     | 901   |
| 2:00PM                         | 39                                      | 590   | 0     | 1    | 630   | 0    | 4                                       | 607   | 28    | 0  | 639   | 0    | 11                   | 0     | 32    | 0  | 43    | 0    | 1                   | 0     | 7     | 0  | 8     | 1     | 1320  |
| 3:00PM                         | 48                                      | 532   | 0     | 0    | 580   | 0    | 2                                       | 624   | 33    | 0  | 659   | 0    | 12                   | 0     | 74    | 0  | 86    | 0    | 1                   | 1     | 1     | 0  | 3     | 0     | 1328  |
| 4:00PM                         | 28                                      | 556   | 0     | 0    | 584   | 0    | 0                                       | 610   | 27    | 0  | 637   | 0    | 10                   | 0     | 11    | 0  | 21    | 0    | 5                   | 2     | 5     | 0  | 12    | 2     | 1254  |
| 5:00PM                         | 40                                      | 686   | 0     | 1    | 727   | 0    | 1                                       | 591   | 39    | 0  | 631   | 0    | 7                    | 0     | 32    | 0  | 39    | 0    | 2                   | 2     | 7     | 0  | 11    | 1     | 1408  |
| 2020-10-10 10:00AM             | 10                                      | 449   | 0     | 0    | 459   | 0    | 2                                       | 461   | 18    | 0  | 481   | 0    | 10                   | 0     | 17    | 0  | 27    | 0    | 0                   | 0     | 1     | 0  | 1     | 3     | 968   |
| 11:00AM                        | 13                                      | 552   | 1     | 0    | 566   | 1    | 0                                       | 604   | 21    | 0  | 625   | 0    | 10                   | 0     | 17    | 0  | 27    | 0    | 0                   | 1     | 1     | 0  | 2     | 2     | 1220  |
| 12:00PM                        | 10                                      | 579   | 0     | 0    | 589   | 0    | 1                                       | 655   | 16    | 0  | 672   | 0    | 5                    | 0     | 27    | 0  | 32    | 0    | 1                   | 0     | 3     | 0  | 4     | 1     | 1297  |
| 1:00PM                         | 16                                      | 602   | 0     | 0    | 618   | 0    | 0                                       | 683   | 29    | 0  | 712   | 0    | 11                   | 0     | 17    | 0  | 28    | 0    | 0                   | 0     | 2     | 0  | 2     | 5     | 1360  |
| <b>Total</b>                   | 348                                     | 5892  | 6     | 2    | 6248  | 1    | 19                                      | 5891  | 253   | 0  | 6163  | 0    | 130                  | 6     | 343   | 0  | 479   | 1    | 13                  | 9     | 35    | 0  | 57    | 25    | 12947 |
| <b>% Approach</b>              | 5.6%                                    | 94.3% | 0.1%  | 0%   | -     | -    | 0.3%                                    | 95.6% | 4.1%  | 0% | -     | -    | 27.1%                | 1.3%  | 71.6% | 0% | -     | -    | 22.8%               | 15.8% | 61.4% | 0% | -     | -     | -     |
| <b>% Total</b>                 | 2.7%                                    | 45.5% | 0%    | 0%   | 48.3% | -    | 0.1%                                    | 45.5% | 2.0%  | 0% | 47.6% | -    | 1.0%                 | 0%    | 2.6%  | 0% | 3.7%  | -    | 0.1%                | 0.1%  | 0.3%  | 0% | 0.4%  | -     | -     |
| <b>Motorcycles</b>             | 0                                       | 12    | 1     | 0    | 13    | -    | 0                                       | 14    | 0     | 0  | 14    | -    | 0                    | 0     | 0     | 0  | 0     | -    | 0                   | 0     | 0     | 0  | 0     | -     | 27    |
| <b>% Motorcycles</b>           | 0%                                      | 0.2%  | 16.7% | 0%   | 0.2%  | -    | 0%                                      | 0.2%  | 0%    | 0% | 0.2%  | -    | 0%                   | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -     | 0.2%  |
| <b>Lights</b>                  | 328                                     | 5763  | 5     | 2    | 6098  | -    | 18                                      | 5756  | 244   | 0  | 6018  | -    | 125                  | 5     | 329   | 0  | 459   | -    | 13                  | 9     | 34    | 0  | 56    | -     | 12631 |
| <b>% Lights</b>                | 94.3%                                   | 97.8% | 83.3% | 100% | 97.6% | -    | 94.7%                                   | 97.7% | 96.4% | 0% | 97.6% | -    | 96.2%                | 83.3% | 95.9% | 0% | 95.8% | -    | 100%                | 100%  | 97.1% | 0% | 98.2% | -     | 97.6% |
| <b>Single-Unit Trucks</b>      | 6                                       | 90    | 0     | 0    | 96    | -    | 1                                       | 95    | 5     | 0  | 101   | -    | 4                    | 1     | 8     | 0  | 13    | -    | 0                   | 0     | 1     | 0  | 1     | -     | 211   |
| <b>% Single-Unit Trucks</b>    | 1.7%                                    | 1.5%  | 0%    | 0%   | 1.5%  | -    | 5.3%                                    | 1.6%  | 2.0%  | 0% | 1.6%  | -    | 3.1%                 | 16.7% | 2.3%  | 0% | 2.7%  | -    | 0%                  | 0%    | 2.9%  | 0% | 1.8%  | -     | 1.6%  |
| <b>Articulated Trucks</b>      | 6                                       | 16    | 0     | 0    | 22    | -    | 0                                       | 12    | 3     | 0  | 15    | -    | 1                    | 0     | 1     | 0  | 2     | -    | 0                   | 0     | 0     | 0  | 0     | -     | 39    |
| <b>% Articulated Trucks</b>    | 1.7%                                    | 0.3%  | 0%    | 0%   | 0.4%  | -    | 0%                                      | 0.2%  | 1.2%  | 0% | 0.2%  | -    | 0.8%                 | 0%    | 0.3%  | 0% | 0.4%  | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -     | 0.3%  |
| <b>Buses</b>                   | 8                                       | 8     | 0     | 0    | 16    | -    | 0                                       | 13    | 1     | 0  | 14    | -    | 0                    | 0     | 5     | 0  | 5     | -    | 0                   | 0     | 0     | 0  | 0     | -     | 35    |
| <b>% Buses</b>                 | 2.3%                                    | 0.1%  | 0%    | 0%   | 0.3%  | -    | 0%                                      | 0.2%  | 0.4%  | 0% | 0.2%  | -    | 0%                   | 0%    | 1.5%  | 0% | 1.0%  | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -     | 0.3%  |
| <b>Bicycles on Road</b>        | 0                                       | 3     | 0     | 0    | 3     | -    | 0                                       | 1     | 0     | 0  | 1     | -    | 0                    | 0     | 0     | 0  | 0     | -    | 0                   | 0     | 0     | 0  | 0     | -     | 4     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0.1%  | 0%    | 0%   | 0%    | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                   | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -     | 0%    |
| <b>Pedestrians</b>             | -                                       | -     | -     | -    | -     | 1    | -                                       | -     | -     | -  | 0     | -    | -                    | -     | -     | -  | 1     | -    | -                   | -     | -     | -  | -     | 21    |       |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -    | -     | 100% | -                                       | -     | -     | -  | -     | -    | -                    | -     | -     | -  | 100%  | -    | -                   | -     | -     | -  | -     | 84.0% | -     |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -    | -     | 0    | -                                       | -     | -     | -  | 0     | -    | -                    | -     | -     | -  | 0     | -    | -                   | -     | -     | -  | -     | 4     |       |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -    | -     | 0%   | -                                       | -     | -     | -  | -     | -    | -                    | -     | -     | -  | 0%    | -    | -                   | -     | -     | -  | -     | 16.0% | -     |

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

**207637-B Washington Street (Route 53) @ Oak ... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:30AM - 9:30 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789285, Location: 42.168512, -70.874877

Provided by: Precision Data Industries,  
 LLC (PDI)  
 46 Morton Street,  
 Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |    |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | Oak Street Eastbound |       |       |    |       |      | Drive Way Westbound |    |       |    |       |      | Int   |
|--------------------------------|---|-------|-------|----|-------|------|---|-------|-------|----|-------|------|----------------------|-------|-------|----|-------|------|---------------------|----|-------|----|-------|------|-------|
|                                | L                                       | T     | R     | U  | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                    | T     | R     | U  | App   | Ped* | L                   | T  | R     | U  | App   | Ped* |       |
| 2020-10-08 8:30AM              | 27                                      | 105   | 0     | 0  | 132   | 0    | 1                                       | 78    | 4     | 0  | 83    | 0    | 8                    | 0     | 8     | 0  | 16    | 0    | 0                   | 0  | 1     | 0  | 1     | 2    | 232   |
| 8:45AM                         | 29                                      | 111   | 1     | 0  | 141   | 0    | 0                                       | 119   | 5     | 0  | 124   | 0    | 6                    | 2     | 36    | 0  | 44    | 1    | 0                   | 0  | 1     | 0  | 1     | 0    | 310   |
| 9:00AM                         | 12                                      | 117   | 0     | 0  | 129   | 0    | 1                                       | 106   | 5     | 0  | 112   | 0    | 1                    | 1     | 10    | 0  | 12    | 0    | 1                   | 0  | 0     | 0  | 1     | 0    | 254   |
| 9:15AM                         | 7                                       | 90    | 0     | 0  | 97    | 0    | 0                                       | 108   | 5     | 0  | 113   | 0    | 3                    | 0     | 10    | 0  | 13    | 0    | 0                   | 0  | 1     | 0  | 1     | 0    | 224   |
| <b>Total</b>                   | 75                                      | 423   | 1     | 0  | 499   | 0    | 2                                       | 411   | 19    | 0  | 432   | 0    | 18                   | 3     | 64    | 0  | 85    | 1    | 1                   | 0  | 3     | 0  | 4     | 2    | 1020  |
| <b>% Approach</b>              | 15.0%                                   | 84.8% | 0.2%  | 0% | -     | -    | 0.5%                                    | 95.1% | 4.4%  | 0% | -     | -    | 21.2%                | 3.5%  | 75.3% | 0% | -     | -    | 25.0%               | 0% | 75.0% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 7.4%                                    | 41.5% | 0.1%  | 0% | 48.9% | -    | 0.2%                                    | 40.3% | 1.9%  | 0% | 42.4% | -    | 1.8%                 | 0.3%  | 6.3%  | 0% | 8.3%  | -    | 0.1%                | 0% | 0.3%  | 0% | 0.4%  | -    | -     |
| <b>PHF</b>                     | 0.647                                   | 0.904 | 0.250 | -  | 0.885 | -    | 0.500                                   | 0.863 | 0.950 | -  | 0.871 | -    | 0.563                | 0.375 | 0.444 | -  | 0.483 | -    | 0.250               | -  | 0.750 | -  | 1.000 | -    | 0.823 |
| <b>Motorcycles</b>             | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 1     | 0     | 0  | 1     | -    | 0                    | 0     | 0     | 0  | 0     | -    | 0                   | 0  | 0     | 0  | 0     | -    | 1     |
| <b>% Motorcycles</b>           | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0.2%  | 0%    | 0% | 0.2%  | -    | 0%                   | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0% | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Lights</b>                  | 65                                      | 406   | 1     | 0  | 472   | -    | 2                                       | 386   | 19    | 0  | 407   | -    | 15                   | 3     | 61    | 0  | 79    | -    | 1                   | 0  | 3     | 0  | 4     | -    | 962   |
| <b>% Lights</b>                | 86.7%                                   | 96.0% | 100%  | 0% | 94.6% | -    | 100%                                    | 93.9% | 100%  | 0% | 94.2% | -    | 83.3%                | 100%  | 95.3% | 0% | 92.9% | -    | 100%                | 0% | 100%  | 0% | 100%  | -    | 94.3% |
| <b>Single-Unit Trucks</b>      | 3                                       | 15    | 0     | 0  | 18    | -    | 0                                       | 17    | 0     | 0  | 17    | -    | 3                    | 0     | 3     | 0  | 6     | -    | 0                   | 0  | 0     | 0  | 0     | -    | 41    |
| <b>% Single-Unit Trucks</b>    | 4.0%                                    | 3.5%  | 0%    | 0% | 3.6%  | -    | 0%                                      | 4.1%  | 0%    | 0% | 3.9%  | -    | 16.7%                | 0%    | 4.7%  | 0% | 7.1%  | -    | 0%                  | 0% | 0%    | 0% | 0%    | -    | 4.0%  |
| <b>Articulated Trucks</b>      | 6                                       | 2     | 0     | 0  | 8     | -    | 0                                       | 2     | 0     | 0  | 2     | -    | 0                    | 0     | 0     | 0  | 0     | -    | 0                   | 0  | 0     | 0  | 0     | -    | 10    |
| <b>% Articulated Trucks</b>    | 8.0%                                    | 0.5%  | 0%    | 0% | 1.6%  | -    | 0%                                      | 0.5%  | 0%    | 0% | 0.5%  | -    | 0%                   | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0% | 0%    | 0% | 0%    | -    | 1.0%  |
| <b>Buses</b>                   | 1                                       | 0     | 0     | 0  | 1     | -    | 0                                       | 5     | 0     | 0  | 5     | -    | 0                    | 0     | 0     | 0  | 0     | -    | 0                   | 0  | 0     | 0  | 0     | -    | 6     |
| <b>% Buses</b>                 | 1.3%                                    | 0%    | 0%    | 0% | 0.2%  | -    | 0%                                      | 1.2%  | 0%    | 0% | 1.2%  | -    | 0%                   | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0% | 0%    | 0% | 0%    | -    | 0.6%  |
| <b>Bicycles on Road</b>        | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 0     | 0     | 0  | 0     | -    | 0                    | 0     | 0     | 0  | 0     | -    | 0                   | 0  | 0     | 0  | 0     | -    | 0     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                   | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0% | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                    | -     | -     | -  | -     | 1    | -                   | -  | -     | -  | -     | 2    |       |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -  | -     | -    | -                                       | -     | -     | -  | -     | -    | -                    | -     | -     | -  | -     | 100% | -                   | -  | -     | -  | -     | 100% | -     |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                    | -     | -     | -  | -     | 0    | -                   | -  | -     | -  | -     | 0    |       |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -  | -     | -    | -                                       | -     | -     | -  | -     | -    | -                    | -     | -     | -  | -     | 0%   | -                   | -  | -     | -  | -     | 0%   | -     |

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

**207637-B Washington Street (Route 53) @ Oak ... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 5PM - 6 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789285, Location: 42.168512, -70.874877

Provided by: Precision Data Industries,  
 LLC (PDI)  
 46 Morton Street,  
 Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |    |       |          | Washington Street (Route 53) Southbound |       |       |       |          | Oak Street Eastbound |   |       |    |          | Drive way Westbound |       |   |       |          | Int   |    |       |      |       |
|--------------------------------|---|-------|----|-------|----------|---|-------|-------|-------|----------|----------------------|---|-------|----|----------|---------------------|-------|---|-------|----------|-------|----|-------|------|-------|
|                                | L                                       | T     | R  | U     | App Ped* | L                                       | T     | R     | U     | App Ped* | L                    | T | R     | U  | App Ped* | L                   | T     | R | U     | App Ped* |       |    |       |      |       |
| 2020-10-08 5:00PM              | 3                                       | 149   | 0  | 0     | 152      | 0                                       | 0     | 159   | 14    | 0        | 173                  | 0 | 2     | 0  | 15       | 0                   | 17    | 0 | 0     | 1        | 4     | 0  | 5     | 1    | 347   |
| 5:15PM                         | 5                                       | 206   | 0  | 0     | 211      | 0                                       | 0     | 160   | 9     | 0        | 169                  | 0 | 3     | 0  | 3        | 0                   | 6     | 0 | 0     | 1        | 1     | 0  | 2     | 0    | 388   |
| 5:30PM                         | 18                                      | 175   | 0  | 1     | 194      | 0                                       | 1     | 138   | 6     | 0        | 145                  | 0 | 2     | 0  | 6        | 0                   | 8     | 0 | 2     | 0        | 1     | 0  | 3     | 0    | 350   |
| 5:45PM                         | 14                                      | 156   | 0  | 0     | 170      | 0                                       | 0     | 134   | 10    | 0        | 144                  | 0 | 0     | 0  | 8        | 0                   | 8     | 0 | 0     | 0        | 1     | 0  | 1     | 0    | 323   |
| <b>Total</b>                   | 40                                      | 686   | 0  | 1     | 727      | 0                                       | 1     | 591   | 39    | 0        | 631                  | 0 | 7     | 0  | 32       | 0                   | 39    | 0 | 2     | 2        | 7     | 0  | 11    | 1    | 1408  |
| <b>% Approach</b>              | 5.5%                                    | 94.4% | 0% | 0.1%  | -        | -                                       | 0.2%  | 93.7% | 6.2%  | 0%       | -                    | - | 17.9% | 0% | 82.1%    | 0%                  | -     | - | 18.2% | 18.2%    | 63.6% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 2.8%                                    | 48.7% | 0% | 0.1%  | 51.6%    | -                                       | 0.1%  | 42.0% | 2.8%  | 0%       | 44.8%                | - | 0.5%  | 0% | 2.3%     | 0%                  | 2.8%  | - | 0.1%  | 0.1%     | 0.5%  | 0% | 0.8%  | -    | -     |
| <b>PHF</b>                     | 0.556                                   | 0.833 | -  | 0.250 | 0.861    | -                                       | 0.250 | 0.922 | 0.696 | -        | 0.910                | - | 0.583 | -  | 0.533    | -                   | 0.574 | - | 0.250 | 0.500    | 0.438 | -  | 0.550 | -    | 0.907 |
| <b>Motorcycles</b>             | 0                                       | 0     | 0  | 0     | 0        | -                                       | 0     | 1     | 0     | 0        | 1                    | - | 0     | 0  | 0        | 0                   | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 1     |
| <b>% Motorcycles</b>           | 0%                                      | 0%    | 0% | 0%    | 0%       | -                                       | 0%    | 0.2%  | 0%    | 0%       | 0.2%                 | - | 0%    | 0% | 0%       | 0%                  | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Lights</b>                  | 40                                      | 682   | 0  | 1     | 723      | -                                       | 1     | 576   | 37    | 0        | 614                  | - | 7     | 0  | 32       | 0                   | 39    | - | 2     | 2        | 7     | 0  | 11    | -    | 1387  |
| <b>% Lights</b>                | 100%                                    | 99.4% | 0% | 100%  | 99.4%    | -                                       | 100%  | 97.5% | 94.9% | 0%       | 97.3%                | - | 100%  | 0% | 100%     | 0%                  | 100%  | - | 100%  | 100%     | 100%  | 0% | 100%  | -    | 98.5% |
| <b>Single-Unit Trucks</b>      | 0                                       | 2     | 0  | 0     | 2        | -                                       | 0     | 11    | 1     | 0        | 12                   | - | 0     | 0  | 0        | 0                   | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 14    |
| <b>% Single-Unit Trucks</b>    | 0%                                      | 0.3%  | 0% | 0%    | 0.3%     | -                                       | 0%    | 1.9%  | 2.6%  | 0%       | 1.9%                 | - | 0%    | 0% | 0%       | 0%                  | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 1.0%  |
| <b>Articulated Trucks</b>      | 0                                       | 1     | 0  | 0     | 1        | -                                       | 0     | 2     | 1     | 0        | 3                    | - | 0     | 0  | 0        | 0                   | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 4     |
| <b>% Articulated Trucks</b>    | 0%                                      | 0.1%  | 0% | 0%    | 0.1%     | -                                       | 0%    | 0.3%  | 2.6%  | 0%       | 0.5%                 | - | 0%    | 0% | 0%       | 0%                  | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.3%  |
| <b>Buses</b>                   | 0                                       | 1     | 0  | 0     | 1        | -                                       | 0     | 0     | 0     | 0        | 0                    | - | 0     | 0  | 0        | 0                   | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 1     |
| <b>% Buses</b>                 | 0%                                      | 0.1%  | 0% | 0%    | 0.1%     | -                                       | 0%    | 0%    | 0%    | 0%       | 0%                   | - | 0%    | 0% | 0%       | 0%                  | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Bicycles on Road</b>        | 0                                       | 0     | 0  | 0     | 0        | -                                       | 0     | 1     | 0     | 0        | 1                    | - | 0     | 0  | 0        | 0                   | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 1     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0% | 0%    | 0%       | -                                       | 0%    | 0.2%  | 0%    | 0%       | 0.2%                 | - | 0%    | 0% | 0%       | 0%                  | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Pedestrians</b>             | -                                       | -     | -  | -     | -        | 0                                       | -     | -     | -     | -        | -                    | 0 | -     | -  | -        | -                   | -     | 0 | -     | -        | -     | -  | -     | 1    |       |
| <b>% Pedestrians</b>           | -                                       | -     | -  | -     | -        | -                                       | -     | -     | -     | -        | -                    | - | -     | -  | -        | -                   | -     | - | -     | -        | -     | -  | -     | 100% |       |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -  | -     | -        | 0                                       | -     | -     | -     | -        | -                    | 0 | -     | -  | -        | -                   | -     | 0 | -     | -        | -     | -  | -     | 0    |       |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -  | -     | -        | -                                       | -     | -     | -     | -        | -                    | - | -     | -  | -        | -                   | -     | - | -     | -        | -     | -  | -     | 0%   |       |

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

**207637-C Washington Street (Route 53) @ Hall... - TMC**

Thu Oct 8, 2020

Full Length (10 AM-2 PM, 6 AM-10 AM, 2 PM-6 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789288, Location: 42.162592, -70.864915

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |    |       |      |       |      | Washington Street (Route 53) Southbound |      |       |       |    |       |      | Hall Drive Eastbound |      |      |       |    |       |      |
|--------------------------------|---|-------|----|-------|------|-------|------|---|------|-------|-------|----|-------|------|----------------------|------|------|-------|----|-------|------|
|                                | L                                       | T     | BR | R     | U    | App   | Ped* | HL                                      | L    | T     | R     | U  | App   | Ped* | L                    | BL   | T    | R     | U  | App   | Ped* |
| 2020-10-08 6:00AM              | 2                                       | 180   | 0  | 2     | 0    | 184   | 0    | 0                                       | 4    | 101   | 1     | 0  | 106   | 0    | 3                    | 0    | 0    | 6     | 0  | 9     | 0    |
| 7:00AM                         | 14                                      | 397   | 0  | 6     | 0    | 417   | 0    | 0                                       | 3    | 225   | 4     | 0  | 232   | 0    | 9                    | 0    | 6    | 14    | 0  | 29    | 0    |
| 8:00AM                         | 19                                      | 539   | 0  | 7     | 0    | 565   | 0    | 1                                       | 4    | 357   | 9     | 0  | 371   | 0    | 10                   | 1    | 2    | 31    | 0  | 44    | 0    |
| 9:00AM                         | 19                                      | 457   | 0  | 2     | 0    | 478   | 0    | 1                                       | 2    | 404   | 7     | 0  | 414   | 0    | 7                    | 0    | 0    | 25    | 0  | 32    | 0    |
| 2:00PM                         | 15                                      | 589   | 0  | 4     | 0    | 608   | 0    | 0                                       | 5    | 627   | 6     | 0  | 638   | 0    | 8                    | 0    | 0    | 28    | 0  | 36    | 0    |
| 3:00PM                         | 19                                      | 563   | 0  | 2     | 0    | 584   | 0    | 0                                       | 1    | 706   | 10    | 0  | 717   | 0    | 4                    | 0    | 2    | 30    | 0  | 36    | 0    |
| 4:00PM                         | 13                                      | 566   | 0  | 1     | 1    | 581   | 0    | 0                                       | 0    | 678   | 7     | 0  | 685   | 0    | 7                    | 0    | 2    | 28    | 0  | 37    | 0    |
| 5:00PM                         | 40                                      | 784   | 0  | 1     | 0    | 825   | 0    | 0                                       | 1    | 645   | 21    | 0  | 667   | 0    | 6                    | 0    | 0    | 23    | 0  | 29    | 0    |
| 2020-10-10 10:00AM             | 19                                      | 454   | 0  | 3     | 0    | 476   | 0    | 0                                       | 3    | 459   | 0     | 0  | 462   | 1    | 7                    | 0    | 0    | 26    | 0  | 33    | 1    |
| 11:00AM                        | 13                                      | 559   | 0  | 1     | 0    | 573   | 0    | 0                                       | 4    | 603   | 3     | 0  | 610   | 0    | 3                    | 0    | 0    | 23    | 0  | 26    | 1    |
| 12:00PM                        | 21                                      | 583   | 0  | 4     | 0    | 608   | 0    | 0                                       | 2    | 637   | 9     | 0  | 648   | 0    | 4                    | 0    | 0    | 19    | 0  | 23    | 0    |
| 1:00PM                         | 21                                      | 612   | 0  | 1     | 0    | 634   | 0    | 0                                       | 2    | 690   | 13    | 0  | 705   | 1    | 6                    | 0    | 0    | 13    | 0  | 19    | 0    |
| <b>Total</b>                   | 215                                     | 6283  | 0  | 34    | 1    | 6533  | 0    | 2                                       | 31   | 6132  | 90    | 0  | 6255  | 2    | 74                   | 1    | 12   | 266   | 0  | 353   | 2    |
| <b>% Approach</b>              | 3.3%                                    | 96.2% | 0% | 0.5%  | 0%   | -     | -    | 0%                                      | 0.5% | 98.0% | 1.4%  | 0% | -     | -    | 21.0%                | 0.3% | 3.4% | 75.4% | 0% | -     | -    |
| <b>% Total</b>                 | 1.6%                                    | 47.6% | 0% | 0.3%  | 0%   | 49.4% | -    | 0%                                      | 0.2% | 46.4% | 0.7%  | 0% | 47.3% | -    | 0.6%                 | 0%   | 0.1% | 2.0%  | 0% | 2.7%  | -    |
| <b>Motorcycles</b>             | 1                                       | 14    | 0  | 0     | 0    | 15    | -    | 0                                       | 0    | 16    | 1     | 0  | 17    | -    | 0                    | 0    | 0    | 1     | 0  | 1     | -    |
| <b>% Motorcycles</b>           | 0.5%                                    | 0.2%  | 0% | 0%    | 0%   | 0.2%  | -    | 0%                                      | 0%   | 0.3%  | 1.1%  | 0% | 0.3%  | -    | 0%                   | 0%   | 0%   | 0.4%  | 0% | 0.3%  | -    |
| <b>Lights</b>                  | 210                                     | 6146  | 0  | 33    | 1    | 6390  | -    | 2                                       | 31   | 5989  | 87    | 0  | 6109  | -    | 72                   | 1    | 12   | 256   | 0  | 341   | -    |
| <b>% Lights</b>                | 97.7%                                   | 97.8% | 0% | 97.1% | 100% | 97.8% | -    | 100%                                    | 100% | 97.7% | 96.7% | 0% | 97.7% | -    | 97.3%                | 100% | 100% | 96.2% | 0% | 96.6% | -    |
| <b>Single-Unit Trucks</b>      | 3                                       | 84    | 0  | 1     | 0    | 88    | -    | 0                                       | 0    | 98    | 1     | 0  | 99    | -    | 0                    | 0    | 0    | 3     | 0  | 3     | -    |
| <b>% Single-Unit Trucks</b>    | 1.4%                                    | 1.3%  | 0% | 2.9%  | 0%   | 1.3%  | -    | 0%                                      | 0%   | 1.6%  | 1.1%  | 0% | 1.6%  | -    | 0%                   | 0%   | 0%   | 1.1%  | 0% | 0.8%  | -    |
| <b>Articulated Trucks</b>      | 0                                       | 16    | 0  | 0     | 0    | 16    | -    | 0                                       | 0    | 15    | 0     | 0  | 15    | -    | 1                    | 0    | 0    | 0     | 0  | 1     | -    |
| <b>% Articulated Trucks</b>    | 0%                                      | 0.3%  | 0% | 0%    | 0%   | 0.2%  | -    | 0%                                      | 0%   | 0.2%  | 0%    | 0% | 0.2%  | -    | 1.4%                 | 0%   | 0%   | 0%    | 0% | 0.3%  | -    |
| <b>Buses</b>                   | 1                                       | 20    | 0  | 0     | 0    | 21    | -    | 0                                       | 0    | 12    | 1     | 0  | 13    | -    | 1                    | 0    | 0    | 6     | 0  | 7     | -    |
| <b>% Buses</b>                 | 0.5%                                    | 0.3%  | 0% | 0%    | 0%   | 0.3%  | -    | 0%                                      | 0%   | 0.2%  | 1.1%  | 0% | 0.2%  | -    | 1.4%                 | 0%   | 0%   | 2.3%  | 0% | 2.0%  | -    |
| <b>Bicycles on Road</b>        | 0                                       | 3     | 0  | 0     | 0    | 3     | -    | 0                                       | 0    | 2     | 0     | 0  | 2     | -    | 0                    | 0    | 0    | 0     | 0  | 0     | -    |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0% | 0%    | 0%   | 0%    | -    | 0%                                      | 0%   | 0%    | 0%    | 0% | 0%    | -    | 0%                   | 0%   | 0%   | 0%    | 0% | 0%    | -    |
| <b>Pedestrians</b>             | -                                       | -     | -  | -     | -    | -     | 0    | -                                       | -    | -     | -     | -  | -     | 2    | -                    | -    | -    | -     | -  | -     | 2    |
| <b>% Pedestrians</b>           | -                                       | -     | -  | -     | -    | -     | -    | -                                       | -    | -     | -     | -  | -     | 100% | -                    | -    | -    | -     | -  | -     | 100% |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -  | -     | -    | -     | 0    | -                                       | -    | -     | -     | -  | -     | 0    | -                    | -    | -    | -     | -  | -     | 0    |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -  | -     | -    | -     | -    | -                                       | -    | -     | -     | -  | -     | 0%   | -                    | -    | -    | -     | -  | -     | 0%   |

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**207637-C Washington Street (Route 53) @ Hall... - TMC**

Thu Oct 8, 2020

Full Length (10 AM-2 PM, 6 AM-10 AM, 2 PM-6 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789288, Location: 42.162592, -70.864915

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Drive way Westbound |       |       |    |    |       |       | Goodlife Drive way Southwestbound |       |       |    |    |      |       | Int   |
|--------------------------------|---------------------|-------|-------|----|----|-------|-------|-----------------------------------|-------|-------|----|----|------|-------|-------|
|                                | L                   | T     | R     | HR | U  | App   | Ped*  | HL                                | BL    | BR    | HR | U  | App  | Ped*  |       |
| 2020-10-08 6:00AM              | 0                   | 0     | 1     | 0  | 0  | 1     | 0     | 0                                 | 0     | 0     | 0  | 0  | 0    | 0     | 300   |
| 7:00AM                         | 1                   | 1     | 0     | 0  | 0  | 2     | 0     | 0                                 | 0     | 0     | 0  | 0  | 0    | 1     | 680   |
| 8:00AM                         | 1                   | 2     | 2     | 0  | 0  | 5     | 6     | 0                                 | 0     | 0     | 0  | 0  | 0    | 5     | 985   |
| 9:00AM                         | 1                   | 0     | 0     | 0  | 0  | 1     | 0     | 0                                 | 1     | 1     | 0  | 0  | 2    | 1     | 927   |
| 2:00PM                         | 7                   | 0     | 4     | 0  | 0  | 11    | 4     | 0                                 | 0     | 0     | 0  | 0  | 0    | 4     | 1293  |
| 3:00PM                         | 4                   | 2     | 4     | 0  | 0  | 10    | 0     | 0                                 | 2     | 0     | 0  | 0  | 2    | 1     | 1349  |
| 4:00PM                         | 4                   | 2     | 5     | 0  | 0  | 11    | 4     | 0                                 | 0     | 0     | 0  | 0  | 0    | 4     | 1314  |
| 5:00PM                         | 6                   | 0     | 1     | 0  | 0  | 7     | 0     | 0                                 | 0     | 0     | 0  | 0  | 0    | 0     | 1528  |
| 2020-10-10 10:00AM             | 0                   | 0     | 3     | 0  | 0  | 3     | 1     | 0                                 | 0     | 0     | 0  | 0  | 0    | 1     | 974   |
| 11:00AM                        | 4                   | 0     | 2     | 0  | 0  | 6     | 3     | 0                                 | 0     | 0     | 0  | 0  | 0    | 3     | 1215  |
| 12:00PM                        | 2                   | 1     | 4     | 0  | 0  | 7     | 1     | 0                                 | 0     | 0     | 0  | 0  | 0    | 1     | 1286  |
| 1:00PM                         | 1                   | 1     | 1     | 0  | 0  | 3     | 3     | 0                                 | 0     | 0     | 0  | 0  | 0    | 3     | 1361  |
| <b>Total</b>                   | 31                  | 9     | 27    | 0  | 0  | 67    | 22    | 0                                 | 3     | 1     | 0  | 0  | 4    | 24    | 13212 |
| <b>% Approach</b>              | 46.3%               | 13.4% | 40.3% | 0% | 0% | -     | -     | 0%                                | 75.0% | 25.0% | 0% | 0% | -    | -     | -     |
| <b>% Total</b>                 | 0.2%                | 0.1%  | 0.2%  | 0% | 0% | 0.5%  | -     | 0%                                | 0%    | 0%    | 0% | 0% | 0%   | -     | -     |
| <b>Motorcycles</b>             | 0                   | 0     | 0     | 0  | 0  | 0     | -     | 0                                 | 0     | 0     | 0  | 0  | 0    | -     | 33    |
| <b>% Motorcycles</b>           | 0%                  | 0%    | 0%    | 0% | 0% | 0%    | -     | 0%                                | 0%    | 0%    | 0% | 0% | 0%   | -     | 0.2%  |
| <b>Lights</b>                  | 31                  | 9     | 26    | 0  | 0  | 66    | -     | 0                                 | 3     | 1     | 0  | 0  | 4    | -     | 12910 |
| <b>% Lights</b>                | 100%                | 100%  | 96.3% | 0% | 0% | 98.5% | -     | 0%                                | 100%  | 100%  | 0% | 0% | 100% | -     | 97.7% |
| <b>Single-Unit Trucks</b>      | 0                   | 0     | 1     | 0  | 0  | 1     | -     | 0                                 | 0     | 0     | 0  | 0  | 0    | -     | 191   |
| <b>% Single-Unit Trucks</b>    | 0%                  | 0%    | 3.7%  | 0% | 0% | 1.5%  | -     | 0%                                | 0%    | 0%    | 0% | 0% | 0%   | -     | 1.4%  |
| <b>Articulated Trucks</b>      | 0                   | 0     | 0     | 0  | 0  | 0     | -     | 0                                 | 0     | 0     | 0  | 0  | 0    | -     | 32    |
| <b>% Articulated Trucks</b>    | 0%                  | 0%    | 0%    | 0% | 0% | 0%    | -     | 0%                                | 0%    | 0%    | 0% | 0% | 0%   | -     | 0.2%  |
| <b>Buses</b>                   | 0                   | 0     | 0     | 0  | 0  | 0     | -     | 0                                 | 0     | 0     | 0  | 0  | 0    | -     | 41    |
| <b>% Buses</b>                 | 0%                  | 0%    | 0%    | 0% | 0% | 0%    | -     | 0%                                | 0%    | 0%    | 0% | 0% | 0%   | -     | 0.3%  |
| <b>Bicycles on Road</b>        | 0                   | 0     | 0     | 0  | 0  | 0     | -     | 0                                 | 0     | 0     | 0  | 0  | 0    | -     | 5     |
| <b>% Bicycles on Road</b>      | 0%                  | 0%    | 0%    | 0% | 0% | 0%    | -     | 0%                                | 0%    | 0%    | 0% | 0% | 0%   | -     | 0%    |
| <b>Pedestrians</b>             | -                   | -     | -     | -  | -  | -     | 20    | -                                 | -     | -     | -  | -  | -    | 22    | -     |
| <b>% Pedestrians</b>           | -                   | -     | -     | -  | -  | -     | 90.9% | -                                 | -     | -     | -  | -  | -    | 91.7% | -     |
| <b>Bicycles on Crosswalk</b>   | -                   | -     | -     | -  | -  | -     | 2     | -                                 | -     | -     | -  | -  | -    | 2     | -     |
| <b>% Bicycles on Crosswalk</b> | -                   | -     | -     | -  | -  | -     | 9.1%  | -                                 | -     | -     | -  | -  | -    | 8.3%  | -     |

\* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**207637-C Washington Street (Route 53) @ Hall... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:15AM - 9:15 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789288, Location: 42.162592, -70.864915

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |    |       |    |       |      | Washington Street (Route 53) Southbound |       |       |       |    |       |      | Hall Drive Eastbound |       |       |       |    |       |      |
|--------------------------------|---|-------|----|-------|----|-------|------|---|-------|-------|-------|----|-------|------|----------------------|-------|-------|-------|----|-------|------|
|                                | L                                       | T     | BR | R     | U  | App   | Ped* | HL                                      | L     | T     | R     | U  | App   | Ped* | L                    | BL    | T     | R     | U  | App   | Ped* |
| 2020-10-08 8:15AM              | 6                                       | 140   | 0  | 1     | 0  | 147   | 0    | 0                                       | 1     | 86    | 3     | 0  | 90    | 0    | 4                    | 0     | 1     | 6     | 0  | 11    | 0    |
| 8:30AM                         | 5                                       | 129   | 0  | 1     | 0  | 135   | 0    | 0                                       | 2     | 80    | 2     | 0  | 84    | 0    | 2                    | 0     | 0     | 6     | 0  | 8     | 0    |
| 8:45AM                         | 6                                       | 151   | 0  | 3     | 0  | 160   | 0    | 0                                       | 1     | 128   | 3     | 0  | 132   | 0    | 1                    | 1     | 0     | 14    | 0  | 16    | 0    |
| 9:00AM                         | 6                                       | 139   | 0  | 0     | 0  | 145   | 0    | 0                                       | 2     | 109   | 1     | 0  | 112   | 0    | 3                    | 0     | 0     | 6     | 0  | 9     | 0    |
| <b>Total</b>                   | 23                                      | 559   | 0  | 5     | 0  | 587   | 0    | 0                                       | 6     | 403   | 9     | 0  | 418   | 0    | 10                   | 1     | 1     | 32    | 0  | 44    | 0    |
| <b>% Approach</b>              | 3.9%                                    | 95.2% | 0% | 0.9%  | 0% | -     | -    | 0%                                      | 1.4%  | 96.4% | 2.2%  | 0% | -     | -    | 22.7%                | 2.3%  | 2.3%  | 72.7% | 0% | -     | -    |
| <b>% Total</b>                 | 2.2%                                    | 53.1% | 0% | 0.5%  | 0% | 55.8% | -    | 0%                                      | 0.6%  | 38.3% | 0.9%  | 0% | 39.7% | -    | 1.0%                 | 0.1%  | 0.1%  | 3.0%  | 0% | 4.2%  | -    |
| <b>PHF</b>                     | 0.958                                   | 0.925 | -  | 0.417 | -  | 0.917 | -    | -                                       | 0.750 | 0.787 | 0.750 | -  | 0.792 | -    | 0.625                | 0.250 | 0.250 | 0.571 | -  | 0.688 | -    |
| <b>Motorcycles</b>             | 1                                       | 0     | 0  | 0     | 0  | 1     | -    | 0                                       | 0     | 0     | 0     | 0  | 0     | -    | 0                    | 0     | 0     | 1     | 0  | 1     | -    |
| <b>% Motorcycles</b>           | 4.3%                                    | 0%    | 0% | 0%    | 0% | 0.2%  | -    | 0%                                      | 0%    | 0%    | 0%    | 0% | 0%    | -    | 0%                   | 0%    | 0%    | 3.1%  | 0% | 2.3%  | -    |
| <b>Lights</b>                  | 21                                      | 535   | 0  | 5     | 0  | 561   | -    | 0                                       | 6     | 390   | 8     | 0  | 404   | -    | 10                   | 1     | 1     | 29    | 0  | 41    | -    |
| <b>% Lights</b>                | 91.3%                                   | 95.7% | 0% | 100%  | 0% | 95.6% | -    | 0%                                      | 100%  | 96.8% | 88.9% | 0% | 96.7% | -    | 100%                 | 100%  | 100%  | 90.6% | 0% | 93.2% | -    |
| <b>Single-Unit Trucks</b>      | 0                                       | 13    | 0  | 0     | 0  | 13    | -    | 0                                       | 0     | 8     | 0     | 0  | 8     | -    | 0                    | 0     | 0     | 0     | 0  | 0     | -    |
| <b>% Single-Unit Trucks</b>    | 0%                                      | 2.3%  | 0% | 0%    | 0% | 2.2%  | -    | 0%                                      | 0%    | 2.0%  | 0%    | 0% | 1.9%  | -    | 0%                   | 0%    | 0%    | 0%    | 0% | 0%    | -    |
| <b>Articulated Trucks</b>      | 0                                       | 3     | 0  | 0     | 0  | 3     | -    | 0                                       | 0     | 2     | 0     | 0  | 2     | -    | 0                    | 0     | 0     | 0     | 0  | 0     | -    |
| <b>% Articulated Trucks</b>    | 0%                                      | 0.5%  | 0% | 0%    | 0% | 0.5%  | -    | 0%                                      | 0%    | 0.5%  | 0%    | 0% | 0.5%  | -    | 0%                   | 0%    | 0%    | 0%    | 0% | 0%    | -    |
| <b>Buses</b>                   | 1                                       | 8     | 0  | 0     | 0  | 9     | -    | 0                                       | 0     | 3     | 1     | 0  | 4     | -    | 0                    | 0     | 0     | 2     | 0  | 2     | -    |
| <b>% Buses</b>                 | 4.3%                                    | 1.4%  | 0% | 0%    | 0% | 1.5%  | -    | 0%                                      | 0%    | 0.7%  | 11.1% | 0% | 1.0%  | -    | 0%                   | 0%    | 0%    | 6.3%  | 0% | 4.5%  | -    |
| <b>Bicycles on Road</b>        | 0                                       | 0     | 0  | 0     | 0  | 0     | -    | 0                                       | 0     | 0     | 0     | 0  | 0     | -    | 0                    | 0     | 0     | 0     | 0  | 0     | -    |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0% | 0%    | 0% | 0%    | -    | 0%                                      | 0%    | 0%    | 0%    | 0% | 0%    | -    | 0%                   | 0%    | 0%    | 0%    | 0% | 0%    | -    |
| <b>Pedestrians</b>             | -                                       | -     | -  | -     | -  | -     | 0    | -                                       | -     | -     | -     | -  | -     | 0    | -                    | -     | -     | -     | -  | -     | 0    |
| <b>% Pedestrians</b>           | -                                       | -     | -  | -     | -  | -     | -    | -                                       | -     | -     | -     | -  | -     | -    | -                    | -     | -     | -     | -  | -     | -    |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -  | -     | -  | -     | 0    | -                                       | -     | -     | -     | -  | -     | 0    | -                    | -     | -     | -     | -  | -     | 0    |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -  | -     | -  | -     | -    | -                                       | -     | -     | -     | -  | -     | -    | -                    | -     | -     | -     | -  | -     | -    |

\* Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn



**207637-C Washington Street (Route 53) @ Hall... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:15AM - 9:15 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789288, Location: 42.162592, -70.864915

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg<br>Direction            | Drive way<br>Westbound |    |       |    |    |       |      |    | Goodlife Driveway<br>Southwestbound |       |    |    |       |      |       |  | Int |
|-----------------------------|------------------------|----|-------|----|----|-------|------|----|-------------------------------------|-------|----|----|-------|------|-------|--|-----|
|                             | L                      | T  | R     | HR | U  | App   | Ped* | HL | BL                                  | BR    | HR | U  | App   | Ped* |       |  |     |
| 2020-10-08 8:15AM           | 0                      | 0  | 1     | 0  | 0  | 1     | 3    | 0  | 0                                   | 0     | 0  | 0  | 0     | 2    | 249   |  |     |
| 8:30AM                      | 1                      | 0  | 0     | 0  | 0  | 1     | 2    | 0  | 0                                   | 0     | 0  | 0  | 0     | 2    | 228   |  |     |
| 8:45AM                      | 0                      | 0  | 0     | 0  | 0  | 0     | 0    | 0  | 0                                   | 0     | 0  | 0  | 0     | 0    | 308   |  |     |
| 9:00AM                      | 0                      | 0  | 0     | 0  | 0  | 0     | 0    | 0  | 0                                   | 1     | 0  | 0  | 1     | 0    | 267   |  |     |
| <b>Total</b>                | 1                      | 0  | 1     | 0  | 0  | 2     | 5    | 0  | 0                                   | 1     | 0  | 0  | 1     | 4    | 1052  |  |     |
| <b>% Approach</b>           | 50.0%                  | 0% | 50.0% | 0% | 0% | -     | -    | 0% | 0%                                  | 100%  | 0% | 0% | -     | -    | -     |  |     |
| <b>% Total</b>              | 0.1%                   | 0% | 0.1%  | 0% | 0% | 0.2%  | -    | 0% | 0%                                  | 0.1%  | 0% | 0% | 0.1%  | -    | -     |  |     |
| <b>PHF</b>                  | 0.250                  | -  | 0.250 | -  | -  | 0.500 | -    | -  | -                                   | 0.250 | -  | -  | 0.250 | -    | 0.854 |  |     |
| <b>Motorcycles</b>          | 0                      | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                   | 0     | 0  | 0  | 0     | -    | 2     |  |     |
| <b>% Motorcycles</b>        | 0%                     | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                  | 0%    | 0% | 0% | 0%    | -    | 0.2%  |  |     |
| <b>Lights</b>               | 1                      | 0  | 1     | 0  | 0  | 2     | -    | 0  | 0                                   | 1     | 0  | 0  | 1     | -    | 1009  |  |     |
| <b>% Lights</b>             | 100%                   | 0% | 100%  | 0% | 0% | 100%  | -    | 0% | 0%                                  | 100%  | 0% | 0% | 100%  | -    | 95.9% |  |     |
| <b>Single-Unit Trucks</b>   | 0                      | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                   | 0     | 0  | 0  | 0     | -    | 21    |  |     |
| <b>% Single-Unit Trucks</b> | 0%                     | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                  | 0%    | 0% | 0% | 0%    | -    | 2.0%  |  |     |
| <b>Articulated Trucks</b>   | 0                      | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                   | 0     | 0  | 0  | 0     | -    | 5     |  |     |
| <b>% Articulated Trucks</b> | 0%                     | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                  | 0%    | 0% | 0% | 0%    | -    | 0.5%  |  |     |
| <b>Buses</b>                | 0                      | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                   | 0     | 0  | 0  | 0     | -    | 15    |  |     |
| <b>% Buses</b>              | 0%                     | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                  | 0%    | 0% | 0% | 0%    | -    | 1.4%  |  |     |
| <b>Bicycles on Road</b>     | 0                      | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                   | 0     | 0  | 0  | 0     | -    | 0     |  |     |
| <b>% Bicycles on Road</b>   | 0%                     | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                  | 0%    | 0% | 0% | 0%    | -    | 0%    |  |     |
| Pedestrians                 | -                      | -  | -     | -  | -  | -     | 5    | -  | -                                   | -     | -  | -  | -     | 4    | -     |  |     |
| % Pedestrians               | -                      | -  | -     | -  | -  | -     | 100% | -  | -                                   | -     | -  | -  | -     | 100% | -     |  |     |
| Bicycles on Crosswalk       | -                      | -  | -     | -  | -  | -     | 0    | -  | -                                   | -     | -  | -  | -     | 0    | -     |  |     |
| % Bicycles on Crosswalk     | -                      | -  | -     | -  | -  | -     | 0%   | -  | -                                   | -     | -  | -  | -     | 0%   | -     |  |     |

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**207637-C Washington Street (Route 53) @ Hall... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 5PM - 6 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789288, Location: 42.162592, -70.864915

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                | Washington Street (Route 53) Northbound |       |        |      |       |          | Washington Street (Route 53) Southbound |       |       |       |       |          | Hall Drive Eastbound |       |    |       |       |          |      |
|------------------------------|---|-------|--------|------|-------|----------|---|-------|-------|-------|-------|----------|----------------------|-------|----|-------|-------|----------|------|
|                              | L                                       | T     | BR     | R    | U     | App Ped* | HL                                      | L     | T     | R     | U     | App Ped* | L                    | BL    | T  | R     | U     | App Ped* |      |
| 2020-10-08 5:00PM            | 5                                       | 142   | 0      | 1    | 0     | 148      | 0                                       | 0     | 199   | 1     | 0     | 200      | 0                    | 1     | 0  | 0     | 2     | 0        | 3    |
| 5:15PM                       | 5                                       | 216   | 0      | 0    | 0     | 221      | 0                                       | 0     | 155   | 5     | 0     | 161      | 0                    | 1     | 0  | 0     | 5     | 0        | 6    |
| 5:30PM                       | 1                                       | 240   | 0      | 0    | 0     | 241      | 0                                       | 0     | 155   | 5     | 0     | 160      | 0                    | 4     | 0  | 0     | 11    | 0        | 15   |
| 5:45PM                       | 29                                      | 186   | 0      | 0    | 0     | 215      | 0                                       | 0     | 136   | 10    | 0     | 146      | 0                    | 0     | 0  | 0     | 5     | 0        | 5    |
| <b>Total</b>                 | 40                                      | 784   | 0      | 1    | 0     | 825      | 0                                       | 0     | 645   | 21    | 0     | 667      | 0                    | 6     | 0  | 0     | 23    | 0        | 29   |
| <b>% Approach</b>            | 4.8%                                    | 95.0% | 0%     | 0.1% | 0%    | -        | -                                       | 0%    | 0.1%  | 96.7% | 3.1%  | 0%       | -                    | 20.7% | 0% | 0%    | 79.3% | 0%       | -    |
| <b>% Total</b>               | 2.6%                                    | 51.3% | 0%     | 0.1% | 0%    | 54.0%    | -                                       | 0%    | 0.1%  | 42.2% | 1.4%  | 0%       | 43.7%                | 0.4%  | 0% | 0%    | 1.5%  | 0%       | 1.9% |
| <b>PHF</b>                   | 0.345                                   | 0.817 | -0.250 | -    | 0.856 | -        | -0.250                                  | 0.809 | 0.525 | -     | 0.833 | -        | 0.375                | -     | -  | 0.523 | -     | 0.483    | -    |
| <b>Motorcycles</b>           | 0                                       | 0     | 0      | 0    | 0     | 0        | -                                       | 0     | 0     | 1     | 0     | 0        | 1                    | 0     | 0  | 0     | 0     | 0        | 0    |
| <b>% Motorcycles</b>         | 0%                                      | 0%    | 0%     | 0%   | 0%    | 0%       | -                                       | 0%    | 0%    | 0.2%  | 0%    | 0%       | 0.1%                 | 0%    | 0% | 0%    | 0%    | 0%       | 0%   |
| <b>Lights</b>                | 40                                      | 782   | 0      | 1    | 0     | 823      | -                                       | 0     | 1     | 629   | 21    | 0        | 651                  | 6     | 0  | 0     | 23    | 0        | 29   |
| <b>% Lights</b>              | 100%                                    | 99.7% | 0%     | 100% | 0%    | 99.8%    | -                                       | 0%    | 100%  | 97.5% | 100%  | 0%       | 97.6%                | 100%  | 0% | 0%    | 100%  | 0%       | 100% |
| <b>Single-Unit Trucks</b>    | 0                                       | 1     | 0      | 0    | 0     | 1        | -                                       | 0     | 0     | 10    | 0     | 0        | 10                   | 0     | 0  | 0     | 0     | 0        | 0    |
| <b>% Single-Unit Trucks</b>  | 0%                                      | 0.1%  | 0%     | 0%   | 0%    | 0.1%     | -                                       | 0%    | 0%    | 1.6%  | 0%    | 0%       | 1.5%                 | 0%    | 0% | 0%    | 0%    | 0%       | 0%   |
| <b>Articulate d Trucks</b>   | 0                                       | 0     | 0      | 0    | 0     | 0        | -                                       | 0     | 0     | 4     | 0     | 0        | 4                    | 0     | 0  | 0     | 0     | 0        | 0    |
| <b>% Articulate d Trucks</b> | 0%                                      | 0%    | 0%     | 0%   | 0%    | 0%       | -                                       | 0%    | 0%    | 0.6%  | 0%    | 0%       | 0.6%                 | 0%    | 0% | 0%    | 0%    | 0%       | 0%   |
| <b>Buses</b>                 | 0                                       | 1     | 0      | 0    | 0     | 1        | -                                       | 0     | 0     | 0     | 0     | 0        | 0                    | 0     | 0  | 0     | 0     | 0        | 0    |
| <b>% Buses</b>               | 0%                                      | 0.1%  | 0%     | 0%   | 0%    | 0.1%     | -                                       | 0%    | 0%    | 0%    | 0%    | 0%       | 0%                   | 0%    | 0% | 0%    | 0%    | 0%       | 0%   |
| <b>Bicycles on Road</b>      | 0                                       | 0     | 0      | 0    | 0     | 0        | -                                       | 0     | 0     | 1     | 0     | 0        | 1                    | 0     | 0  | 0     | 0     | 0        | 0    |
| <b>% Bicycles on Road</b>    | 0%                                      | 0%    | 0%     | 0%   | 0%    | 0%       | -                                       | 0%    | 0%    | 0.2%  | 0%    | 0%       | 0.1%                 | 0%    | 0% | 0%    | 0%    | 0%       | 0%   |
| Pedestrians                  | -                                       | -     | -      | -    | -     | -        | 0                                       | -     | -     | -     | -     | -        | 0                    | -     | -  | -     | -     | -        | 0    |
| % Pedestrians                | -                                       | -     | -      | -    | -     | -        | -                                       | -     | -     | -     | -     | -        | -                    | -     | -  | -     | -     | -        | -    |
| Bicycles on Crosswalk        | -                                       | -     | -      | -    | -     | -        | 0                                       | -     | -     | -     | -     | -        | 0                    | -     | -  | -     | -     | -        | 0    |
| % Bicycles on Crosswalk      | -                                       | -     | -      | -    | -     | -        | -                                       | -     | -     | -     | -     | -        | -                    | -     | -  | -     | -     | -        | -    |

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**207637-C Washington Street (Route 53) @ Hall... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 5PM - 6 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789288, Location: 42.162592, -70.864915

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction               | Drive way Westbound |    |       |    |    |       |      |    | Goodlife Drive way Southwestbound |    |    |    |     |      |       |  | Int |
|-----------------------------|---------------------|----|-------|----|----|-------|------|----|-----------------------------------|----|----|----|-----|------|-------|--|-----|
|                             | L                   | T  | R     | HR | U  | App   | Ped* | HL | BL                                | BR | HR | U  | App | Ped* |       |  |     |
| 2020-10-08 5:00PM           | 1                   | 0  | 1     | 0  | 0  | 2     | 0    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 353   |  |     |
| 5:15PM                      | 5                   | 0  | 0     | 0  | 0  | 5     | 0    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 393   |  |     |
| 5:30PM                      | 0                   | 0  | 0     | 0  | 0  | 0     | 0    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 416   |  |     |
| 5:45PM                      | 0                   | 0  | 0     | 0  | 0  | 0     | 0    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 366   |  |     |
| <b>Total</b>                | 6                   | 0  | 1     | 0  | 0  | 7     | 0    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 1528  |  |     |
| <b>% Approach</b>           | 85.7%               | 0% | 14.3% | 0% | 0% | -     | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | -     |  |     |
| <b>% Total</b>              | 0.4%                | 0% | 0.1%  | 0% | 0% | 0.5%  | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | -     |  |     |
| <b>PHF</b>                  | 0.300               | -  | 0.250 | -  | -  | 0.350 | -    | -  | -                                 | -  | -  | -  | -   | -    | 0.920 |  |     |
| <b>Motorcycles</b>          | 0                   | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 1     |  |     |
| <b>% Motorcycles</b>        | 0%                  | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | 0.1%  |  |     |
| <b>Lights</b>               | 6                   | 0  | 1     | 0  | 0  | 7     | -    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 1510  |  |     |
| <b>% Lights</b>             | 100%                | 0% | 100%  | 0% | 0% | 100%  | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | 98.8% |  |     |
| <b>Single-Unit Trucks</b>   | 0                   | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 11    |  |     |
| <b>% Single-Unit Trucks</b> | 0%                  | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | 0.7%  |  |     |
| <b>Articulated Trucks</b>   | 0                   | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 4     |  |     |
| <b>% Articulated Trucks</b> | 0%                  | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | 0.3%  |  |     |
| <b>Buses</b>                | 0                   | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 1     |  |     |
| <b>% Buses</b>              | 0%                  | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | 0.1%  |  |     |
| <b>Bicycles on Road</b>     | 0                   | 0  | 0     | 0  | 0  | 0     | -    | 0  | 0                                 | 0  | 0  | 0  | 0   | 0    | 1     |  |     |
| <b>% Bicycles on Road</b>   | 0%                  | 0% | 0%    | 0% | 0% | 0%    | -    | 0% | 0%                                | 0% | 0% | 0% | 0%  | -    | 0.1%  |  |     |
| Pedestrians                 | -                   | -  | -     | -  | -  | -     | 0    | -  | -                                 | -  | -  | -  | -   | -    | 0     |  |     |
| % Pedestrians               | -                   | -  | -     | -  | -  | -     | -    | -  | -                                 | -  | -  | -  | -   | -    | -     |  |     |
| Bicycles on Crosswalk       | -                   | -  | -     | -  | -  | -     | 0    | -  | -                                 | -  | -  | -  | -   | -    | 0     |  |     |
| % Bicycles on Crosswalk     | -                   | -  | -     | -  | -  | -     | -    | -  | -                                 | -  | -  | -  | -   | -    | -     |  |     |

\*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

**207637-D Washington Street (Route 53) @ Wash... - TMC**

Thu Oct 8, 2020

Full Length (6 AM-10 AM, 2 PM-6 PM, 10 AM-2 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789289, Location: 42.161817, -70.863291

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Park Drive Northbound |       |       |    |       |      | Brantwood Road Southbound |       |       |      |       |       | Washington Street (Route 53) Eastbound |       |       |    |       |      | Washington Street (Route 53) Westbound |       |       |    |       |      | Int   |
|--------------------------------|----------------------------------|-------|-------|----|-------|------|---------------------------|-------|-------|------|-------|-------|--|-------|-------|----|-------|------|--|-------|-------|----|-------|------|-------|
|                                | L                                | T     | R     | U  | App   | Ped* | L                         | T     | R     | U    | App   | Ped*  | L                                      | T     | R     | U  | App   | Ped* | L                                      | T     | R     | U  | App   | Ped* |       |
| 2020-10-08 6:00AM              | 9                                | 0     | 11    | 0  | 20    | 0    | 4                         | 0     | 5     | 0    | 9     | 1     | 1                                      | 98    | 3     | 0  | 102   | 0    | 4                                      | 174   | 1     | 0  | 179   | 0    | 310   |
| 7:00AM                         | 7                                | 0     | 23    | 0  | 30    | 0    | 10                        | 0     | 11    | 0    | 21    | 2     | 5                                      | 226   | 5     | 0  | 236   | 0    | 16                                     | 404   | 4     | 0  | 424   | 0    | 711   |
| 8:00AM                         | 18                               | 0     | 13    | 0  | 31    | 0    | 3                         | 0     | 14    | 0    | 17    | 3     | 13                                     | 356   | 8     | 0  | 377   | 1    | 7                                      | 548   | 6     | 0  | 561   | 0    | 986   |
| 9:00AM                         | 11                               | 0     | 19    | 0  | 30    | 0    | 8                         | 1     | 9     | 0    | 18    | 0     | 4                                      | 411   | 10    | 0  | 425   | 0    | 14                                     | 470   | 5     | 0  | 489   | 0    | 962   |
| 2:00PM                         | 9                                | 1     | 24    | 0  | 34    | 0    | 4                         | 0     | 9     | 0    | 13    | 0     | 5                                      | 649   | 9     | 0  | 663   | 1    | 14                                     | 593   | 6     | 0  | 613   | 0    | 1323  |
| 3:00PM                         | 9                                | 0     | 22    | 0  | 31    | 2    | 7                         | 0     | 7     | 0    | 14    | 0     | 9                                      | 700   | 11    | 0  | 720   | 0    | 16                                     | 565   | 12    | 0  | 593   | 0    | 1358  |
| 4:00PM                         | 15                               | 1     | 28    | 0  | 44    | 0    | 1                         | 1     | 8     | 2    | 12    | 2     | 8                                      | 669   | 14    | 0  | 691   | 0    | 18                                     | 554   | 12    | 0  | 584   | 0    | 1331  |
| 5:00PM                         | 17                               | 0     | 25    | 0  | 42    | 0    | 7                         | 0     | 10    | 0    | 17    | 1     | 9                                      | 660   | 14    | 0  | 683   | 0    | 18                                     | 804   | 12    | 0  | 834   | 0    | 1576  |
| 2020-10-10 10:00AM             | 13                               | 0     | 28    | 0  | 41    | 0    | 9                         | 0     | 4     | 0    | 13    | 1     | 5                                      | 469   | 13    | 0  | 487   | 0    | 6                                      | 466   | 7     | 0  | 479   | 0    | 1020  |
| 11:00AM                        | 15                               | 0     | 27    | 0  | 42    | 0    | 9                         | 0     | 14    | 0    | 23    | 4     | 13                                     | 603   | 10    | 0  | 626   | 0    | 18                                     | 546   | 10    | 0  | 574   | 0    | 1265  |
| 12:00PM                        | 11                               | 0     | 28    | 0  | 39    | 0    | 8                         | 1     | 14    | 0    | 23    | 0     | 17                                     | 639   | 12    | 0  | 668   | 0    | 19                                     | 584   | 10    | 0  | 613   | 0    | 1343  |
| 1:00PM                         | 13                               | 0     | 31    | 0  | 44    | 0    | 9                         | 0     | 5     | 0    | 14    | 2     | 8                                      | 690   | 11    | 0  | 709   | 0    | 17                                     | 602   | 11    | 0  | 630   | 0    | 1397  |
| <b>Total</b>                   | 147                              | 2     | 279   | 0  | 428   | 2    | 79                        | 3     | 110   | 2    | 194   | 16    | 97                                     | 6170  | 120   | 0  | 6387  | 2    | 167                                    | 6310  | 96    | 0  | 6573  | 0    | 13582 |
| <b>% Approach</b>              | 34.3%                            | 0.5%  | 65.2% | 0% | -     | -    | 40.7%                     | 1.5%  | 56.7% | 1.0% | -     | -     | 1.5%                                   | 96.6% | 1.9%  | 0% | -     | -    | 2.5%                                   | 96.0% | 1.5%  | 0% | -     | -    | -     |
| <b>% Total</b>                 | 1.1%                             | 0%    | 2.1%  | 0% | 3.2%  | -    | 0.6%                      | 0%    | 0.8%  | 0%   | 1.4%  | -     | 0.7%                                   | 45.4% | 0.9%  | 0% | 47.0% | -    | 1.2%                                   | 46.5% | 0.7%  | 0% | 48.4% | -    | -     |
| <b>Motorcycles</b>             | 1                                | 0     | 0     | 0  | 1     | -    | 0                         | 0     | 0     | 0    | 0     | -     | 0                                      | 16    | 0     | 0  | 16    | -    | 2                                      | 13    | 0     | 0  | 15    | -    | 32    |
| <b>% Motorcycles</b>           | 0.7%                             | 0%    | 0%    | 0% | 0.2%  | -    | 0%                        | 0%    | 0%    | 0%   | 0%    | -     | 0%                                     | 0.3%  | 0%    | 0% | 0.3%  | -    | 1.2%                                   | 0.2%  | 0%    | 0% | 0.2%  | -    | 0.2%  |
| <b>Lights</b>                  | 141                              | 1     | 272   | 0  | 414   | -    | 78                        | 2     | 107   | 2    | 189   | -     | 96                                     | 6046  | 113   | 0  | 6255  | -    | 160                                    | 6177  | 94    | 0  | 6431  | -    | 13289 |
| <b>% Lights</b>                | 95.9%                            | 50.0% | 97.5% | 0% | 96.7% | -    | 98.7%                     | 66.7% | 97.3% | 100% | 97.4% | -     | 99.0%                                  | 98.0% | 94.2% | 0% | 97.9% | -    | 95.8%                                  | 97.9% | 97.9% | 0% | 97.8% | -    | 97.8% |
| <b>Single-Unit Trucks</b>      | 5                                | 1     | 2     | 0  | 8     | -    | 1                         | 1     | 2     | 0    | 4     | -     | 1                                      | 81    | 2     | 0  | 84    | -    | 3                                      | 86    | 2     | 0  | 91    | -    | 187   |
| <b>% Single-Unit Trucks</b>    | 3.4%                             | 50.0% | 0.7%  | 0% | 1.9%  | -    | 1.3%                      | 33.3% | 1.8%  | 0%   | 2.1%  | -     | 1.0%                                   | 1.3%  | 1.7%  | 0% | 1.3%  | -    | 1.8%                                   | 1.4%  | 2.1%  | 0% | 1.4%  | -    | 1.4%  |
| <b>Articulated Trucks</b>      | 0                                | 0     | 0     | 0  | 0     | -    | 0                         | 0     | 0     | 0    | 0     | -     | 0                                      | 11    | 0     | 0  | 11    | -    | 1                                      | 15    | 0     | 0  | 16    | -    | 27    |
| <b>% Articulated Trucks</b>    | 0%                               | 0%    | 0%    | 0% | 0%    | -    | 0%                        | 0%    | 0%    | 0%   | 0%    | -     | 0%                                     | 0.2%  | 0%    | 0% | 0.2%  | -    | 0.6%                                   | 0.2%  | 0%    | 0% | 0.2%  | -    | 0.2%  |
| <b>Buses</b>                   | 0                                | 0     | 5     | 0  | 5     | -    | 0                         | 0     | 0     | 0    | 0     | -     | 0                                      | 13    | 5     | 0  | 18    | -    | 1                                      | 18    | 0     | 0  | 19    | -    | 42    |
| <b>% Buses</b>                 | 0%                               | 0%    | 1.8%  | 0% | 1.2%  | -    | 0%                        | 0%    | 0%    | 0%   | 0%    | -     | 0%                                     | 0.2%  | 4.2%  | 0% | 0.3%  | -    | 0.6%                                   | 0.3%  | 0%    | 0% | 0.3%  | -    | 0.3%  |
| <b>Bicycles on Road</b>        | 0                                | 0     | 0     | 0  | 0     | -    | 0                         | 0     | 1     | 0    | 1     | -     | 0                                      | 3     | 0     | 0  | 3     | -    | 0                                      | 1     | 0     | 0  | 1     | -    | 5     |
| <b>% Bicycles on Road</b>      | 0%                               | 0%    | 0%    | 0% | 0%    | -    | 0%                        | 0%    | 0.9%  | 0%   | 0.5%  | -     | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                | -     | -     | -  | -     | 2    | -                         | -     | -     | -    | -     | 13    | -                                      | -     | -     | -  | -     | 2    | -                                      | -     | -     | -  | -     | 0    | -     |
| <b>% Pedestrians</b>           | -                                | -     | -     | -  | -     | 100% | -                         | -     | -     | -    | -     | 81.3% | -                                      | -     | -     | -  | -     | 100% | -                                      | -     | -     | -  | -     | -    | -     |
| <b>Bicycles on Crosswalk</b>   | -                                | -     | -     | -  | -     | 0    | -                         | -     | -     | -    | -     | 3     | -                                      | -     | -     | -  | -     | 0    | -                                      | -     | -     | -  | -     | 0    | -     |
| <b>% Bicycles on Crosswalk</b> | -                                | -     | -     | -  | -     | 0%   | -                         | -     | -     | -    | -     | 18.8% | -                                      | -     | -     | -  | -     | 0%   | -                                      | -     | -     | -  | -     | -    | -     |

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

**207637-D Washington Street (Route 53) @ Wash... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:15AM - 9:15 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789289, Location: 42.161817, -70.863291

Provided by: Precision Data Industries,  
 LLC (PDI)  
 46 Morton Street,  
 Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Park Drive Northbound |    |       |    |          | Brantwood Road Southbound |    |       |    |          | Washington Street (Route 53) Eastbound |       |       |    |          | Washington Street (Route 53) Westbound |       |       |    |          | Int   |
|--------------------------------|----------------------------------|----|-------|----|----------|---------------------------|----|-------|----|----------|--|-------|-------|----|----------|--|-------|-------|----|----------|-------|
|                                | L                                | T  | R     | U  | App Ped* | L                         | T  | R     | U  | App Ped* | L                                      | T     | R     | U  | App Ped* | L                                      | T     | R     | U  | App Ped* |       |
| Time                           |                                  |    |       |    |          |                           |    |       |    |          |  |       |       |    |          |  |       |       |    |          |       |
| 2020-10-08 8:15AM              | 5                                | 0  | 2     | 0  | 7 0      | 1                         | 0  | 1     | 0  | 2 0      | 2                                      | 83    | 2     | 0  | 87 0     | 2                                      | 145   | 4     | 0  | 151 0    | 247   |
| 8:30AM                         | 6                                | 0  | 3     | 0  | 9 0      | 1                         | 0  | 3     | 0  | 4 3      | 5                                      | 74    | 2     | 0  | 81 0     | 2                                      | 129   | 0     | 0  | 131 0    | 225   |
| 8:45AM                         | 3                                | 0  | 7     | 0  | 10 0     | 1                         | 0  | 6     | 0  | 7 0      | 6                                      | 132   | 0     | 0  | 138 0    | 2                                      | 157   | 1     | 0  | 160 0    | 315   |
| 9:00AM                         | 1                                | 0  | 7     | 0  | 8 0      | 3                         | 0  | 3     | 0  | 6 0      | 2                                      | 113   | 2     | 0  | 117 0    | 2                                      | 138   | 0     | 0  | 140 0    | 271   |
| <b>Total</b>                   | 15                               | 0  | 19    | 0  | 34 0     | 6                         | 0  | 13    | 0  | 19 3     | 15                                     | 402   | 6     | 0  | 423 0    | 8                                      | 569   | 5     | 0  | 582 0    | 1058  |
| <b>% Approach</b>              | 44.1%                            | 0% | 55.9% | 0% | -        | 31.6%                     | 0% | 68.4% | 0% | -        | 3.5%                                   | 95.0% | 1.4%  | 0% | -        | 1.4%                                   | 97.8% | 0.9%  | 0% | -        | -     |
| <b>% Total</b>                 | 1.4%                             | 0% | 1.8%  | 0% | 3.2%     | 0.6%                      | 0% | 1.2%  | 0% | 1.8%     | 1.4%                                   | 38.0% | 0.6%  | 0% | 40.0%    | 0.8%                                   | 53.8% | 0.5%  | 0% | 55.0%    | -     |
| <b>PHF</b>                     | 0.625                            | -  | 0.679 | -  | 0.850    | 0.500                     | -  | 0.542 | -  | 0.679    | 0.625                                  | 0.761 | 0.750 | -  | 0.766    | 1.000                                  | 0.906 | 0.313 | -  | 0.909    | 0.840 |
| <b>Motorcycles</b>             | 0                                | 0  | 0     | 0  | 0        | 0                         | 0  | 0     | 0  | 0        | 0                                      | 1     | 0     | 0  | 1        | 0                                      | 1     | 0     | 0  | 1        | 2     |
| <b>% Motorcycles</b>           | 0%                               | 0% | 0%    | 0% | 0%       | 0%                        | 0% | 0%    | 0% | 0%       | 0%                                     | 0.2%  | 0%    | 0% | 0.2%     | 0%                                     | 0.2%  | 0%    | 0% | 0.2%     | 0.2%  |
| <b>Lights</b>                  | 14                               | 0  | 19    | 0  | 33       | 6                         | 0  | 13    | 0  | 19       | 15                                     | 389   | 5     | 0  | 409      | 7                                      | 545   | 5     | 0  | 557      | 1018  |
| <b>% Lights</b>                | 93.3%                            | 0% | 100%  | 0% | 97.1%    | 100%                      | 0% | 100%  | 0% | 100%     | 100%                                   | 96.8% | 83.3% | 0% | 96.7%    | 87.5%                                  | 95.8% | 100%  | 0% | 95.7%    | 96.2% |
| <b>Single-Unit Trucks</b>      | 1                                | 0  | 0     | 0  | 1        | 0                         | 0  | 0     | 0  | 0        | 0                                      | 10    | 0     | 0  | 10       | 1                                      | 11    | 0     | 0  | 12       | 23    |
| <b>% Single-Unit Trucks</b>    | 6.7%                             | 0% | 0%    | 0% | 2.9%     | 0%                        | 0% | 0%    | 0% | 0%       | 0%                                     | 2.5%  | 0%    | 0% | 2.4%     | 12.5%                                  | 1.9%  | 0%    | 0% | 2.1%     | 2.2%  |
| <b>Articulated Trucks</b>      | 0                                | 0  | 0     | 0  | 0        | 0                         | 0  | 0     | 0  | 0        | 0                                      | 0     | 0     | 0  | 0        | 0                                      | 4     | 0     | 0  | 4        | 4     |
| <b>% Articulated Trucks</b>    | 0%                               | 0% | 0%    | 0% | 0%       | 0%                        | 0% | 0%    | 0% | 0%       | 0%                                     | 0%    | 0%    | 0% | 0%       | 0%                                     | 0.7%  | 0%    | 0% | 0.7%     | 0.4%  |
| <b>Buses</b>                   | 0                                | 0  | 0     | 0  | 0        | 0                         | 0  | 0     | 0  | 0        | 0                                      | 2     | 1     | 0  | 3        | 0                                      | 8     | 0     | 0  | 8        | 11    |
| <b>% Buses</b>                 | 0%                               | 0% | 0%    | 0% | 0%       | 0%                        | 0% | 0%    | 0% | 0%       | 0%                                     | 0.5%  | 16.7% | 0% | 0.7%     | 0%                                     | 1.4%  | 0%    | 0% | 1.4%     | 1.0%  |
| <b>Bicycles on Road</b>        | 0                                | 0  | 0     | 0  | 0        | 0                         | 0  | 0     | 0  | 0        | 0                                      | 0     | 0     | 0  | 0        | 0                                      | 0     | 0     | 0  | 0        | 0     |
| <b>% Bicycles on Road</b>      | 0%                               | 0% | 0%    | 0% | 0%       | 0%                        | 0% | 0%    | 0% | 0%       | 0%                                     | 0%    | 0%    | 0% | 0%       | 0%                                     | 0%    | 0%    | 0% | 0%       | 0%    |
| <b>Pedestrians</b>             | -                                | -  | -     | -  | 0        | -                         | -  | -     | -  | 3        | -                                      | -     | -     | -  | 0        | -                                      | -     | -     | -  | 0        | -     |
| <b>% Pedestrians</b>           | -                                | -  | -     | -  | -        | -                         | -  | -     | -  | 100%     | -                                      | -     | -     | -  | -        | -                                      | -     | -     | -  | -        | -     |
| <b>Bicycles on Crosswalk</b>   | -                                | -  | -     | -  | 0        | -                         | -  | -     | -  | 0        | -                                      | -     | -     | -  | 0        | -                                      | -     | -     | -  | 0        | -     |
| <b>% Bicycles on Crosswalk</b> | -                                | -  | -     | -  | -        | -                         | -  | -     | -  | 0%       | -                                      | -     | -     | -  | -        | -                                      | -     | -     | -  | -        | -     |

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

**207637-D Washington Street (Route 53) @ Wash... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 5PM - 6 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789289, Location: 42.161817, -70.863291

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction               | Washington Park Drive Northbound |    |       |    |              | Brantwood Road Southbound |       |    |       |          | Washington Street (Route 53) Eastbound |      |       |       |          | Washington Street (Route 53) Westbound |              |   |       |          |       |    |              |   |             |
|-----------------------------|----------------------------------|----|-------|----|--------------|---------------------------|-------|----|-------|----------|--|------|-------|-------|----------|--|--------------|---|-------|----------|-------|----|--------------|---|-------------|
| Time                        | L                                | T  | R     | U  | App Ped*     | L                         | T     | R  | U     | App Ped* | L                                      | T    | R     | U     | App Ped* | L                                      | T            | R | U     | App Ped* | Int   |    |              |   |             |
| 2020-10-08 5:00PM           | 4                                | 0  | 6     | 0  | <b>10</b>    | 0                         | 1     | 0  | 2     | 0        | <b>3</b>                               | 1    | 2     | 199   | 4        | 0                                      | <b>205</b>   | 0 | 6     | 139      | 2     | 0  | <b>147</b>   | 0 | <b>365</b>  |
| 5:15PM                      | 8                                | 0  | 10    | 0  | <b>18</b>    | 0                         | 5     | 0  | 4     | 0        | <b>9</b>                               | 0    | 2     | 157   | 6        | 0                                      | <b>165</b>   | 0 | 2     | 215      | 3     | 0  | <b>220</b>   | 0 | <b>412</b>  |
| 5:30PM                      | 3                                | 0  | 4     | 0  | <b>7</b>     | 0                         | 0     | 0  | 0     | 0        | <b>0</b>                               | 0    | 3     | 164   | 1        | 0                                      | <b>168</b>   | 0 | 7     | 237      | 5     | 0  | <b>249</b>   | 0 | <b>424</b>  |
| 5:45PM                      | 2                                | 0  | 5     | 0  | <b>7</b>     | 0                         | 1     | 0  | 4     | 0        | <b>5</b>                               | 0    | 2     | 140   | 3        | 0                                      | <b>145</b>   | 0 | 3     | 213      | 2     | 0  | <b>218</b>   | 0 | <b>375</b>  |
| <b>Total</b>                | 17                               | 0  | 25    | 0  | <b>42</b>    | 0                         | 7     | 0  | 10    | 0        | <b>17</b>                              | 1    | 9     | 660   | 14       | 0                                      | <b>683</b>   | 0 | 18    | 804      | 12    | 0  | <b>834</b>   | 0 | <b>1576</b> |
| <b>% Approach</b>           | 40.5%                            | 0% | 59.5% | 0% | -            | -                         | 41.2% | 0% | 58.8% | 0%       | -                                      | -    | 1.3%  | 96.6% | 2.0%     | 0%                                     | -            | - | 2.2%  | 96.4%    | 1.4%  | 0% | -            | - | -           |
| <b>% Total</b>              | 1.1%                             | 0% | 1.6%  | 0% | <b>2.7%</b>  | -                         | 0.4%  | 0% | 0.6%  | 0%       | <b>1.1%</b>                            | -    | 0.6%  | 41.9% | 0.9%     | 0%                                     | <b>43.3%</b> | - | 1.1%  | 51.0%    | 0.8%  | 0% | <b>52.9%</b> | - | -           |
| <b>PHF</b>                  | 0.531                            | -  | 0.625 | -  | <b>0.583</b> | -                         | 0.350 | -  | 0.625 | -        | <b>0.472</b>                           | -    | 0.750 | 0.828 | 0.583    | -                                      | <b>0.832</b> | - | 0.643 | 0.848    | 0.600 | -  | <b>0.837</b> | - | 0.931       |
| <b>Motorcycles</b>          | 0                                | 0  | 0     | 0  | <b>0</b>     | -                         | 0     | 0  | 0     | 0        | <b>0</b>                               | -    | 0     | 1     | 0        | 0                                      | <b>1</b>     | - | 0     | 0        | 0     | 0  | <b>0</b>     | - | 1           |
| <b>% Motorcycles</b>        | 0%                               | 0% | 0%    | 0% | <b>0%</b>    | -                         | 0%    | 0% | 0%    | 0%       | <b>0%</b>                              | -    | 0%    | 0.2%  | 0%       | 0%                                     | <b>0.1%</b>  | - | 0%    | 0%       | 0%    | 0% | <b>0%</b>    | - | 0.1%        |
| <b>Lights</b>               | 17                               | 0  | 25    | 0  | <b>42</b>    | -                         | 7     | 0  | 10    | 0        | <b>17</b>                              | -    | 9     | 648   | 14       | 0                                      | <b>671</b>   | - | 18    | 803      | 12    | 0  | <b>833</b>   | - | 1563        |
| <b>% Lights</b>             | 100%                             | 0% | 100%  | 0% | <b>100%</b>  | -                         | 100%  | 0% | 100%  | 0%       | <b>100%</b>                            | -    | 100%  | 98.2% | 100%     | 0%                                     | <b>98.2%</b> | - | 100%  | 99.9%    | 100%  | 0% | <b>99.9%</b> | - | 99.2%       |
| <b>Single-Unit Trucks</b>   | 0                                | 0  | 0     | 0  | <b>0</b>     | -                         | 0     | 0  | 0     | 0        | <b>0</b>                               | -    | 0     | 9     | 0        | 0                                      | <b>9</b>     | - | 0     | 1        | 0     | 0  | <b>1</b>     | - | 10          |
| <b>% Single-Unit Trucks</b> | 0%                               | 0% | 0%    | 0% | <b>0%</b>    | -                         | 0%    | 0% | 0%    | 0%       | <b>0%</b>                              | -    | 0%    | 1.4%  | 0%       | 0%                                     | <b>1.3%</b>  | - | 0%    | 0.1%     | 0%    | 0% | <b>0.1%</b>  | - | 0.6%        |
| <b>Articulated Trucks</b>   | 0                                | 0  | 0     | 0  | <b>0</b>     | -                         | 0     | 0  | 0     | 0        | <b>0</b>                               | -    | 0     | 1     | 0        | 0                                      | <b>1</b>     | - | 0     | 0        | 0     | 0  | <b>0</b>     | - | 1           |
| <b>% Articulated Trucks</b> | 0%                               | 0% | 0%    | 0% | <b>0%</b>    | -                         | 0%    | 0% | 0%    | 0%       | <b>0%</b>                              | -    | 0%    | 0.2%  | 0%       | 0%                                     | <b>0.1%</b>  | - | 0%    | 0%       | 0%    | 0% | <b>0%</b>    | - | 0.1%        |
| <b>Buses</b>                | 0                                | 0  | 0     | 0  | <b>0</b>     | -                         | 0     | 0  | 0     | 0        | <b>0</b>                               | -    | 0     | 0     | 0        | 0                                      | <b>0</b>     | - | 0     | 0        | 0     | 0  | <b>0</b>     | - | 0           |
| <b>% Buses</b>              | 0%                               | 0% | 0%    | 0% | <b>0%</b>    | -                         | 0%    | 0% | 0%    | 0%       | <b>0%</b>                              | -    | 0%    | 0%    | 0%       | 0%                                     | <b>0%</b>    | - | 0%    | 0%       | 0%    | 0% | <b>0%</b>    | - | 0%          |
| <b>Bicycles on Road</b>     | 0                                | 0  | 0     | 0  | <b>0</b>     | -                         | 0     | 0  | 0     | 0        | <b>0</b>                               | -    | 0     | 1     | 0        | 0                                      | <b>1</b>     | - | 0     | 0        | 0     | 0  | <b>0</b>     | - | 1           |
| <b>% Bicycles on Road</b>   | 0%                               | 0% | 0%    | 0% | <b>0%</b>    | -                         | 0%    | 0% | 0%    | 0%       | <b>0%</b>                              | -    | 0%    | 0.2%  | 0%       | 0%                                     | <b>0.1%</b>  | - | 0%    | 0%       | 0%    | 0% | <b>0%</b>    | - | 0.1%        |
| Pedestrians                 | -                                | -  | -     | -  | -            | 0                         | -     | -  | -     | -        | -                                      | 1    | -     | -     | -        | -                                      | -            | 0 | -     | -        | -     | -  | -            | 0 | -           |
| % Pedestrians               | -                                | -  | -     | -  | -            | -                         | -     | -  | -     | -        | -                                      | 100% | -     | -     | -        | -                                      | -            | - | -     | -        | -     | -  | -            | - | -           |
| Bicycles on Crosswalk       | -                                | -  | -     | -  | -            | 0                         | -     | -  | -     | -        | -                                      | 0    | -     | -     | -        | -                                      | -            | 0 | -     | -        | -     | -  | -            | 0 | -           |
| % Bicycles on Crosswalk     | -                                | -  | -     | -  | -            | -                         | -     | -  | -     | -        | -                                      | 0%   | -     | -     | -        | -                                      | -            | - | -     | -        | -     | -  | -            | - | -           |

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

**207637-E Washington Street (Route 53) @ Jaco... - TMC**

Thu Oct 8, 2020

Full Length (6 AM-10 AM, 2 PM-6 PM, 10 AM-2 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789290, Location: 42.159485, -70.853803

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |    |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | Stop & Shop Driveway Eastbound |      |       |    |       |       | Jacobs Trail Westbound |       |       |    |       |       | Int   |
|--------------------------------|---|-------|-------|----|-------|------|---|-------|-------|----|-------|------|--------------------------------|------|-------|----|-------|-------|------------------------|-------|-------|----|-------|-------|-------|
|                                | L                                       | T     | R     | U  | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                              | T    | R     | U  | App   | Ped*  | L                      | T     | R     | U  | App   | Ped*  |       |
| 2020-10-08 6:00AM              | 21                                      | 196   | 1     | 0  | 218   | 0    | 1                                       | 110   | 8     | 0  | 119   | 0    | 8                              | 0    | 4     | 0  | 12    | 0     | 10                     | 0     | 5     | 0  | 15    | 0     | 364   |
| 7:00AM                         | 26                                      | 447   | 8     | 0  | 481   | 0    | 4                                       | 252   | 14    | 0  | 270   | 0    | 16                             | 1    | 18    | 0  | 35    | 0     | 13                     | 3     | 11    | 0  | 27    | 0     | 813   |
| 8:00AM                         | 33                                      | 625   | 11    | 0  | 669   | 3    | 12                                      | 357   | 25    | 0  | 394   | 0    | 31                             | 4    | 31    | 0  | 66    | 1     | 21                     | 5     | 9     | 0  | 35    | 4     | 1164  |
| 9:00AM                         | 34                                      | 529   | 8     | 0  | 571   | 0    | 2                                       | 430   | 36    | 0  | 468   | 0    | 28                             | 0    | 35    | 0  | 63    | 1     | 13                     | 1     | 7     | 0  | 21    | 2     | 1123  |
| 2:00PM                         | 65                                      | 608   | 19    | 0  | 692   | 2    | 6                                       | 661   | 72    | 0  | 739   | 0    | 53                             | 3    | 81    | 0  | 137   | 0     | 17                     | 2     | 10    | 0  | 29    | 0     | 1597  |
| 3:00PM                         | 66                                      | 609   | 22    | 0  | 697   | 1    | 5                                       | 723   | 71    | 0  | 799   | 0    | 63                             | 4    | 78    | 0  | 145   | 1     | 11                     | 5     | 10    | 0  | 26    | 1     | 1667  |
| 4:00PM                         | 79                                      | 607   | 17    | 0  | 703   | 1    | 7                                       | 717   | 91    | 0  | 815   | 0    | 64                             | 5    | 96    | 0  | 165   | 1     | 14                     | 3     | 9     | 0  | 26    | 1     | 1709  |
| 5:00PM                         | 56                                      | 850   | 18    | 0  | 924   | 0    | 11                                      | 670   | 76    | 0  | 757   | 0    | 48                             | 2    | 61    | 0  | 111   | 0     | 7                      | 3     | 6     | 0  | 16    | 0     | 1808  |
| 2020-10-10 10:00AM             | 70                                      | 490   | 14    | 0  | 574   | 0    | 9                                       | 496   | 49    | 0  | 554   | 0    | 50                             | 4    | 51    | 0  | 105   | 0     | 14                     | 4     | 6     | 0  | 24    | 1     | 1257  |
| 11:00AM                        | 67                                      | 580   | 13    | 0  | 660   | 0    | 13                                      | 607   | 72    | 0  | 692   | 0    | 50                             | 4    | 63    | 0  | 117   | 0     | 24                     | 4     | 11    | 0  | 39    | 8     | 1508  |
| 12:00PM                        | 69                                      | 593   | 19    | 0  | 681   | 2    | 11                                      | 683   | 44    | 0  | 738   | 0    | 49                             | 7    | 81    | 0  | 137   | 0     | 16                     | 2     | 13    | 0  | 31    | 3     | 1587  |
| 1:00PM                         | 67                                      | 625   | 16    | 0  | 708   | 1    | 7                                       | 711   | 63    | 0  | 781   | 0    | 51                             | 4    | 54    | 0  | 109   | 0     | 14                     | 5     | 12    | 0  | 31    | 0     | 1629  |
| <b>Total</b>                   | 653                                     | 6759  | 166   | 0  | 7578  | 10   | 88                                      | 6417  | 621   | 0  | 7126  | 0    | 511                            | 38   | 653   | 0  | 1202  | 4     | 174                    | 37    | 109   | 0  | 320   | 20    | 16226 |
| <b>% Approach</b>              | 8.6%                                    | 89.2% | 2.2%  | 0% | -     | -    | 1.2%                                    | 90.1% | 8.7%  | 0% | -     | -    | 42.5%                          | 3.2% | 54.3% | 0% | -     | -     | 54.4%                  | 11.6% | 34.1% | 0% | -     | -     | -     |
| <b>% Total</b>                 | 4.0%                                    | 41.7% | 1.0%  | 0% | 46.7% | -    | 0.5%                                    | 39.5% | 3.8%  | 0% | 43.9% | -    | 3.1%                           | 0.2% | 4.0%  | 0% | 7.4%  | -     | 1.1%                   | 0.2%  | 0.7%  | 0% | 2.0%  | -     | -     |
| <b>Motorcycles</b>             | 0                                       | 10    | 0     | 0  | 10    | -    | 0                                       | 12    | 0     | 0  | 12    | -    | 1                              | 0    | 0     | 0  | 1     | -     | 0                      | 1     | 0     | 0  | 1     | -     | 24    |
| <b>% Motorcycles</b>           | 0%                                      | 0.1%  | 0%    | 0% | 0.1%  | -    | 0%                                      | 0.2%  | 0%    | 0% | 0.2%  | -    | 0.2%                           | 0%   | 0%    | 0% | 0.1%  | -     | 0%                     | 2.7%  | 0%    | 0% | 0.3%  | -     | 0.1%  |
| <b>Lights</b>                  | 644                                     | 6633  | 162   | 0  | 7439  | -    | 84                                      | 6292  | 615   | 0  | 6991  | -    | 501                            | 38   | 644   | 0  | 1183  | -     | 171                    | 36    | 102   | 0  | 309   | -     | 15922 |
| <b>% Lights</b>                | 98.6%                                   | 98.1% | 97.6% | 0% | 98.2% | -    | 95.5%                                   | 98.1% | 99.0% | 0% | 98.1% | -    | 98.0%                          | 100% | 98.6% | 0% | 98.4% | -     | 98.3%                  | 97.3% | 93.6% | 0% | 96.6% | -     | 98.1% |
| <b>Single-Unit Trucks</b>      | 8                                       | 79    | 4     | 0  | 91    | -    | 4                                       | 76    | 3     | 0  | 83    | -    | 8                              | 0    | 7     | 0  | 15    | -     | 3                      | 0     | 5     | 0  | 8     | -     | 197   |
| <b>% Single-Unit Trucks</b>    | 1.2%                                    | 1.2%  | 2.4%  | 0% | 1.2%  | -    | 4.5%                                    | 1.2%  | 0.5%  | 0% | 1.2%  | -    | 1.6%                           | 0%   | 1.1%  | 0% | 1.2%  | -     | 1.7%                   | 0%    | 4.6%  | 0% | 2.5%  | -     | 1.2%  |
| <b>Articulated Trucks</b>      | 1                                       | 15    | 0     | 0  | 16    | -    | 0                                       | 12    | 3     | 0  | 15    | -    | 1                              | 0    | 2     | 0  | 3     | -     | 0                      | 0     | 0     | 0  | 0     | -     | 34    |
| <b>% Articulated Trucks</b>    | 0.2%                                    | 0.2%  | 0%    | 0% | 0.2%  | -    | 0%                                      | 0.2%  | 0.5%  | 0% | 0.2%  | -    | 0.2%                           | 0%   | 0.3%  | 0% | 0.2%  | -     | 0%                     | 0%    | 0%    | 0% | 0%    | -     | 0.2%  |
| <b>Buses</b>                   | 0                                       | 19    | 0     | 0  | 19    | -    | 0                                       | 21    | 0     | 0  | 21    | -    | 0                              | 0    | 0     | 0  | 0     | -     | 0                      | 0     | 2     | 0  | 2     | -     | 42    |
| <b>% Buses</b>                 | 0%                                      | 0.3%  | 0%    | 0% | 0.3%  | -    | 0%                                      | 0.3%  | 0%    | 0% | 0.3%  | -    | 0%                             | 0%   | 0%    | 0% | 0%    | -     | 0%                     | 0%    | 1.8%  | 0% | 0.6%  | -     | 0.3%  |
| <b>Bicycles on Road</b>        | 0                                       | 3     | 0     | 0  | 3     | -    | 0                                       | 4     | 0     | 0  | 4     | -    | 0                              | 0    | 0     | 0  | 0     | -     | 0                      | 0     | 0     | 0  | 0     | -     | 7     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0.1%  | 0%    | 0% | 0.1%  | -    | 0%                             | 0%   | 0%    | 0% | 0%    | -     | 0%                     | 0%    | 0%    | 0% | 0%    | -     | 0%    |
| <b>Pedestrians</b>             | -                                       | -     | -     | -  | -     | 10   | -                                       | -     | -     | -  | -     | 0    | -                              | -    | -     | -  | -     | 3     | -                      | -     | -     | -  | -     | 16    |       |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -  | -     | 100% | -                                       | -     | -     | -  | -     | -    | -                              | -    | -     | -  | -     | 75.0% | -                      | -     | -     | -  | -     | 80.0% |       |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                              | -    | -     | -  | -     | 1     | -                      | -     | -     | -  | -     | 4     |       |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -  | -     | 0%   | -                                       | -     | -     | -  | -     | -    | -                              | -    | -     | -  | -     | 25.0% | -                      | -     | -     | -  | -     | 20.0% |       |

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

**207637-E Washington Street (Route 53) @ Jaco... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:45AM - 9:45 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789290, Location: 42.159485, -70.853803

Provided by: Precision Data Industries,  
 LLC (PDI)  
 46 Morton Street,  
 Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |    |          | Washington Street (Route 53) Southbound |       |       |       |          | Stop & Shop Drive way Eastbound |   |       |       |          | Jacobs Trail Westbound |       |   |       |          | Int   |    |       |      |       |
|--------------------------------|---|-------|-------|----|----------|---|-------|-------|-------|----------|---------------------------------|---|-------|-------|----------|------------------------|-------|---|-------|----------|-------|----|-------|------|-------|
|                                | L                                       | T     | R     | U  | App Ped* | L                                       | T     | R     | U     | App Ped* | L                               | T | R     | U     | App Ped* | L                      | T     | R | U     | App Ped* |       |    |       |      |       |
| 2020-10-08 8:45AM              | 9                                       | 181   | 4     | 0  | 194      | 0                                       | 6     | 125   | 5     | 0        | 136                             | 0 | 10    | 1     | 9        | 0                      | 20    | 0 | 2     | 0        | 4     | 0  | 6     | 1    | 356   |
| 9:00AM                         | 13                                      | 148   | 0     | 0  | 161      | 0                                       | 1     | 108   | 10    | 0        | 119                             | 0 | 9     | 0     | 11       | 0                      | 20    | 0 | 6     | 0        | 2     | 0  | 8     | 0    | 308   |
| 9:15AM                         | 6                                       | 121   | 1     | 0  | 128      | 0                                       | 0     | 111   | 8     | 0        | 119                             | 0 | 8     | 0     | 7        | 0                      | 15    | 0 | 3     | 0        | 3     | 0  | 6     | 0    | 268   |
| 9:30AM                         | 6                                       | 136   | 5     | 0  | 147      | 0                                       | 0     | 107   | 7     | 0        | 114                             | 0 | 8     | 0     | 12       | 0                      | 20    | 0 | 3     | 0        | 2     | 0  | 5     | 2    | 286   |
| <b>Total</b>                   | 34                                      | 586   | 10    | 0  | 630      | 0                                       | 7     | 451   | 30    | 0        | 488                             | 0 | 35    | 1     | 39       | 0                      | 75    | 0 | 14    | 0        | 11    | 0  | 25    | 3    | 1218  |
| <b>% Approach</b>              | 5.4%                                    | 93.0% | 1.6%  | 0% | -        | -                                       | 1.4%  | 92.4% | 6.1%  | 0%       | -                               | - | 46.7% | 1.3%  | 52.0%    | 0%                     | -     | - | 56.0% | 0%       | 44.0% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 2.8%                                    | 48.1% | 0.8%  | 0% | 51.7%    | -                                       | 0.6%  | 37.0% | 2.5%  | 0%       | 40.1%                           | - | 2.9%  | 0.1%  | 3.2%     | 0%                     | 6.2%  | - | 1.1%  | 0%       | 0.9%  | 0% | 2.1%  | -    | -     |
| <b>PHF</b>                     | 0.654                                   | 0.809 | 0.500 | -  | 0.812    | -                                       | 0.292 | 0.900 | 0.750 | -        | 0.895                           | - | 0.875 | 0.250 | 0.813    | -                      | 0.938 | - | 0.583 | -        | 0.688 | -  | 0.781 | -    | 0.855 |
| <b>Motorcycles</b>             | 0                                       | 1     | 0     | 0  | 1        | -                                       | 0     | 0     | 0     | 0        | 0                               | - | 0     | 0     | 0        | 0                      | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 1     |
| <b>% Motorcycles</b>           | 0%                                      | 0.2%  | 0%    | 0% | 0.2%     | -                                       | 0%    | 0%    | 0%    | 0%       | 0%                              | - | 0%    | 0%    | 0%       | 0%                     | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Lights</b>                  | 33                                      | 562   | 10    | 0  | 605      | -                                       | 7     | 428   | 30    | 0        | 465                             | - | 32    | 1     | 38       | 0                      | 71    | - | 14    | 0        | 10    | 0  | 24    | -    | 1165  |
| <b>% Lights</b>                | 97.1%                                   | 95.9% | 100%  | 0% | 96.0%    | -                                       | 100%  | 94.9% | 100%  | 0%       | 95.3%                           | - | 91.4% | 100%  | 97.4%    | 0%                     | 94.7% | - | 100%  | 0%       | 90.9% | 0% | 96.0% | -    | 95.6% |
| <b>Single-Unit Trucks</b>      | 1                                       | 17    | 0     | 0  | 18       | -                                       | 0     | 17    | 0     | 0        | 17                              | - | 3     | 0     | 1        | 0                      | 4     | - | 0     | 0        | 1     | 0  | 1     | -    | 40    |
| <b>% Single-Unit Trucks</b>    | 2.9%                                    | 2.9%  | 0%    | 0% | 2.9%     | -                                       | 0%    | 3.8%  | 0%    | 0%       | 3.5%                            | - | 8.6%  | 0%    | 2.6%     | 0%                     | 5.3%  | - | 0%    | 0%       | 9.1%  | 0% | 4.0%  | -    | 3.3%  |
| <b>Articulate d Trucks</b>     | 0                                       | 6     | 0     | 0  | 6        | -                                       | 0     | 2     | 0     | 0        | 2                               | - | 0     | 0     | 0        | 0                      | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 8     |
| <b>% Articulate d Trucks</b>   | 0%                                      | 1.0%  | 0%    | 0% | 1.0%     | -                                       | 0%    | 0.4%  | 0%    | 0%       | 0.4%                            | - | 0%    | 0%    | 0%       | 0%                     | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.7%  |
| <b>Buses</b>                   | 0                                       | 0     | 0     | 0  | 0        | -                                       | 0     | 3     | 0     | 0        | 3                               | - | 0     | 0     | 0        | 0                      | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 3     |
| <b>% Buses</b>                 | 0%                                      | 0%    | 0%    | 0% | 0%       | -                                       | 0%    | 0.7%  | 0%    | 0%       | 0.6%                            | - | 0%    | 0%    | 0%       | 0%                     | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.2%  |
| <b>Bicycles on Road</b>        | 0                                       | 0     | 0     | 0  | 0        | -                                       | 0     | 1     | 0     | 0        | 1                               | - | 0     | 0     | 0        | 0                      | 0     | - | 0     | 0        | 0     | 0  | 0     | -    | 1     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0%    | 0% | 0%       | -                                       | 0%    | 0.2%  | 0%    | 0%       | 0.2%                            | - | 0%    | 0%    | 0%       | 0%                     | 0%    | - | 0%    | 0%       | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Pedestrians</b>             | -                                       | -     | -     | -  | -        | 0                                       | -     | -     | -     | -        | -                               | 0 | -     | -     | -        | -                      | -     | 0 | -     | -        | -     | -  | -     | 3    |       |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -  | -        | -                                       | -     | -     | -     | -        | -                               | - | -     | -     | -        | -                      | -     | - | -     | -        | -     | -  | -     | 100% |       |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -  | -        | 0                                       | -     | -     | -     | -        | -                               | 0 | -     | -     | -        | -                      | -     | 0 | -     | -        | -     | -  | -     | 0    |       |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -  | -        | -                                       | -     | -     | -     | -        | -                               | - | -     | -     | -        | -                      | -     | - | -     | -        | -     | -  | -     | 0%   |       |

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



**207637-E Washington Street (Route 53) @ Jaco... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 5PM - 6 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789290, Location: 42.159485, -70.853803

Provided by: Precision Data Industries,  
 LLC (PDI)  
 46 Morton Street,  
 Framingham, MA, MA, 01702, US

| Leg Direction                | Washington Street (Route 53) Northbound |       |       |    |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | Stop & Shop Driveway Eastbound |       |       |    |       |      | Jacobs Trail Westbound |       |       |    |       |      | Int         |
|------------------------------|---|-------|-------|----|-------|------|---|-------|-------|----|-------|------|--------------------------------|-------|-------|----|-------|------|------------------------|-------|-------|----|-------|------|-------------|
|                              | L                                       | T     | R     | U  | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                              | T     | R     | U  | App   | Ped* | L                      | T     | R     | U  | App   | Ped* |             |
| 2020-10-08 5:00PM            | 5                                       | 144   | 3     | 0  | 152   | 0    | 3                                       | 199   | 24    | 0  | 226   | 0    | 11                             | 0     | 16    | 0  | 27    | 0    | 2                      | 0     | 1     | 0  | 3     | 0    | <b>408</b>  |
| 5:15PM                       | 15                                      | 229   | 8     | 0  | 252   | 0    | 1                                       | 172   | 16    | 0  | 189   | 0    | 10                             | 1     | 13    | 0  | 24    | 0    | 2                      | 1     | 0     | 0  | 3     | 0    | <b>468</b>  |
| 5:30PM                       | 17                                      | 252   | 5     | 0  | 274   | 0    | 4                                       | 157   | 17    | 0  | 178   | 0    | 16                             | 0     | 14    | 0  | 30    | 0    | 2                      | 1     | 3     | 0  | 6     | 0    | <b>488</b>  |
| 5:45PM                       | 19                                      | 225   | 2     | 0  | 246   | 0    | 3                                       | 142   | 19    | 0  | 164   | 0    | 11                             | 1     | 18    | 0  | 30    | 0    | 1                      | 1     | 2     | 0  | 4     | 0    | <b>444</b>  |
| <b>Total</b>                 | 56                                      | 850   | 18    | 0  | 924   | 0    | 11                                      | 670   | 76    | 0  | 757   | 0    | 48                             | 2     | 61    | 0  | 111   | 0    | 7                      | 3     | 6     | 0  | 16    | 0    | <b>1808</b> |
| <b>% Approach</b>            | 6.1%                                    | 92.0% | 1.9%  | 0% | -     | -    | 1.5%                                    | 88.5% | 10.0% | 0% | -     | -    | 43.2%                          | 1.8%  | 55.0% | 0% | -     | -    | 43.8%                  | 18.8% | 37.5% | 0% | -     | -    | -           |
| <b>% Total</b>               | 3.1%                                    | 47.0% | 1.0%  | 0% | 51.1% | -    | 0.6%                                    | 37.1% | 4.2%  | 0% | 41.9% | -    | 2.7%                           | 0.1%  | 3.4%  | 0% | 6.1%  | -    | 0.4%                   | 0.2%  | 0.3%  | 0% | 0.9%  | -    | -           |
| <b>PHF</b>                   | 0.737                                   | 0.843 | 0.563 | -  | 0.843 | -    | 0.688                                   | 0.839 | 0.792 | -  | 0.835 | -    | 0.750                          | 0.500 | 0.847 | -  | 0.925 | -    | 0.875                  | 0.750 | 0.500 | -  | 0.667 | -    | 0.927       |
| <b>Motorcycles</b>           | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 0     | 0     | 0  | 0     | -    | 0                              | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 0           |
| <b>% Motorcycles</b>         | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                             | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0%          |
| <b>Lights</b>                | 56                                      | 849   | 18    | 0  | 923   | -    | 10                                      | 656   | 75    | 0  | 741   | -    | 48                             | 2     | 60    | 0  | 110   | -    | 7                      | 3     | 6     | 0  | 16    | -    | 1790        |
| <b>% Lights</b>              | 100%                                    | 99.9% | 100%  | 0% | 99.9% | -    | 90.9%                                   | 97.9% | 98.7% | 0% | 97.9% | -    | 100%                           | 100%  | 98.4% | 0% | 99.1% | -    | 100%                   | 100%  | 100%  | 0% | 100%  | -    | 99.0%       |
| <b>Single-Unit Trucks</b>    | 0                                       | 1     | 0     | 0  | 1     | -    | 1                                       | 11    | 0     | 0  | 12    | -    | 0                              | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 13          |
| <b>% Single-Unit Trucks</b>  | 0%                                      | 0.1%  | 0%    | 0% | 0.1%  | -    | 9.1%                                    | 1.6%  | 0%    | 0% | 1.6%  | -    | 0%                             | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.7%        |
| <b>Articulate d Trucks</b>   | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 0     | 1     | 0  | 1     | -    | 0                              | 0     | 1     | 0  | 1     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 2           |
| <b>% Articulate d Trucks</b> | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0%    | 1.3%  | 0% | 0.1%  | -    | 0%                             | 0%    | 1.6%  | 0% | 0.9%  | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.1%        |
| <b>Buses</b>                 | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 1     | 0     | 0  | 1     | -    | 0                              | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 1           |
| <b>% Buses</b>               | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0.1%  | 0%    | 0% | 0.1%  | -    | 0%                             | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.1%        |
| <b>Bicycles on Road</b>      | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 2     | 0     | 0  | 2     | -    | 0                              | 0     | 0     | 0  | 0     | -    | 0                      | 0     | 0     | 0  | 0     | -    | 2           |
| <b>% Bicycles on Road</b>    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0.3%  | 0%    | 0% | 0.3%  | -    | 0%                             | 0%    | 0%    | 0% | 0%    | -    | 0%                     | 0%    | 0%    | 0% | 0%    | -    | 0.1%        |
| Pedestrians                  | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                              | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 0    | -           |
| % Pedestrians                | -                                       | -     | -     | -  | -     | -    | -                                       | -     | -     | -  | -     | -    | -                              | -     | -     | -  | -     | -    | -                      | -     | -     | -  | -     | -    | -           |
| Bicycles on Crosswalk        | -                                       | -     | -     | -  | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                              | -     | -     | -  | -     | 0    | -                      | -     | -     | -  | -     | 0    | -           |
| % Bicycles on Crosswalk      | -                                       | -     | -     | -  | -     | -    | -                                       | -     | -     | -  | -     | -    | -                              | -     | -     | -  | -     | -    | -                      | -     | -     | -  | -     | -    | -           |

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

**207637-F Washington Street (Route 53) @ Assi... - TMC**

Thu Oct 8, 2020

Full Length (10 AM-2 PM, 6 AM-10 AM, 2 PM-6 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789291, Location: 42.157695, -70.851389

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |      |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | Driveway Eastbound |       |       |      |       |       | Assinippi Avenue Westbound |       |       |    |       |       | Int   |
|--------------------------------|---|-------|-------|------|-------|------|---|-------|-------|----|-------|------|--------------------|-------|-------|------|-------|-------|----------------------------|-------|-------|----|-------|-------|-------|
|                                | L                                       | T     | R     | U    | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                  | T     | R     | U    | App   | Ped*  | L                          | T     | R     | U  | App   | Ped*  |       |
| 2020-10-08 6:00AM              | 1                                       | 179   | 15    | 1    | 196   | 0    | 41                                      | 82    | 0     | 0  | 123   | 0    | 0                  | 0     | 0     | 0    | 0     | 0     | 1                          | 0     | 37    | 0  | 38    | 0     | 357   |
| 7:00AM                         | 3                                       | 369   | 16    | 0    | 388   | 0    | 85                                      | 192   | 3     | 0  | 280   | 0    | 0                  | 1     | 1     | 0    | 2     | 0     | 3                          | 2     | 111   | 0  | 116   | 0     | 786   |
| 8:00AM                         | 4                                       | 492   | 21    | 0    | 517   | 0    | 88                                      | 319   | 0     | 0  | 407   | 0    | 3                  | 3     | 3     | 0    | 9     | 0     | 10                         | 2     | 179   | 0  | 191   | 1     | 1124  |
| 9:00AM                         | 9                                       | 435   | 25    | 0    | 469   | 0    | 92                                      | 372   | 11    | 0  | 475   | 0    | 4                  | 6     | 8     | 0    | 18    | 1     | 6                          | 4     | 141   | 0  | 151   | 3     | 1113  |
| 2:00PM                         | 3                                       | 515   | 18    | 1    | 537   | 1    | 186                                     | 573   | 4     | 0  | 763   | 0    | 0                  | 0     | 9     | 0    | 9     | 1     | 7                          | 0     | 193   | 0  | 200   | 4     | 1509  |
| 3:00PM                         | 8                                       | 524   | 13    | 0    | 545   | 0    | 196                                     | 600   | 4     | 0  | 800   | 0    | 2                  | 0     | 14    | 0    | 16    | 0     | 10                         | 0     | 166   | 0  | 176   | 0     | 1537  |
| 4:00PM                         | 6                                       | 501   | 11    | 0    | 518   | 0    | 196                                     | 631   | 6     | 0  | 833   | 0    | 1                  | 2     | 8     | 1    | 12    | 0     | 6                          | 0     | 197   | 0  | 203   | 0     | 1566  |
| 5:00PM                         | 4                                       | 777   | 10    | 0    | 791   | 0    | 193                                     | 559   | 2     | 0  | 754   | 0    | 0                  | 1     | 8     | 0    | 9     | 0     | 4                          | 0     | 167   | 0  | 171   | 0     | 1725  |
| 2020-10-10 10:00AM             | 5                                       | 439   | 24    | 0    | 468   | 0    | 117                                     | 446   | 4     | 0  | 567   | 0    | 3                  | 3     | 8     | 0    | 14    | 0     | 10                         | 1     | 137   | 0  | 148   | 0     | 1197  |
| 11:00AM                        | 6                                       | 488   | 22    | 0    | 516   | 0    | 141                                     | 570   | 3     | 0  | 714   | 0    | 5                  | 1     | 3     | 2    | 11    | 1     | 10                         | 0     | 175   | 0  | 185   | 0     | 1426  |
| 12:00PM                        | 3                                       | 531   | 21    | 0    | 555   | 0    | 171                                     | 606   | 3     | 0  | 780   | 0    | 1                  | 1     | 6     | 0    | 8     | 0     | 13                         | 0     | 156   | 0  | 169   | 3     | 1512  |
| 1:00PM                         | 7                                       | 561   | 18    | 0    | 586   | 0    | 157                                     | 650   | 2     | 0  | 809   | 0    | 3                  | 0     | 14    | 0    | 17    | 0     | 7                          | 1     | 149   | 0  | 157   | 0     | 1569  |
| <b>Total</b>                   | 59                                      | 5811  | 214   | 2    | 6086  | 1    | 1663                                    | 5600  | 42    | 0  | 7305  | 0    | 22                 | 18    | 82    | 3    | 125   | 3     | 87                         | 10    | 1808  | 0  | 1905  | 11    | 15421 |
| <b>% Approach</b>              | 1.0%                                    | 95.5% | 3.5%  | 0%   | -     | -    | 22.8%                                   | 76.7% | 0.6%  | 0% | -     | -    | 17.6%              | 14.4% | 65.6% | 2.4% | -     | -     | 4.6%                       | 0.5%  | 94.9% | 0% | -     | -     | -     |
| <b>% Total</b>                 | 0.4%                                    | 37.7% | 1.4%  | 0%   | 39.5% | -    | 10.8%                                   | 36.3% | 0.3%  | 0% | 47.4% | -    | 0.1%               | 0.1%  | 0.5%  | 0%   | 0.8%  | -     | 0.6%                       | 0.1%  | 11.7% | 0% | 12.4% | -     | -     |
| <b>Motorcycles</b>             | 0                                       | 13    | 1     | 0    | 14    | -    | 0                                       | 16    | 0     | 0  | 16    | -    | 0                  | 0     | 0     | 0    | 0     | -     | 0                          | 0     | 2     | 0  | 2     | -     | 32    |
| <b>% Motorcycles</b>           | 0%                                      | 0.2%  | 0.5%  | 0%   | 0.2%  | -    | 0%                                      | 0.3%  | 0%    | 0% | 0.2%  | -    | 0%                 | 0%    | 0%    | 0%   | 0%    | -     | 0%                         | 0%    | 0.1%  | 0% | 0.1%  | -     | 0.2%  |
| <b>Lights</b>                  | 53                                      | 5714  | 211   | 2    | 5980  | -    | 1638                                    | 5485  | 41    | 0  | 7164  | -    | 22                 | 17    | 73    | 3    | 115   | -     | 86                         | 9     | 1757  | 0  | 1852  | -     | 15111 |
| <b>% Lights</b>                | 89.8%                                   | 98.3% | 98.6% | 100% | 98.3% | -    | 98.5%                                   | 97.9% | 97.6% | 0% | 98.1% | -    | 100%               | 94.4% | 89.0% | 100% | 92.0% | -     | 98.9%                      | 90.0% | 97.2% | 0% | 97.2% | -     | 98.0% |
| <b>Single-Unit Trucks</b>      | 6                                       | 66    | 2     | 0    | 74    | -    | 11                                      | 79    | 1     | 0  | 91    | -    | 0                  | 1     | 9     | 0    | 10    | -     | 1                          | 1     | 28    | 0  | 30    | -     | 205   |
| <b>% Single-Unit Trucks</b>    | 10.2%                                   | 1.1%  | 0.9%  | 0%   | 1.2%  | -    | 0.7%                                    | 1.4%  | 2.4%  | 0% | 1.2%  | -    | 0%                 | 5.6%  | 11.0% | 0%   | 8.0%  | -     | 1.1%                       | 10.0% | 1.5%  | 0% | 1.6%  | -     | 1.3%  |
| <b>Articulated Trucks</b>      | 0                                       | 12    | 0     | 0    | 12    | -    | 2                                       | 10    | 0     | 0  | 12    | -    | 0                  | 0     | 0     | 0    | 0     | -     | 0                          | 0     | 3     | 0  | 3     | -     | 27    |
| <b>% Articulated Trucks</b>    | 0%                                      | 0.2%  | 0%    | 0%   | 0.2%  | -    | 0.1%                                    | 0.2%  | 0%    | 0% | 0.2%  | -    | 0%                 | 0%    | 0%    | 0%   | 0%    | -     | 0%                         | 0%    | 0.2%  | 0% | 0.2%  | -     | 0.2%  |
| <b>Buses</b>                   | 0                                       | 4     | 0     | 0    | 4     | -    | 12                                      | 8     | 0     | 0  | 20    | -    | 0                  | 0     | 0     | 0    | 0     | -     | 0                          | 0     | 16    | 0  | 16    | -     | 40    |
| <b>% Buses</b>                 | 0%                                      | 0.1%  | 0%    | 0%   | 0.1%  | -    | 0.7%                                    | 0.1%  | 0%    | 0% | 0.3%  | -    | 0%                 | 0%    | 0%    | 0%   | 0%    | -     | 0%                         | 0%    | 0.9%  | 0% | 0.8%  | -     | 0.3%  |
| <b>Bicycles on Road</b>        | 0                                       | 2     | 0     | 0    | 2     | -    | 0                                       | 2     | 0     | 0  | 2     | -    | 0                  | 0     | 0     | 0    | 0     | -     | 0                          | 0     | 2     | 0  | 2     | -     | 6     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0%    | 0%   | 0%    | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                 | 0%    | 0%    | 0%   | 0%    | -     | 0%                         | 0%    | 0.1%  | 0% | 0.1%  | -     | 0%    |
| <b>Pedestrians</b>             | -                                       | -     | -     | -    | -     | 1    | -                                       | -     | -     | -  | -     | 0    | -                  | -     | -     | -    | -     | 2     | -                          | -     | -     | -  | -     | 9     | -     |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -    | -     | 100% | -                                       | -     | -     | -  | -     | 0    | -                  | -     | -     | -    | -     | 66.7% | -                          | -     | -     | -  | -     | 81.8% | -     |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -    | -     | 0    | -                                       | -     | -     | -  | -     | 0    | -                  | -     | -     | -    | -     | 1     | -                          | -     | -     | -  | -     | 2     | -     |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -    | -     | 0%   | -                                       | -     | -     | -  | -     | 0    | -                  | -     | -     | -    | -     | 33.3% | -                          | -     | -     | -  | -     | 18.2% | -     |

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

**207637-F Washington Street (Route 53) @ Assi... - TMC**

Thu Oct 8, 2020

AM Peak (Oct 08 2020 8:45AM - 9:45 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

Provided by: Precision Data Industries, LLC (PDI)

All Movements

ID: 789291, Location: 42.157695, -70.851389

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Washington Street (Route 53) Northbound |       |       |    |       |      | Washington Street (Route 53) Southbound |       |       |    |       |      | Drive way Eastbound |       |       |    |       |      | Assinippi Avenue Westbound |       |       |    |       |      | Int   |
|--------------------------------|---|-------|-------|----|-------|------|---|-------|-------|----|-------|------|---------------------|-------|-------|----|-------|------|----------------------------|-------|-------|----|-------|------|-------|
|                                | L                                       | T     | R     | U  | App   | Ped* | L                                       | T     | R     | U  | App   | Ped* | L                   | T     | R     | U  | App   | Ped* | L                          | T     | R     | U  | App   | Ped* |       |
| 2020-10-08 8:45AM              | 2                                       | 124   | 6     | 0  | 132   | 0    | 35                                      | 106   | 0     | 0  | 141   | 0    | 0                   | 0     | 1     | 0  | 1     | 0    | 2                          | 0     | 59    | 0  | 61    | 0    | 335   |
| 9:00AM                         | 2                                       | 120   | 9     | 0  | 131   | 0    | 30                                      | 94    | 2     | 0  | 126   | 0    | 2                   | 0     | 1     | 0  | 3     | 0    | 0                          | 2     | 44    | 0  | 46    | 1    | 306   |
| 9:15AM                         | 5                                       | 97    | 3     | 0  | 105   | 0    | 21                                      | 97    | 2     | 0  | 120   | 0    | 1                   | 3     | 1     | 0  | 5     | 0    | 2                          | 1     | 33    | 0  | 36    | 1    | 266   |
| 9:30AM                         | 2                                       | 111   | 8     | 0  | 121   | 0    | 30                                      | 88    | 4     | 0  | 122   | 0    | 0                   | 3     | 4     | 0  | 7     | 0    | 1                          | 1     | 35    | 0  | 37    | 1    | 287   |
| <b>Total</b>                   | 11                                      | 452   | 26    | 0  | 489   | 0    | 116                                     | 385   | 8     | 0  | 509   | 0    | 3                   | 6     | 7     | 0  | 16    | 0    | 5                          | 4     | 171   | 0  | 180   | 3    | 1194  |
| <b>% Approach</b>              | 2.2%                                    | 92.4% | 5.3%  | 0% | -     | -    | 22.8%                                   | 75.6% | 1.6%  | 0% | -     | -    | 18.8%               | 37.5% | 43.8% | 0% | -     | -    | 2.8%                       | 2.2%  | 95.0% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 0.9%                                    | 37.9% | 2.2%  | 0% | 41.0% | -    | 9.7%                                    | 32.2% | 0.7%  | 0% | 42.6% | -    | 0.3%                | 0.5%  | 0.6%  | 0% | 1.3%  | -    | 0.4%                       | 0.3%  | 14.3% | 0% | 15.1% | -    | -     |
| <b>PHF</b>                     | 0.550                                   | 0.911 | 0.722 | -  | 0.926 | -    | 0.829                                   | 0.908 | 0.500 | -  | 0.902 | -    | 0.375               | 0.500 | 0.438 | -  | 0.571 | -    | 0.625                      | 0.500 | 0.720 | -  | 0.734 | -    | 0.890 |
| <b>Motorcycles</b>             | 0                                       | 1     | 0     | 0  | 1     | -    | 0                                       | 1     | 0     | 0  | 1     | -    | 0                   | 0     | 0     | 0  | 0     | -    | 0                          | 0     | 0     | 0  | 0     | -    | 2     |
| <b>% Motorcycles</b>           | 0%                                      | 0.2%  | 0%    | 0% | 0.2%  | -    | 0%                                      | 0.3%  | 0%    | 0% | 0.2%  | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -    | 0%                         | 0%    | 0%    | 0% | 0%    | -    | 0.2%  |
| <b>Lights</b>                  | 10                                      | 429   | 25    | 0  | 464   | -    | 115                                     | 363   | 8     | 0  | 486   | -    | 3                   | 5     | 6     | 0  | 14    | -    | 5                          | 3     | 168   | 0  | 176   | -    | 1140  |
| <b>% Lights</b>                | 90.9%                                   | 94.9% | 96.2% | 0% | 94.9% | -    | 99.1%                                   | 94.3% | 100%  | 0% | 95.5% | -    | 100%                | 83.3% | 85.7% | 0% | 87.5% | -    | 100%                       | 75.0% | 98.2% | 0% | 97.8% | -    | 95.5% |
| <b>Single-Unit Trucks</b>      | 1                                       | 15    | 1     | 0  | 17    | -    | 1                                       | 14    | 0     | 0  | 15    | -    | 0                   | 1     | 1     | 0  | 2     | -    | 0                          | 1     | 2     | 0  | 3     | -    | 37    |
| <b>% Single-Unit Trucks</b>    | 9.1%                                    | 3.3%  | 3.8%  | 0% | 3.5%  | -    | 0.9%                                    | 3.6%  | 0%    | 0% | 2.9%  | -    | 0%                  | 16.7% | 14.3% | 0% | 12.5% | -    | 0%                         | 25.0% | 1.2%  | 0% | 1.7%  | -    | 3.1%  |
| <b>Articulated Trucks</b>      | 0                                       | 7     | 0     | 0  | 7     | -    | 0                                       | 4     | 0     | 0  | 4     | -    | 0                   | 0     | 0     | 0  | 0     | -    | 0                          | 0     | 0     | 0  | 0     | -    | 11    |
| <b>% Articulated Trucks</b>    | 0%                                      | 1.5%  | 0%    | 0% | 1.4%  | -    | 0%                                      | 1.0%  | 0%    | 0% | 0.8%  | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -    | 0%                         | 0%    | 0%    | 0% | 0%    | -    | 0.9%  |
| <b>Buses</b>                   | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 3     | 0     | 0  | 3     | -    | 0                   | 0     | 0     | 0  | 0     | -    | 0                          | 0     | 0     | 0  | 0     | -    | 3     |
| <b>% Buses</b>                 | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0.8%  | 0%    | 0% | 0.6%  | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -    | 0%                         | 0%    | 0%    | 0% | 0%    | -    | 0.3%  |
| <b>Bicycles on Road</b>        | 0                                       | 0     | 0     | 0  | 0     | -    | 0                                       | 0     | 0     | 0  | 0     | -    | 0                   | 0     | 0     | 0  | 0     | -    | 0                          | 0     | 1     | 0  | 1     | -    | 1     |
| <b>% Bicycles on Road</b>      | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                                      | 0%    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0%    | 0% | 0%    | -    | 0%                         | 0%    | 0.6%  | 0% | 0.6%  | -    | 0.1%  |
| <b>Pedestrians</b>             | -                                       | -     | -     | -  | 0     | -    | -                                       | -     | -     | -  | 0     | -    | -                   | -     | -     | -  | 0     | -    | -                          | -     | -     | -  | -     | -    | 3     |
| <b>% Pedestrians</b>           | -                                       | -     | -     | -  | -     | -    | -                                       | -     | -     | -  | -     | -    | -                   | -     | -     | -  | -     | -    | -                          | -     | -     | -  | -     | -    | 100%  |
| <b>Bicycles on Crosswalk</b>   | -                                       | -     | -     | -  | 0     | -    | -                                       | -     | -     | -  | 0     | -    | -                   | -     | -     | -  | 0     | -    | -                          | -     | -     | -  | -     | -    | 0     |
| <b>% Bicycles on Crosswalk</b> | -                                       | -     | -     | -  | -     | -    | -                                       | -     | -     | -  | -     | -    | -                   | -     | -     | -  | -     | -    | -                          | -     | -     | -  | -     | -    | 0%    |

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

**207637-F Washington Street (Route 53) @ Assi... - TMC**

Thu Oct 8, 2020

PM Peak (Oct 08 2020 5PM - 6 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 789291, Location: 42.157695, -70.851389

Provided by: Precision Data Industries, LLC (PDI)  
46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction               | Washington Street (Route 53) Northbound |            |           |          |            | Washington Street (Route 53) Southbound |            |            |          |          | Driveway Eastbound |          |          |          |          | Assinippi Avenue Westbound |          |          |          |          | Int        |          |            |          |             |
|-----------------------------|---|------------|-----------|----------|------------|---|------------|------------|----------|----------|--------------------|----------|----------|----------|----------|----------------------------|----------|----------|----------|----------|------------|----------|------------|----------|-------------|
|                             | L                                       | T          | R         | U        | App Ped*   | L                                       | T          | R          | U        | App Ped* | L                  | T        | R        | U        | App Ped* | L                          | T        | R        | U        | App Ped* |            |          |            |          |             |
| 2020-10-08 5:00PM           | 1                                       | 111        | 3         | 0        | 115        | 0                                       | 50         | 169        | 1        | 0        | 220                | 0        | 0        | 1        | 4        | 0                          | 5        | 0        | 0        | 0        | 42         | 0        | 42         | 0        | 382         |
| 5:15PM                      | 1                                       | 227        | 1         | 0        | 229        | 0                                       | 46         | 147        | 0        | 0        | 193                | 0        | 0        | 0        | 1        | 0                          | 1        | 0        | 2        | 0        | 38         | 0        | 40         | 0        | 463         |
| 5:30PM                      | 0                                       | 238        | 2         | 0        | 240        | 0                                       | 48         | 124        | 1        | 0        | 173                | 0        | 0        | 0        | 0        | 0                          | 0        | 0        | 0        | 0        | 42         | 0        | 42         | 0        | 455         |
| 5:45PM                      | 2                                       | 201        | 4         | 0        | 207        | 0                                       | 49         | 119        | 0        | 0        | 168                | 0        | 0        | 0        | 3        | 0                          | 3        | 0        | 2        | 0        | 45         | 0        | 47         | 0        | 425         |
| <b>Total</b>                | <b>4</b>                                | <b>777</b> | <b>10</b> | <b>0</b> | <b>791</b> | <b>0</b>                                | <b>193</b> | <b>559</b> | <b>2</b> | <b>0</b> | <b>754</b>         | <b>0</b> | <b>0</b> | <b>1</b> | <b>8</b> | <b>0</b>                   | <b>9</b> | <b>0</b> | <b>4</b> | <b>0</b> | <b>167</b> | <b>0</b> | <b>171</b> | <b>0</b> | <b>1725</b> |
| <b>% Approach</b>           | 0.5%                                    | 98.2%      | 1.3%      | 0%       | -          | -                                       | 25.6%      | 74.1%      | 0.3%     | 0%       | -                  | -        | 0%       | 11.1%    | 88.9%    | 0%                         | -        | -        | 2.3%     | 0%       | 97.7%      | 0%       | -          | -        | -           |
| <b>% Total</b>              | 0.2%                                    | 45.0%      | 0.6%      | 0%       | 45.9%      | -                                       | 11.2%      | 32.4%      | 0.1%     | 0%       | 43.7%              | -        | 0%       | 0.1%     | 0.5%     | 0%                         | 0.5%     | -        | 0.2%     | 0%       | 9.7%       | 0%       | 9.9%       | -        | -           |
| <b>PHF</b>                  | 0.500                                   | 0.816      | 0.625     | -        | 0.824      | -                                       | 0.965      | 0.825      | 0.500    | -        | 0.856              | -        | -        | 0.250    | 0.500    | -                          | 0.450    | -        | 0.500    | -        | 0.928      | -        | 0.910      | -        | 0.931       |
| <b>Motorcycles</b>          | 0                                       | 0          | 0         | 0        | 0          | -                                       | 0          | 1          | 0        | 0        | 1                  | -        | 0        | 0        | 0        | 0                          | 0        | -        | 0        | 0        | 0          | 0        | 0          | 0        | 1           |
| <b>% Motorcycles</b>        | 0%                                      | 0%         | 0%        | 0%       | 0%         | -                                       | 0%         | 0.2%       | 0%       | 0%       | 0.1%               | -        | 0%       | 0%       | 0%       | 0%                         | 0%       | -        | 0%       | 0%       | 0%         | 0%       | 0%         | 0%       | 0.1%        |
| <b>Lights</b>               | 4                                       | 773        | 10        | 0        | 787        | -                                       | 193        | 546        | 2        | 0        | 741                | -        | 0        | 1        | 8        | 0                          | 9        | -        | 4        | 0        | 167        | 0        | 171        | -        | 1708        |
| <b>% Lights</b>             | 100%                                    | 99.5%      | 100%      | 0%       | 99.5%      | -                                       | 100%       | 97.7%      | 100%     | 0%       | 98.3%              | -        | 0%       | 100%     | 100%     | 0%                         | 100%     | -        | 100%     | 0%       | 100%       | 0%       | 100%       | -        | 99.0%       |
| <b>Single-Unit Trucks</b>   | 0                                       | 3          | 0         | 0        | 3          | -                                       | 0          | 10         | 0        | 0        | 10                 | -        | 0        | 0        | 0        | 0                          | 0        | -        | 0        | 0        | 0          | 0        | 0          | 0        | 13          |
| <b>% Single-Unit Trucks</b> | 0%                                      | 0.4%       | 0%        | 0%       | 0.4%       | -                                       | 0%         | 1.8%       | 0%       | 0%       | 1.3%               | -        | 0%       | 0%       | 0%       | 0%                         | 0%       | -        | 0%       | 0%       | 0%         | 0%       | 0%         | 0%       | 0.8%        |
| <b>Articulated Trucks</b>   | 0                                       | 0          | 0         | 0        | 0          | -                                       | 0          | 1          | 0        | 0        | 1                  | -        | 0        | 0        | 0        | 0                          | 0        | -        | 0        | 0        | 0          | 0        | 0          | 0        | 1           |
| <b>% Articulated Trucks</b> | 0%                                      | 0%         | 0%        | 0%       | 0%         | -                                       | 0%         | 0.2%       | 0%       | 0%       | 0.1%               | -        | 0%       | 0%       | 0%       | 0%                         | 0%       | -        | 0%       | 0%       | 0%         | 0%       | 0%         | 0%       | 0.1%        |
| <b>Buses</b>                | 0                                       | 1          | 0         | 0        | 1          | -                                       | 0          | 0          | 0        | 0        | 0                  | -        | 0        | 0        | 0        | 0                          | 0        | -        | 0        | 0        | 0          | 0        | 0          | 0        | 1           |
| <b>% Buses</b>              | 0%                                      | 0.1%       | 0%        | 0%       | 0.1%       | -                                       | 0%         | 0%         | 0%       | 0%       | 0%                 | -        | 0%       | 0%       | 0%       | 0%                         | 0%       | -        | 0%       | 0%       | 0%         | 0%       | 0%         | 0%       | 0.1%        |
| <b>Bicycles on Road</b>     | 0                                       | 0          | 0         | 0        | 0          | -                                       | 0          | 1          | 0        | 0        | 1                  | -        | 0        | 0        | 0        | 0                          | 0        | -        | 0        | 0        | 0          | 0        | 0          | 0        | 1           |
| <b>% Bicycles on Road</b>   | 0%                                      | 0%         | 0%        | 0%       | 0%         | -                                       | 0%         | 0.2%       | 0%       | 0%       | 0.1%               | -        | 0%       | 0%       | 0%       | 0%                         | 0%       | -        | 0%       | 0%       | 0%         | 0%       | 0%         | 0%       | 0.1%        |
| Pedestrians                 | -                                       | -          | -         | -        | 0          | -                                       | -          | -          | -        | -        | 0                  | -        | -        | -        | -        | -                          | 0        | -        | -        | -        | -          | -        | -          | -        | 0           |
| % Pedestrians               | -                                       | -          | -         | -        | -          | -                                       | -          | -          | -        | -        | -                  | -        | -        | -        | -        | -                          | -        | -        | -        | -        | -          | -        | -          | -        | -           |
| Bicycles on Crosswalk       | -                                       | -          | -         | -        | 0          | -                                       | -          | -          | -        | -        | 0                  | -        | -        | -        | -        | -                          | 0        | -        | -        | -        | -          | -        | -          | -        | 0           |
| % Bicycles on Crosswalk     | -                                       | -          | -         | -        | -          | -                                       | -          | -          | -        | -        | -                  | -        | -        | -        | -        | -                          | -        | -        | -        | -        | -          | -        | -          | -        | -           |

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

**APPENDIX F**  
**Turning Movement Counts**  
**Route 53 at Pond Street in Norwell**  
**September 26, 2019**

**TM-1 (Route 53 @ Route 228) TMC - TMC**

Thu Sep 26, 2019

Full Length (6 AM-9 AM, 3 PM-6 PM, 11 AM-2 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 699165, Location: 42.174643, -70.884978, Site Code: 197188

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Main Street (Route 228) Southbound |             |             |          |             |          | Washington Street (Route 53) Westbound |             |             |          |             |          | Pond Street (Route 228) Northbound |             |             |          |             |          | Whiting Street (Route 53) Eastbound |             |            |          |             |          | Int          |
|--------------------------------|------------------------------------|-------------|-------------|----------|-------------|----------|--|-------------|-------------|----------|-------------|----------|------------------------------------|-------------|-------------|----------|-------------|----------|-------------------------------------|-------------|------------|----------|-------------|----------|--------------|
|                                | R                                  | T           | L           | U        | App         | Ped*     | R                                      | T           | L           | U        | App         | Ped*     | R                                  | T           | L           | U        | App         | Ped*     | R                                   | T           | L          | U        | App         | Ped*     |              |
| 2019-09-26 6:00AM              | 30                                 | 155         | 57          | 0        | 242         | 0        | 143                                    | 641         | 94          | 0        | 878         | 0        | 63                                 | 283         | 115         | 0        | 461         | 0        | 36                                  | 111         | 28         | 0        | 175         | 0        | 1756         |
| 7:00AM                         | 73                                 | 290         | 171         | 0        | 534         | 0        | 242                                    | 742         | 155         | 0        | 1139        | 1        | 60                                 | 395         | 153         | 0        | 608         | 1        | 98                                  | 294         | 77         | 0        | 469         | 0        | 2750         |
| 8:00AM                         | 81                                 | 334         | 261         | 0        | 676         | 0        | 219                                    | 707         | 186         | 0        | 1112        | 0        | 118                                | 344         | 130         | 0        | 592         | 0        | 132                                 | 395         | 53         | 0        | 580         | 0        | 2960         |
| 3:00PM                         | 86                                 | 460         | 276         | 0        | 822         | 1        | 228                                    | 564         | 190         | 0        | 982         | 3        | 301                                | 343         | 186         | 0        | 830         | 0        | 167                                 | 708         | 82         | 0        | 957         | 0        | 3591         |
| 4:00PM                         | 58                                 | 485         | 306         | 0        | 849         | 0        | 225                                    | 534         | 192         | 0        | 951         | 0        | 344                                | 337         | 210         | 0        | 891         | 0        | 133                                 | 755         | 73         | 0        | 961         | 0        | 3652         |
| 5:00PM                         | 56                                 | 452         | 260         | 0        | 768         | 0        | 290                                    | 574         | 182         | 0        | 1046        | 0        | 275                                | 374         | 205         | 0        | 854         | 0        | 161                                 | 794         | 104        | 0        | 1059        | 0        | 3727         |
| 2019-09-28 11:00AM             | 93                                 | 348         | 180         | 0        | 621         | 0        | 214                                    | 653         | 208         | 0        | 1075        | 1        | 223                                | 395         | 229         | 0        | 847         | 3        | 154                                 | 620         | 100        | 0        | 874         | 0        | 3417         |
| 12:00PM                        | 84                                 | 425         | 224         | 0        | 733         | 1        | 238                                    | 792         | 190         | 0        | 1220        | 1        | 198                                | 370         | 238         | 1        | 807         | 4        | 168                                 | 626         | 96         | 0        | 890         | 1        | 3650         |
| 1:00PM                         | 88                                 | 341         | 204         | 0        | 633         | 0        | 214                                    | 812         | 185         | 0        | 1211        | 0        | 211                                | 348         | 230         | 0        | 789         | 1        | 140                                 | 637         | 79         | 0        | 856         | 0        | 3489         |
| <b>Total</b>                   | <b>649</b>                         | <b>3290</b> | <b>1939</b> | <b>0</b> | <b>5878</b> | <b>2</b> | <b>2013</b>                            | <b>6019</b> | <b>1582</b> | <b>0</b> | <b>9614</b> | <b>6</b> | <b>1793</b>                        | <b>3189</b> | <b>1696</b> | <b>1</b> | <b>6679</b> | <b>9</b> | <b>1189</b>                         | <b>4940</b> | <b>692</b> | <b>0</b> | <b>6821</b> | <b>1</b> | <b>28992</b> |
| <b>% Approach</b>              | 11.0%                              | 56.0%       | 33.0%       | 0%       | -           | -        | 20.9%                                  | 62.6%       | 16.5%       | 0%       | -           | -        | 26.8%                              | 47.7%       | 25.4%       | 0%       | -           | -        | 17.4%                               | 72.4%       | 10.1%      | 0%       | -           | -        | -            |
| <b>% Total</b>                 | 2.2%                               | 11.3%       | 6.7%        | 0%       | 20.3%       | -        | 6.9%                                   | 20.8%       | 5.5%        | 0%       | 33.2%       | -        | 6.2%                               | 11.0%       | 5.8%        | 0%       | 23.0%       | -        | 4.1%                                | 17.0%       | 2.4%       | 0%       | 23.5%       | -        | -            |
| <b>Motorcycles</b>             | 5                                  | 9           | 7           | 0        | 21          | -        | 1                                      | 8           | 3           | 0        | 12          | -        | 5                                  | 13          | 4           | 0        | 22          | -        | 6                                   | 17          | 1          | 0        | 24          | -        | 79           |
| <b>% Motorcycles</b>           | 0.8%                               | 0.3%        | 0.4%        | 0%       | 0.4%        | -        | 0%                                     | 0.1%        | 0.2%        | 0%       | 0.1%        | -        | 0.3%                               | 0.4%        | 0.2%        | 0%       | 0.3%        | -        | 0.5%                                | 0.3%        | 0.1%       | 0%       | 0.4%        | -        | 0.3%         |
| <b>Lights</b>                  | 622                                | 3186        | 1902        | 0        | 5710        | -        | 1981                                   | 5953        | 1554        | 0        | 9488        | -        | 1740                               | 3056        | 1663        | 1        | 6460        | -        | 1168                                | 4875        | 665        | 0        | 6708        | -        | 28366        |
| <b>% Lights</b>                | 95.8%                              | 96.8%       | 98.1%       | 0%       | 97.1%       | -        | 98.4%                                  | 98.9%       | 98.2%       | 0%       | 98.7%       | -        | 97.0%                              | 95.8%       | 98.1%       | 100%     | 96.7%       | -        | 98.2%                               | 98.7%       | 96.1%      | 0%       | 98.3%       | -        | 97.8%        |
| <b>Single-Unit Trucks</b>      | 8                                  | 65          | 22          | 0        | 95          | -        | 20                                     | 48          | 21          | 0        | 89          | -        | 42                                 | 75          | 25          | 0        | 142         | -        | 13                                  | 42          | 12         | 0        | 67          | -        | 393          |
| <b>% Single-Unit Trucks</b>    | 1.2%                               | 2.0%        | 1.1%        | 0%       | 1.6%        | -        | 1.0%                                   | 0.8%        | 1.3%        | 0%       | 0.9%        | -        | 2.3%                               | 2.4%        | 1.5%        | 0%       | 2.1%        | -        | 1.1%                                | 0.9%        | 1.7%       | 0%       | 1.0%        | -        | 1.4%         |
| <b>Articulated Trucks</b>      | 6                                  | 23          | 3           | 0        | 32          | -        | 6                                      | 6           | 4           | 0        | 16          | -        | 5                                  | 37          | 3           | 0        | 45          | -        | 2                                   | 4           | 7          | 0        | 13          | -        | 106          |
| <b>% Articulated Trucks</b>    | 0.9%                               | 0.7%        | 0.2%        | 0%       | 0.5%        | -        | 0.3%                                   | 0.1%        | 0.3%        | 0%       | 0.2%        | -        | 0.3%                               | 1.2%        | 0.2%        | 0%       | 0.7%        | -        | 0.2%                                | 0.1%        | 1.0%       | 0%       | 0.2%        | -        | 0.4%         |
| <b>Buses</b>                   | 7                                  | 6           | 5           | 0        | 18          | -        | 4                                      | 4           | 0           | 0        | 8           | -        | 0                                  | 7           | 1           | 0        | 8           | -        | 0                                   | 2           | 7          | 0        | 9           | -        | 43           |
| <b>% Buses</b>                 | 1.1%                               | 0.2%        | 0.3%        | 0%       | 0.3%        | -        | 0.2%                                   | 0.1%        | 0%          | 0%       | 0.1%        | -        | 0%                                 | 0.2%        | 0.1%        | 0%       | 0.1%        | -        | 0%                                  | 0%          | 1.0%       | 0%       | 0.1%        | -        | 0.1%         |
| <b>Bicycles on Road</b>        | 1                                  | 1           | 0           | 0        | 2           | -        | 1                                      | 0           | 0           | 0        | 1           | -        | 1                                  | 1           | 0           | 0        | 2           | -        | 0                                   | 0           | 0          | 0        | 0           | -        | 5            |
| <b>% Bicycles on Road</b>      | 0.2%                               | 0%          | 0%          | 0%       | 0%          | -        | 0%                                     | 0%          | 0%          | 0%       | 0%          | -        | 0.1%                               | 0%          | 0%          | 0%       | 0%          | -        | 0%                                  | 0%          | 0%         | 0%       | 0%          | -        | 0%           |
| <b>Pedestrians</b>             | -                                  | -           | -           | -        | -           | 2        | -                                      | -           | -           | -        | -           | 6        | -                                  | -           | -           | -        | -           | 9        | -                                   | -           | -          | -        | -           | 1        | -            |
| <b>% Pedestrians</b>           | -                                  | -           | -           | -        | -           | 100%     | -                                      | -           | -           | -        | -           | 100%     | -                                  | -           | -           | -        | -           | 100%     | -                                   | -           | -          | -        | -           | 100%     | -            |
| <b>Bicycles on Crosswalk</b>   | -                                  | -           | -           | -        | -           | 0        | -                                      | -           | -           | -        | -           | 0        | -                                  | -           | -           | -        | -           | 0        | -                                   | -           | -          | -        | -           | 0        | -            |
| <b>% Bicycles on Crosswalk</b> | -                                  | -           | -           | -        | -           | 0%       | -                                      | -           | -           | -        | -           | 0%       | -                                  | -           | -           | -        | -           | 0%       | -                                   | -           | -          | -        | -           | 0%       | -            |

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

**TM-1 (Route 53 @ Route 228) TMC - TMC**

Thu Sep 26, 2019

AM Peak (Sep 26 2019 7:45AM - 8:45 AM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 699165, Location: 42.174643, -70.884978, Site Code: 197188

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Main Street (Route 228) Southbound |       |       |    |       |      | Washington Street (Route 53) Westbound |       |       |    |       |      | Pond Street (Route 228) Northbound |       |       |    |       |      | Whiting Street (Route 53) Eastbound |       |       |    |       |      | Int   |
|--------------------------------|------------------------------------|-------|-------|----|-------|------|--|-------|-------|----|-------|------|------------------------------------|-------|-------|----|-------|------|-------------------------------------|-------|-------|----|-------|------|-------|
|                                | R                                  | T     | L     | U  | App   | Ped* | R                                      | T     | L     | U  | App   | Ped* | R                                  | T     | L     | U  | App   | Ped* | R                                   | T     | L     | U  | App   | Ped* |       |
| 2019-09-26 7:45AM              | 11                                 | 79    | 57    | 0  | 147   | 0    | 49                                     | 177   | 50    | 0  | 276   | 0    | 19                                 | 91    | 47    | 0  | 157   | 0    | 28                                  | 112   | 11    | 0  | 151   | 0    | 731   |
| 8:00AM                         | 15                                 | 84    | 74    | 0  | 173   | 0    | 49                                     | 184   | 53    | 0  | 286   | 0    | 35                                 | 85    | 40    | 0  | 160   | 0    | 25                                  | 109   | 11    | 0  | 145   | 0    | 764   |
| 8:15AM                         | 14                                 | 84    | 55    | 0  | 153   | 0    | 70                                     | 177   | 39    | 0  | 286   | 0    | 22                                 | 87    | 31    | 0  | 140   | 0    | 39                                  | 94    | 18    | 0  | 151   | 0    | 730   |
| 8:30AM                         | 23                                 | 82    | 58    | 0  | 163   | 0    | 49                                     | 191   | 46    | 0  | 286   | 0    | 29                                 | 88    | 26    | 0  | 143   | 0    | 33                                  | 98    | 14    | 0  | 145   | 0    | 737   |
| <b>Total</b>                   | 63                                 | 329   | 244   | 0  | 636   | 0    | 217                                    | 729   | 188   | 0  | 1134  | 0    | 105                                | 351   | 144   | 0  | 600   | 0    | 125                                 | 413   | 54    | 0  | 592   | 0    | 2962  |
| <b>% Approach</b>              | 9.9%                               | 51.7% | 38.4% | 0% | -     | -    | 19.1%                                  | 64.3% | 16.6% | 0% | -     | -    | 17.5%                              | 58.5% | 24.0% | 0% | -     | -    | 21.1%                               | 69.8% | 9.1%  | 0% | -     | -    | -     |
| <b>% Total</b>                 | 2.1%                               | 11.1% | 8.2%  | 0% | 21.5% | -    | 7.3%                                   | 24.6% | 6.3%  | 0% | 38.3% | -    | 3.5%                               | 11.9% | 4.9%  | 0% | 20.3% | -    | 4.2%                                | 13.9% | 1.8%  | 0% | 20.0% | -    | -     |
| <b>PHF</b>                     | 0.685                              | 0.979 | 0.824 | -  | 0.919 | -    | 0.775                                  | 0.954 | 0.887 | -  | 0.991 | -    | 0.750                              | 0.964 | 0.766 | -  | 0.938 | -    | 0.801                               | 0.922 | 0.750 | -  | 0.980 | -    | 0.969 |
| <b>Motorcycles</b>             | 0                                  | 0     | 0     | 0  | 0     | -    | 1                                      | 1     | 0     | 0  | 2     | -    | 0                                  | 1     | 0     | 0  | 1     | -    | 0                                   | 2     | 0     | 0  | 2     | -    | 5     |
| <b>% Motorcycles</b>           | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0.5%                                   | 0.1%  | 0%    | 0% | 0.2%  | -    | 0%                                 | 0.3%  | 0%    | 0% | 0.2%  | -    | 0%                                  | 0.5%  | 0%    | 0% | 0.3%  | -    | 0.2%  |
| <b>Lights</b>                  | 60                                 | 314   | 241   | 0  | 615   | -    | 203                                    | 717   | 182   | 0  | 1102  | -    | 90                                 | 314   | 137   | 0  | 541   | -    | 124                                 | 397   | 50    | 0  | 571   | -    | 2829  |
| <b>% Lights</b>                | 95.2%                              | 95.4% | 98.8% | 0% | 96.7% | -    | 93.5%                                  | 98.4% | 96.8% | 0% | 97.2% | -    | 85.7%                              | 89.5% | 95.1% | 0% | 90.2% | -    | 99.2%                               | 96.1% | 92.6% | 0% | 96.5% | -    | 95.5% |
| <b>Single-Unit Trucks</b>      | 1                                  | 9     | 2     | 0  | 12    | -    | 10                                     | 9     | 5     | 0  | 24    | -    | 12                                 | 26    | 7     | 0  | 45    | -    | 1                                   | 11    | 2     | 0  | 14    | -    | 95    |
| <b>% Single-Unit Trucks</b>    | 1.6%                               | 2.7%  | 0.8%  | 0% | 1.9%  | -    | 4.6%                                   | 1.2%  | 2.7%  | 0% | 2.1%  | -    | 11.4%                              | 7.4%  | 4.9%  | 0% | 7.5%  | -    | 0.8%                                | 2.7%  | 3.7%  | 0% | 2.4%  | -    | 3.2%  |
| <b>Articulated Trucks</b>      | 1                                  | 4     | 0     | 0  | 5     | -    | 1                                      | 2     | 1     | 0  | 4     | -    | 3                                  | 10    | 0     | 0  | 13    | -    | 0                                   | 3     | 1     | 0  | 4     | -    | 26    |
| <b>% Articulated Trucks</b>    | 1.6%                               | 1.2%  | 0%    | 0% | 0.8%  | -    | 0.5%                                   | 0.3%  | 0.5%  | 0% | 0.4%  | -    | 2.9%                               | 2.8%  | 0%    | 0% | 2.2%  | -    | 0%                                  | 0.7%  | 1.9%  | 0% | 0.7%  | -    | 0.9%  |
| <b>Buses</b>                   | 1                                  | 2     | 1     | 0  | 4     | -    | 2                                      | 0     | 0     | 0  | 2     | -    | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                   | 0     | 1     | 0  | 1     | -    | 7     |
| <b>% Buses</b>                 | 1.6%                               | 0.6%  | 0.4%  | 0% | 0.6%  | -    | 0.9%                                   | 0%    | 0%    | 0% | 0.2%  | -    | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                  | 0%    | 1.9%  | 0% | 0.2%  | -    | 0.2%  |
| <b>Bicycles on Road</b>        | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                      | 0     | 0     | 0  | 0     | -    | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                   | 0     | 0     | 0  | 0     | -    | 0     |
| <b>% Bicycles on Road</b>      | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                  | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                  | -     | -     | -  | -     | 0    | -                                      | -     | -     | -  | -     | 0    | -                                  | -     | -     | -  | -     | 0    | -                                   | -     | -     | -  | -     | 0    | -     |
| <b>% Pedestrians</b>           | -                                  | -     | -     | -  | -     | -    | -                                      | -     | -     | -  | -     | -    | -                                  | -     | -     | -  | -     | -    | -                                   | -     | -     | -  | -     | -    | -     |
| <b>Bicycles on Crosswalk</b>   | -                                  | -     | -     | -  | -     | 0    | -                                      | -     | -     | -  | -     | 0    | -                                  | -     | -     | -  | -     | 0    | -                                   | -     | -     | -  | -     | 0    | -     |
| <b>% Bicycles on Crosswalk</b> | -                                  | -     | -     | -  | -     | -    | -                                      | -     | -     | -  | -     | -    | -                                  | -     | -     | -  | -     | -    | -                                   | -     | -     | -  | -     | -    | -     |

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

**TM-1 (Route 53 @ Route 228) TMC - TMC**

Thu Sep 26, 2019

PM Peak (Sep 26 2019 4:45PM - 5:45 PM) - Overall Peak Hour

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 699165, Location: 42.174643, -70.884978, Site Code: 197188

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Main Street (Route 228) Southbound |       |       |    |       |      | Washington Street (Route 53) Westbound |       |       |    |       |      | Pond Street (Route 228) Northbound |       |       |    |       |      | Whiting Street (Route 53) Eastbound |       |       |    |       |      | Int   |
|--------------------------------|------------------------------------|-------|-------|----|-------|------|--|-------|-------|----|-------|------|------------------------------------|-------|-------|----|-------|------|-------------------------------------|-------|-------|----|-------|------|-------|
|                                | R                                  | T     | L     | U  | App   | Ped* | R                                      | T     | L     | U  | App   | Ped* | R                                  | T     | L     | U  | App   | Ped* | R                                   | T     | L     | U  | App   | Ped* |       |
| 2019-09-26 4:45PM              | 12                                 | 112   | 80    | 0  | 204   | 0    | 60                                     | 135   | 46    | 0  | 241   | 0    | 93                                 | 85    | 52    | 0  | 230   | 0    | 42                                  | 208   | 21    | 0  | 271   | 0    | 946   |
| 5:00PM                         | 14                                 | 111   | 51    | 0  | 176   | 0    | 78                                     | 162   | 44    | 0  | 284   | 0    | 81                                 | 98    | 54    | 0  | 233   | 0    | 47                                  | 215   | 20    | 0  | 282   | 0    | 975   |
| 5:15PM                         | 15                                 | 121   | 63    | 0  | 199   | 0    | 58                                     | 144   | 44    | 0  | 246   | 0    | 70                                 | 91    | 51    | 0  | 212   | 0    | 34                                  | 191   | 30    | 0  | 255   | 0    | 912   |
| 5:30PM                         | 12                                 | 92    | 71    | 0  | 175   | 0    | 80                                     | 155   | 49    | 0  | 284   | 0    | 46                                 | 87    | 53    | 0  | 186   | 0    | 37                                  | 201   | 29    | 0  | 267   | 0    | 912   |
| <b>Total</b>                   | 53                                 | 436   | 265   | 0  | 754   | 0    | 276                                    | 596   | 183   | 0  | 1055  | 0    | 290                                | 361   | 210   | 0  | 861   | 0    | 160                                 | 815   | 100   | 0  | 1075  | 0    | 3745  |
| <b>% Approach</b>              | 7.0%                               | 57.8% | 35.1% | 0% | -     | -    | 26.2%                                  | 56.5% | 17.3% | 0% | -     | -    | 33.7%                              | 41.9% | 24.4% | 0% | -     | -    | 14.9%                               | 75.8% | 9.3%  | 0% | -     | -    | -     |
| <b>% Total</b>                 | 1.4%                               | 11.6% | 7.1%  | 0% | 20.1% | -    | 7.4%                                   | 15.9% | 4.9%  | 0% | 28.2% | -    | 7.7%                               | 9.6%  | 5.6%  | 0% | 23.0% | -    | 4.3%                                | 21.8% | 2.7%  | 0% | 28.7% | -    | -     |
| <b>PHF</b>                     | 0.883                              | 0.901 | 0.828 | -  | 0.924 | -    | 0.863                                  | 0.920 | 0.934 | -  | 0.929 | -    | 0.780                              | 0.921 | 0.972 | -  | 0.924 | -    | 0.851                               | 0.948 | 0.833 | -  | 0.953 | -    | 0.960 |
| <b>Motorcycles</b>             | 1                                  | 0     | 0     | 0  | 1     | -    | 0                                      | 2     | 1     | 0  | 3     | -    | 0                                  | 1     | 0     | 0  | 1     | -    | 1                                   | 2     | 1     | 0  | 4     | -    | 9     |
| <b>% Motorcycles</b>           | 1.9%                               | 0%    | 0%    | 0% | 0.1%  | -    | 0%                                     | 0.3%  | 0.5%  | 0% | 0.3%  | -    | 0%                                 | 0.3%  | 0%    | 0% | 0.1%  | -    | 0.6%                                | 0.2%  | 1.0%  | 0% | 0.4%  | -    | 0.2%  |
| <b>Lights</b>                  | 51                                 | 425   | 262   | 0  | 738   | -    | 272                                    | 590   | 179   | 0  | 1041  | -    | 290                                | 359   | 207   | 0  | 856   | -    | 159                                 | 807   | 97    | 0  | 1063  | -    | 3698  |
| <b>% Lights</b>                | 96.2%                              | 97.5% | 98.9% | 0% | 97.9% | -    | 98.6%                                  | 99.0% | 97.8% | 0% | 98.7% | -    | 100%                               | 99.4% | 98.6% | 0% | 99.4% | -    | 99.4%                               | 99.0% | 97.0% | 0% | 98.9% | -    | 98.7% |
| <b>Single-Unit Trucks</b>      | 1                                  | 4     | 1     | 0  | 6     | -    | 2                                      | 4     | 3     | 0  | 9     | -    | 0                                  | 0     | 3     | 0  | 3     | -    | 0                                   | 6     | 1     | 0  | 7     | -    | 25    |
| <b>% Single-Unit Trucks</b>    | 1.9%                               | 0.9%  | 0.4%  | 0% | 0.8%  | -    | 0.7%                                   | 0.7%  | 1.6%  | 0% | 0.9%  | -    | 0%                                 | 0%    | 1.4%  | 0% | 0.3%  | -    | 0%                                  | 0.7%  | 1.0%  | 0% | 0.7%  | -    | 0.7%  |
| <b>Articulated Trucks</b>      | 0                                  | 5     | 1     | 0  | 6     | -    | 1                                      | 0     | 0     | 0  | 1     | -    | 0                                  | 1     | 0     | 0  | 1     | -    | 0                                   | 0     | 0     | 0  | 0     | -    | 8     |
| <b>% Articulated Trucks</b>    | 0%                                 | 1.1%  | 0.4%  | 0% | 0.8%  | -    | 0.4%                                   | 0%    | 0%    | 0% | 0.1%  | -    | 0%                                 | 0.3%  | 0%    | 0% | 0.1%  | -    | 0%                                  | 0%    | 0%    | 0% | 0%    | -    | 0.2%  |
| <b>Buses</b>                   | 0                                  | 2     | 1     | 0  | 3     | -    | 1                                      | 0     | 0     | 0  | 1     | -    | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                   | 0     | 1     | 0  | 1     | -    | 5     |
| <b>% Buses</b>                 | 0%                                 | 0.5%  | 0.4%  | 0% | 0.4%  | -    | 0.4%                                   | 0%    | 0%    | 0% | 0.1%  | -    | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                  | 0%    | 1.0%  | 0% | 0.1%  | -    | 0.1%  |
| <b>Bicycles on Road</b>        | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                      | 0     | 0     | 0  | 0     | -    | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                   | 0     | 0     | 0  | 0     | -    | 0     |
| <b>% Bicycles on Road</b>      | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                  | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                  | -     | -     | -  | 0     | -    | -                                      | -     | -     | -  | 0     | -    | -                                  | -     | -     | -  | 0     | -    | -                                   | -     | -     | -  | 0     | -    | 0     |
| <b>% Pedestrians</b>           | -                                  | -     | -     | -  | -     | -    | -                                      | -     | -     | -  | -     | -    | -                                  | -     | -     | -  | -     | -    | -                                   | -     | -     | -  | -     | -    | -     |
| <b>Bicycles on Crosswalk</b>   | -                                  | -     | -     | -  | 0     | -    | -                                      | -     | -     | -  | 0     | -    | -                                  | -     | -     | -  | 0     | -    | -                                   | -     | -     | -  | 0     | -    | 0     |
| <b>% Bicycles on Crosswalk</b> | -                                  | -     | -     | -  | -     | -    | -                                      | -     | -     | -  | -     | -    | -                                  | -     | -     | -  | -     | -    | -                                   | -     | -     | -  | -     | -    | -     |

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



**TM-1 (Route 53 @ Route 228) TMC - TMC**

Sat Sep 28, 2019

Midday Peak (WKND) (Sep 28 2019 11:45AM - 12:45 PM)

All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 699165, Location: 42.174643, -70.884978, Site Code: 197188

Provided by: Precision Data Industries, LLC (PDI)

46 Morton Street, Framingham, MA, MA, 01702, US

| Leg Direction                  | Main Street (Route 228) Southbound |       |       |    |       |      | Washington Street (Route 53) Westbound |       |       |    |       |      | Pond Street (Route 228) Northbound |       |       |    |       |      | Whiting Street (Route 53) Eastbound |       |       |    |       |      | Int   |
|--------------------------------|------------------------------------|-------|-------|----|-------|------|--|-------|-------|----|-------|------|------------------------------------|-------|-------|----|-------|------|-------------------------------------|-------|-------|----|-------|------|-------|
|                                | R                                  | T     | L     | U  | App   | Ped* | R                                      | T     | L     | U  | App   | Ped* | R                                  | T     | L     | U  | App   | Ped* | R                                   | T     | L     | U  | App   | Ped* |       |
| 2019-09-28 11:45AM             | 26                                 | 92    | 36    | 0  | 154   | 0    | 55                                     | 196   | 61    | 0  | 312   | 1    | 54                                 | 103   | 55    | 0  | 212   | 3    | 46                                  | 167   | 31    | 0  | 244   | 0    | 922   |
| 12:00PM                        | 24                                 | 116   | 52    | 0  | 192   | 1    | 63                                     | 213   | 58    | 0  | 334   | 0    | 66                                 | 87    | 55    | 0  | 208   | 2    | 41                                  | 165   | 27    | 0  | 233   | 1    | 967   |
| 12:15PM                        | 23                                 | 120   | 57    | 0  | 200   | 0    | 60                                     | 193   | 50    | 0  | 303   | 1    | 45                                 | 94    | 58    | 0  | 197   | 1    | 38                                  | 164   | 28    | 0  | 230   | 0    | 930   |
| 12:30PM                        | 22                                 | 96    | 47    | 0  | 165   | 0    | 55                                     | 197   | 33    | 0  | 285   | 0    | 52                                 | 103   | 68    | 0  | 223   | 1    | 41                                  | 142   | 20    | 0  | 203   | 0    | 876   |
| <b>Total</b>                   | 95                                 | 424   | 192   | 0  | 711   | 1    | 233                                    | 799   | 202   | 0  | 1234  | 2    | 217                                | 387   | 236   | 0  | 840   | 7    | 166                                 | 638   | 106   | 0  | 910   | 1    | 3695  |
| <b>% Approach</b>              | 13.4%                              | 59.6% | 27.0% | 0% | -     | -    | 18.9%                                  | 64.7% | 16.4% | 0% | -     | -    | 25.8%                              | 46.1% | 28.1% | 0% | -     | -    | 18.2%                               | 70.1% | 11.6% | 0% | -     | -    | -     |
| <b>% Total</b>                 | 2.6%                               | 11.5% | 5.2%  | 0% | 19.2% | -    | 6.3%                                   | 21.6% | 5.5%  | 0% | 33.4% | -    | 5.9%                               | 10.5% | 6.4%  | 0% | 22.7% | -    | 4.5%                                | 17.3% | 2.9%  | 0% | 24.6% | -    | -     |
| <b>PHF</b>                     | 0.913                              | 0.883 | 0.842 | -  | 0.889 | -    | 0.925                                  | 0.938 | 0.828 | -  | 0.924 | -    | 0.822                              | 0.939 | 0.868 | -  | 0.942 | -    | 0.902                               | 0.955 | 0.855 | -  | 0.932 | -    | 0.955 |
| <b>Motorcycles</b>             | 2                                  | 2     | 1     | 0  | 5     | -    | 0                                      | 1     | 0     | 0  | 1     | -    | 2                                  | 2     | 2     | 0  | 6     | -    | 1                                   | 2     | 0     | 0  | 3     | -    | 15    |
| <b>% Motorcycles</b>           | 2.1%                               | 0.5%  | 0.5%  | 0% | 0.7%  | -    | 0%                                     | 0.1%  | 0%    | 0% | 0.1%  | -    | 0.9%                               | 0.5%  | 0.8%  | 0% | 0.7%  | -    | 0.6%                                | 0.3%  | 0%    | 0% | 0.3%  | -    | 0.4%  |
| <b>Lights</b>                  | 91                                 | 413   | 188   | 0  | 692   | -    | 233                                    | 795   | 199   | 0  | 1227  | -    | 214                                | 382   | 233   | 0  | 829   | -    | 164                                 | 633   | 106   | 0  | 903   | -    | 3651  |
| <b>% Lights</b>                | 95.8%                              | 97.4% | 97.9% | 0% | 97.3% | -    | 100%                                   | 99.5% | 98.5% | 0% | 99.4% | -    | 98.6%                              | 98.7% | 98.7% | 0% | 98.7% | -    | 98.8%                               | 99.2% | 100%  | 0% | 99.2% | -    | 98.8% |
| <b>Single-Unit Trucks</b>      | 0                                  | 5     | 1     | 0  | 6     | -    | 0                                      | 3     | 3     | 0  | 6     | -    | 1                                  | 1     | 1     | 0  | 3     | -    | 1                                   | 3     | 0     | 0  | 4     | -    | 19    |
| <b>% Single-Unit Trucks</b>    | 0%                                 | 1.2%  | 0.5%  | 0% | 0.8%  | -    | 0%                                     | 0.4%  | 1.5%  | 0% | 0.5%  | -    | 0.5%                               | 0.3%  | 0.4%  | 0% | 0.4%  | -    | 0.6%                                | 0.5%  | 0%    | 0% | 0.4%  | -    | 0.5%  |
| <b>Articulated Trucks</b>      | 1                                  | 3     | 2     | 0  | 6     | -    | 0                                      | 0     | 0     | 0  | 0     | -    | 0                                  | 1     | 0     | 0  | 1     | -    | 0                                   | 0     | 0     | 0  | 0     | -    | 7     |
| <b>% Articulated Trucks</b>    | 1.1%                               | 0.7%  | 1.0%  | 0% | 0.8%  | -    | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%                                 | 0.3%  | 0%    | 0% | 0.1%  | -    | 0%                                  | 0%    | 0%    | 0% | 0%    | -    | 0.2%  |
| <b>Buses</b>                   | 1                                  | 1     | 0     | 0  | 2     | -    | 0                                      | 0     | 0     | 0  | 0     | -    | 0                                  | 1     | 0     | 0  | 1     | -    | 0                                   | 0     | 0     | 0  | 0     | -    | 3     |
| <b>% Buses</b>                 | 1.1%                               | 0.2%  | 0%    | 0% | 0.3%  | -    | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%                                 | 0.3%  | 0%    | 0% | 0.1%  | -    | 0%                                  | 0%    | 0%    | 0% | 0%    | -    | 0.1%  |
| <b>Bicycles on Road</b>        | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                      | 0     | 0     | 0  | 0     | -    | 0                                  | 0     | 0     | 0  | 0     | -    | 0                                   | 0     | 0     | 0  | 0     | -    | 0     |
| <b>% Bicycles on Road</b>      | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                     | 0%    | 0%    | 0% | 0%    | -    | 0%                                 | 0%    | 0%    | 0% | 0%    | -    | 0%                                  | 0%    | 0%    | 0% | 0%    | -    | 0%    |
| <b>Pedestrians</b>             | -                                  | -     | -     | -  | -     | 1    | -                                      | -     | -     | -  | -     | 2    | -                                  | -     | -     | -  | -     | 7    | -                                   | -     | -     | -  | -     | 1    | -     |
| <b>% Pedestrians</b>           | -                                  | -     | -     | -  | -     | 100% | -                                      | -     | -     | -  | -     | 100% | -                                  | -     | -     | -  | -     | 100% | -                                   | -     | -     | -  | -     | 100% | -     |
| <b>Bicycles on Crosswalk</b>   | -                                  | -     | -     | -  | -     | 0    | -                                      | -     | -     | -  | -     | 0    | -                                  | -     | -     | -  | -     | 0    | -                                   | -     | -     | -  | -     | 0    | -     |
| <b>% Bicycles on Crosswalk</b> | -                                  | -     | -     | -  | -     | 0%   | -                                      | -     | -     | -  | -     | 0%   | -                                  | -     | -     | -  | -     | 0%   | -                                   | -     | -     | -  | -     | 0%   | -     |

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

**APPENDIX G**  
**Intersection Capacity Analyses**  
**Weekday AM Peak Hour**  
**Estimated Base Year (2020) Scenarios**

Intersection Capacity Analysis  
1: Pond Street/Main Street & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 54    | 413   | 125  | 188   | 729   | 217  | 144   | 351   | 105   | 244   | 329   | 63   |
| Future Volume (vph)     | 54    | 413   | 125  | 188   | 729   | 217  | 144   | 351   | 105   | 244   | 329   | 63   |
| Ideal Flow (vphp)       | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 150   |       | 0    | 200   |       | 0    | 150   |       | 200   | 250   |       | 250  |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 1     | 1     |       | 1    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Satd. Flow (prot)       | 1787  | 3344  | 0    | 1703  | 3437  | 0    | 1583  | 1727  | 1538  | 1736  | 3404  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (perm)       | 1787  | 3344  | 0    | 1703  | 3437  | 0    | 1583  | 1727  | 1538  | 1736  | 3404  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 44    |      |       | 43    |      |       |       | 131   |       |       | 20   |
| Link Speed (mph)        |       | 35    |      |       | 35    |      |       | 45    |       |       |       | 45   |
| Link Distance (ft)      |       | 1282  |      |       | 608   |      |       | 885   |       |       |       | 701  |
| Travel Time (s)         |       | 25.0  |      |       | 11.8  |      |       | 13.4  |       |       |       | 10.6 |
| Peak Hour Factor        | 0.98  | 0.98  | 0.98 | 0.99  | 0.99  | 0.99 | 0.94  | 0.94  | 0.94  | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 1%    | 3%    | 8%   | 6%    | 1%    | 3%   | 14%   | 10%   | 5%    | 4%    | 4%    | 1%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 55    | 549   | 0    | 190   | 955   | 0    | 153   | 373   | 112   | 265   | 426   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | Prot  | NA    | Perm  | Prot  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      | 3     | 8     |       | 7     | 4     |      |
| Permitted Phases        |       |       |      |       |       |      |       |       | 8     |       |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 8     | 8     | 7     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 1.0   | 1.0   |      | 1.0   | 1.0   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      |
| Minimum Split (s)       | 10.0  | 22.5  |      | 13.0  | 22.5  |      | 13.0  | 22.0  | 22.0  | 10.0  | 22.0  |      |
| Total Split (s)         | 15.0  | 40.0  |      | 15.0  | 40.0  |      | 20.0  | 25.0  | 25.0  | 20.0  | 25.0  |      |
| Total Split (%)         | 15.0% | 40.0% |      | 15.0% | 40.0% |      | 20.0% | 25.0% | 25.0% | 20.0% | 25.0% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      |
| 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   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   | Lag   | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Recall Mode             | None  | None  |      | None  | None  |      | None  | None  | None  | None  | None  |      |
| Act Effct Green (s)     | 8.0   | 27.3  |      | 10.1  | 31.9  |      | 12.9  | 20.2  | 20.2  | 15.1  | 22.4  |      |
| Actuated g/C Ratio      | 0.09  | 0.29  |      | 0.11  | 0.34  |      | 0.14  | 0.22  | 0.22  | 0.16  | 0.24  |      |
| v/c Ratio               | 0.36  | 0.54  |      | 1.03  | 0.79  |      | 0.70  | 1.00  | 0.26  | 0.94  | 0.51  |      |
| Control Delay           | 48.6  | 26.6  |      | 119.0 | 32.4  |      | 57.0  | 85.4  | 6.0   | 81.8  | 33.8  |      |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 48.6  | 26.6  |      | 119.0 | 32.4  |      | 57.0  | 85.4  | 6.0   | 81.8  | 33.8  |      |
| LOS                     | D     | C     |      | F     | C     |      | E     | F     | A     | F     | C     |      |
| Approach Delay          |       | 28.6  |      |       | 46.7  |      |       | 64.6  |       |       | 52.2  |      |
| Approach LOS            |       | C     |      |       | D     |      |       | E     |       |       | D     |      |
| Queue Length 50th (ft)  | 32    | 128   |      | ~130  | 263   |      | 89    | ~247  | 0     | 163   | 117   |      |
| Queue Length 95th (ft)  | 72    | 178   |      | #277  | 350   |      | #172  | #447  | 34    | #337  | 176   |      |
| Internal Link Dist (ft) |       | 1202  |      |       | 528   |      |       | 805   |       |       | 621   |      |
| Turn Bay Length (ft)    | 150   |       |      | 200   |       |      | 150   |       | 200   | 250   |       |      |
| Base Capacity (vph)     | 194   | 1298  |      | 184   | 1332  |      | 258   | 374   | 436   | 282   | 837   |      |

Intersection Capacity Analysis  
 1: Pond Street/Main Street & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|------|------|------|-----|
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Reduced v/c Ratio      | 0.28 | 0.42 |     | 1.03 | 0.72 |     | 0.59 | 1.00 | 0.26 | 0.94 | 0.51 |     |

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 92.9  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.03  
 Intersection Signal Delay: 48.1 Intersection LOS: D  
 Intersection Capacity Utilization 79.1% ICU Level of Service D  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Pond Street/Main Street & Route 53

|      |      |      |      |
|------|------|------|------|
| Ø1   | Ø2   | Ø3   | Ø4   |
| 15 s | 40 s | 20 s | 25 s |
| Ø5   | Ø6   | Ø7   | Ø8   |
| 15 s | 40 s | 20 s | 25 s |

HCM 6th TWSC  
Route 53 at Queen Anne Plaza Driveway

02/26/2021

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.8  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      | ↖    | ↑    | ↖    | ↖    |
| Traffic Vol, veh/h       | 745  | 17   | 14   | 1172 | 4    | 110  |
| Future Vol, veh/h        | 745  | 17   | 14   | 1172 | 4    | 110  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | 100  | -    | 0    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 810  | 18   | 15   | 1274 | 4    | 120  |























| Major/Minor          | Major1 | Major2 | Minor1 |   |       |       |
|----------------------|--------|--------|--------|---|-------|-------|
| Conflicting Flow All | 0      | 0      | 828    | 0 | 2123  | 414   |
| Stage 1              | -      | -      | -      | - | 819   | -     |
| Stage 2              | -      | -      | -      | - | 1304  | -     |
| Critical Hdwy        | -      | -      | 4.13   | - | 6.63  | 6.93  |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.83  | -     |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.43  | -     |
| Follow-up Hdwy       | -      | -      | 2.219  | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver   | -      | -      | 801    | - | 49    | 588   |
| Stage 1              | -      | -      | -      | - | 395   | -     |
| Stage 2              | -      | -      | -      | - | 253   | -     |
| Platoon blocked, %   | -      | -      | -      | - | -     | -     |
| Mov Cap-1 Maneuver   | -      | -      | 801    | - | 48    | 588   |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 160   | -     |
| Stage 1              | -      | -      | -      | - | 395   | -     |
| Stage 2              | -      | -      | -      | - | 248   | -     |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.1 | 13.2 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 160   | 588   | -   | -   | 801   | -   |
| HCM Lane V/C Ratio    | 0.027 | 0.203 | -   | -   | 0.019 | -   |
| HCM Control Delay (s) | 28.1  | 12.7  | -   | -   | 9.6   | -   |
| HCM Lane LOS          | D     | B     | -   | -   | A     | -   |
| HCM 95th %tile Q(veh) | 0.1   | 0.8   | -   | -   | 0.1   | -   |

Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations     |  |  |  |  |  |   |  |  |   |  |  |  |
| Traffic Volume (vph)    | 196   | 471   | 158   | 21  | 557   | 53  | 249   | 96  | 26  | 88  | 134   | 515   |
| Future Volume (vph)     | 196   | 471   | 158   | 21  | 557   | 53  | 249   | 96  | 26  | 88  | 134   | 515   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 300   |   | 300   | 150   |   | 150   | 200   |   | 0   | 350   |   | 350   |
| Storage Lanes           | 1   |   | 1   | 2   |   | 0   | 1   |   | 0   | 1   |   | 0   |
| Taper Length (ft)       | 25  |   |   | 150   |   |   | 150   |   |   | 150   |   |   |
| Satd. Flow (prot)       | 1736  | 1827  | 1553  | 1736  | 3426  | 0   | 1770  | 1795  | 0   | 1770  | 1863  | 1583  |
| Flt Permitted           | 0.950   |   |   | 0.950   |   |   | 0.351   |   |   | 0.671   |   |   |
| Satd. Flow (perm)       | 1736  | 1827  | 1506  | 1727  | 3426  | 0   | 654   | 1795  | 0   | 1245  | 1863  | 1583  |
| Right Turn on Red       |   |   | Yes   |   |   | Yes   |   |   | Yes   |   |   | Yes   |
| Satd. Flow (RTOR)       |   |   | 172   |   | 9   |   |   | 13  |   |   |   | 569   |
| Link Speed (mph)        |   | 30  |   |   | 30  |   |   | 30  |   |   |   | 30  |
| Link Distance (ft)      |   | 663   |   |   | 1258  |   |   | 1174  |   |   |   | 873   |
| Travel Time (s)         |   | 15.1  |   |   | 28.6  |   |   | 26.7  |   |   |   | 19.8  |
| Confl. Peds. (#/hr)     |   |   | 4   | 4   |   |   |   |   | 1   | 1   |   |   |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.91  | 0.91  | 0.91  | 0.85  | 0.85  | 0.85  |
| Heavy Vehicles (%)      | 4%  | 4%  | 4%  | 4%  | 4%  | 4%  | 2%  | 2%  | 2%  | 2%  | 2%  | 2%  |
| Shared Lane Traffic (%) |   |   |   |   |   |   |   |   |   |   |   |   |
| Lane Group Flow (vph)   | 213   | 512   | 172   | 23  | 663   | 0   | 274   | 134   | 0   | 104   | 158   | 606   |
| Turn Type               | Prot  | NA  | Perm  | Prot  | NA  |   | pm+pt   | NA  |   | Perm  | NA  | Perm  |
| Protected Phases        | 1   | 6   |   | 5   | 2   |   | 7   | 4   |   |   |   | 8   |
| Permitted Phases        |   |   | 6   |   |   |   | 4   |   |   | 8   |   | 8   |
| Detector Phase          | 1   | 6   | 6   | 5   | 2   |   | 7   | 4   |   | 8   | 8   | 8   |
| Switch Phase            |   |   |   |   |   |   |   |   |   |   |   |   |
| Minimum Initial (s)     | 5.0   | 5.0   | 5.0   | 3.0   | 5.0   |   | 5.0   | 5.0   |   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)       | 10.0  | 25.0  | 25.0  | 8.0   | 25.0  |   | 9.0   | 10.0  |   | 10.0  | 10.0  | 10.0  |
| Total Split (s)         | 20.0  | 30.0  | 30.0  | 20.0  | 30.0  |   | 15.0  | 30.0  |   | 15.0  | 15.0  | 15.0  |
| Total Split (%)         | 19.4%   | 29.1%   | 29.1%   | 19.4%   | 29.1%   |   | 14.6%   | 29.1%   |   | 14.6%   | 14.6%   | 14.6%   |
| Yellow Time (s)         | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |   | 4.0   | 4.0   |   | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |   | 0.0   | 1.0   |   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |   | 0.0   | 0.0   |   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |   | 4.0   | 5.0   |   | 5.0   | 5.0   | 5.0   |
| Lead/Lag                | Lead  | Lag   | Lag   | Lead  | Lag   |   | Lead  |   |   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   | Yes   | Yes   |   | Yes   |   |   | Yes   | Yes   | Yes   |
| Recall Mode             | None  | Max   | Max   | None  | Max   |   | None  | None  |   | None  | None  | None  |
| Act Effct Green (s)     | 14.2  | 39.8  | 39.8  | 6.7   | 25.3  |   | 26.3  | 25.3  |   | 10.1  | 10.1  | 10.1  |
| Actuated g/C Ratio      | 0.17  | 0.48  | 0.48  | 0.08  | 0.30  |   | 0.31  | 0.30  |   | 0.12  | 0.12  | 0.12  |
| v/c Ratio               | 0.72  | 0.59  | 0.21  | 0.17  | 0.64  |   | 0.78  | 0.24  |   | 0.69  | 0.71  | 0.88  |
| Control Delay           | 49.8  | 23.7  | 4.6   | 41.4  | 29.7  |   | 42.7  | 23.5  |   | 63.0  | 55.7  | 20.6  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |   | 0.0   | 0.0   |   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 49.8  | 23.7  | 4.6   | 41.4  | 29.7  |   | 42.7  | 23.5  |   | 63.0  | 55.7  | 20.6  |
| LOS                     | D   | C   | A   | D   | C   |   | D   | C   |   | E   | E   | C   |
| Approach Delay          |   | 26.3  |   |   | 30.1  |   |   | 36.4  |   |   | 32.1  |   |
| Approach LOS            |   | C   |   |   | C   |   |   | D   |   |   | C   |   |
| Queue Length 50th (ft)  | 100   | 143   | 0   | 11  | 145   |   | 108   | 44  |   | 50  | 77  | 17  |
| Queue Length 95th (ft)  | #266  | #527  | 48  | 40  | 281   |   | #276  | 119   |   | #155  | #203  | #163  |
| Internal Link Dist (ft) |   | 583   |   |   | 1178  |   |   | 1094  |   |   | 793   |   |
| Turn Bay Length (ft)    | 300   |   | 300   | 150   |   |   | 200   |   |   | 350   |   | 350   |

Intersection Capacity Analysis  
 2: High St/Grove St & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 23.0 |
| Total Split (s)         | 23.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |

Intersection Capacity Analysis  
 2: High St/Grove St & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR  | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| Base Capacity (vph)    | 314  | 868  | 805  | 314  | 1040 |     | 353  | 551  |     | 150  | 224  | 691  |
| Starvation Cap Reductn | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Spillback Cap Reductn  | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Storage Cap Reductn    | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Reduced v/c Ratio      | 0.68 | 0.59 | 0.21 | 0.07 | 0.64 |     | 0.78 | 0.24 |     | 0.69 | 0.71 | 0.88 |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 103                    |
| Actuated Cycle Length:  | 83.7                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.88                   |
| Intersection Signal Delay:                                      | 30.4                   |
| Intersection LOS:   | C                      |
| Intersection Capacity Utilization                               | 74.4%                  |
| ICU Level of Service  | D                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer. |                        |
| Queue shown is maximum after two cycles.                        |                        |

Splits and Phases: 2: High St/Grove St & Route 53

|            |            |            |            |
|------------|------------|------------|------------|
| Ø1<br>20 s | Ø2<br>30 s | Ø9<br>23 s | Ø4<br>30 s |
| Ø5<br>20 s | Ø6<br>30 s |            | Ø7<br>15 s |
|            |            |            | Ø8<br>15 s |



| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.5  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NEL  | NER  |
| Lane Configurations      | ↔    |      |      | ↔    | ↔    | ↔    |
| Traffic Vol, veh/h       | 514  | 24   | 94   | 579  | 27   | 80   |
| Future Vol, veh/h        | 514  | 24   | 94   | 579  | 27   | 80   |
| Conflicting Peds, #/hr   | 0    | 1    | 1    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 75   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 89   | 89   | 60   | 60   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 591  | 28   | 106  | 651  | 45   | 133  |

| Major/Minor          | Major1 | Major2 | Minor1 |   |             |
|----------------------|--------|--------|--------|---|-------------|
| Conflicting Flow All | 0      | 0      | 620    | 0 | 1469 606    |
| Stage 1              | -      | -      | -      | - | 606 -       |
| Stage 2              | -      | -      | -      | - | 863 -       |
| Critical Hdwy        | -      | -      | 4.13   | - | 6.43 6.23   |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.43 -      |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.43 -      |
| Follow-up Hdwy       | -      | -      | 2.227  | - | 3.527 3.327 |
| Pot Cap-1 Maneuver   | -      | -      | 956    | - | 140 495     |
| Stage 1              | -      | -      | -      | - | 543 -       |
| Stage 2              | -      | -      | -      | - | 411 -       |
| Platoon blocked, %   | -      | -      | -      | - | -           |
| Mov Cap-1 Maneuver   | -      | -      | 955    | - | 116 495     |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 116 -       |
| Stage 1              | -      | -      | -      | - | 542 -       |
| Stage 2              | -      | -      | -      | - | 339 -       |

| Approach             | EB | WB  | NE   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 1.3 | 24.9 |
| HCM LOS              |    |     | C    |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 116   | 495   | -   | -   | 955   | -   |
| HCM Lane V/C Ratio    | 0.388 | 0.269 | -   | -   | 0.111 | -   |
| HCM Control Delay (s) | 54.5  | 14.9  | -   | -   | 9.2   | 0   |
| HCM Lane LOS          | F     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 1.6   | 1.1   | -   | -   | 0.4   | -   |

HCM 6th TWSC  
4: Hall Dr/Driveway & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.1  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 8    | 516  | 12   | 30   | 716  | 6    | 13   | 3    | 41   | 2    | 2    | 2    |
| Future Vol, veh/h        | 8    | 516  | 12   | 30   | 716  | 6    | 13   | 3    | 41   | 2    | 2    | 2    |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 80   | 92   | 92   | 92   | 70   | 70   | 70   | 60   | 60   | 60   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 3    | 3    | 3    | 4    | 4    | 4    | 0    | 0    | 0    |
| Mvmt Flow                | 10   | 645  | 15   | 33   | 778  | 7    | 19   | 4    | 59   | 3    | 3    | 3    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|------|-----|
| Conflicting Flow All | 787    | 0 | 0 | 660    | 0 | 0 | 1524   | 1526  | 653   | 1554   | 1530 | 784 |
| Stage 1              | -      | - | - | -      | - | - | 673    | 673   | -     | 850    | 850  | -   |
| Stage 2              | -      | - | - | -      | - | - | 851    | 853   | -     | 704    | 680  | -   |
| Critical Hdwy        | 4.14   | - | - | 4.13   | - | - | 7.14   | 6.54  | 6.24  | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.14   | 5.54  | -     | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.14   | 5.54  | -     | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.236  | - | - | 2.227  | - | - | 3.536  | 4.036 | 3.336 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 823    | - | - | 923    | - | - | 96     | 116   | 464   | 93     | 118  | 396 |
| Stage 1              | -      | - | - | -      | - | - | 442    | 451   | -     | 358    | 380  | -   |
| Stage 2              | -      | - | - | -      | - | - | 352    | 373   | -     | 431    | 454  | -   |
| Platoon blocked, %   |        | - | - |        | - | - |        |       |       |        |      |     |
| Mov Cap-1 Maneuver   | 821    | - | - | 923    | - | - | 87     | 106   | 464   | 74     | 108  | 395 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 87     | 106   | -     | 74     | 108  | -   |
| Stage 1              | -      | - | - | -      | - | - | 434    | 442   | -     | 350    | 355  | -   |
| Stage 2              | -      | - | - | -      | - | - | 324    | 349   | -     | 366    | 445  | -   |

| Approach             | EB  |  |  | WB  |  |  | NE   |  |  | SW |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|----|--|--|
| HCM Control Delay, s | 0.1 |  |  | 0.4 |  |  | 31.8 |  |  | 38 |  |  |
| HCM LOS              |     |  |  |     |  |  | D    |  |  | E  |  |  |

| Minor Lane/Major Mvmt | NELn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SWLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 214   | 821   | -   | -   | 923   | -   | -   | 119   |
| HCM Lane V/C Ratio    | 0.381 | 0.012 | -   | -   | 0.035 | -   | -   | 0.084 |
| HCM Control Delay (s) | 31.8  | 9.4   | 0   | -   | 9     | 0   | -   | 38    |
| HCM Lane LOS          | D     | A     | A   | -   | A     | A   | -   | E     |
| HCM 95th %tile Q(veh) | 1.7   | 0     | -   | -   | 0.1   | -   | -   | 0.3   |

HCM 6th TWSC  
 5: Washington Park Dr/Brantwood Rd & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.1  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 19   | 515  | 8    | 10   | 728  | 6    | 19   | 0    | 24   | 8    | 0    | 17   |
| Future Vol, veh/h        | 19   | 515  | 8    | 10   | 728  | 6    | 19   | 0    | 24   | 8    | 0    | 17   |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 2    | 2    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 80   | 91   | 91   | 91   | 85   | 85   | 85   | 70   | 70   | 70   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 0    | 0    | 0    |
| Mvmt Flow                | 24   | 644  | 10   | 11   | 800  | 7    | 22   | 0    | 28   | 11   | 0    | 24   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|------|-----|
| Conflicting Flow All | 809    | 0 | 0 | 654    | 0 | 0 | 1535   | 1528  | 651   | 1541   | 1530 | 806 |
| Stage 1              | -      | - | - | -      | - | - | 697    | 697   | -     | 828    | 828  | -   |
| Stage 2              | -      | - | - | -      | - | - | 838    | 831   | -     | 713    | 702  | -   |
| Critical Hdwy        | 4.14   | - | - | 4.13   | - | - | 7.13   | 6.53  | 6.23  | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.13   | 5.53  | -     | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.13   | 5.53  | -     | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.236  | - | - | 2.227  | - | - | 3.527  | 4.027 | 3.327 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 808    | - | - | 928    | - | - | 94     | 117   | 467   | 95     | 118  | 385 |
| Stage 1              | -      | - | - | -      | - | - | 430    | 441   | -     | 368    | 389  | -   |
| Stage 2              | -      | - | - | -      | - | - | 359    | 383   | -     | 426    | 443  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -    | -   |
| Mov Cap-1 Maneuver   | 806    | - | - | 928    | - | - | 83     | 109   | 466   | 84     | 110  | 384 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 83     | 109   | -     | 84     | 110  | -   |
| Stage 1              | -      | - | - | -      | - | - | 410    | 420   | -     | 350    | 380  | -   |
| Stage 2              | -      | - | - | -      | - | - | 329    | 374   | -     | 381    | 422  | -   |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.3 |  |  | 0.1 |  |  | 39.7 |  |  | 30.1 |  |  |
| HCM LOS              |     |  |  |     |  |  | E    |  |  | D    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 153   | 806   | -   | -   | 928   | -   | -   | 179   |
| HCM Lane V/C Ratio    | 0.331 | 0.029 | -   | -   | 0.012 | -   | -   | 0.2   |
| HCM Control Delay (s) | 39.7  | 9.6   | 0   | -   | 8.9   | 0   | -   | 30.1  |
| HCM Lane LOS          | E     | A     | A   | -   | A     | A   | -   | D     |
| HCM 95th %tile Q(veh) | 1.3   | 0.1   | -   | -   | 0     | -   | -   | 0.7   |

Intersection Capacity Analysis  
 6: Stop & Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 10    | 586   | 39   | 44    | 762   | 13   | 46    | 2     | 51   | 18    | 2     | 14   |
| Future Volume (vph)     | 10    | 586   | 39   | 44    | 762   | 13   | 46    | 2     | 51   | 18    | 2     | 14   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 200   |       | 200  | 150   |       | 0    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 1     |       | 1    | 1     |       | 0    | 1     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 150   |       |      | 25    |       |      | 25    |       |      | 25    |       |      |
| Satd. Flow (prot)       | 1736  | 3440  | 0    | 1752  | 1840  | 0    | 1719  | 1521  | 0    | 0     | 1683  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.388 |       |      | 0.728 |       |      |       | 0.805 |      |
| Satd. Flow (perm)       | 1728  | 3440  | 0    | 716   | 1840  | 0    | 1317  | 1521  | 0    | 0     | 1386  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 9     |      |       | 1     |      |       | 57    |      |       |       | 18   |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       |       | 30   |
| Link Distance (ft)      |       | 1093  |      |       | 907   |      |       | 396   |      |       |       | 538  |
| Travel Time (s)         |       | 24.8  |      |       | 20.6  |      |       | 9.0   |      |       |       | 12.2 |
| Confl. Peds. (#/hr)     | 3     |       |      |       |       | 3    |       |       | 2    | 2     |       |      |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90 | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 3%    | 3%    | 3%   | 5%    | 5%    | 5%   | 4%    | 4%    | 4%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 11    | 694   | 0    | 49    | 861   | 0    | 51    | 59    | 0    | 0     | 44    | 0    |
| Turn Type               | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      |       | 3     |      |       |       | 7    |
| Permitted Phases        |       |       |      | 2     |       |      | 3     |       |      | 7     |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 3     |      | 7     |       | 7    |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 3.0   | 5.0   |      | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      |
| Minimum Split (s)       | 8.0   | 10.0  |      | 8.0   | 10.0  |      | 10.0  | 10.0  |      | 10.0  | 10.0  |      |
| Total Split (s)         | 15.0  | 45.0  |      | 15.0  | 45.0  |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Total Split (%)         | 15.6% | 46.9% |      | 15.6% | 46.9% |      | 15.6% | 15.6% |      | 15.6% | 15.6% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 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   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lead  |      | Lag   | Lag   |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      |       |       |      |       |       |      |
| Recall Mode             | None  | Max   |      | None  | Max   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 6.2   | 45.9  |      | 50.3  | 50.2  |      | 7.9   | 7.9   |      |       |       | 7.9  |
| Actuated g/C Ratio      | 0.09  | 0.66  |      | 0.72  | 0.72  |      | 0.11  | 0.11  |      |       |       | 0.11 |
| v/c Ratio               | 0.07  | 0.31  |      | 0.08  | 0.65  |      | 0.34  | 0.27  |      |       |       | 0.26 |
| Control Delay           | 35.9  | 9.7   |      | 9.2   | 14.7  |      | 39.0  | 14.3  |      |       |       | 26.7 |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |       |       | 0.0  |
| Total Delay             | 35.9  | 9.7   |      | 9.2   | 14.7  |      | 39.0  | 14.3  |      |       |       | 26.7 |
| LOS                     | D     | A     |      | A     | B     |      | D     | B     |      |       |       | C    |
| Approach Delay          |       | 10.1  |      |       | 14.4  |      |       | 25.8  |      |       |       | 26.7 |
| Approach LOS            |       | B     |      |       | B     |      |       | C     |      |       |       | C    |
| Queue Length 50th (ft)  | 4     | 70    |      | 4     | 135   |      | 20    | 1     |      |       |       | 10   |
| Queue Length 95th (ft)  | 23    | 198   |      | 38    | #815  |      | 66    | 37    |      |       |       | 41   |
| Internal Link Dist (ft) |       | 1013  |      |       | 827   |      |       | 316   |      |       |       | 458  |
| Turn Bay Length (ft)    | 200   |       |      | 150   |       |      |       |       |      |       |       |      |

Intersection Capacity Analysis  
 6: Stop & Shop Driveway/Jacob's Trail & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 1.0  |
| Minimum Split (s)       | 21.0 |
| Total Split (s)         | 21.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |

Intersection Capacity Analysis  
 6: Stop & Shop Driveway/Jacob's Trail & Route 53

02/27/2021

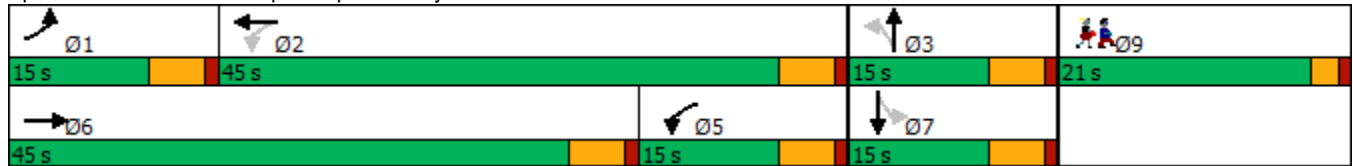


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|-----|-----|------|-----|
| Base Capacity (vph)    | 256  | 2266 |     | 703  | 1324 |     | 194  | 273  |     |     | 220  |     |
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.04 | 0.31 |     | 0.07 | 0.65 |     | 0.26 | 0.22 |     |     | 0.20 |     |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 96                     |
| Actuated Cycle Length:  | 69.7                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.65                   |
| Intersection Signal Delay:  | 13.7                   |
| Intersection LOS:   | B                      |
| Intersection Capacity Utilization:  | 57.9%                  |
| ICU Level of Service:   | B                      |
| Analysis Period (min):  | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 6: Sop&Shop Driveway/Jacob's Trail & Route 53



HCM 6th TWSC  
7: Driveway/Assinippi Ave & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔↔   |      |      | ↔    |      |      | ↔    |      |      | ↔    | ↔    |
| Traffic Vol, veh/h       | 148  | 493  | 10   | 14   | 579  | 33   | 4    | 8    | 9    | 6    | 5    | 219  |
| Future Vol, veh/h        | 148  | 493  | 10   | 14   | 579  | 33   | 4    | 8    | 9    | 6    | 5    | 219  |
| Conflicting Peds, #/hr   | 3    | 0    | 0    | 0    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | Stop |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 75   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 80   | 80   | 80   | 80   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 5    | 5    | 5    | 5    | 5    | 5    | 2    | 2    | 2    |
| Mvmt Flow                | 164  | 548  | 11   | 16   | 643  | 37   | 5    | 10   | 11   | 8    | 6    | 274  |

| Major/Minor          | Major1 |   | Major2 |        | Minor1 |   |        | Minor2 |        |       |       |       |
|----------------------|--------|---|--------|--------|--------|---|--------|--------|--------|-------|-------|-------|
| Conflicting Flow All | 683    | 0 | 0      | 559    | 0      | 0 | 1579   | 1597   | 280    | 1304  | 1584  | 665   |
| Stage 1              | -      | - | -      | -      | -      | - | 882    | 882    | -      | 697   | 697   | -     |
| Stage 2              | -      | - | -      | -      | -      | - | 697    | 715    | -      | 607   | 887   | -     |
| Critical Hdwy        | 4.16   | - | -      | 4.175  | -      | - | 7.375  | 6.575  | 6.975  | 7.33  | 6.53  | 6.23  |
| Critical Hdwy Stg 1  | -      | - | -      | -      | -      | - | 6.575  | 5.575  | -      | 6.13  | 5.53  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -      | -      | - | 6.175  | 5.575  | -      | 6.53  | 5.53  | -     |
| Follow-up Hdwy       | 2.238  | - | -      | 2.2475 | -      | - | 3.5475 | 4.0475 | 3.3475 | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver   | 897    | - | -      | 992    | -      | - | 79     | 104    | 710    | 127   | 108   | 459   |
| Stage 1              | -      | - | -      | -      | -      | - | 303    | 358    | -      | 431   | 442   | -     |
| Stage 2              | -      | - | -      | -      | -      | - | 424    | 428    | -      | 451   | 361   | -     |
| Platoon blocked, %   | -      | - | -      | -      | -      | - | -      | -      | -      | -     | -     | -     |
| Mov Cap-1 Maneuver   | 894    | - | -      | 992    | -      | - | 23     | 74     | 710    | 88    | 77    | 458   |
| Mov Cap-2 Maneuver   | -      | - | -      | -      | -      | - | 23     | 74     | -      | 88    | 77    | -     |
| Stage 1              | -      | - | -      | -      | -      | - | 222    | 262    | -      | 315   | 429   | -     |
| Stage 2              | -      | - | -      | -      | -      | - | 164    | 416    | -      | 313   | 265   | -     |

| Approach             | EB  |  | WB  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|-----|--|------|--|--|------|--|--|
| HCM Control Delay, s | 2.9 |  | 0.2 |  | 82.8 |  |  | 25.5 |  |  |
| HCM LOS              |     |  |     |  | F    |  |  | D    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 71    | 894   | -   | -   | 992   | -   | -   | 83    | 458   |
| HCM Lane V/C Ratio    | 0.37  | 0.184 | -   | -   | 0.016 | -   | -   | 0.166 | 0.598 |
| HCM Control Delay (s) | 82.8  | 9.9   | 0.8 | -   | 8.7   | 0   | -   | 56.8  | 23.9  |
| HCM Lane LOS          | F     | A     | A   | -   | A     | A   | -   | F     | C     |
| HCM 95th %tile Q(veh) | 1.4   | 0.7   | -   | -   | 0     | -   | -   | 0.6   | 3.8   |

**APPENDIX H**  
**Intersection Capacity Analyses**  
**Weekday PM Peak Hour**  
**Estimated Base Year (2020) Scenarios**



# Intersection Capacity Analysis

## 1: Pond St/Main St & Whiting St/Washington St

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 100   | 815   | 160  | 183   | 596   | 276  | 210   | 361   | 290   | 265   | 436   | 53   |
| Future Volume (vph)     | 100   | 815   | 160  | 183   | 596   | 276  | 210   | 361   | 290   | 265   | 436   | 53   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 150   |       | 0    | 200   |       | 0    | 150   |       | 250   | 250   |       | 250  |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 1     | 1     |       | 1    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Satd. Flow (prot)       | 1770  | 3491  | 0    | 1770  | 3396  | 0    | 1787  | 1900  | 1615  | 1787  | 3452  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (perm)       | 1770  | 3491  | 0    | 1770  | 3396  | 0    | 1787  | 1900  | 1615  | 1787  | 3452  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 22    |      |       | 72    |      |       |       | 244   |       |       | 10   |
| Link Speed (mph)        |       | 35    |      |       | 35    |      |       | 45    |       |       |       | 45   |
| Link Distance (ft)      |       | 1282  |      |       | 602   |      |       | 877   |       |       |       | 701  |
| Travel Time (s)         |       | 25.0  |      |       | 11.7  |      |       | 13.3  |       |       |       | 10.6 |
| Peak Hour Factor        | 0.95  | 0.95  | 0.95 | 0.93  | 0.93  | 0.93 | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 2%    | 1%    | 0%   | 2%    | 1%    | 2%   | 1%    | 0%    | 0%    | 1%    | 3%    | 2%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 105   | 1026  | 0    | 197   | 938   | 0    | 228   | 392   | 315   | 288   | 532   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | Prot  | NA    | Perm  | Prot  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      | 3     | 8     |       | 7     | 4     |      |
| Permitted Phases        |       |       |      |       |       |      |       |       | 8     |       |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 8     | 8     | 7     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 1.0   | 5.0   |      | 1.0   | 5.0   |      | 1.0   | 5.0   | 5.0   | 1.0   | 1.0   |      |
| Minimum Split (s)       | 6.0   | 23.0  |      | 11.0  | 23.0  |      | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  |      |
| Total Split (s)         | 15.0  | 40.0  |      | 15.0  | 40.0  |      | 30.0  | 25.0  | 25.0  | 30.0  | 25.0  |      |
| Total Split (%)         | 13.6% | 36.4% |      | 13.6% | 36.4% |      | 27.3% | 22.7% | 22.7% | 27.3% | 22.7% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      |
| 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   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   | Lag   | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Recall Mode             | None  | None  |      | None  | None  |      | None  | None  | None  | None  | None  |      |
| Act Effect Green (s)    | 9.4   | 33.6  |      | 10.0  | 34.2  |      | 18.4  | 20.1  | 20.1  | 20.9  | 22.5  |      |
| Actuated g/C Ratio      | 0.09  | 0.32  |      | 0.10  | 0.33  |      | 0.18  | 0.19  | 0.19  | 0.20  | 0.21  |      |
| v/c Ratio               | 0.66  | 0.90  |      | 1.17  | 0.81  |      | 0.73  | 1.08  | 0.62  | 0.81  | 0.71  |      |
| Control Delay           | 68.0  | 45.8  |      | 164.4 | 36.8  |      | 54.7  | 111.3 | 16.5  | 58.3  | 44.5  |      |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 68.0  | 45.8  |      | 164.4 | 36.8  |      | 54.7  | 111.3 | 16.5  | 58.3  | 44.5  |      |
| LOS                     | E     | D     |      | F     | D     |      | D     | F     | B     | E     | D     |      |
| Approach Delay          |       | 47.9  |      |       | 59.0  |      |       | 65.6  |       |       | 49.3  |      |
| Approach LOS            |       | D     |      |       | E     |      |       | E     |       |       | D     |      |
| Queue Length 50th (ft)  | 71    | 344   |      | ~165  | 288   |      | 150   | ~309  | 42    | 188   | 175   |      |
| Queue Length 95th (ft)  | #148  | #484  |      | #318  | 382   |      | 224   | #512  | 138   | 286   | #273  |      |
| Internal Link Dist (ft) |       | 1202  |      |       | 522   |      |       | 797   |       |       | 621   |      |
| Turn Bay Length (ft)    | 150   |       |      | 200   |       |      | 150   |       | 250   | 250   |       |      |
| Base Capacity (vph)     | 169   | 1186  |      | 169   | 1187  |      | 428   | 364   | 507   | 428   | 751   |      |

Intersection Capacity Analysis  
 1: Pond St/Main St & Whiting St/Washington St

02/27/2021

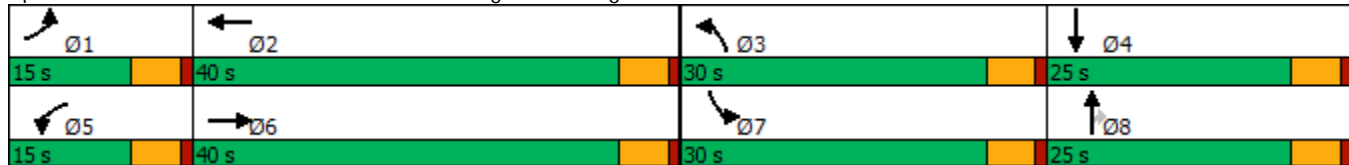


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|------|------|------|-----|
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Reduced v/c Ratio      | 0.62 | 0.87 |     | 1.17 | 0.79 |     | 0.53 | 1.08 | 0.62 | 0.67 | 0.71 |     |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 110                    |
| Actuated Cycle Length:  | 104.7                  |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 1.17                   |
| Intersection Signal Delay:  | 55.4                   |
| Intersection LOS:   | E                      |
| Intersection Capacity Utilization   | 88.1%                  |
| ICU Level of Service  | E                      |
| Analysis Period (min)   | 15                     |
| ~ Volume exceeds capacity, queue is theoretically infinite.<br>Queue shown is maximum after two cycles.     |                        |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 1: Pond St/Main St & Whiting St/Washington St



HCM 6th TWSC  
Route 53 at Queen Anne Plaza Driveway

02/26/2021

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.6  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      | ↖    | ↑    | ↖    | ↖    |
| Traffic Vol, veh/h       | 1323 | 44   | 86   | 1029 | 18   | 171  |
| Future Vol, veh/h        | 1323 | 44   | 86   | 1029 | 18   | 171  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | 100  | -    | 0    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1470 | 49   | 96   | 1143 | 20   | 190  |

| Major/Minor          | Major1 | Major2 | Minor1 |   |       |       |
|----------------------|--------|--------|--------|---|-------|-------|
| Conflicting Flow All | 0      | 0      | 1519   | 0 | 2830  | 760   |
| Stage 1              | -      | -      | -      | - | 1495  | -     |
| Stage 2              | -      | -      | -      | - | 1335  | -     |
| Critical Hdwy        | -      | -      | 4.13   | - | 6.63  | 6.93  |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.83  | -     |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.43  | -     |
| Follow-up Hdwy       | -      | -      | 2.219  | - | 3.519 | 3.319 |
| Pot Cap-1 Maneuver   | -      | -      | 437    | - | ~ 16  | 349   |
| Stage 1              | -      | -      | -      | - | 173   | -     |
| Stage 2              | -      | -      | -      | - | 245   | -     |
| Platoon blocked, %   | -      | -      | -      | - | -     | -     |
| Mov Cap-1 Maneuver   | -      | -      | 437    | - | ~ 12  | 349   |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 88    | -     |
| Stage 1              | -      | -      | -      | - | 173   | -     |
| Stage 2              | -      | -      | -      | - | 191   | -     |























| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 1.2 | 29.9 |
| HCM LOS              |    |     | D    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 88    | 349   | -   | -   | 437   | -   |
| HCM Lane V/C Ratio    | 0.227 | 0.544 | -   | -   | 0.219 | -   |
| HCM Control Delay (s) | 57.6  | 27    | -   | -   | 15.5  | -   |
| HCM Lane LOS          | F     | D     | -   | -   | C     | -   |
| HCM 95th %tile Q(veh) | 0.8   | 3.1   | -   | -   | 0.8   | -   |

Notes  
 -: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations     |  |  |  |  |  |   |  |  |   |  |  |  |
| Traffic Volume (vph)    | 389   | 652   | 274   | 24  | 572   | 76  | 231   | 102   | 38  | 85  | 76  | 307   |
| Future Volume (vph)     | 389   | 652   | 274   | 24  | 572   | 76  | 231   | 102   | 38  | 85  | 76  | 307   |
| Ideal Flow (vphp)       | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 300   |   | 300   | 150   |   | 150   | 200   |   | 0   | 350   |   | 350   |
| Storage Lanes           | 1   |   | 1   | 2   |   | 0   | 1   |   | 0   | 1   |   | 0   |
| Taper Length (ft)       | 25  |   |   | 150   |   |   | 150   |   |   | 150   |   |   |
| Satd. Flow (prot)       | 1770  | 1863  | 1583  | 1770  | 3476  | 0   | 1770  | 1786  | 0   | 1787  | 1881  | 1599  |
| Flt Permitted           | 0.950   |   |   | 0.950   |   |   | 0.540   |   |   | 0.663   |   |   |
| Satd. Flow (perm)       | 1770  | 1863  | 1583  | 1770  | 3476  | 0   | 1006  | 1786  | 0   | 1247  | 1881  | 1599  |
| Right Turn on Red       |   |   | Yes   |   |   | Yes   |   |   | Yes   |   |   | Yes   |
| Satd. Flow (RTOR)       |   |   | 211   |   | 11  |   |   | 15  |   |   |   | 320   |
| Link Speed (mph)        |   | 30  |   |   | 30  |   |   | 30  |   |   |   | 30  |
| Link Distance (ft)      |   | 933   |   |   | 1262  |   |   | 1358  |   |   |   | 807   |
| Travel Time (s)         |   | 21.2  |   |   | 28.7  |   |   | 30.9  |   |   |   | 18.3  |
| Peak Hour Factor        | 0.96  | 0.96  | 0.96  | 0.93  | 0.93  | 0.93  | 0.95  | 0.95  | 0.95  | 0.96  | 0.96  | 0.96  |
| Heavy Vehicles (%)      | 2%  | 2%  | 2%  | 2%  | 2%  | 2%  | 2%  | 2%  | 2%  | 1%  | 1%  | 1%  |
| Shared Lane Traffic (%) |   |   |   |   |   |   |   |   |   |   |   |   |
| Lane Group Flow (vph)   | 405   | 679   | 285   | 26  | 697   | 0   | 243   | 147   | 0   | 89  | 79  | 320   |
| Turn Type               | Prot  | NA  | Perm  | Prot  | NA  |   | pm+pt   | NA  |   | Perm  | NA  | Perm  |
| Protected Phases        | 1   | 6   |   | 5   | 2   |   | 7   | 4   |   |   |   | 8   |
| Permitted Phases        |   |   | 6   |   |   |   | 4   |   |   | 8   |   | 8   |
| Detector Phase          | 1   | 6   | 6   | 5   | 2   |   | 7   | 4   |   | 8   | 8   | 8   |
| Switch Phase            |   |   |   |   |   |   |   |   |   |   |   |   |
| Minimum Initial (s)     | 5.0   | 5.0   | 5.0   | 3.0   | 5.0   |   | 5.0   | 5.0   |   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)       | 10.0  | 25.0  | 25.0  | 10.0  | 25.0  |   | 9.0   | 10.0  |   | 10.0  | 10.0  | 10.0  |
| Total Split (s)         | 20.0  | 40.0  | 40.0  | 20.0  | 40.0  |   | 15.0  | 45.0  |   | 30.0  | 30.0  | 30.0  |
| Total Split (%)         | 15.6%   | 31.3%   | 31.3%   | 15.6%   | 31.3%   |   | 11.7%   | 35.2%   |   | 23.4%   | 23.4%   | 23.4%   |
| Yellow Time (s)         | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |   | 4.0   | 4.0   |   | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |   | 0.0   | 1.0   |   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |   | 0.0   | 0.0   |   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |   | 4.0   | 5.0   |   | 5.0   | 5.0   | 5.0   |
| Lead/Lag                | Lead  | Lag   | Lag   | Lead  | Lag   |   | Lead  |   |   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   | Yes   | Yes   |   | Yes   |   |   | Yes   | Yes   | Yes   |
| Recall Mode             | None  | Max   | Max   | None  | Max   |   | None  | None  |   | None  | None  | None  |
| Act Effect Green (s)    | 15.3  | 51.0  | 51.0  | 7.1   | 35.6  |   | 29.2  | 28.2  |   | 13.0  | 13.0  | 13.0  |
| Actuated g/C Ratio      | 0.16  | 0.52  | 0.52  | 0.07  | 0.36  |   | 0.30  | 0.29  |   | 0.13  | 0.13  | 0.13  |
| v/c Ratio               | 1.47  | 0.70  | 0.31  | 0.20  | 0.55  |   | 0.63  | 0.28  |   | 0.54  | 0.32  | 0.65  |
| Control Delay           | 262.6   | 27.2  | 7.4   | 50.7  | 28.5  |   | 37.3  | 26.6  |   | 53.3  | 42.9  | 11.7  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |   | 0.0   | 0.0   |   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 262.6   | 27.2  | 7.4   | 50.7  | 28.5  |   | 37.3  | 26.6  |   | 53.3  | 42.9  | 11.7  |
| LOS                     | F   | C   | A   | D   | C   |   | D   | C   |   | D   | D   | B   |
| Approach Delay          |   | 92.7  |   |   | 29.3  |   |   | 33.2  |   |   |   | 24.3  |
| Approach LOS            |   | F   |   |   | C   |   |   | C   |   |   |   | C   |
| Queue Length 50th (ft)  | ~323  | 236   | 17  | 15  | 162   |   | 114   | 58  |   | 49  | 42  | 0   |
| Queue Length 95th (ft)  | #706  | #873  | 119   | 51  | 334   |   | 240   | 139   |   | 119   | 103   | 83  |
| Internal Link Dist (ft) |   | 853   |   |   | 1182  |   |   | 1278  |   |   | 727   |   |
| Turn Bay Length (ft)    | 300   |   | 300   | 150   |   |   | 200   |   |   | 350   |   | 350   |
| Base Capacity (vph)     | 275   | 971   | 926   | 275   | 1270  |   | 387   | 750   |   | 323   | 488   | 652   |

# Intersection Capacity Analysis

## 2: High St/Grove St & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| 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 (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 23.0 |
| Total Split (s)         | 23.0 |
| Total Split (%)         | 18%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |
| Base Capacity (vph)     |      |

# Intersection Capacity Analysis

## 2: High St/Grove St & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR  | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| Starvation Cap Reductn | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Spillback Cap Reductn  | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Storage Cap Reductn    | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Reduced v/c Ratio      | 1.47 | 0.70 | 0.31 | 0.09 | 0.55 |     | 0.63 | 0.20 |     | 0.28 | 0.16 | 0.49 |

### Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 128                    |
| Actuated Cycle Length:  | 97.9                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 1.47                   |
| Intersection Signal Delay:  | 58.2                   |
| Intersection LOS:   | E                      |
| Intersection Capacity Utilization   | 72.6%                  |
| ICU Level of Service  | C                      |
| Analysis Period (min)   | 15                     |
| ~ Volume exceeds capacity, queue is theoretically infinite.<br>Queue shown is maximum after two cycles.     |                        |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

### Splits and Phases: 2: High St/Grove St & Route 53

|            |            |            |            |
|------------|------------|------------|------------|
| Ø1<br>20 s | Ø2<br>40 s | Ø9<br>23 s | Ø4<br>45 s |
| Ø5<br>20 s | Ø6<br>40 s |            | Ø7<br>15 s |
|            |            |            | Ø8<br>30 s |

HCM 6th TWSC  
3: Oak St & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.8  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NEL  | NER  |
| Lane Configurations      | ↔    |      |      | ↔    | ↔    | ↔    |
| Traffic Vol, veh/h       | 720  | 40   | 45   | 616  | 20   | 80   |
| Future Vol, veh/h        | 720  | 40   | 45   | 616  | 20   | 80   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 75   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 90   | 90   | 60   | 60   |
| Heavy Vehicles, %        | 2    | 2    | 1    | 1    | 0    | 0    |
| Mvmt Flow                | 783  | 43   | 50   | 684  | 33   | 133  |

| Major/Minor          | Major1 | Major2 | Minor1 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 0      | 0      | 826    | 0 | 1589 |
| Stage 1              | -      | -      | -      | - | 805  |
| Stage 2              | -      | -      | -      | - | 784  |
| Critical Hdwy        | -      | -      | 4.11   | - | 6.4  |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.4  |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.4  |
| Follow-up Hdwy       | -      | -      | 2.209  | - | 3.5  |
| Pot Cap-1 Maneuver   | -      | -      | 809    | - | 120  |
| Stage 1              | -      | -      | -      | - | 443  |
| Stage 2              | -      | -      | -      | - | 453  |
| Platoon blocked, %   | -      | -      | -      | - | -    |
| Mov Cap-1 Maneuver   | -      | -      | 809    | - | 108  |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 108  |
| Stage 1              | -      | -      | -      | - | 443  |
| Stage 2              | -      | -      | -      | - | 408  |

| Approach             | EB | WB  | NE   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.7 | 25.9 |
| HCM LOS              |    |     | D    |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 108   | 386   | -   | -   | 809   | -   |
| HCM Lane V/C Ratio    | 0.309 | 0.345 | -   | -   | 0.062 | -   |
| HCM Control Delay (s) | 52.6  | 19.2  | -   | -   | 9.7   | 0   |
| HCM Lane LOS          | F     | C     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 1.2   | 1.5   | -   | -   | 0.2   | -   |

HCM 6th TWSC  
4: Hall Dr/Driveway & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 1    | 771  | 22   | 42   | 715  | 1    | 6    | 0    | 24   | 2    | 0    | 2    |
| Future Vol, veh/h        | 1    | 771  | 22   | 42   | 715  | 1    | 6    | 0    | 24   | 2    | 0    | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 88   | 88   | 88   | 60   | 60   | 60   | 50   | 50   | 50   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 1    | 857  | 24   | 48   | 813  | 1    | 10   | 0    | 40   | 4    | 0    | 4    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 814    | 0 | 0 | 881    | 0 | 0 | 1783   | 1781 | 869 | 1801   | 1793 | 814 |
| Stage 1              | -      | - | - | -      | - | - | 871    | 871  | -   | 910    | 910  | -   |
| Stage 2              | -      | - | - | -      | - | - | 912    | 910  | -   | 891    | 883  | -   |
| Critical Hdwy        | 4.12   | - | - | 4.11   | - | - | 7.1    | 6.5  | 6.2 | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.218  | - | - | 2.209  | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 813    | - | - | 772    | - | - | 64     | 83   | 354 | 62     | 82   | 381 |
| Stage 1              | -      | - | - | -      | - | - | 349    | 371  | -   | 332    | 356  | -   |
| Stage 2              | -      | - | - | -      | - | - | 331    | 356  | -   | 340    | 367  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -   | -      | -    | -   |
| Mov Cap-1 Maneuver   | 813    | - | - | 772    | - | - | 58     | 73   | 354 | 50     | 73   | 381 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 58     | 73   | -   | 50     | 73   | -   |
| Stage 1              | -      | - | - | -      | - | - | 348    | 370  | -   | 331    | 316  | -   |
| Stage 2              | -      | - | - | -      | - | - | 291    | 316  | -   | 301    | 366  | -   |

| Approach             | EB |  |  | WB  |  |  | NE   |  |  | SW |  |  |
|----------------------|----|--|--|-----|--|--|------|--|--|----|--|--|
| HCM Control Delay, s | 0  |  |  | 0.6 |  |  | 33.6 |  |  | 50 |  |  |
| HCM LOS              |    |  |  |     |  |  | D    |  |  | F  |  |  |

| Minor Lane/Major Mvmt | NELn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SWLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 175   | 813   | -   | -   | 772   | -   | -   | 88    |
| HCM Lane V/C Ratio    | 0.286 | 0.001 | -   | -   | 0.062 | -   | -   | 0.091 |
| HCM Control Delay (s) | 33.6  | 9.4   | 0   | -   | 10    | 0   | -   | 50    |
| HCM Lane LOS          | D     | A     | A   | -   | A     | A   | -   | F     |
| HCM 95th %tile Q(veh) | 1.1   | 0     | -   | -   | 0.2   | -   | -   | 0.3   |



HCM 6th TWSC  
5: Washington Park Dr/Brantwood Rd & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.7  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 9    | 786  | 15   | 19   | 736  | 12   | 18   | 0    | 26   | 7    | 0    | 10   |
| Future Vol, veh/h        | 9    | 786  | 15   | 19   | 736  | 12   | 18   | 0    | 26   | 7    | 0    | 10   |
| Conflicting Peds, #/hr   | 1    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 3    | 3    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 80   | 80   | 80   | 60   | 60   | 60   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 10   | 873  | 17   | 21   | 818  | 13   | 23   | 0    | 33   | 12   | 0    | 17   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 832    | 0 | 0 | 890    | 0 | 0 | 1777   | 1776 | 885 | 1789   | 1778 | 826 |
| Stage 1              | -      | - | - | -      | - | - | 902    | 902  | -   | 868    | 868  | -   |
| Stage 2              | -      | - | - | -      | - | - | 875    | 874  | -   | 921    | 910  | -   |
| Critical Hdwy        | 4.12   | - | - | 4.11   | - | - | 7.1    | 6.5  | 6.2 | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.218  | - | - | 2.209  | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 801    | - | - | 766    | - | - | 65     | 84   | 347 | 64     | 83   | 375 |
| Stage 1              | -      | - | - | -      | - | - | 335    | 359  | -   | 350    | 372  | -   |
| Stage 2              | -      | - | - | -      | - | - | 347    | 370  | -   | 327    | 356  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -   | -      | -    | -   |
| Mov Cap-1 Maneuver   | 800    | - | - | 766    | - | - | 59     | 78   | 346 | 54     | 77   | 375 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 59     | 78   | -   | 54     | 77   | -   |
| Stage 1              | -      | - | - | -      | - | - | 327    | 350  | -   | 341    | 353  | -   |
| Stage 2              | -      | - | - | -      | - | - | 315    | 351  | -   | 288    | 347  | -   |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.1 |  |  | 0.2 |  |  | 61.3 |  |  | 49.3 |  |  |
| HCM LOS              |     |  |  |     |  |  | F    |  |  | E    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 116   | 800   | -   | -   | 766   | -   | -   | 109   |
| HCM Lane V/C Ratio    | 0.474 | 0.013 | -   | -   | 0.028 | -   | -   | 0.26  |
| HCM Control Delay (s) | 61.3  | 9.6   | 0   | -   | 9.8   | 0   | -   | 49.3  |
| HCM Lane LOS          | F     | A     | A   | -   | A     | A   | -   | E     |
| HCM 95th %tile Q(veh) | 2.1   | 0     | -   | -   | 0.1   | -   | -   | 1     |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 30    | 824   | 80   | 90    | 793   | 20   | 75    | 5     | 95   | 10    | 5     | 10    |
| Future Volume (vph)     | 30    | 824   | 80   | 90    | 793   | 20   | 75    | 5     | 95   | 10    | 5     | 10    |
| Ideal Flow (vphp)       | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 200   |       | 200  | 150   |       | 0    | 0     |       | 0    | 0     |       | 0     |
| Storage Lanes           | 1     |       | 1    | 1     |       | 0    | 1     |       | 0    | 0     |       | 0     |
| Taper Length (ft)       | 150   |       |      | 25    |       |      | 25    |       |      | 25    |       |       |
| Satd. Flow (prot)       | 1770  | 3493  | 0    | 1787  | 1874  | 0    | 1805  | 1630  | 0    | 0     | 1761  | 0     |
| Flt Permitted           | 0.950 |       |      | 0.254 |       |      | 0.734 |       |      |       | 0.820 |       |
| Satd. Flow (perm)       | 1770  | 3493  | 0    | 478   | 1874  | 0    | 1395  | 1630  | 0    | 0     | 1474  | 0     |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       | 13    |      |       | 2     |      |       | 106   |      |       |       | 14    |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 1093  |      |       | 907   |      |       | 368   |      |       |       | 415   |
| Travel Time (s)         |       | 24.8  |      |       | 20.6  |      |       | 8.4   |      |       |       | 9.4   |
| Peak Hour Factor        | 0.86  | 0.86  | 0.86 | 0.86  | 0.86  | 0.86 | 0.90  | 0.90  | 0.90 | 0.70  | 0.70  | 0.70  |
| Heavy Vehicles (%)      | 2%    | 2%    | 2%   | 1%    | 1%    | 1%   | 0%    | 0%    | 0%   | 0%    | 0%    | 0%    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 35    | 1051  | 0    | 105   | 945   | 0    | 83    | 112   | 0    | 0     | 35    | 0     |
| Turn Type               | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |       |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      |       | 3     |      |       |       | 7     |
| Permitted Phases        |       |       |      | 2     |       |      | 3     |       |      | 7     |       |       |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 3     |      | 7     |       | 7     |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 3.0   | 5.0   |      | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Minimum Split (s)       | 8.0   | 10.0  |      | 8.0   | 10.0  |      | 10.0  | 10.0  |      | 10.0  |       | 10.0  |
| Total Split (s)         | 15.0  | 45.0  |      | 15.0  | 45.0  |      | 15.0  | 15.0  |      | 15.0  |       | 15.0  |
| Total Split (%)         | 15.6% | 46.9% |      | 15.6% | 46.9% |      | 15.6% | 15.6% |      | 15.6% |       | 15.6% |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   |       | 4.0   |
| All-Red Time (s)        | 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   |      | 0.0   |       | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Lead/Lag                | Lead  | Lead  |      | Lag   | Lag   |      |       |       |      |       |       |       |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      |       |       |      |       |       |       |
| Recall Mode             | None  | Max   |      | None  | Max   |      | None  | None  |      | None  |       | None  |
| Act Effect Green (s)    | 7.2   | 43.9  |      | 46.7  | 48.3  |      | 8.9   | 8.9   |      |       |       | 8.8   |
| Actuated g/C Ratio      | 0.10  | 0.62  |      | 0.66  | 0.69  |      | 0.13  | 0.13  |      |       |       | 0.12  |
| v/c Ratio               | 0.19  | 0.48  |      | 0.24  | 0.74  |      | 0.47  | 0.38  |      |       |       | 0.18  |
| Control Delay           | 36.8  | 13.1  |      | 15.1  | 19.6  |      | 43.3  | 13.1  |      |       |       | 26.0  |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |       |       | 0.0   |
| Total Delay             | 36.8  | 13.1  |      | 15.1  | 19.6  |      | 43.3  | 13.1  |      |       |       | 26.0  |
| LOS                     | D     | B     |      | B     | B     |      | D     | B     |      |       |       | C     |
| Approach Delay          |       | 13.9  |      |       | 19.2  |      |       | 25.9  |      |       |       | 26.0  |
| Approach LOS            |       | B     |      |       | B     |      |       | C     |      |       |       | C     |
| Queue Length 50th (ft)  | 14    | 132   |      | 11    | 181   |      | 34    | 2     |      |       |       | 8     |
| Queue Length 95th (ft)  | 48    | 322   |      | 69    | #882  |      | #108  | 53    |      |       |       | 30    |
| Internal Link Dist (ft) |       | 1013  |      |       | 827   |      |       | 288   |      |       |       | 335   |
| Turn Bay Length (ft)    | 200   |       |      | 150   |       |      |       |       |      |       |       |       |
| Base Capacity (vph)     | 265   | 2182  |      | 528   | 1284  |      | 209   | 335   |      |       |       | 233   |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| 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 (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 21.0 |
| Total Split (s)         | 21.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |
| Base Capacity (vph)     |      |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021

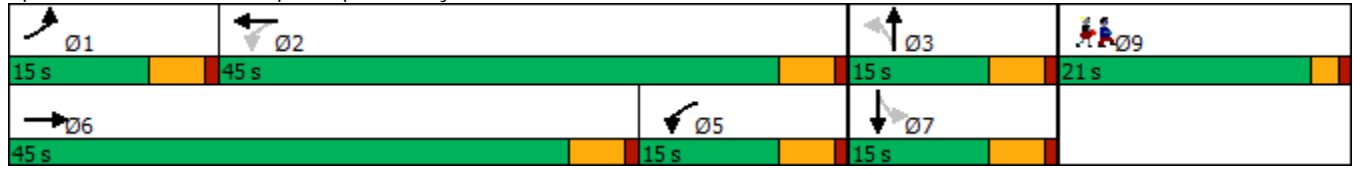


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|-----|-----|------|-----|
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.13 | 0.48 |     | 0.20 | 0.74 |     | 0.40 | 0.33 |     |     | 0.15 |     |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 96                     |
| Actuated Cycle Length:  | 70.5                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.74                   |
| Intersection Signal Delay:  | 17.4                   |
| Intersection LOS:   | B                      |
| Intersection Capacity Utilization   | 67.7%                  |
| ICU Level of Service  | C                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 6: Stop&Shop Driveway/Jacob's Trail & Route 53



Intersection Capacity Analysis  
7: Driveway/Assinippi Ave & Route 53

12/23/2020

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.2  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔↔   |      |      | ↔    |      |      | ↔    |      |      | ↔    | ↔    |
| Traffic Vol, veh/h       | 205  | 713  | 2    | 4    | 704  | 11   | 0    | 2    | 8    | 5    | 0    | 180  |
| Future Vol, veh/h        | 205  | 713  | 2    | 4    | 704  | 11   | 0    | 2    | 8    | 5    | 0    | 180  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | Stop |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 75   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 88   | 86   | 86   | 86   | 50   | 50   | 50   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 233  | 810  | 2    | 5    | 819  | 13   | 0    | 4    | 16   | 6    | 0    | 200  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 832    | 0 | 0 | 812    | 0 | 0 | 2113   | 2119 | 406 | 1709   | 2114 | 826 |
| Stage 1              | -      | - | - | -      | - | - | 1277   | 1277 | -   | 836    | 836  | -   |
| Stage 2              | -      | - | - | -      | - | - | 836    | 842  | -   | 873    | 1278 | -   |
| Critical Hdwy        | 4.13   | - | - | 4.115  | - | - | 7.3    | 6.5  | 6.9 | 7.3    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.5    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.5    | 5.5  | -   |
| Follow-up Hdwy       | 2.219  | - | - | 2.2095 | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 798    | - | - | 818    | - | - | 33     | 51   | 600 | 66     | 51   | 375 |
| Stage 1              | -      | - | - | -      | - | - | 179    | 239  | -   | 364    | 385  | -   |
| Stage 2              | -      | - | - | -      | - | - | 364    | 383  | -   | 316    | 239  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -   | -      | -    | -   |
| Mov Cap-1 Maneuver   | 798    | - | - | 818    | - | - | 9      | 24   | 600 | 33     | 24   | 375 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 9      | 24   | -   | 33     | 24   | -   |
| Stage 1              | -      | - | - | -      | - | - | 84     | 112  | -   | 170    | 381  | -   |
| Stage 2              | -      | - | - | -      | - | - | 168    | 379  | -   | 139    | 112  | -   |

| Approach             | EB |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 4  |  |  | 0.1 |  |  | 48.2 |  |  | 28.1 |  |  |
| HCM LOS              |    |  |  |     |  |  | E    |  |  | D    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 103   | 798   | -   | -   | 818   | -   | -   | 33    | 375   |
| HCM Lane V/C Ratio    | 0.194 | 0.292 | -   | -   | 0.006 | -   | -   | 0.168 | 0.533 |
| HCM Control Delay (s) | 48.2  | 11.4  | 1.9 | -   | 9.4   | 0   | -   | 135   | 25.1  |
| HCM Lane LOS          | E     | B     | A   | -   | A     | A   | -   | F     | D     |
| HCM 95th %tile Q(veh) | 0.7   | 1.2   | -   | -   | 0     | -   | -   | 0.5   | 3     |

**APPENDIX I**  
**Corridor Crash Rate Worksheets**

## SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Norwell COUNT DATE : 2020 Estimated

DISTRICT : 5

~ SEGMENT DATA ~

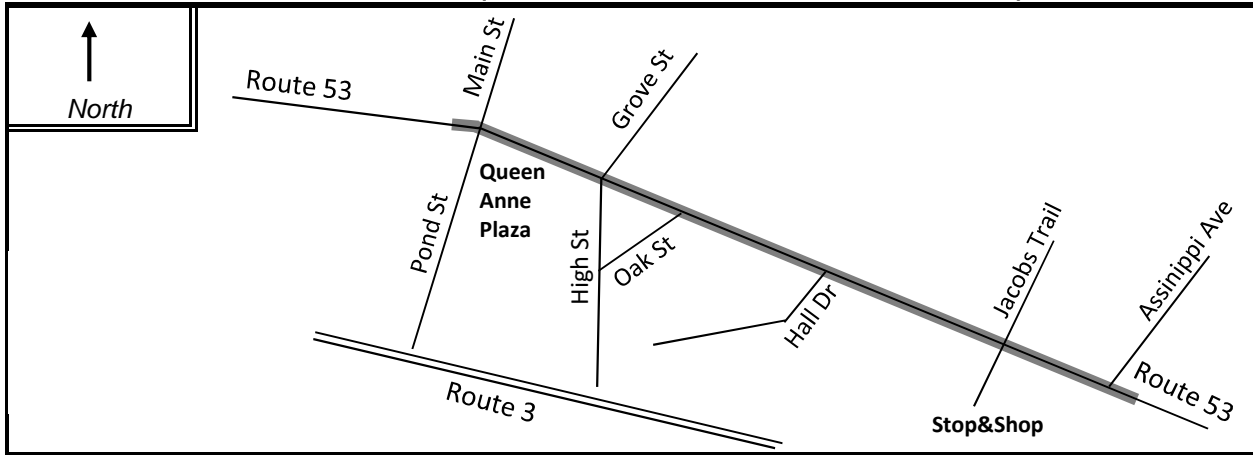
ROADWAY NAME: Route 53 Corridor in Norwell

START POINT: North of Route 228 (Main Street/Pond Street)

END POINT: South of Assinippi Avenue

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

|                                     |        |
|-------------------------------------|--------|
| SEGMENT LENGTH IN MILES ( L ):      | 2.24   |
| AVERAGE DAILY TRAFFIC VOLUME ( V ): | 17,100 |

|                     |     |              |   |                                      |       |
|---------------------|-----|--------------|---|--------------------------------------|-------|
| TOTAL # OF CRASHES: | 287 | # OF YEARS : | 5 | AVERAGE # OF CRASHES PER YEAR ( A ): | 57.40 |
|---------------------|-----|--------------|---|--------------------------------------|-------|

CRASH RATE CALCULATION : **4.11** RATE =  $\frac{(A * 1,000,000)}{(L * V * 365)}$

Comments : 2017 State Average for Urban Minor Arterials = 3.49

Project Title & Date: Route 53 Corridor Study in Norwell

## SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Norwell COUNT DATE : 2020 Estimated

DISTRICT : 5

~ SEGMENT DATA ~

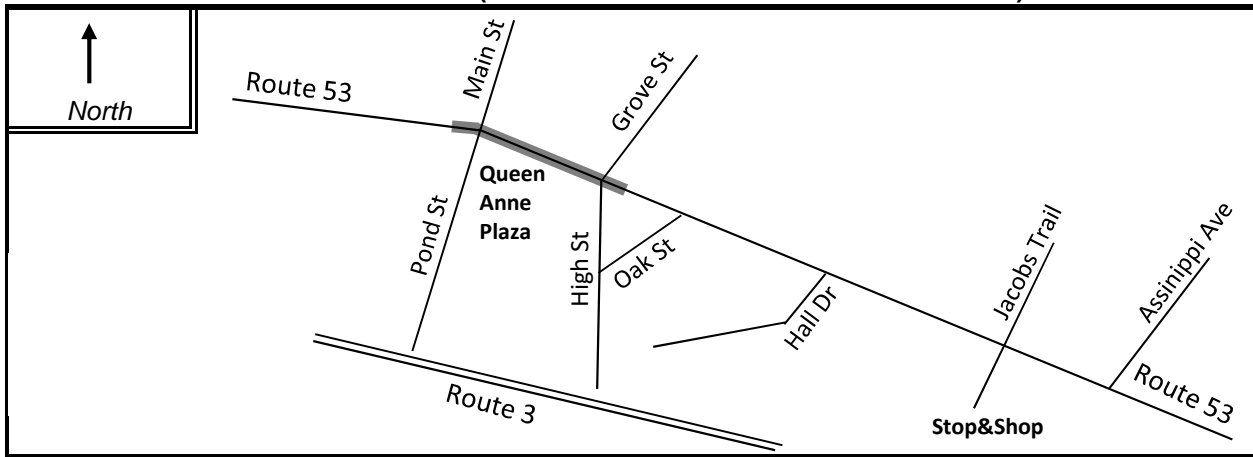
ROADWAY NAME: Route 53 Corridor Segment 1

START POINT: North of Route 228 (Main Street/Pond Street)

END POINT: South of High Street

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

|                                     |             |
|-------------------------------------|-------------|
| SEGMENT LENGTH IN MILES ( L ):      | <b>0.49</b> |
| AVERAGE DAILY TRAFFIC VOLUME ( V ): | 22,800      |

|                     |            |              |          |                                      |              |
|---------------------|------------|--------------|----------|--------------------------------------|--------------|
| TOTAL # OF CRASHES: | <b>149</b> | # OF YEARS : | <b>5</b> | AVERAGE # OF CRASHES PER YEAR ( A ): | <b>29.80</b> |
|---------------------|------------|--------------|----------|--------------------------------------|--------------|

CRASH RATE CALCULATION :

**7.31**

$$\text{RATE} = \frac{(A * 1,000,000)}{(L * V * 365)}$$

Comments : 2017 State Average for Urban Minor Arterials = 3.49

Project Title & Date: Route 53 Corridor Study in Norwell



## SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Norwell COUNT DATE : 2020 Estimated

DISTRICT : 5

~ SEGMENT DATA ~

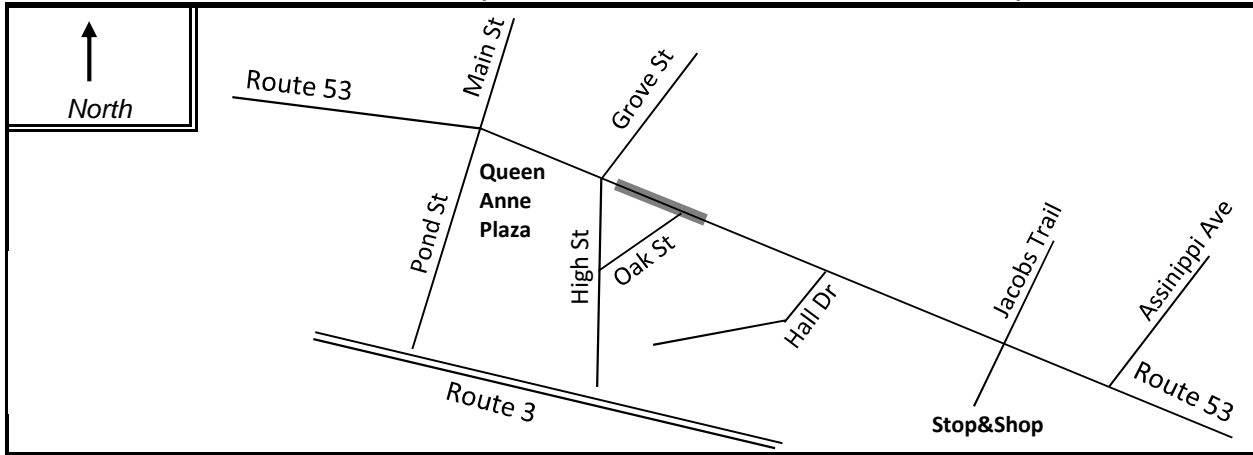
ROADWAY NAME: Route 53 Corridor Segment 2

START POINT: South of High Street

END POINT: South of Oak Street

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

|                                     |             |
|-------------------------------------|-------------|
| SEGMENT LENGTH IN MILES ( L ):      | <b>0.33</b> |
| AVERAGE DAILY TRAFFIC VOLUME ( V ): | 14,650      |

|                     |           |              |          |                                      |             |
|---------------------|-----------|--------------|----------|--------------------------------------|-------------|
| TOTAL # OF CRASHES: | <b>29</b> | # OF YEARS : | <b>5</b> | AVERAGE # OF CRASHES PER YEAR ( A ): | <b>5.80</b> |
|---------------------|-----------|--------------|----------|--------------------------------------|-------------|

CRASH RATE CALCULATION :

**3.29**

RATE =  $\frac{(A * 1,000,000)}{(L * V * 365)}$

Comments : 2017 State Average for Urban Minor Arterials = 3.49

Project Title & Date: Route 53 Corridor Study in Norwell

## SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Norwell COUNT DATE : 2020 Estimated

DISTRICT : 5

~ SEGMENT DATA ~

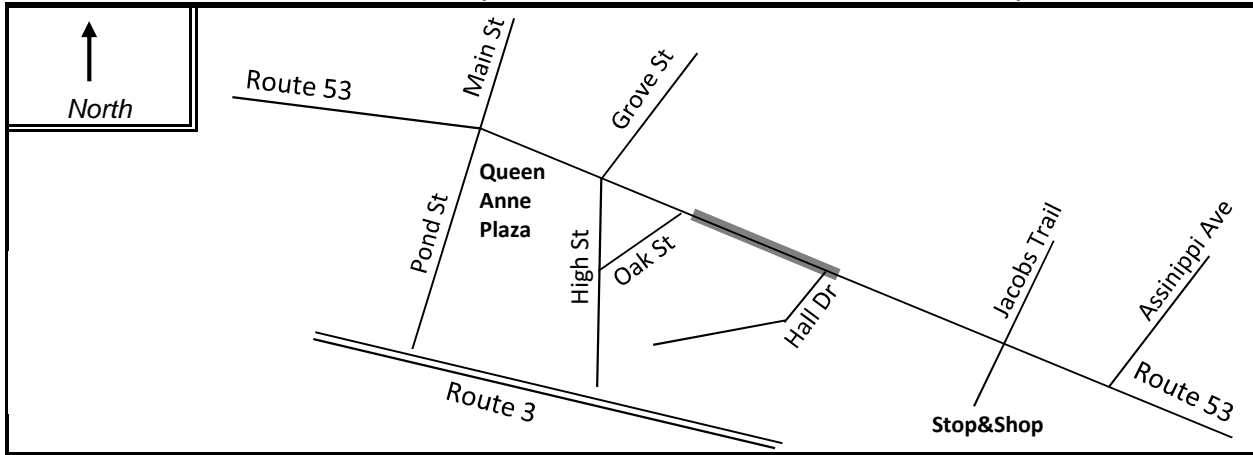
ROADWAY NAME: Route 53 Corridor Segment 3

START POINT: South of Oak Street

END POINT: South of Hull Drive

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

|                                     |             |
|-------------------------------------|-------------|
| SEGMENT LENGTH IN MILES ( L ):      | <b>0.62</b> |
| AVERAGE DAILY TRAFFIC VOLUME ( V ): | 15,000      |

|                     |           |              |          |                                      |             |
|---------------------|-----------|--------------|----------|--------------------------------------|-------------|
| TOTAL # OF CRASHES: | <b>24</b> | # OF YEARS : | <b>5</b> | AVERAGE # OF CRASHES PER YEAR ( A ): | <b>4.80</b> |
|---------------------|-----------|--------------|----------|--------------------------------------|-------------|

CRASH RATE CALCULATION :

**1.41**

RATE = 
$$\frac{(A * 1,000,000)}{(L * V * 365)}$$

Comments : 2017 State Average for Urban Minor Arterials = 3.49

Project Title & Date: Route 53 Corridor Study in Norwell

## SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Norwell COUNT DATE : 2020 Estimated

DISTRICT : 5

~ SEGMENT DATA ~

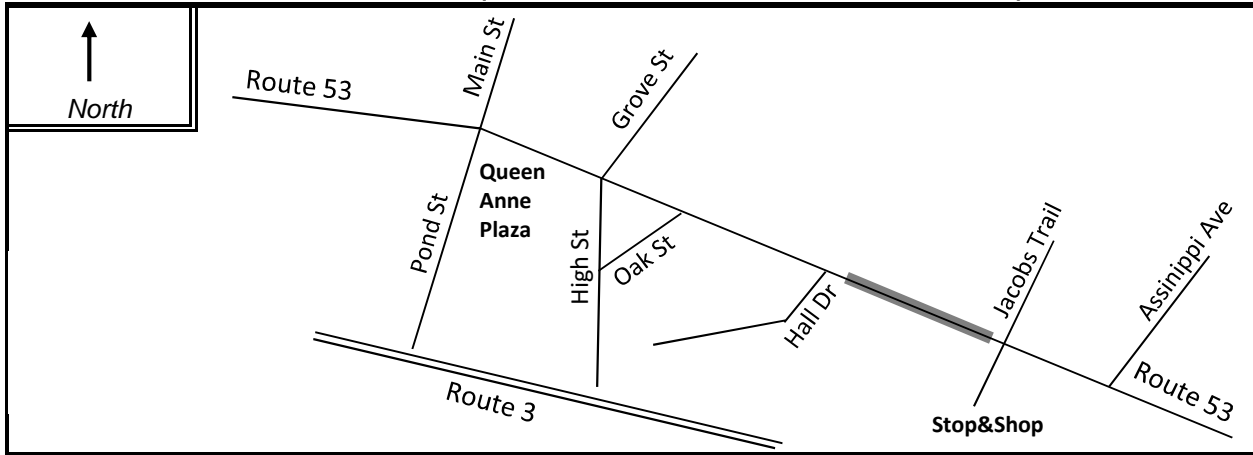
ROADWAY NAME: Route 53 Corridor Segment 4

START POINT: South of Hull Drive

END POINT: North of Jacobs Drive and Stop & Shop Driveway

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

|                                     |             |
|-------------------------------------|-------------|
| SEGMENT LENGTH IN MILES ( L ):      | <b>0.52</b> |
| AVERAGE DAILY TRAFFIC VOLUME ( V ): | 15,850      |

|                     |           |             |          |                                      |              |
|---------------------|-----------|-------------|----------|--------------------------------------|--------------|
| TOTAL # OF CRASHES: | <b>52</b> | # OF YEARS: | <b>5</b> | AVERAGE # OF CRASHES PER YEAR ( A ): | <b>10.40</b> |
|---------------------|-----------|-------------|----------|--------------------------------------|--------------|

CRASH RATE CALCULATION :

**3.46**

RATE = 
$$\frac{(A * 1,000,000)}{(L * V * 365)}$$

Comments : 2017 State Average for Urban Minor Arterials = 3.49

Project Title & Date: Route 53 Corridor Study in Norwell

## SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Norwell COUNT DATE : 2020 Estimated

DISTRICT : 5

~ SEGMENT DATA ~

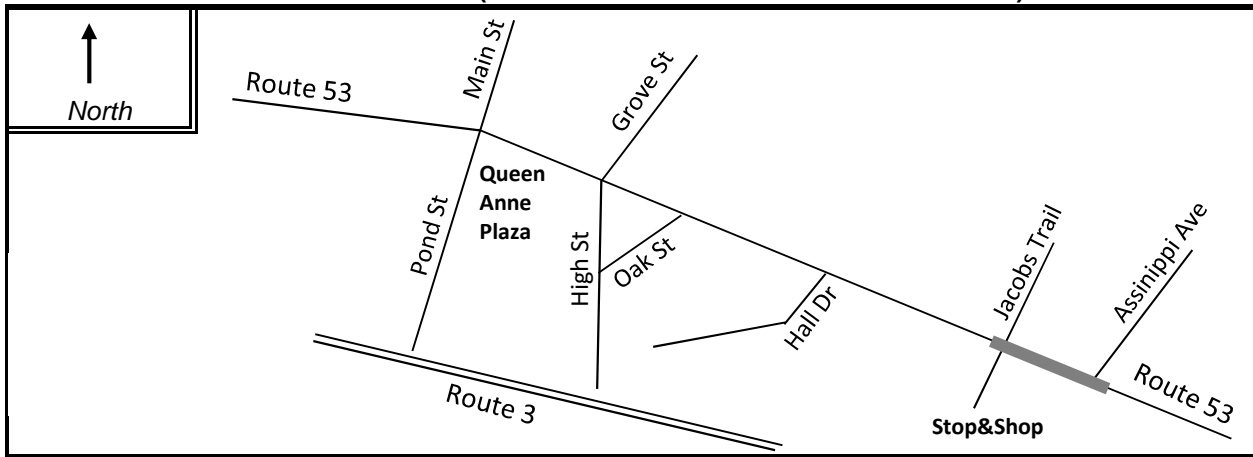
ROADWAY NAME: Route 53 Corridor Segment 5

START POINT: North of Jacobs Drive and Stop & Shop Driveway

END POINT: South of Assinippi Avenue

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Minor Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

|                                     |             |
|-------------------------------------|-------------|
| SEGMENT LENGTH IN MILES ( L ):      | <b>0.28</b> |
| AVERAGE DAILY TRAFFIC VOLUME ( V ): | 17,300      |

|                     |           |             |          |                                      |             |
|---------------------|-----------|-------------|----------|--------------------------------------|-------------|
| TOTAL # OF CRASHES: | <b>33</b> | # OF YEARS: | <b>5</b> | AVERAGE # OF CRASHES PER YEAR ( A ): | <b>6.60</b> |
|---------------------|-----------|-------------|----------|--------------------------------------|-------------|

CRASH RATE CALCULATION :

**3.73**

RATE = 
$$\frac{(A * 1,000,000)}{(L * V * 365)}$$

Comments : 2017 State Average for Urban Minor Arterials = 3.49

Project Title & Date: Route 53 Corridor Study in Norwell

**APPENDIX J**  
**Intersection Crash Rate Worksheets**











## **APPENDIX K**

### **Collision Diagrams and Crash Look-Up Tables Nine Contiguous Segments in the Study Corridor**





**SYMBOLS**

- |                        |                    |
|------------------------|--------------------|
| → Moving Vehicle       | → ▨ Parked Vehicle |
| → ▨ Backing Vehicle    | → □ Fixed Object   |
| ⋯ Non-Involved Vehicle | → ✂ Bicycle        |
| → 🧑 Pedestrian         |                    |

**TYPES OF CRASH**

- |             |                  |
|-------------|------------------|
| ↔↔↔ Head On | ↔↔ Sideswipe     |
| →↘↙ Angle   | ↻ Out of Control |
| →↔ Rear End |                  |

**CRASH INDEX AND SEVERITY**

- #, #, #
- # Property Damage Only Crash Index Number
  - # Injury Crash Index Number
  - # Fatal Crash Index Number



**Figure K-1**  
**Collision Diagram: Route 53 at Pond Street and Main Street**  
 Norwell Police Crash Reports 2015–19 and MassDOT Crash Data 2013–17 (Hingham)



Table K-1

Summary of Crashes: Route 53 at Main Street and Pond Street  
Norwell Police Crash Reports 2015–19 and MassDOT Crash Data 2013–17 (Hingham)

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition | Ambient Light Condition | Weather Condition | Vehicle Action Veh #1         | Vehicle Action Veh #2         | Most Harmful Event   | Driver Contribution   |
|-------|------------|-----------|-------|------------------|-------------------------------|------------------------|-------------------------|-------------------|-------------------------------|-------------------------------|--|---|
| 1     | 2/13/2015  | Friday    | 21:19 | PDO              | Rear-end                      | Dry                    | Dark - lighted roadway  | Clear             | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | Fatigued/asleep   |
| 2     | 3/14/2015  | Saturday  | 10:41 | PDO              | Angle                         | Wet                    | Daylight                | Rain              | Travelling straight ahead     | Turning left                  | Collision with motor vehicle in transport                  | No improper driving   |
| 3     | 6/9/2015   | Tuesday   | 17:09 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 4     | 7/22/2015  | Wednesday | 12:12 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 5     | 10/5/2015  | Monday    | 9:02  | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | No improper driving   |
| 6     | 1/28/2016  | Thursday  | 21:55 | PDO              | Angle                         | Dry                    | Dark - lighted roadway  | Clear             | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in transport                  | Failed to yield right of way  |
| 7     | 3/24/2016  | Thursday  | 13:06 | Non Fatal Injury | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | No improper driving   |
| 8     | 4/13/2016  | Wednesday | 7:08  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Slowing or stopped            | Collision with motor vehicle in transport                  | Glare   |
| 9     | 5/11/2016  | Wednesday | 17:09 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Slowing or stopped            | Collision with motor vehicle in transport                  | Inattention   |
| 10    | 6/9/2016   | Thursday  | 9:33  | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 11    | 8/13/2016  | Saturday  | 16:08 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in transport                  | Other improper action   |
| 12    | 11/1/2016  | Tuesday   | 9:56  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | Distracted  |
| 13    | 1/15/2017  | Sunday    | 12:33 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 14    | 1/18/2017  | Wednesday | 11:59 | PDO              | Sideswipe, same direction     | Wet                    | Daylight                | Rain              | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | No improper driving   |
| 15    | 1/20/2017  | Friday    | 12:20 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Cloudy            | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in transport                  | Failure to keep in proper lane or running off road  |
| 16    | 2/17/2017  | Friday    | 18:58 | PDO              | Rear-end                      | Ice                    | Daylight                | Snow              | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport                  | Unknown   |
| 17    | 4/30/2017  | Sunday    | 15:13 | PDO              | Sideswipe, same direction     | Wet                    | Daylight                | Rain              | Entering traffic lane         | Travelling straight ahead     | Collision with motor vehicle in transport                  | Unknown   |
| 18    | 5/6/2017   | Saturday  | 11:34 | PDO              | Sideswipe, opposite direction | Wet                    | Daylight                | Rain              | Unknown                       | Travelling straight ahead     | Collision with motor vehicle in transport                  | Unknown   |
| 19    | 10/23/2017 | Monday    | 11:56 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 20    | 11/10/2017 | Friday    | 7:56  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Turning right                 | Turning right                 | Collision with motor vehicle in transport                  | No improper driving   |
| 21    | 11/16/2017 | Thursday  | 14:48 | Non Fatal Injury | Rear-end                      | Wet                    | Daylight                | Rain              | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 22    | 12/18/2017 | Monday    | 7:33  | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport                  | Other improper action   |
| 23    | 4/3/2018   | Tuesday   | 11:50 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in transport                  | No improper driving   |
| 24    | 5/25/2018  | Friday    | 11:14 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Entering traffic lane         | Collision with motor vehicle in transport                  | Other improper action   |
| 25    | 5/31/2018  | Thursday  | 13:45 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport                  | Unknown   |
| 26    | 8/5/2018   | Sunday    | 22:03 | PDO              | Rear-end                      | Dry                    | Dark - lighted roadway  | Clear             | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | Distracted  |
| 27    | 8/18/2018  | Saturday  | 15:46 | PDO              | Angle                         | Wet                    | Daylight                | Rain              | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in transport                  | Made an improper turn   |
| 28    | 11/14/2018 | Wednesday | 14:33 | PDO              | Head on                       | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Travelling straight ahead     | Collision with pedestrian                                  | No improper driving   |
| 29    | 12/11/2018 | Tuesday   | 13:11 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport                  | Unknown   |
| 30    | 2/17/2019  | Sunday    | 14:18 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Changing lanes                | Collision with motor vehicle in transport                  | Failure to keep in proper lane or running off road  |
| 31    | 3/5/2019   | Tuesday   | 11:17 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Changing lanes                | Collision with motor vehicle in transport                  | Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc |
| 32    | 4/6/2019   | Saturday  | 19:38 | Non Fatal Injury | Front to rear                 | Dry                    | Daylight                | Clear             | Slowing or stopped            | Slowing or stopped            | Collision with motor vehicle in transport                  | Distracted  |
| 33    | 5/12/2019  | Sunday    | 17:07 | PDO              | Head on                       | Wet                    | Dusk                    | Rain              | Travelling straight ahead     | Turning left                  | Collision with motor vehicle in transport                  | No improper driving   |
| 34    | 9/21/2019  | Saturday  | 7:34  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport                  | Glare   |
| 35    | 2/2/2013   | Saturday  | 21:39 | PDO              | Angle                         | Dry                    | Dark - lighted roadway  | Clear/Cloudy      | Turning right                 | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Made an improper turn   |
| 36    | 2/5/2013   | Tuesday   | 7:56  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Other improper action   |
| 37    | 5/16/2013  | Thursday  | 15:14 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped in traffic | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Followed too closely  |
| 38    | 7/6/2013   | Saturday  | 12:14 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Entering traffic lane         | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Failed to yield right of way  |
| 39    | 6/23/2014  | Monday    | 10:02 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Made an improper turn   |
| 40    | 8/15/2014  | Friday    | 9:49  | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Turning left                  | Turning left                  | Collision with motor vehicle in traffic                    | Inattention   |
| 41    | 10/17/2014 | Friday    | 14:29 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear/Clear       | Turning left                  | Turning left                  | Collision with motor vehicle in traffic                    | Followed too closely  |
| 42    | 5/6/2015   | Wednesday | 16:38 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Turning left                  | Collision with motor vehicle in traffic                    | Disregarded traffic signs, signals, road markings   |
| 43    | 6/15/2015  | Monday    | 17:52 | PDO              | Rear-end                      | Wet                    | Daylight                | Cloudy/Rain       | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Followed too closely  |
| 44    | 7/21/2015  | Tuesday   | 15:01 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Changing lanes                | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Failed to yield right of way  |
| 45    | 11/12/2015 | Thursday  | 15:48 | PDO              | Sideswipe, same direction     | Wet                    | Dusk                    | Cloudy/Rain       | Travelling straight ahead     | Turning left                  | Collision with motor vehicle in traffic                    | Unknown   |
| 46    | 12/23/2015 | Wednesday | 18:58 | PDO              | Rear-end                      | Wet                    | Dark - lighted roadway  | Rain              | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Followed too closely  |
| 47    | 1/24/2016  | Sunday    | 11:34 | PDO              | Rear-end                      | Wet                    | Daylight                | Clear             | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Followed too closely  |
| 48    | 4/27/2016  | Wednesday | 15:24 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear/Clear       | Slowing or stopped in traffic | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Distracted  |
| 49    | 5/8/2016   | Sunday    | 17:14 | PDO              | Single vehicle crash          | Dry                    | Daylight                | Clear             | Travelling straight ahead     |                               | Collision with fixed object (wall, building, tunnel, etc.) | Other improper action   |
| 50    | 5/8/2016   | Sunday    | 17:57 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped in traffic | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Other improper action   |
| 51    | 5/11/2016  | Wednesday | 17:09 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Inattention   |
| 52    | 6/16/2016  | Thursday  | 13:33 | Not Reported     | Rear-end                      | Dry                    | Daylight                | Clear             | Parked                        | Backing                       | Collision with motor vehicle in traffic                    | Unknown   |
| 53    | 1/18/2017  | Wednesday | 20:14 | PDO              | Angle                         | Wet                    | Dark - lighted roadway  | Cloudy/Rain       | Turning right                 | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Failed to yield right of way  |
| 54    | 3/21/2017  | Tuesday   | 8:47  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped in traffic | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Other improper action   |
| 55    | 4/7/2017   | Friday    | 13:45 | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic                    | Followed too closely  |
| 56    | 5/11/2017  | Thursday  | 12:21 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in traffic                    | Inattention   |
| 57    | 6/3/2017   | Saturday  | 20:02 | PDO              | Angle                         | Wet                    | Dusk                    | Cloudy/Rain       | Travelling straight ahead     | Entering traffic lane         | Collision with motor vehicle in traffic                    | Failed to yield right of way  |
| 58    | 6/9/2017   | Friday    | 10:34 | PDO              | Single vehicle crash          | Dry                    | Daylight                | Clear             | Travelling straight ahead     |                               | Collision with fixed object (wall, building, tunnel, etc.) | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner                  |

Note: The intersection is located on the border between Norwell and Hingham. The recent five-year crashes are from two data sources. Norwell police crash reports 2015–19 were used for the crashes occurred in Norwell (Crash Numbers 1 to 34) and MassDOT crash data 2013–17 were used for the crashes occurred in Hingham (Crash Numbers 35 to 58).

PDO = Property Damage Only





**SYMBOLS**

- Moving Vehicle
- ↔ Backing Vehicle
- ⋯ Non-Involved Vehicle
- ⤴ Pedestrian
- ▭ Parked Vehicle
- □ Fixed Object
- ✂ Bicycle

**TYPES OF CRASH**

- ↔↔↔ Head On
- ↓ ↙ Angle
- | → Rear End
- ↔↔ Sideswipe
- ↻ Out of Control

**CRASH INDEX AND SEVERITY**

- #, #, #
- # Property Damage Only Crash Index Number
  - # Injury Crash Index Number
  - # Fatal Crash Index Number



**Figure K-2**  
**Collision Diagram: Route 53 between Pond Street and High Street**  
**Norwell Police Crash Reports 2015–19**



**Table K-2**  
**Summary of Crashes: Route 53 between Pond Street and High Street**  
**Norwell Police Crash Reports 2015-19**

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition | Ambient Light Condition | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event                        | Driver Contribution                                |
|-------|------------|-----------|-------|------------------|-------------------------------|------------------------|-------------------------|-------------------|---------------------------|---------------------------|---|--|
| 1     | 1/15/2015  | Thursday  | 10:33 | Non Fatal Injury | Angle                         | Wet                    | Daylight                | Snow              | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Inattention  |
| 2     | 2/12/2015  | Thursday  | 12:50 | PDO              | Unknown                       | Unknown                | Unknown                 | Unknown           | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 3     | 6/8/2015   | Monday    | 16:38 | Non Fatal Injury | Single vehicle crash          | Dry                    | Daylight                | Clear             | Entering traffic lane     |                           | Collision with cyclist                    | No improper driving                                |
| 4     | 8/15/2015  | Saturday  | 11:05 | Non Fatal Injury | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action                              |
| 5     | 10/10/2015 | Saturday  | 14:07 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way                       |
| 6     | 10/20/2015 | Tuesday   | 9:05  | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 7     | 8/21/2015  | Friday    | 15:52 | Non Fatal Injury | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 8     | 11/22/2015 | Sunday    | 10:55 | PDO              | Rear-end                      | Wet                    | Daylight                | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving                                |
| 9     | 12/18/2015 | Friday    | 17:57 | PDO              | Rear-end                      | Wet                    | Dark - lighted roadway  | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving                                |
| 10    | 9/14/2016  | Wednesday | 15:28 | PDO              | Sideswipe, opposite direction | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | No improper driving                                |
| 11    | 10/30/2016 | Sunday    | 19:21 | PDO              | Head on                       | Wet                    | Dark - lighted roadway  | Rain              | Turning left              | Turning left              | Collision with motor vehicle in transport | No improper driving                                |
| 12    | 11/22/2016 | Tuesday   | 9:37  | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action                              |
| 13    | 12/24/2016 | Saturday  | 10:24 | PDO              | Angle                         | Wet                    | Daylight                | Rain              | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving                                |
| 14    | 1/6/2017   | Friday    | 11:26 | Non Fatal Injury | Sideswipe, same direction     | Wet                    | Daylight                | Cloudy            | Travelling straight ahead | Changing lanes            | Collision with motor vehicle in transport | No improper driving                                |
| 15    | 1/6/2017   | Friday    | 12:05 | PDO              | Angle                         | Wet                    | Daylight                | Cloudy            | Backing                   | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 16    | 1/26/2017  | Thursday  | 16:39 | PDO              | Angle                         | Wet                    | Dusk                    | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Visibility obstructed                              |
| 17    | 4/7/2017   | Friday    | 15:28 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Made an improper turn                              |
| 18    | 5/3/2017   | Wednesday | 19:41 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 19    | 7/6/2017   | Thursday  | 11:19 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving                                |
| 20    | 8/24/2017  | Thursday  | 11:54 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving                                |
| 21    | 9/11/2017  | Monday    | 15:28 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 22    | 10/24/2017 | Tuesday   | 8:43  | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning right             | Collision with motor vehicle in transport | Unknown  |
| 23    | 10/27/2017 | Friday    | 12:07 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | Unknown  |
| 24    | 12/22/2017 | Friday    | 11:19 | PDO              | Angle                         | Dry                    | Daylight                | Cloudy            | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Other improper action                              |
| 25    | 1/23/2018  | Tuesday   | 16:11 | PDO              | Single vehicle crash          | Wet                    | Daylight                | Rain              | Travelling straight ahead |                           | Collision with animal-deer                | No improper driving                                |
| 26    | 2/14/2018  | Wednesday | 16:25 | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 27    | 2/16/2018  | Friday    | 8:53  | PDO              | Angle                         | Wet                    | Daylight                | Cloudy            | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Made an improper turn                              |
| 28    | 3/1/2018   | Thursday  | 21:54 | PDO              | Angle                         | Dry                    | Dark - lighted roadway  | Clear             | Changing lanes            | Turning left              | Collision with motor vehicle in transport | Failed to yield right of way                       |
| 29    | 5/24/2018  | Thursday  | 11:04 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely                               |
| 30    | 6/21/2018  | Thursday  | 12:14 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport | Failure to keep in proper lane or running off road |
| 31    | 7/23/2018  | Monday    | 14:15 | Non Fatal Injury | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport | Visibility obstructed                              |
| 32    | 8/18/2018  | Saturday  | 11:36 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 33    | 9/18/2018  | Tuesday   | 12:29 | Non Fatal Injury | Sideswipe, opposite direction | Wet                    | Daylight                | Rain              | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way                       |
| 34    | 10/3/2018  | Wednesday | 17:03 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning right             | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action                              |
| 35    | 11/16/2018 | Friday    | 9:45  | PDO              | Sideswipe, opposite direction | Wet                    | Daylight                | Rain              | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Failed to yield right of way                       |
| 36    | 4/18/2019  | Thursday  | 16:02 | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 37    | 4/22/2019  | Monday    | 17:16 | PDO              | Angle                         | Wet                    | Daylight                | Cloudy            | Turning left              | Turning left              | Collision with motor vehicle in transport | No improper driving                                |
| 38    | 4/27/2019  | Saturday  | 13:14 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | Distracted   |
| 39    | 5/9/2019   | Thursday  | 12:40 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 40    | 5/30/2019  | Thursday  | 13:19 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Overtaking/passing        | Turning left              | Collision with motor vehicle in transport | Disregarded traffic signs, signals, road markings  |
| 41    | 7/17/2019  | Wednesday | 12:40 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 42    | 7/17/2019  | Wednesday | 14:10 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving                                |
| 43    | 7/30/2019  | Tuesday   | 10:16 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport | Failed to yield right of way                       |
| 44    | 9/21/2019  | Saturday  | 10:30 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely                               |
| 45    | 10/1/2019  | Tuesday   | 15:24 | PDO              | Unknown                       | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failure to keep in proper lane or running off road |
| 46    | 11/23/2019 | Saturday  | 13:07 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |

Note: PDO = Property Damage Only





**SYMBOLS**

- |                        |                   |
|------------------------|-------------------|
| → Moving Vehicle       | →  Parked Vehicle |
| ↔ Backing Vehicle      | →  Fixed Object   |
| ⋯ Non-Involved Vehicle | →  Bicycle        |
| →  Pedestrian          |                   |

**TYPES OF CRASH**

- |             |                   |
|-------------|-------------------|
| ↔↔↔ Head On | ↔↔ Sideswipe      |
| →↘↙ Angle   | ↪↪ Out of Control |
| →↔ Rear End |                   |

**CRASH INDEX AND SEVERITY**

- #, (#), (⊕)
- # Property Damage Only Crash Index Number
  - (#) Injury Crash Index Number
  - (⊕) Fatal Crash Index Number



**Figure K-3**  
**Collision Diagram: Route 53 at High Street and Grove Street**  
**Norwell Police Crash Reports 2015–19**



**Table K-3**  
**Summary of Crashes: Route 53 at High Street and Grove Street**  
**Norwell Police Crash Reports 2015-19**

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition | Ambient Light Condition | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event                        | Driver Contribution  |
|-------|------------|-----------|-------|------------------|-------------------------------|------------------------|-------------------------|-------------------|---------------------------|---------------------------|---|--|
| 1     | 1/21/2015  | Wednesday | 20:14 | PDO              | Rear-end                      | Dry                    | Dark - lighted roadway  | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 2     | 2/25/2015  | Wednesday | 13:39 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning right             | Collision with motor vehicle in transport | No improper driving  |
| 3     | 3/13/2015  | Friday    | 7:47  | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Other improper action  |
| 4     | 3/17/2015  | Tuesday   | 11:29 | Non Fatal Injury | Rear-end                      | Wet                    | Daylight                | Rain              | Slowing or stopped        | Turning right             | Collision with motor vehicle in transport | No improper driving  |
| 5     | 3/29/2015  | Sunday    | 19:37 | PDO              | Angle                         | Dry                    | Dark - lighted roadway  | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Failed to yield right of way   |
| 6     | 6/12/2015  | Friday    | 13:24 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 7     | 7/8/2015   | Wednesday | 11:42 | Non Fatal Injury | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 8     | 11/2/2015  | Monday    | 14:59 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 9     | 11/21/2015 | Saturday  | 13:29 | PDO              | Sideswipe, opposite direction | Dry                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport | Operating defective equipment  |
| 10    | 12/4/2015  | Friday    | 17:01 | PDO              | Angle                         | Dry                    | Dark - lighted roadway  | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way   |
| 11    | 3/26/2016  | Saturday  | 13:28 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 12    | 6/28/2016  | Tuesday   | 16:54 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 13    | 7/8/2016   | Friday    | 12:31 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | Other improper action  |
| 14    | 7/21/2016  | Thursday  | 15:30 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 15    | 9/6/2016   | Tuesday   | 11:01 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 16    | 9/16/2016  | Friday    | 16:32 | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely   |
| 17    | 10/24/2016 | Monday    | 15:42 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 18    | 10/28/2016 | Friday    | 13:35 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped        | Parked                    | Collision with motor vehicle in transport | Unknown  |
| 19    | 10/30/2016 | Sunday    | 18:28 | PDO              | Rear-end                      | Wet                    | Dark - lighted roadway  | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |
| 20    | 11/4/2016  | Friday    | 16:41 | PDO              | Head on                       | Dry                    | Daylight                | Clear             | Turning left              | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 21    | 11/8/2016  | Tuesday   | 16:10 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |
| 22    | 2/7/2017   | Tuesday   | 9:19  | PDO              | Angle                         | Wet                    | Daylight                | Snow              | Turning right             | Making U-turn             | Collision with motor vehicle in transport | No improper driving  |
| 23    | 4/30/2017  | Sunday    | 17:44 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Visibility obstructed  |
| 24    | 6/8/2017   | Thursday  | 8:17  | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 25    | 7/24/2017  | Monday    | 15:04 | PDO              | Rear-end                      | Wet                    | Daylight                | Rain              | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | Inattention  |
| 26    | 8/1/2017   | Tuesday   | 13:57 | Non Fatal Injury | Angle                         | Dry                    | Daylight                | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 27    | 8/1/2017   | Tuesday   | 14:45 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 28    | 8/15/2017  | Tuesday   | 13:34 | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 29    | 11/26/2017 | Sunday    | 10:52 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | Unknown  |
| 30    | 12/5/2017  | Tuesday   | 12:02 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 31    | 1/5/2018   | Friday    | 15:19 | Non Fatal Injury | Rear-end                      | Snow                   | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Distracted   |
| 32    | 3/29/2018  | Thursday  | 11:59 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | Other improper action  |
| 33    | 5/5/2018   | Saturday  | 13:15 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |
| 34    | 5/18/2018  | Friday    | 9:59  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 35    | 7/20/2018  | Friday    | 14:36 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Visibility obstructed  |
| 36    | 10/17/2018 | Wednesday | 15:41 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 37    | 12/5/2018  | Wednesday | 7:40  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 38    | 12/11/2018 | Tuesday   | 17:53 | Non Fatal Injury | Angle                         | Dry                    | Dark - lighted roadway  | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner |
| 39    | 1/23/2019  | Wednesday | 9:20  | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely   |
| 40    | 3/30/2019  | Saturday  | 14:43 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely   |
| 41    | 4/3/2019   | Wednesday | 14:30 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely   |
| 42    | 9/5/2019   | Thursday  | 19:02 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | Unknown  |
| 43    | 9/25/2019  | Wednesday | 12:26 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely   |
| 44    | 12/5/2019  | Thursday  | 15:13 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Unknown  |
| 45    | 12/12/2019 | Thursday  | 7:59  | PDO              | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Entering traffic lane     | Entering traffic lane     | Collision with motor vehicle in transport | Failed to yield right of way   |

Note: PDO = Property Damage Only





**SYMBOLS**

- |                        |                    |
|------------------------|--------------------|
| → Moving Vehicle       | → ▭ Parked Vehicle |
| ↔ Backing Vehicle      | → □ Fixed Object   |
| ⋯ Non-Involved Vehicle | → ✂ Bicycle        |
| → ⚧ Pedestrian         |                    |

**TYPES OF CRASH**

- |             |                  |
|-------------|------------------|
| ↔↔↔ Head On | ↘↗ Sideswipe     |
| →↙↘ Angle   | ⊖ Out of Control |
| →↔ Rear End |                  |

**CRASH INDEX AND SEVERITY**

- #, (#), (##)
- # Property Damage Only Crash Index Number
  - (#) Injury Crash Index Number
  - (##) Fatal Crash Index Number



**Figure K-4**  
**Collision Diagram: Route 53 between High Street and Oak Street**  
**Norwell Police Crash Reports 2015–19**



**Table K-4**  
**Summary of Crashes: Route 53 between High Street and Oak Street**  
**Norwell Police Crash Reports 2015-19**

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition | Ambient Light Condition | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event                              | Driver Contribution  |
|-------|------------|-----------|-------|------------------|-------------------------------|------------------------|-------------------------|-------------------|---------------------------|---------------------------|---|--|
| 1     | 2/12/2015  | Thursday  | 21:41 | PDO              | Angle                         | Slush                  | Dark - lighted roadway  | Snow              | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport       | Visibility obstructed  |
| 2     | 2/16/2015  | Monday    | 16:57 | Non Fatal Injury | Angle                         | Slush                  | Daylight                | Cloudy            | Other                     | Travelling straight ahead | Collision with motor vehicle in transport       | Driving too fast for conditions  |
| 3     | 4/12/2015  | Sunday    | 21:10 | PDO              | Single vehicle crash          | Dry                    | Dark - lighted roadway  | Clear             | Travelling straight ahead |                           | Collision with utility pole                     | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner |
| 4     | 6/7/2015   | Sunday    | 12:55 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | Other improper action  |
| 5     | 10/31/2015 | Saturday  | 21:36 | Non Fatal Injury | Angle                         | Dry                    | Dark - lighted roadway  | Clear             | Travelling straight ahead | Parked                    | Collision with parked motor vehicle             | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner |
| 6     | 11/13/2015 | Friday    | 8:42  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport       | Followed too closely   |
| 7     | 12/19/2015 | Saturday  | 12:15 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | No improper driving  |
| 8     | 2/4/2016   | Thursday  | 16:20 | PDO              | Sideswipe, opposite direction | Dry                    | Dusk                    | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport       | Unknown  |
| 9     | 8/10/2016  | Wednesday | 14:11 | PDO              | Head on                       | Wet                    | Daylight                | Rain              | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport       | Unknown  |
| 10    | 9/13/2016  | Tuesday   | 8:16  | PDO              | Single vehicle crash          | Dry                    | Daylight                | Clear             | Turning right             |                           | Collision with light pole or other post/support | Inattention  |
| 11    | 1/24/2017  | Tuesday   | 17:25 | PDO              | Rear-end                      | Wet                    | Dark - lighted roadway  | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | Unknown  |
| 12    | 3/17/2017  | Friday    | 14:37 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport       | Other improper action  |
| 13    | 5/24/2017  | Wednesday | 17:18 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | Unknown  |
| 14    | 7/12/2017  | Wednesday | 11:59 | PDO              | Single vehicle crash          | Wet                    | Daylight                | Rain              | Entering traffic lane     |                           | Collision with utility pole                     | Unknown  |
| 15    | 9/11/2017  | Monday    | 10:31 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | Unknown  |
| 16    | 9/16/2017  | Saturday  | 6:51  | PDO              | Rear-end                      | Wet                    | Daylight                | Rain              | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport       | Distracted   |
| 17    | 11/22/2017 | Wednesday | 14:06 | PDO              | Angle                         | Wet                    | Daylight                | Rain              | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport       | No improper driving  |
| 18    | 1/22/2018  | Monday    | 1:04  | Non Fatal Injury | Single vehicle crash          | Dry                    | Dark - lighted roadway  | Clear             | Travelling straight ahead |                           | Collision with utility pole                     | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner |
| 19    | 6/17/2018  | Sunday    | 11:48 | PDO              | Sideswipe, opposite direction | Dry                    | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport       | No improper driving  |
| 20    | 8/15/2018  | Wednesday | 8:55  | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport       | Failed to yield right of way   |
| 21    | 8/19/2018  | Sunday    | 14:48 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | Other improper action  |
| 22    | 9/20/2018  | Thursday  | 14:43 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport       | Failed to yield right of way   |
| 23    | 11/30/2018 | Friday    | 16:58 | PDO              | Rear-end                      | Dry                    | Dark - lighted roadway  | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport       | Distracted   |
| 24    | 3/18/2019  | Monday    | 17:50 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Turning left              | Slowing or stopped        | Collision with motor vehicle in transport       | No improper driving  |
| 25    | 4/29/2019  | Monday    | 7:59  | Non Fatal Injury | Sideswipe, same direction     | Dry                    | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with utility pole                     | Unknown  |
| 26    | 6/20/2019  | Thursday  | 14:36 | PDO              | Angle                         | Wet                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport       | Unknown  |
| 27    | 6/28/2019  | Friday    | 17:03 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport       | Failure to keep in proper lane or running off road                               |
| 28    | 10/5/2019  | Saturday  | 13:51 | PDO              | Angle                         | Dry                    | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport       | Unknown  |
| 29    | 10/10/2019 | Thursday  | 18:01 | Non Fatal Injury | Angle                         | Dry                    | Dusk                    | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport       | Unknown  |

Note: PDO = Property Damage Only





**SYMBOLS**

- |                        |                   |
|------------------------|-------------------|
| → Moving Vehicle       | →  Parked Vehicle |
| ↔ Backing Vehicle      | →  Fixed Object   |
| ⋯ Non-Involved Vehicle | →  Bicycle        |
| →  Pedestrian          | →  Animal         |

**TYPES OF CRASH**

- |             |                   |
|-------------|-------------------|
| ↔↔↔ Head On | ↔↔ Sideswipe      |
| →↙↘ Angle   | ↪↪ Out of Control |
| →↔ Rear End |                   |

**CRASH INDEX AND SEVERITY**

- #, #, #
- # Property Damage Only Crash Index Number
  - # Injury Crash Index Number
  - # Fatal Crash Index Number



**Figure K-5**  
**Collision Diagram: Route 53 between Oak Street and Hall Drive**  
**Norwell Police Crash Reports 2015-19**



**Table K-5**  
**Summary of Crashes: Route 53 between Oak Street and Hall Drive**  
**Norwell Police Crash Reports 2015-19**

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision  | Road Surface Condition | Ambient Light Condition    | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event                        | Driver Contribution          |
|-------|------------|-----------|-------|------------------|----------------------|------------------------|----------------------------|-------------------|---------------------------|---------------------------|---|------------------------------|
| 1     | 3/27/2015  | Friday    | 16:13 | PDO              | Angle                | Dry                    | Daylight                   | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Made an improper turn        |
| 2     | 1/6/2016   | Wednesday | 18:14 | PDO              | Rear-end             | Dry                    | Dark - lighted roadway     | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving          |
| 3     | 2/26/2016  | Friday    | 15:08 | Non Fatal Injury | Angle                | Dry                    | Daylight                   | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way |
| 4     | 3/19/2016  | Saturday  | 21:18 | PDO              | Head on              | Dry                    | Dark - roadway not lighted | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Made an improper turn        |
| 5     | 5/23/2016  | Monday    | 20:37 | PDO              | Single vehicle crash | Dry                    | Dark - lighted roadway     | Clear             | Travelling straight ahead |                           | Collision with animal-deer                | No improper driving          |
| 6     | 9/1/2016   | Thursday  | 12:00 | Non Fatal Injury | Rear-end             | Wet                    | Daylight                   | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action        |
| 7     | 9/19/2016  | Monday    | 16:42 | PDO              | Rear-end             | Wet                    | Daylight                   | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely         |
| 8     | 11/12/2016 | Saturday  | 13:19 | Non Fatal Injury | Head on              | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | No improper driving          |
| 9     | 11/29/2016 | Tuesday   | 14:21 | PDO              | Rear-end             | Wet                    | Daylight                   | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving          |
| 10    | 1/26/2017  | Thursday  | 16:42 | PDO              | Angle                | Wet                    | Daylight                   | Rain              | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way |
| 11    | 2/18/2017  | Saturday  | 20:14 | Non Fatal Injury | Rear-end             | Dry                    | Dusk                       | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Illness                      |
| 12    | 4/18/2017  | Tuesday   | 13:02 | Non Fatal Injury | Rear-end             | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | Other improper action        |
| 13    | 5/5/2017   | Friday    | 14:59 | PDO              | Rear-end             | Wet                    | Daylight                   | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown                      |
| 14    | 9/16/2017  | Saturday  | 11:59 | PDO              | Single vehicle crash | Dry                    | Daylight                   | Cloudy            | Travelling straight ahead |                           | Collision with animal-deer                | No improper driving          |
| 15    | 9/26/2017  | Tuesday   | 11:30 | Non Fatal Injury | Rear-end             | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown                      |
| 16    | 10/12/2017 | Thursday  | 7:08  | PDO              | Rear-end             | Wet                    | Daylight                   | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Inattention                  |
| 17    | 11/9/2018  | Friday    | 9:51  | PDO              | Rear-end             | Dry                    | Daylight                   | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Unknown                      |
| 18    | 5/28/2019  | Tuesday   | 19:59 | PDO              | Single vehicle crash | Wet                    | Dark - lighted roadway     | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with animal-deer                | Unknown                      |
| 19    | 12/4/2019  | Wednesday | 15:46 | PDO              | Rear-end             | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving          |

Note: PDO = Property Damage Only





**SYMBOLS**

- |                             |                              |
|-----------------------------|------------------------------|
| → Moving Vehicle            | → [trapezoid] Parked Vehicle |
| ↔ Backing Vehicle           | → [square] Fixed Object      |
| ⋯ Non-Involved Vehicle      | → [bicycle] Bicycle          |
| → [stick figure] Pedestrian | → [animal] Animal            |

**TYPES OF CRASH**

- |             |                  |
|-------------|------------------|
| ↔↔↔ Head On | ↔↔ Sideswipe     |
| →↙↘ Angle   | ↻ Out of Control |
| →↔ Rear End |                  |

**CRASH INDEX AND SEVERITY**

- #, (#), (#)
- # Property Damage Only Crash Index Number
  - (#) Injury Crash Index Number
  - (#) Fatal Crash Index Number



**Figure K-6**  
Collision Diagram: Route 53 between Hall Drive and Jacobs Trail (Section 1)  
Norwell Police Crash Reports 2015–19



**Table K-6**  
**Summary of Crashes: Route 53 between Hall Drive and Jacobs Trail (Sec. 1)**  
**Norwell Police Crash Reports 2015-19**

| Index | Crash Date | Day      | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition | Ambient Light Condition    | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event                        | Driver Contribution  |
|-------|------------|----------|-------|------------------|-------------------------------|------------------------|----------------------------|-------------------|---------------------------|---------------------------|---|--|
| 1     | 1/3/2015   | Saturday | 16:58 | Non Fatal Injury | Rear-end                      | Snow                   | Dark - roadway not lighted | Snow              | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | Inattention  |
| 2     | 4/21/2015  | Tuesday  | 14:16 | PDO              | Angle                         | Dry                    | Daylight                   | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way   |
| 3     | 5/9/2015   | Saturday | 11:55 | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Followed too closely   |
| 4     | 8/1/2015   | Saturday | 14:28 | PDO              | Rear-end                      | Wet                    | Daylight                   | Cloudy            | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 5     | 9/10/2015  | Thursday | 12:13 | PDO              | Rear-end                      | Wet                    | Daylight                   | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 6     | 10/31/2015 | Saturday | 10:36 | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 7     | 12/10/2015 | Thursday | 23:11 | PDO              | Rear-end                      | Wet                    | Dark - roadway not lighted | Fog, smog, smoke  | Unknown                   | Slowing or stopped        | Collision with motor vehicle in transport | Unknown  |
| 8     | 6/12/2016  | Sunday   | 11:25 | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |
| 9     | 7/25/2016  | Monday   | 12:23 | PDO              | Angle                         | Dry                    | Daylight                   | Clear             | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way   |
| 10    | 8/13/2016  | Saturday | 7:51  | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 11    | 9/16/2016  | Friday   | 22:43 | Non Fatal Injury | Single vehicle crash          | Dry                    | Dark - lighted roadway     | Cloudy            | Travelling straight ahead |                           | Other                                     | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner |
| 12    | 10/1/2016  | Saturday | 13:37 | PDO              | Rear-end                      | Wet                    | Daylight                   | Rain              | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | No improper driving  |
| 13    | 10/8/2016  | Saturday | 12:30 | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 14    | 10/31/2016 | Monday   | 15:54 | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 15    | 12/29/2016 | Thursday | 14:04 | PDO              | Rear-end                      | Wet                    | Daylight                   | Rain              | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |
| 16    | 3/28/2017  | Tuesday  | 11:38 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                   | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 17    | 11/12/2017 | Sunday   | 10:38 | PDO              | Sideswipe, same direction     | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 18    | 12/5/2017  | Tuesday  | 16:42 | PDO              | Single vehicle crash          | Wet                    | Dark - lighted roadway     | Cloudy            | Travelling straight ahead |                           | Collision with animal-deer                | No improper driving  |
| 19    | 12/22/2017 | Friday   | 11:07 | PDO              | Unknown                       | Dry                    | Daylight                   | Clear             | Backing                   | Parked                    | Collision with motor vehicle in transport | Unknown  |
| 20    | 1/14/2018  | Sunday   | 13:48 | PDO              | Single vehicle crash          | Dry                    | Daylight                   | Cloudy            | Travelling straight ahead |                           | Collision with animal-deer                | No improper driving  |
| 21    | 3/23/2018  | Friday   | 12:30 | PDO              | Rear-end                      | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 22    | 9/13/2018  | Thursday | 16:10 | Non Fatal Injury | Angle                         | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport | Failed to yield right of way   |
| 23    | 9/25/2018  | Tuesday  | 17:38 | PDO              | Rear-end                      | Wet                    | Daylight                   | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 24    | 11/23/2018 | Friday   | 14:13 | Non Fatal Injury | Sideswipe, opposite direction | Dry                    | Daylight                   | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way   |
| 25    | 12/11/2018 | Tuesday  | 17:30 | Non Fatal Injury | Angle                         | Dry                    | Dark - lighted roadway     | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport | Failed to yield right of way   |
| 26    | 1/14/2019  | Monday   | 18:27 | Non Fatal Injury | Single vehicle crash          | Dry                    | Dark - lighted roadway     | Cloudy            | Travelling straight ahead |                           | Collision with animal-deer                | No improper driving  |
| 27    | 1/20/2019  | Sunday   | 11:18 | PDO              | Sideswipe, same direction     | Wet                    | Daylight                   | Snow              | Turning left              | Overtaking/passing        | Collision with motor vehicle in transport | Disregarded traffic signs, signals, road markings                                |
| 28    | 3/17/2019  | Sunday   | 12:48 | PDO              | Angle                         | Dry                    | Daylight                   | Clear             | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 29    | 4/21/2019  | Sunday   | 13:13 | PDO              | Front to rear                 | Wet                    | Daylight                   | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 30    | 6/15/2019  | Saturday | 17:03 | PDO              | Angle                         | Dry                    | Daylight                   | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Distracted   |
| 31    | 7/25/2019  | Thursday | 15:37 | PDO              | Angle                         | Dry                    | Daylight                   | Clear             | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 32    | 11/7/2019  | Thursday | 14:55 | PDO              | Rear-end                      | Dry                    | Daylight                   | Cloudy            | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |

Note: PDO = Property Damage Only





**SYMBOLS**

- |                        |                    |
|------------------------|--------------------|
| → Moving Vehicle       | → ▭ Parked Vehicle |
| ↔ Backing Vehicle      | → □ Fixed Object   |
| ⋯ Non-Involved Vehicle | → ✂ Bicycle        |
| → ⚽ Pedestrian         |                    |

**TYPES OF CRASH**

- |             |                  |
|-------------|------------------|
| ↔↔↔ Head On | ↔↔ Sideswipe     |
| →↙↘ Angle   | ↻ Out of Control |
| →↔ Rear End |                  |

**CRASH INDEX AND SEVERITY**

- #, #, #
- # Property Damage Only Crash Index Number
- # Injury Crash Index Number
- # Fatal Crash Index Number



**Figure K-7**  
**Collision Diagram: Route 53 between Hall Drive and Jacobs Trail (Section 2)**  
**Norwell Police Crash Reports 2015-19**



Table K-7  
 Summary of Crashes: Route 53 between Hall Drive and Jacobs Trail (Sec. 2)  
 Norwell Police Crash Reports 2015-19

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition       | Ambient Light Condition | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event   | Driver Contribution   |
|-------|------------|-----------|-------|------------------|-------------------------------|------------------------------|-------------------------|-------------------|---------------------------|---------------------------|--|---|
| 1     | 3/18/2015  | Wednesday | 9:09  | PDO              | Rear-end                      | Dry                          | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | No improper driving   |
| 2     | 4/19/2015  | Sunday    | 9:11  | PDO              | Sideswipe, opposite direction | Dry                          | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | Unknown   |
| 3     | 7/14/2015  | Tuesday   | 11:22 | Non Fatal Injury | Angle                         | Wet                          | Daylight                | Rain              | Entering traffic lane     | Travelling straight ahead | Collision with motor vehicle in transport                  | No improper driving   |
| 4     | 12/22/2015 | Tuesday   | 14:27 | Non Fatal Injury | Rear-end                      | Wet                          | Daylight                | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | Followed too closely  |
| 5     | 1/8/2016   | Friday    | 16:45 | PDO              | Rear-end                      | Sand, mud, dirt, oil, gravel | Dark - lighted roadway  | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport                  | Unknown   |
| 6     | 2/5/2016   | Friday    | 12:26 | PDO              | Angle                         | Snow                         | Daylight                | Snow              | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport                  | No improper driving   |
| 7     | 4/29/2016  | Friday    | 15:38 | PDO              | Rear-end                      | Dry                          | Daylight                | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | No improper driving   |
| 8     | 5/2/2016   | Monday    | 15:43 | PDO              | Sideswipe, opposite direction | Unknown                      | Daylight                | Cloudy            | Turning left              | Slowing or stopped        | Collision with motor vehicle in transport                  | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner                  |
| 9     | 6/19/2016  | Sunday    | 23:25 | PDO              | Single vehicle crash          | Dry                          | Dark - lighted roadway  | Clear             | Travelling straight ahead |                           | Collision with animal-deer                                 | Unknown   |
| 10    | 8/10/2016  | Wednesday | 12:48 | PDO              | Rear-end                      | Wet                          | Daylight                | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | No improper driving   |
| 11    | 11/22/2016 | Tuesday   | 18:06 | PDO              | Rear-end                      | Dry                          | Dark - lighted roadway  | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport                  | Unknown   |
| 12    | 12/19/2016 | Monday    | 16:29 | PDO              | Rear-end                      | Dry                          | Dusk                    | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport                  | Unknown   |
| 13    | 2/13/2017  | Monday    | 16:36 | PDO              | Rear-end                      | Wet                          | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport                  | Inattention   |
| 14    | 10/23/2017 | Monday    | 15:15 | PDO              | Sideswipe, opposite direction | Dry                          | Daylight                | Clear             | Turning left              | Unknown                   | Collision with motor vehicle in transport                  | Unknown   |
| 15    | 12/23/2017 | Saturday  | 10:32 | PDO              | Rear-end                      | Wet                          | Daylight                | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | Other improper action   |
| 16    | 4/20/2018  | Friday    | 12:17 | Non Fatal Injury | Rear-end                      | Dry                          | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport                  | Inattention   |
| 17    | 6/21/2018  | Thursday  | 13:15 | PDO              | Single vehicle crash          | Dry                          | Daylight                | Clear             | Travelling straight ahead |                           | Collision with other fixed object (wall, building, tunnel) | Unknown   |
| 18    | 7/21/2018  | Saturday  | 12:09 | PDO              | Angle                         | Dry                          | Daylight                | Clear             | Travelling straight ahead | Parked                    | Collision with parked motor vehicle                        | Unknown   |
| 19    | 9/25/2018  | Tuesday   | 15:59 | PDO              | Rear-end                      | Wet                          | Daylight                | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport                  | Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc |
| 20    | 11/14/2018 | Wednesday | 13:08 | PDO              | Single vehicle crash          | Dry                          | Daylight                | Clear             | Travelling straight ahead |                           | Collision with median barrier                              | Unknown   |
| 21    | 3/1/2019   | Friday    | 9:51  | PDO              | Rear-end                      | Dry                          | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport                  | Inattention   |
| 22    | 4/10/2019  | Wednesday | 15:27 | PDO              | Angle                         | Dry                          | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport                  | Failed to yield right of way  |
| 23    | 5/22/2019  | Wednesday | 15:08 | Non Fatal Injury | Rear-end                      | Dry                          | Daylight                | Clear             | Travelling straight ahead | Slowing or stopped        | Collision with motor vehicle in transport                  | Followed too closely  |
| 24    | 7/3/2017   | Monday    | 8:57  | Non Fatal Injury | Rear-end                      | Dry                          | Daylight                | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport                  | Other improper action   |
| 25    | 7/16/2017  | Sunday    | 16:17 | Non Fatal Injury | Angle                         | Dry                          | Daylight                | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport                  | Failed to yield right of way  |

Note: PDO = Property Damage Only





**SYMBOLS**

- |                        |                   |
|------------------------|-------------------|
| → Moving Vehicle       | →  Parked Vehicle |
| ↔ Backing Vehicle      | →  Fixed Object   |
| ⋯ Non-Involved Vehicle | →  Bicycle        |
| →  Pedestrian          |                   |

**TYPES OF CRASH**

- |             |                   |
|-------------|-------------------|
| ↔↔↔ Head On | ↔↔ Sideswipe      |
| →↔↔ Angle   | ↪↪ Out of Control |
| →↔ Rear End |                   |

**CRASH INDEX AND SEVERITY**

- #, (#), (##)
- # Property Damage Only Crash Index Number
  - (#) Injury Crash Index Number
  - (##) Fatal Crash Index Number



**Figure K-8**  
**Collision Diagram: Route 53 at Jacobs Trail and Stop & Shop Driveway**  
**Norwell Police Crash Reports 2015–19**



**Table K-8**  
**Summary of Crashes: Route 53 at Jacobs Trail and Stop & Shop Driveway**  
**Norwell Police Crash Reports 2015–19**

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision       | Road Surface Condition | Ambient Light Condition    | Weather Condition | Vehicle Action Veh #1     | Vehicle Action Veh #2     | Most Harmful Event                        | Driver Contribution  |
|-------|------------|-----------|-------|------------------|---------------------------|------------------------|----------------------------|-------------------|---------------------------|---------------------------|---|--|
| 1     | 1/22/2015  | Thursday  | 17:46 | PDO              | Angle                     | Dry                    | Dark - roadway not lighted | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Failed to yield right of way   |
| 2     | 7/10/2015  | Friday    | 11:04 | PDO              | Rear-end                  | Dry                    | Daylight                   | Cloudy            | Slowing or stopped        | Slowing or stopped        | Collision with motor vehicle in transport | No improper driving  |
| 3     | 7/26/2015  | Sunday    | 11:34 | PDO              | Rear-end                  | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 4     | 12/2/2015  | Wednesday | 10:04 | PDO              | Angle                     | Wet                    | Daylight                   | Rain              | Travelling straight ahead | Turning right             | Collision with motor vehicle in transport | Other improper action  |
| 5     | 4/27/2016  | Wednesday | 7:42  | Non Fatal Injury | Rear-end                  | Dry                    | Daylight                   | Cloudy            | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Inattention  |
| 6     | 10/29/2016 | Saturday  | 18:24 | Non Fatal Injury | Head on                   | Dry                    | Dark - lighted roadway     | Clear             | Turning left              | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way   |
| 7     | 11/7/2016  | Monday    | 18:09 | PDO              | Angle                     | Dry                    | Dark - lighted roadway     | Clear             | Travelling straight ahead | Turning left              | Collision with motor vehicle in transport | Visibility obstructed  |
| 8     | 11/25/2016 | Friday    | 16:57 | PDO              | Sideswipe, same direction | Wet                    | Dark - lighted roadway     | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Unknown  |
| 9     | 1/24/2017  | Tuesday   | 18:13 | PDO              | Sideswipe, same direction | Wet                    | Dark - lighted roadway     | Rain              | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | No improper driving  |
| 10    | 2/12/2018  | Monday    | 17:50 | PDO              | Angle                     | Dry                    | Dark - lighted roadway     | Clear             | Travelling straight ahead | Unknown                   | Collision with motor vehicle in transport | No improper driving  |
| 11    | 4/23/2018  | Monday    | 18:12 | PDO              | Sideswipe, same direction | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Failure to keep in proper lane or running off road                               |
| 12    | 11/3/2018  | Saturday  | 16:30 | PDO              | Rear-end                  | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Operating vehicle in erratic, reckless, careless, negligent or aggressive manner |
| 13    | 2/21/2019  | Thursday  | 18:45 | PDO              | Front to rear             | Dry                    | Dark - lighted roadway     | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Failed to yield right of way   |
| 14    | 4/20/2019  | Saturday  | 11:55 | PDO              | Angle                     | Other                  | Daylight                   | Cloudy            | Travelling straight ahead | Travelling straight ahead | Collision with motor vehicle in transport | Other improper action  |
| 15    | 11/11/2019 | Monday    | 15:10 | PDO              | Rear-end                  | Dry                    | Daylight                   | Clear             | Slowing or stopped        | Travelling straight ahead | Collision with motor vehicle in transport | Distracted   |
| 16    | 11/21/2019 | Thursday  | 13:10 | PDO              | Angle                     | Dry                    | Daylight                   | Clear             | Travelling straight ahead | Entering traffic lane     | Collision with motor vehicle in transport | Failed to yield right of way   |

Note: PDO = Property Damage Only





**SYMBOLS**

- |    |                      |   |   |                |
|----|----------------------|---|---|----------------|
| →  | Moving Vehicle       | → | ▭ | Parked Vehicle |
| ↔  | Backing Vehicle      | → | □ | Fixed Object   |
| ⋯→ | Non-Involved Vehicle | → | ⊗ | Bicycle        |
| →  | ⊗                    |   |   | Pedestrian     |

**TYPES OF CRASH**

- |     |          |    |                |
|-----|----------|----|----------------|
| ↔↔↔ | Head On  | ↘↗ | Sideswipe      |
| →↘  | Angle    | ↻  | Out of Control |
| →↔  | Rear End |    |                |

**CRASH INDEX AND SEVERITY**

- #, (#), (##)
- # Property Damage Only Crash Index Number
  - (#) Injury Crash Index Number
  - (##) Fatal Crash Index Number



**Figure K-9**  
**Collision Diagram: Route 53 between Jacobs Trail and Assinippi Avenue**  
 Norwell Police Crash Reports 2015–19 and MassDOT Crash Data 2013–17 (Hanover)



**Table K-9**  
**Summary of Crashes: Route 53 between Jacobs Trail and Assinippi Avenue**  
**Norwell Police Crash Reports 2015–19 and MassDOT Crash Data 2013–17 (Hanover)**

| Index | Crash Date | Day       | Time  | Crash Severity   | Manner of Collision           | Road Surface Condition | Ambient Light Condition | Weather Condition | Vehicle Action Veh #1         | Vehicle Action Veh #2         | Most Harmful Event                        | Driver Contribution             |
|-------|------------|-----------|-------|------------------|-------------------------------|------------------------|-------------------------|-------------------|-------------------------------|-------------------------------|---|---------------------------------|
| 1     | 8/22/2015  | Saturday  | 15:58 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Cloudy            | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport | Inattention                     |
| 2     | 8/10/2016  | Wednesday | 9:39  | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Entering traffic lane         | Entering traffic lane         | Collision with motor vehicle in transport | No improper driving             |
| 3     | 10/9/2017  | Monday    | 13:38 | PDO              | Rear-end                      | Wet                    | Daylight                | Rain              | Turning left                  | Travelling straight ahead     | Collision with motor vehicle in transport | Unknown                         |
| 4     | 12/29/2017 | Friday    | 8:56  | PDO              | Rear-end                      | Dry                    | Daylight                | Cloudy            | Turning right                 | Slowing or stopped            | Collision with motor vehicle in transport | No improper driving             |
| 5     | 1/30/2019  | Wednesday | 11:32 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped            | Travelling straight ahead     | Collision with motor vehicle in transport | Distracted                      |
| 6     | 2/9/2019   | Saturday  | 10:55 | PDO              | Single vehicle crash          | Dry                    | Daylight                | Clear             | Slowing or stopped            |                               | Collision with pedestrian                 | Unknown                         |
| 7     | 6/3/2019   | Monday    | 12:01 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Travelling straight ahead     | Slowing or stopped            | Collision with motor vehicle in transport | Other improper action           |
| 8     | 2/12/2014  | Wednesday | 16:23 | PDO              | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped in traffic | Travelling straight ahead     | Collision with motor vehicle in traffic   | Inattention                     |
| 9     | 8/14/2014  | Thursday  | 10:32 | Non Fatal Injury | Rear-end                      | Dry                    | Daylight                | Clear             | Slowing or stopped in traffic | Travelling straight ahead     | Collision with motor vehicle in traffic   | Inattention                     |
| 10    | 11/6/2014  | Thursday  | 15:05 | Non Fatal Injury | Rear-end                      | Wet                    | Daylight                | Rain/Cloudy       | Slowing or stopped in traffic | Slowing or stopped in traffic | Collision with motor vehicle in traffic   | Other improper action           |
| 11    | 4/1/2015   | Wednesday | 7:45  | PDO              | Angle                         | Dry                    | Daylight                | Clear/Clear       | Travelling straight ahead     | Turning left                  | Collision with motor vehicle in traffic   | Inattention                     |
| 12    | 11/28/2015 | Saturday  | 14:23 | Non Fatal Injury | Rear-end                      | Wet                    | Daylight                | Rain/Cloudy       | Slowing or stopped in traffic | Travelling straight ahead     | Collision with motor vehicle in traffic   | Driving too fast for conditions |
| 13    | 9/27/2016  | Tuesday   | 11:20 | Not Reported     | Angle                         | Wet                    | Daylight                | Clear             | Travelling straight ahead     | Entering traffic lane         | Collision with motor vehicle in traffic   | Unknown                         |
| 14    | 2/10/2017  | Friday    | 7:35  | PDO              | Rear-end                      | Snow                   | Daylight                | Clear/Clear       | Travelling straight ahead     | Slowing or stopped in traffic | Collision with motor vehicle in traffic   | No improper driving             |
| 15    | 2/23/2017  | Thursday  | 18:06 | Non Fatal Injury | Angle                         | Dry                    | Dark - lighted roadway  | Clear/Clear       | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in traffic   | Failed to yield right of way    |
| 16    | 10/30/2017 | Monday    | 7:05  | PDO              | Sideswipe, same direction     | Wet                    | Daylight                | Rain/Cloudy       | Travelling straight ahead     | Travelling straight ahead     | Collision with motor vehicle in traffic   | Unknown                         |
| 17    | 12/19/2017 | Tuesday   | 6:22  | Non Fatal Injury | Sideswipe, opposite direction | Unknown                | Dawn                    | Unknown/Unknown   | Travelling straight ahead     | Turning left                  | Collision with motor vehicle in traffic   | Failed to yield right of way    |

Note: This segment includes the intersection of Route 53 and Assinippi Avenue. The intersection is located on the border between Norwell and Hanover. The recent five-year crashes are from two data sources.

Norwell police crash reports 2015–19 were used for the crashes occurred in Norwell (Crash Numbers 1 to 7) and MassDOT crash data 2013–17 were used for the crashes occurred in Hanover (Crash Numbers 8 to 17).

PDO = Property Damage Only

**APPENDIX L**  
**Intersection Capacity Analyses**  
**Weekday AM/PM Peak Hour**  
**Signal Retiming Scenarios (2020 Estimated Volumes)**

Intersection Capacity Analysis  
1: Pond Street/Main Street & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 54    | 413   | 125  | 188   | 729   | 217  | 144   | 351   | 105   | 244   | 329   | 63   |
| Future Volume (vph)     | 54    | 413   | 125  | 188   | 729   | 217  | 144   | 351   | 105   | 244   | 329   | 63   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 150   |       | 0    | 200   |       | 0    | 150   |       | 200   | 250   |       | 250  |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 1     | 1     |       | 1    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Satd. Flow (prot)       | 1787  | 3344  | 0    | 1703  | 3437  | 0    | 1583  | 1727  | 1538  | 1736  | 3404  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (perm)       | 1787  | 3344  | 0    | 1703  | 3437  | 0    | 1583  | 1727  | 1538  | 1736  | 3404  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 36    |      |       | 40    |      |       |       | 185   |       |       | 21   |
| Link Speed (mph)        |       | 35    |      |       | 35    |      |       | 45    |       |       |       | 45   |
| Link Distance (ft)      |       | 1282  |      |       | 608   |      |       | 885   |       |       |       | 701  |
| Travel Time (s)         |       | 25.0  |      |       | 11.8  |      |       | 13.4  |       |       |       | 10.6 |
| Peak Hour Factor        | 0.98  | 0.98  | 0.98 | 0.99  | 0.99  | 0.99 | 0.94  | 0.94  | 0.94  | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 1%    | 3%    | 8%   | 6%    | 1%    | 3%   | 14%   | 10%   | 5%    | 4%    | 4%    | 1%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 55    | 549   | 0    | 190   | 955   | 0    | 153   | 373   | 112   | 265   | 426   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | Prot  | NA    | Perm  | Prot  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      | 3     | 8     |       | 7     | 4     |      |
| Permitted Phases        |       |       |      |       |       |      |       |       | 8     |       |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 8     | 8     | 7     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 1.0   | 1.0   |      | 1.0   | 1.0   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      |
| Minimum Split (s)       | 10.0  | 22.5  |      | 13.0  | 22.5  |      | 13.0  | 22.0  | 22.0  | 10.0  | 22.0  |      |
| Total Split (s)         | 10.0  | 26.0  |      | 20.0  | 36.0  |      | 24.0  | 30.0  | 30.0  | 24.0  | 30.0  |      |
| Total Split (%)         | 10.0% | 26.0% |      | 20.0% | 36.0% |      | 24.0% | 30.0% | 30.0% | 24.0% | 30.0% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      |
| 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   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   | Lag   | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Recall Mode             | None  | None  |      | None  | None  |      | None  | None  | None  | None  | None  |      |
| Act Effct Green (s)     | 5.1   | 19.4  |      | 13.7  | 30.6  |      | 14.2  | 23.2  | 23.2  | 17.4  | 26.5  |      |
| Actuated g/C Ratio      | 0.05  | 0.21  |      | 0.15  | 0.33  |      | 0.15  | 0.25  | 0.25  | 0.18  | 0.28  |      |
| v/c Ratio               | 0.57  | 0.77  |      | 0.77  | 0.83  |      | 0.65  | 0.88  | 0.22  | 0.83  | 0.44  |      |
| Control Delay           | 70.4  | 41.5  |      | 61.1  | 37.2  |      | 51.6  | 57.9  | 1.4   | 60.2  | 29.2  |      |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 70.4  | 41.5  |      | 61.1  | 37.2  |      | 51.6  | 57.9  | 1.4   | 60.2  | 29.2  |      |
| LOS                     | E     | D     |      | E     | D     |      | D     | E     | A     | E     | C     |      |
| Approach Delay          |       | 44.1  |      |       | 41.1  |      |       | 46.5  |       |       | 41.1  |      |
| Approach LOS            |       | D     |      |       | D     |      |       | D     |       |       | D     |      |
| Queue Length 50th (ft)  | 35    | 162   |      | 117   | 290   |      | 93    | 228   | 0     | 163   | 109   |      |
| Queue Length 95th (ft)  | #94   | 224   |      | #221  | #403  |      | 153   | #390  | 4     | #291  | 164   |      |
| Internal Link Dist (ft) |       | 1202  |      |       | 528   |      |       | 805   |       |       | 621   |      |
| Turn Bay Length (ft)    | 150   |       |      | 200   |       |      | 150   |       | 200   | 250   |       |      |
| Base Capacity (vph)     | 96    | 792   |      | 276   | 1179  |      | 325   | 466   | 551   | 356   | 1012  |      |

Intersection Capacity Analysis  
 1: Pond Street/Main Street & Route 53

02/27/2021

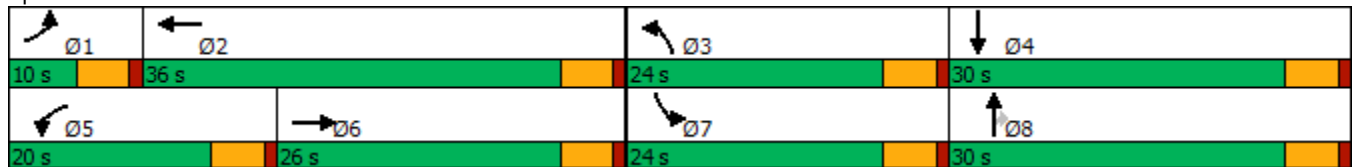


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|------|------|------|-----|
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Reduced v/c Ratio      | 0.57 | 0.69 |     | 0.69 | 0.81 |     | 0.47 | 0.80 | 0.20 | 0.74 | 0.42 |     |

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 94.1  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 42.8      Intersection LOS: D  
 Intersection Capacity Utilization 79.1%      ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Pond Street/Main Street & Route 53



# Intersection Capacity Analysis

## 1: Pond St/Main St & Whiting St/Washington St

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 100   | 815   | 160  | 183   | 596   | 276  | 210   | 361   | 290   | 265   | 436   | 53   |
| Future Volume (vph)     | 100   | 815   | 160  | 183   | 596   | 276  | 210   | 361   | 290   | 265   | 436   | 53   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 150   |       | 0    | 200   |       | 0    | 150   |       | 250   | 250   |       | 250  |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 1     | 1     |       | 1    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Satd. Flow (prot)       | 1770  | 3491  | 0    | 1770  | 3396  | 0    | 1787  | 1900  | 1615  | 1787  | 3452  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (perm)       | 1770  | 3491  | 0    | 1770  | 3396  | 0    | 1787  | 1900  | 1615  | 1787  | 3452  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 21    |      |       | 74    |      |       |       | 238   |       |       | 11   |
| Link Speed (mph)        |       | 35    |      |       | 35    |      |       | 45    |       |       |       | 45   |
| Link Distance (ft)      |       | 1282  |      |       | 602   |      |       | 877   |       |       |       | 701  |
| Travel Time (s)         |       | 25.0  |      |       | 11.7  |      |       | 13.3  |       |       |       | 10.6 |
| Peak Hour Factor        | 0.95  | 0.95  | 0.95 | 0.93  | 0.93  | 0.93 | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 2%    | 1%    | 0%   | 2%    | 1%    | 2%   | 1%    | 0%    | 0%    | 1%    | 3%    | 2%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 105   | 1026  | 0    | 197   | 938   | 0    | 228   | 392   | 315   | 288   | 532   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | Prot  | NA    | Perm  | Prot  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      | 3     | 8     |       | 7     | 4     |      |
| Permitted Phases        |       |       |      |       |       |      |       |       | 8     |       |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 8     | 8     | 7     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 1.0   | 5.0   |      | 1.0   | 5.0   |      | 1.0   | 5.0   | 5.0   | 1.0   | 1.0   |      |
| Minimum Split (s)       | 6.0   | 23.0  |      | 11.0  | 23.0  |      | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  |      |
| Total Split (s)         | 16.0  | 38.0  |      | 20.0  | 42.0  |      | 24.0  | 28.0  | 28.0  | 24.0  | 28.0  |      |
| Total Split (%)         | 14.5% | 34.5% |      | 18.2% | 38.2% |      | 21.8% | 25.5% | 25.5% | 21.8% | 25.5% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      |
| 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   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   | Lag   | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Recall Mode             | None  | None  |      | None  | None  |      | None  | None  | None  | None  | None  |      |
| Act Effct Green (s)     | 10.0  | 33.0  |      | 14.4  | 37.4  |      | 17.3  | 23.0  | 23.0  | 18.9  | 24.6  |      |
| Actuated g/C Ratio      | 0.09  | 0.30  |      | 0.13  | 0.34  |      | 0.16  | 0.21  | 0.21  | 0.17  | 0.23  |      |
| v/c Ratio               | 0.65  | 0.96  |      | 0.85  | 0.78  |      | 0.81  | 0.98  | 0.60  | 0.94  | 0.68  |      |
| Control Delay           | 66.6  | 56.9  |      | 76.7  | 35.0  |      | 66.2  | 84.7  | 15.7  | 82.7  | 43.6  |      |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 66.6  | 56.9  |      | 76.7  | 35.0  |      | 66.2  | 84.7  | 15.7  | 82.7  | 43.6  |      |
| LOS                     | E     | E     |      | E     | D     |      | E     | F     | B     | F     | D     |      |
| Approach Delay          |       | 57.8  |      |       | 42.3  |      |       | 56.9  |       |       | 57.3  |      |
| Approach LOS            |       | E     |      |       | D     |      |       | E     |       |       | E     |      |
| Queue Length 50th (ft)  | 72    | 368   |      | 137   | 290   |      | 154   | 278   | 46    | 203   | 182   |      |
| Queue Length 95th (ft)  | #136  | #510  |      | #258  | 370   |      | #263  | #473  | 137   | #366  | 243   |      |
| Internal Link Dist (ft) |       | 1202  |      |       | 522   |      |       | 797   |       |       | 621   |      |
| Turn Bay Length (ft)    | 150   |       |      | 200   |       |      | 150   |       | 250   | 250   |       |      |
| Base Capacity (vph)     | 178   | 1068  |      | 242   | 1209  |      | 310   | 399   | 527   | 310   | 784   |      |



Intersection Capacity Analysis  
 1: Pond St/Main St & Whiting St/Washington St

02/27/2021

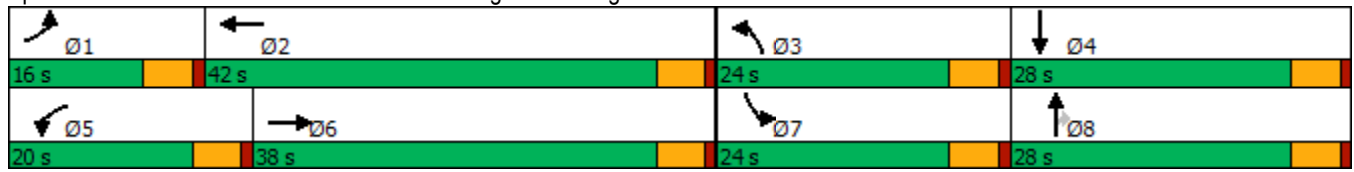


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|------|------|------|-----|
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    | 0   |
| Reduced v/c Ratio      | 0.59 | 0.96 |     | 0.81 | 0.78 |     | 0.74 | 0.98 | 0.60 | 0.93 | 0.68 |     |

Intersection Summary























|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 110                    |
| Actuated Cycle Length:  | 109.3                  |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.98                   |
| Intersection Signal Delay:  | 53.1                   |
| Intersection LOS:   | D                      |
| Intersection Capacity Utilization   | 88.1%                  |
| ICU Level of Service  | E                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 1: Pond St/Main St & Whiting St/Washington St



Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations     |  |  |  |  |  |   |  |  |   |  |  |  |
| Traffic Volume (vph)    | 196   | 471   | 158   | 21  | 557   | 53  | 249   | 96  | 26  | 88  | 134   | 515   |
| Future Volume (vph)     | 196   | 471   | 158   | 21  | 557   | 53  | 249   | 96  | 26  | 88  | 134   | 515   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 300   |   | 300   | 150   |   | 150   | 200   |   | 0   | 350   |   | 350   |
| Storage Lanes           | 1   |   | 1   | 2   |   | 0   | 1   |   | 0   | 1   |   | 0   |
| Taper Length (ft)       | 25  |   |   | 150   |   |   | 150   |   |   | 150   |   |   |
| Satd. Flow (prot)       | 1736  | 1827  | 1553  | 1736  | 3426  | 0   | 1770  | 1795  | 0   | 1770  | 1863  | 1583  |
| Flt Permitted           | 0.950   |   |   | 0.950   |   |   | 0.423   |   |   | 0.671   |   |   |
| Satd. Flow (perm)       | 1736  | 1827  | 1506  | 1727  | 3426  | 0   | 788   | 1795  | 0   | 1246  | 1863  | 1583  |
| Right Turn on Red       |   |   | Yes   |   |   | Yes   |   |   | Yes   |   |   | Yes   |
| Satd. Flow (RTOR)       |   |   | 172   |   | 9   |   |   | 13  |   |   |   | 563   |
| Link Speed (mph)        |   | 30  |   |   | 30  |   |   | 30  |   |   |   | 30  |
| Link Distance (ft)      |   | 663   |   |   | 1258  |   |   | 1174  |   |   |   | 873   |
| Travel Time (s)         |   | 15.1  |   |   | 28.6  |   |   | 26.7  |   |   |   | 19.8  |
| Confl. Peds. (#/hr)     |   |   | 4   | 4   |   |   |   |   | 1   | 1   |   |   |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.91  | 0.91  | 0.91  | 0.85  | 0.85  | 0.85  |
| Heavy Vehicles (%)      | 4%  | 4%  | 4%  | 4%  | 4%  | 4%  | 2%  | 2%  | 2%  | 2%  | 2%  | 2%  |
| Shared Lane Traffic (%) |   |   |   |   |   |   |   |   |   |   |   |   |
| Lane Group Flow (vph)   | 213   | 512   | 172   | 23  | 663   | 0   | 274   | 134   | 0   | 104   | 158   | 606   |
| Turn Type               | Prot  | NA  | Perm  | Prot  | NA  |   | pm+pt   | NA  |   | Perm  | NA  | Perm  |
| Protected Phases        | 1   | 6   |   | 5   | 2   |   | 7   | 4   |   |   |   | 8   |
| Permitted Phases        |   |   | 6   |   |   |   | 4   |   |   | 8   |   | 8   |
| Detector Phase          | 1   | 6   | 6   | 5   | 2   |   | 7   | 4   |   | 8   | 8   | 8   |
| Switch Phase            |   |   |   |   |   |   |   |   |   |   |   |   |
| Minimum Initial (s)     | 5.0   | 5.0   | 5.0   | 3.0   | 5.0   |   | 5.0   | 5.0   |   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)       | 10.0  | 25.0  | 25.0  | 8.0   | 25.0  |   | 9.0   | 10.0  |   | 10.0  | 10.0  | 10.0  |
| Total Split (s)         | 20.0  | 38.0  | 38.0  | 10.0  | 28.0  |   | 12.0  | 32.0  |   | 20.0  | 20.0  | 20.0  |
| Total Split (%)         | 19.4%   | 36.9%   | 36.9%   | 9.7%  | 27.2%   |   | 11.7%   | 31.1%   |   | 19.4%   | 19.4%   | 19.4%   |
| Yellow Time (s)         | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |   | 4.0   | 4.0   |   | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |   | 0.0   | 1.0   |   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |   | 0.0   | 0.0   |   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |   | 4.0   | 5.0   |   | 5.0   | 5.0   | 5.0   |
| Lead/Lag                | Lead  | Lag   | Lag   | Lead  | Lag   |   | Lead  |   |   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   | Yes   | Yes   |   | Yes   |   |   | Yes   | Yes   | Yes   |
| Recall Mode             | None  | Max   | Max   | None  | Max   |   | None  | None  |   | None  | None  | None  |
| Act Effct Green (s)     | 14.1  | 39.0  | 39.0  | 5.1   | 23.4  |   | 26.3  | 25.3  |   | 13.1  | 13.1  | 13.1  |
| Actuated g/C Ratio      | 0.17  | 0.48  | 0.48  | 0.06  | 0.29  |   | 0.32  | 0.31  |   | 0.16  | 0.16  | 0.16  |
| v/c Ratio               | 0.71  | 0.59  | 0.21  | 0.21  | 0.67  |   | 0.78  | 0.24  |   | 0.52  | 0.53  | 0.83  |
| Control Delay           | 48.4  | 23.2  | 4.4   | 45.9  | 31.5  |   | 42.4  | 22.2  |   | 44.0  | 40.4  | 16.5  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |   | 0.0   | 0.0   |   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 48.4  | 23.2  | 4.4   | 45.9  | 31.5  |   | 42.4  | 22.2  |   | 44.0  | 40.4  | 16.5  |
| LOS                     | D   | C   | A   | D   | C   |   | D   | C   |   | D   | D   | B   |
| Approach Delay          |   | 25.6  |   |   | 32.0  |   |   | 35.7  |   |   | 24.1  |   |
| Approach LOS            |   | C   |   |   | C   |   |   | D   |   |   | C   |   |
| Queue Length 50th (ft)  | 99  | 152   | 0   | 11  | 150   |   | 104   | 42  |   | 47  | 71  | 18  |
| Queue Length 95th (ft)  | #266  | #504  | 47  | 42  | #313  |   | #328  | 115   |   | 114   | 155   | #128  |
| Internal Link Dist (ft) |   | 583   |   |   | 1178  |   |   | 1094  |   |   | 793   |   |
| Turn Bay Length (ft)    | 300   |   | 300   | 150   |   |   | 200   |   |   | 350   |   | 350   |

Intersection Capacity Analysis  
 2: High St/Grove St & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 23.0 |
| Total Split (s)         | 23.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |

Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021

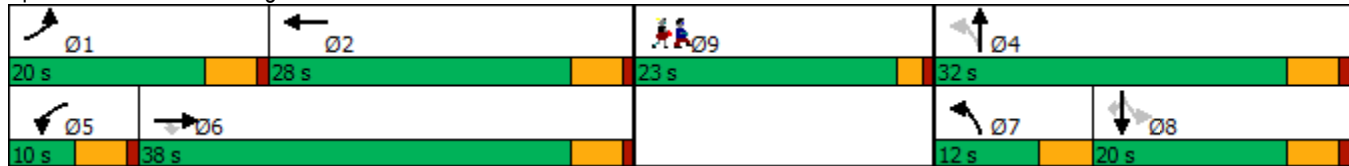


| Lane Group             | EBL  | EBT  | EBR  | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| Base Capacity (vph)    | 323  | 871  | 808  | 107  | 987  |     | 351  | 611  |     | 232  | 347  | 753  |
| Starvation Cap Reductn | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Spillback Cap Reductn  | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Storage Cap Reductn    | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Reduced v/c Ratio      | 0.66 | 0.59 | 0.21 | 0.21 | 0.67 |     | 0.78 | 0.22 |     | 0.45 | 0.46 | 0.80 |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 103                    |
| Actuated Cycle Length:  | 81.7                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.83                   |
| Intersection Signal Delay:                                      | 28.1                   |
| Intersection LOS:   | C                      |
| Intersection Capacity Utilization                               | 74.4%                  |
| ICU Level of Service  | D                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer. |                        |
| Queue shown is maximum after two cycles.                        |                        |

Splits and Phases: 2: High St/Grove St & Route 53



Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |       |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 389   | 652   | 274   | 24    | 572   | 76   | 231   | 102   | 38   | 85    | 76    | 307   |
| Future Volume (vph)     | 389   | 652   | 274   | 24    | 572   | 76   | 231   | 102   | 38   | 85    | 76    | 307   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 300   |       | 300   | 150   |       | 150  | 200   |       | 0    | 350   |       | 350   |
| Storage Lanes           | 1     |       | 1     | 2     |       | 0    | 1     |       | 0    | 1     |       | 0     |
| Taper Length (ft)       | 25    |       |       | 150   |       |      | 150   |       |      | 150   |       |       |
| Satd. Flow (prot)       | 1770  | 1863  | 1583  | 1770  | 3476  | 0    | 1770  | 1786  | 0    | 1787  | 1881  | 1599  |
| Flt Permitted           | 0.950 |       |       | 0.950 |       |      | 0.490 |       |      | 0.663 |       |       |
| Satd. Flow (perm)       | 1770  | 1863  | 1583  | 1770  | 3476  | 0    | 913   | 1786  | 0    | 1247  | 1881  | 1599  |
| Right Turn on Red       |       |       | Yes   |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       |       | 285   |       | 12    |      |       | 15    |      |       |       | 320   |
| Link Speed (mph)        |       | 30    |       |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 933   |       |       | 1262  |      |       | 1358  |      |       |       | 807   |
| Travel Time (s)         |       | 21.2  |       |       | 28.7  |      |       | 30.9  |      |       |       | 18.3  |
| Peak Hour Factor        | 0.96  | 0.96  | 0.96  | 0.93  | 0.93  | 0.93 | 0.95  | 0.95  | 0.95 | 0.96  | 0.96  | 0.96  |
| Heavy Vehicles (%)      | 2%    | 2%    | 2%    | 2%    | 2%    | 2%   | 2%    | 2%    | 2%   | 1%    | 1%    | 1%    |
| Shared Lane Traffic (%) |       |       |       |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 405   | 679   | 285   | 26    | 697   | 0    | 243   | 147   | 0    | 89    | 79    | 320   |
| Turn Type               | Prot  | NA    | Perm  | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    | Perm  |
| Protected Phases        | 1     | 6     |       | 5     | 2     |      | 7     | 4     |      |       |       | 8     |
| Permitted Phases        |       |       | 6     |       |       |      | 4     |       |      | 8     |       | 8     |
| Detector Phase          | 1     | 6     | 6     | 5     | 2     |      | 7     | 4     |      | 8     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   | 5.0   | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)       | 10.0  | 25.0  | 25.0  | 10.0  | 25.0  |      | 9.0   | 10.0  |      | 10.0  | 10.0  | 10.0  |
| Total Split (s)         | 32.0  | 51.0  | 51.0  | 10.0  | 29.0  |      | 12.0  | 26.0  |      | 14.0  | 14.0  | 14.0  |
| Total Split (%)         | 29.1% | 46.4% | 46.4% | 9.1%  | 26.4% |      | 10.9% | 23.6% |      | 12.7% | 12.7% | 12.7% |
| Yellow Time (s)         | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 0.0   | 1.0   |      | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      | 4.0   | 5.0   |      | 5.0   | 5.0   | 5.0   |
| Lead/Lag                | Lead  | Lag   | Lag   | Lead  | Lag   |      | Lead  |       |      | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   | Yes   | Yes   |      | Yes   |       |      | Yes   | Yes   | Yes   |
| Recall Mode             | None  | Max   | Max   | None  | Max   |      | None  | None  |      | None  | None  | None  |
| Act Effct Green (s)     | 25.5  | 51.2  | 51.2  | 5.1   | 24.3  |      | 22.3  | 21.3  |      | 9.1   | 9.1   | 9.1   |
| Actuated g/C Ratio      | 0.28  | 0.57  | 0.57  | 0.06  | 0.27  |      | 0.25  | 0.24  |      | 0.10  | 0.10  | 0.10  |
| v/c Ratio               | 0.81  | 0.64  | 0.28  | 0.26  | 0.74  |      | 0.80  | 0.34  |      | 0.71  | 0.42  | 0.71  |
| Control Delay           | 45.2  | 20.0  | 2.9   | 51.3  | 36.5  |      | 53.7  | 30.4  |      | 71.8  | 48.2  | 15.0  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   |
| Total Delay             | 45.2  | 20.0  | 2.9   | 51.3  | 36.5  |      | 53.7  | 30.4  |      | 71.8  | 48.2  | 15.0  |
| LOS                     | D     | C     | A     | D     | D     |      | D     | C     |      | E     | D     | B     |
| Approach Delay          |       | 23.9  |       |       | 37.0  |      |       | 44.9  |      |       | 30.8  |       |
| Approach LOS            |       | C     |       |       | D     |      |       | D     |      |       | C     |       |
| Queue Length 50th (ft)  | 197   | 186   | 0     | 14    | 178   |      | 116   | 59    |      | 48    | 41    | 0     |
| Queue Length 95th (ft)  | #468  | #652  | 50    | 48    | #359  |      | #337  | 145   |      | #161  | 105   | #110  |
| Internal Link Dist (ft) |       | 853   |       |       | 1182  |      |       | 1278  |      |       | 727   |       |
| Turn Bay Length (ft)    | 300   |       | 300   | 150   |       |      | 200   |       |      | 350   |       | 350   |
| Base Capacity (vph)     | 537   | 1059  | 1022  | 99    | 946   |      | 302   | 433   |      | 126   | 190   | 449   |

Intersection Capacity Analysis  
 2: High St/Grove St & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| 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 (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 23.0 |
| Total Split (s)         | 23.0 |
| Total Split (%)         | 21%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |
| Base Capacity (vph)     |      |

Intersection Capacity Analysis  
 2: High St/Grove St & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR  | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| Starvation Cap Reductn | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Spillback Cap Reductn  | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Storage Cap Reductn    | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Reduced v/c Ratio      | 0.75 | 0.64 | 0.28 | 0.26 | 0.74 |     | 0.80 | 0.34 |     | 0.71 | 0.42 | 0.71 |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 110                    |
| Actuated Cycle Length:  | 90                     |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.81                   |
| Intersection Signal Delay:  | 31.0                   |
| Intersection LOS:   | C                      |
| Intersection Capacity Utilization   | 72.6%                  |
| ICU Level of Service  | C                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                        |

Splits and Phases: 2: High St/Grove St & Route 53



# Intersection Capacity Analysis

## 6: Stop & Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 10    | 586   | 39   | 44    | 762   | 13   | 46    | 2     | 51   | 18    | 2     | 14   |
| Future Volume (vph)     | 10    | 586   | 39   | 44    | 762   | 13   | 46    | 2     | 51   | 18    | 2     | 14   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 200   |       | 200  | 150   |       | 0    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 1     |       | 1    | 1     |       | 0    | 1     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 150   |       |      | 25    |       |      | 25    |       |      | 25    |       |      |
| Satd. Flow (prot)       | 1736  | 3440  | 0    | 1752  | 1840  | 0    | 1719  | 1521  | 0    | 0     | 1683  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.354 |       |      | 0.728 |       |      |       | 0.805 |      |
| Satd. Flow (perm)       | 1720  | 3440  | 0    | 653   | 1840  | 0    | 1317  | 1521  | 0    | 0     | 1386  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 9     |      |       | 1     |      |       | 57    |      |       |       | 18   |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       |       | 30   |
| Link Distance (ft)      |       | 1093  |      |       | 907   |      |       | 396   |      |       |       | 538  |
| Travel Time (s)         |       | 24.8  |      |       | 20.6  |      |       | 9.0   |      |       |       | 12.2 |
| Confl. Peds. (#/hr)     | 3     |       |      |       |       | 3    |       |       | 2    | 2     |       |      |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90 | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 3%    | 3%    | 3%   | 5%    | 5%    | 5%   | 4%    | 4%    | 4%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 11    | 694   | 0    | 49    | 861   | 0    | 51    | 59    | 0    | 0     | 44    | 0    |
| Turn Type               | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      |       | 3     |      |       |       | 7    |
| Permitted Phases        |       |       |      | 2     |       |      | 3     |       |      | 7     |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 3     |      | 7     |       | 7    |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 3.0   | 5.0   |      | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      |
| Minimum Split (s)       | 8.0   | 10.0  |      | 8.0   | 10.0  |      | 10.0  | 10.0  |      | 10.0  | 10.0  |      |
| Total Split (s)         | 10.0  | 50.0  |      | 10.0  | 50.0  |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Total Split (%)         | 10.4% | 52.1% |      | 10.4% | 52.1% |      | 15.6% | 15.6% |      | 15.6% | 15.6% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 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   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      |       |       |      |       |       |      |
| Recall Mode             | None  | Max   |      | None  | Max   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 5.1   | 50.6  |      | 54.3  | 54.7  |      | 8.0   | 8.0   |      |       |       | 8.0  |
| Actuated g/C Ratio      | 0.07  | 0.68  |      | 0.73  | 0.74  |      | 0.11  | 0.11  |      |       |       | 0.11 |
| v/c Ratio               | 0.09  | 0.29  |      | 0.09  | 0.63  |      | 0.36  | 0.28  |      |       |       | 0.27 |
| Control Delay           | 40.1  | 8.6   |      | 5.7   | 13.4  |      | 41.6  | 14.8  |      |       |       | 28.0 |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |       |       | 0.0  |
| Total Delay             | 40.1  | 8.6   |      | 5.7   | 13.4  |      | 41.6  | 14.8  |      |       |       | 28.0 |
| LOS                     | D     | A     |      | A     | B     |      | D     | B     |      |       |       | C    |
| Approach Delay          |       | 9.1   |      |       | 13.0  |      |       | 27.3  |      |       |       | 28.0 |
| Approach LOS            |       | A     |      |       | B     |      |       | C     |      |       |       | C    |
| Queue Length 50th (ft)  | 5     | 69    |      | 4     | 137   |      | 22    | 1     |      |       |       | 11   |
| Queue Length 95th (ft)  | 24    | 187   |      | 28    | #784  |      | 67    | 38    |      |       |       | 42   |
| Internal Link Dist (ft) |       | 1013  |      |       | 827   |      |       | 316   |      |       |       | 458  |
| Turn Bay Length (ft)    | 200   |       |      | 150   |       |      |       |       |      |       |       |      |



Intersection Capacity Analysis  
 6: Stop & Shop Driveway/Jacob's Trail & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 1.0  |
| Minimum Split (s)       | 21.0 |
| Total Split (s)         | 21.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |

# Intersection Capacity Analysis

## 6: Stop & Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|-----|-----|------|-----|
| Base Capacity (vph)    | 119  | 2353 |     | 554  | 1357 |     | 181  | 259  |     |     | 206  |     |
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.09 | 0.29 |     | 0.09 | 0.63 |     | 0.28 | 0.23 |     |     | 0.21 |     |

### Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 96                     |
| Actuated Cycle Length:  | 74.1                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.63                   |
| Intersection Signal Delay:                                      | 12.7                   |
| Intersection LOS:   | B                      |
| Intersection Capacity Utilization                               | 57.9%                  |
| ICU Level of Service  | B                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer. |                        |
| Queue shown is maximum after two cycles.                        |                        |

### Splits and Phases: 6: Sop&Shop Driveway/Jacob's Trail & Route 53



Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 30    | 824   | 80   | 90    | 793   | 20   | 75    | 5     | 95   | 10    | 5     | 10    |
| Future Volume (vph)     | 30    | 824   | 80   | 90    | 793   | 20   | 75    | 5     | 95   | 10    | 5     | 10    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 200   |       | 200  | 150   |       | 0    | 0     |       | 0    | 0     |       | 0     |
| Storage Lanes           | 1     |       | 1    | 1     |       | 0    | 1     |       | 0    | 0     |       | 0     |
| Taper Length (ft)       | 150   |       |      | 25    |       |      | 25    |       |      | 25    |       |       |
| Satd. Flow (prot)       | 1770  | 3493  | 0    | 1787  | 1874  | 0    | 1805  | 1630  | 0    | 0     | 1761  | 0     |
| Flt Permitted           | 0.950 |       |      | 0.196 |       |      | 0.734 |       |      |       | 0.837 |       |
| Satd. Flow (perm)       | 1770  | 3493  | 0    | 369   | 1874  | 0    | 1395  | 1630  | 0    | 0     | 1504  | 0     |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       | 14    |      |       | 2     |      |       | 106   |      |       |       | 14    |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 1093  |      |       | 907   |      |       | 368   |      |       |       | 415   |
| Travel Time (s)         |       | 24.8  |      |       | 20.6  |      |       | 8.4   |      |       |       | 9.4   |
| Peak Hour Factor        | 0.86  | 0.86  | 0.86 | 0.86  | 0.86  | 0.86 | 0.90  | 0.90  | 0.90 | 0.70  | 0.70  | 0.70  |
| Heavy Vehicles (%)      | 2%    | 2%    | 2%   | 1%    | 1%    | 1%   | 0%    | 0%    | 0%   | 0%    | 0%    | 0%    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 35    | 1051  | 0    | 105   | 945   | 0    | 83    | 112   | 0    | 0     | 35    | 0     |
| Turn Type               | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |       |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      |       | 3     |      |       |       | 7     |
| Permitted Phases        |       |       |      | 2     |       |      | 3     |       |      | 7     |       |       |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 3     |      | 7     |       | 7     |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 3.0   | 5.0   |      | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Minimum Split (s)       | 8.0   | 10.0  |      | 8.0   | 10.0  |      | 10.0  | 10.0  |      | 10.0  |       | 10.0  |
| Total Split (s)         | 10.0  | 48.0  |      | 12.0  | 50.0  |      | 15.0  | 15.0  |      | 15.0  |       | 15.0  |
| Total Split (%)         | 10.4% | 50.0% |      | 12.5% | 52.1% |      | 15.6% | 15.6% |      | 15.6% |       | 15.6% |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   |       | 4.0   |
| All-Red Time (s)        | 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   |      | 0.0   |       | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      |       |       |      |       |       |       |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      |       |       |      |       |       |       |
| Recall Mode             | None  | Max   |      | None  | Max   |      | None  | None  |      | None  |       | None  |
| Act Effct Green (s)     | 5.1   | 44.4  |      | 52.5  | 50.0  |      | 8.9   | 8.9   |      |       |       | 8.9   |
| Actuated g/C Ratio      | 0.07  | 0.58  |      | 0.69  | 0.66  |      | 0.12  | 0.12  |      |       |       | 0.12  |
| v/c Ratio               | 0.29  | 0.51  |      | 0.28  | 0.77  |      | 0.51  | 0.40  |      |       |       | 0.19  |
| Control Delay           | 44.7  | 12.8  |      | 7.2   | 18.7  |      | 46.6  | 13.5  |      |       |       | 26.7  |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |       |       | 0.0   |
| Total Delay             | 44.7  | 12.8  |      | 7.2   | 18.7  |      | 46.6  | 13.5  |      |       |       | 26.7  |
| LOS                     | D     | B     |      | A     | B     |      | D     | B     |      |       |       | C     |
| Approach Delay          |       | 13.8  |      |       | 17.5  |      |       | 27.6  |      |       |       | 26.7  |
| Approach LOS            |       | B     |      |       | B     |      |       | C     |      |       |       | C     |
| Queue Length 50th (ft)  | 16    | 140   |      | 11    | 184   |      | 36    | 3     |      |       |       | 9     |
| Queue Length 95th (ft)  | 51    | 304   |      | 48    | #822  |      | #109  | 54    |      |       |       | 31    |
| Internal Link Dist (ft) |       | 1013  |      |       | 827   |      |       | 288   |      |       |       | 335   |
| Turn Bay Length (ft)    | 200   |       |      | 150   |       |      |       |       |      |       |       |       |
| Base Capacity (vph)     | 119   | 2046  |      | 388   | 1233  |      | 187   | 310   |      |       |       | 214   |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| 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 (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 21.0 |
| Total Split (s)         | 21.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |
| Base Capacity (vph)     |      |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|-----|-----|------|-----|
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.29 | 0.51 |     | 0.27 | 0.77 |     | 0.44 | 0.36 |     |     | 0.16 |     |

Intersection Summary

Area Type: Other  
 Cycle Length: 96  
 Actuated Cycle Length: 76  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 16.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 67.7%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Stop&Shop Driveway/Jacob's Trail & Route 53



**APPENDIX M**  
**Intersection Capacity Analyses**  
**Weekday AM/PM Peak Hour**  
**Proposed Long-Term Improvements under 2030 Traffic Conditions**

# Intersection Capacity Analysis

## 1: Pond Street/Main Street & Route 53

02/26/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 55    | 421   | 136  | 203   | 744   | 221  | 153   | 374   | 112   | 249   | 356   | 64   |
| Future Volume (vph)     | 55    | 421   | 136  | 203   | 744   | 221  | 153   | 374   | 112   | 249   | 356   | 64   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 150   |       | 0    | 200   |       | 0    | 150   |       | 200   | 250   |       | 250  |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 1     | 1     |       | 1    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Satd. Flow (prot)       | 1787  | 3336  | 0    | 1703  | 3437  | 0    | 1583  | 1727  | 1538  | 1736  | 3406  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (perm)       | 1787  | 3336  | 0    | 1703  | 3437  | 0    | 1583  | 1727  | 1538  | 1736  | 3406  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 39    |      |       | 40    |      |       |       | 185   |       |       | 19   |
| Link Speed (mph)        |       | 35    |      |       | 35    |      |       | 45    |       |       |       | 45   |
| Link Distance (ft)      |       | 1282  |      |       | 608   |      |       | 885   |       |       |       | 701  |
| Travel Time (s)         |       | 25.0  |      |       | 11.8  |      |       | 13.4  |       |       |       | 10.6 |
| Peak Hour Factor        | 0.98  | 0.98  | 0.98 | 0.99  | 0.99  | 0.99 | 0.94  | 0.94  | 0.94  | 0.92  | 0.92  | 0.92 |
| Growth Factor           | 101%  | 101%  | 101% | 101%  | 101%  | 101% | 101%  | 101%  | 101%  | 101%  | 101%  | 101% |
| Heavy Vehicles (%)      | 1%    | 3%    | 8%   | 6%    | 1%    | 3%   | 14%   | 10%   | 5%    | 4%    | 4%    | 1%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 57    | 574   | 0    | 207   | 984   | 0    | 164   | 402   | 120   | 273   | 461   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | Prot  | NA    | Perm  | Prot  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      | 3     | 8     |       | 7     | 4     |      |
| Permitted Phases        |       |       |      |       |       |      |       |       | 8     |       |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 8     | 8     | 7     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 1.0   | 1.0   |      | 1.0   | 1.0   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      |
| Minimum Split (s)       | 10.0  | 22.5  |      | 13.0  | 22.5  |      | 13.0  | 22.0  | 22.0  | 10.0  | 22.0  |      |
| Total Split (s)         | 10.0  | 26.0  |      | 20.0  | 36.0  |      | 24.0  | 30.0  | 30.0  | 24.0  | 30.0  |      |
| Total Split (%)         | 10.0% | 26.0% |      | 20.0% | 36.0% |      | 24.0% | 30.0% | 30.0% | 24.0% | 30.0% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      |
| 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   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   | Lag   | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Recall Mode             | None  | C-Max |      | None  | C-Max |      | None  | None  | None  | None  | None  |      |
| Act Effect Green (s)    | 5.2   | 22.8  |      | 14.4  | 34.2  |      | 15.0  | 24.6  | 24.6  | 18.2  | 27.8  |      |
| Actuated g/C Ratio      | 0.05  | 0.23  |      | 0.14  | 0.34  |      | 0.15  | 0.25  | 0.25  | 0.18  | 0.28  |      |
| v/c Ratio               | 0.62  | 0.73  |      | 0.84  | 0.82  |      | 0.69  | 0.95  | 0.23  | 0.87  | 0.48  |      |
| Control Delay           | 75.8  | 40.2  |      | 71.0  | 36.9  |      | 55.0  | 70.4  | 1.9   | 66.6  | 31.2  |      |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 75.8  | 40.2  |      | 71.0  | 36.9  |      | 55.0  | 70.4  | 1.9   | 66.6  | 31.2  |      |
| LOS                     | E     | D     |      | E     | D     |      | D     | E     | A     | E     | C     |      |
| Approach Delay          |       | 43.4  |      |       | 42.8  |      |       | 54.7  |       |       | 44.4  |      |
| Approach LOS            |       | D     |      |       | D     |      |       | D     |       |       | D     |      |
| Queue Length 50th (ft)  | 36    | 171   |      | 129   | 303   |      | 100   | 251   | 0     | 169   | 122   |      |
| Queue Length 95th (ft)  | #99   | 234   |      | #249  | #425  |      | 163   | #432  | 10    | #303  | 179   |      |
| Internal Link Dist (ft) |       | 1202  |      |       | 528   |      |       | 805   |       |       | 621   |      |
| Turn Bay Length (ft)    | 150   |       |      | 200   |       |      | 150   |       | 200   | 250   |       |      |

# Intersection Capacity Analysis

## 1: Pond Street/Main Street & Route 53

02/26/2021

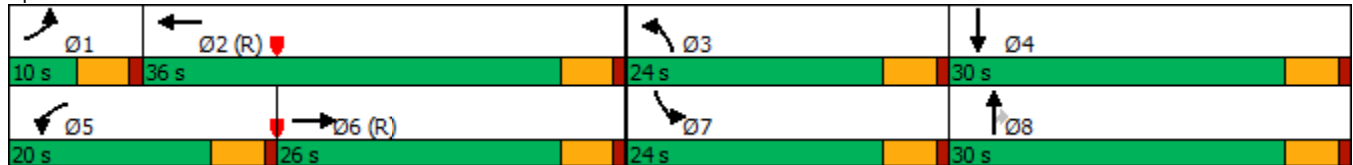


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|------|------|------|-----|
| Base Capacity (vph)    | 92   | 789  |     | 255  | 1201 |     | 300  | 431  | 523  | 329  | 959  |     |
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    |     |
| Reduced v/c Ratio      | 0.62 | 0.73 |     | 0.81 | 0.82 |     | 0.55 | 0.93 | 0.23 | 0.83 | 0.48 |     |

### Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 45.8  
 Intersection LOS: D  
 Intersection Capacity Utilization 81.7%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

### Splits and Phases: 1: Pond Street/Main Street & Route 53





Intersection Capacity Analysis  
 QAP Driveway & Route 53/Washington St

02/26/2021



| Lane Group              | EBT   | EBR  | WBL   | WBT   | NBL   | NBR   | Ø9   |
|-------------------------|-------|------|-------|-------|-------|-------|------|
| Lane Configurations     | ↑↑    |      | ↖     | ↑     | ↖     | ↗     |      |
| Traffic Volume (vph)    | 745   | 17   | 14    | 1172  | 4     | 110   |      |
| Future Volume (vph)     | 745   | 17   | 14    | 1172  | 4     | 110   |      |
| Ideal Flow (vphp)       | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  |      |
| Storage Length (ft)     |       | 0    | 100   |       | 0     | 0     |      |
| Storage Lanes           |       | 0    | 1     |       | 1     | 1     |      |
| Taper Length (ft)       |       |      | 25    |       | 25    |       |      |
| Satd. Flow (prot)       | 3529  | 0    | 1770  | 1863  | 1770  | 1583  |      |
| Flt Permitted           |       |      | 0.293 |       | 0.950 |       |      |
| Satd. Flow (perm)       | 3529  | 0    | 546   | 1863  | 1770  | 1583  |      |
| Right Turn on Red       |       | Yes  |       |       |       | Yes   |      |
| Satd. Flow (RTOR)       | 3     |      |       |       |       | 123   |      |
| Link Speed (mph)        | 30    |      |       | 30    | 30    |       |      |
| Link Distance (ft)      | 608   |      |       | 654   | 266   |       |      |
| Travel Time (s)         | 13.8  |      |       | 14.9  | 6.0   |       |      |
| Peak Hour Factor        | 0.92  | 0.92 | 0.92  | 0.92  | 0.92  | 0.92  |      |
| Growth Factor           | 103%  | 103% | 103%  | 103%  | 103%  | 103%  |      |
| Shared Lane Traffic (%) |       |      |       |       |       |       |      |
| Lane Group Flow (vph)   | 853   | 0    | 16    | 1312  | 4     | 123   |      |
| Turn Type               | NA    |      | pm+pt | NA    | Prot  | Perm  |      |
| Protected Phases        | 6     |      | 5     | 1     | 3     |       | 9    |
| Permitted Phases        |       |      | 1     |       |       | 3     |      |
| Detector Phase          | 6     |      | 5     | 1     | 3     | 3     |      |
| Switch Phase            |       |      |       |       |       |       |      |
| Minimum Initial (s)     | 5.0   |      | 3.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Minimum Split (s)       | 25.0  |      | 10.0  | 25.0  | 10.0  | 10.0  | 27.0 |
| Total Split (s)         | 66.0  |      | 10.0  | 76.0  | 12.0  | 12.0  | 27.0 |
| Total Split (%)         | 57.4% |      | 8.7%  | 66.1% | 10.4% | 10.4% | 23%  |
| Yellow Time (s)         | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 2.0  |
| 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   | 0.0   |      |
| Total Lost Time (s)     | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lag   |      | Lead  |       |       |       |      |
| Lead-Lag Optimize?      | Yes   |      | Yes   |       |       |       |      |
| Recall Mode             | C-Max |      | None  | None  | Min   | Min   | None |
| Act Effect Green (s)    | 89.3  |      | 93.5  | 93.5  | 6.1   | 6.1   |      |
| Actuated g/C Ratio      | 0.78  |      | 0.81  | 0.81  | 0.05  | 0.05  |      |
| v/c Ratio               | 0.31  |      | 0.03  | 0.87  | 0.04  | 0.61  |      |
| Control Delay           | 6.5   |      | 4.9   | 17.4  | 52.0  | 23.1  |      |
| Queue Delay             | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 6.5   |      | 4.9   | 17.4  | 52.0  | 23.1  |      |
| LOS                     | A     |      | A     | B     | D     | C     |      |
| Approach Delay          | 6.5   |      |       | 17.3  | 24.0  |       |      |
| Approach LOS            | A     |      |       | B     | C     |       |      |
| Queue Length 50th (ft)  | 39    |      | 1     | 299   | 3     | 0     |      |
| Queue Length 95th (ft)  | 247   |      | 13    | #1397 | 14    | 60    |      |
| Internal Link Dist (ft) | 528   |      |       | 574   | 186   |       |      |
| Turn Bay Length (ft)    |       |      | 100   |       |       |       |      |
| Base Capacity (vph)     | 2741  |      | 501   | 1513  | 107   | 211   |      |

Intersection Capacity Analysis  
 QAP Driveway & Route 53/Washington St

02/26/2021

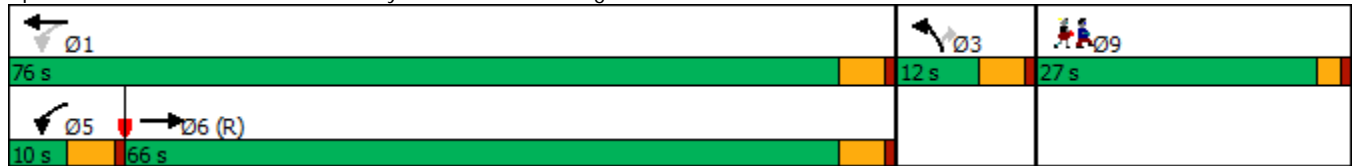


| Lane Group             | EBT  | EBR | WBL  | WBT  | NBL  | NBR  | Ø9 |
|------------------------|------|-----|------|------|------|------|----|
| Starvation Cap Reductn | 0    |     | 0    | 0    | 0    | 0    |    |
| Spillback Cap Reductn  | 0    |     | 0    | 0    | 0    | 0    |    |
| Storage Cap Reductn    | 0    |     | 0    | 0    | 0    | 0    |    |
| Reduced v/c Ratio      | 0.31 |     | 0.03 | 0.87 | 0.04 | 0.58 |    |

Intersection Summary

Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 0 (0%), Referenced to phase 2: and 6:EBT, Start of Green  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 13.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 76.0%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 29: QAP Driveway & Route 53/Washington St



Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |       |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 196   | 471   | 158   | 21    | 557   | 53   | 249   | 96    | 26   | 88    | 134   | 515   |
| Future Volume (vph)     | 196   | 471   | 158   | 21    | 557   | 53   | 249   | 96    | 26   | 88    | 134   | 515   |
| Ideal Flow (vphp)       | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 300   |       | 300   | 150   |       | 150  | 200   |       | 0    | 350   |       | 350   |
| Storage Lanes           | 1     |       | 1     | 2     |       | 0    | 1     |       | 0    | 1     |       | 0     |
| Taper Length (ft)       | 25    |       |       | 150   |       |      | 150   |       |      | 150   |       |       |
| Satd. Flow (prot)       | 1736  | 1827  | 1553  | 1736  | 3426  | 0    | 1770  | 1795  | 0    | 1770  | 1863  | 1583  |
| Flt Permitted           | 0.950 |       |       | 0.950 |       |      | 0.401 |       |      | 0.669 |       |       |
| Satd. Flow (perm)       | 1736  | 1827  | 1506  | 1727  | 3426  | 0    | 747   | 1795  | 0    | 1242  | 1863  | 1583  |
| Right Turn on Red       |       |       | Yes   |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       |       | 177   |       | 9     |      |       | 13    |      |       |       | 548   |
| Link Speed (mph)        |       | 30    |       |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 663   |       |       | 1258  |      |       | 1174  |      |       |       | 873   |
| Travel Time (s)         |       | 15.1  |       |       | 28.6  |      |       | 26.7  |      |       |       | 19.8  |
| Confl. Peds. (#/hr)     |       |       | 4     | 4     |       |      |       |       | 1    | 1     |       |       |
| Peak Hour Factor        | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92 | 0.91  | 0.91  | 0.91 | 0.85  | 0.85  | 0.85  |
| Growth Factor           | 103%  | 103%  | 103%  | 103%  | 103%  | 103% | 103%  | 103%  | 103% | 103%  | 103%  | 103%  |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%    | 4%    | 4%    | 4%   | 2%    | 2%    | 2%   | 2%    | 2%    | 2%    |
| Shared Lane Traffic (%) |       |       |       |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 219   | 527   | 177   | 24    | 683   | 0    | 282   | 138   | 0    | 107   | 162   | 624   |
| Turn Type               | Prot  | NA    | Perm  | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    | Perm  |
| Protected Phases        | 1     | 6     |       | 5     | 2     |      | 7     | 4     |      |       |       | 8     |
| Permitted Phases        |       |       | 6     |       |       |      | 4     |       |      | 8     |       | 8     |
| Detector Phase          | 1     | 6     | 6     | 5     | 2     |      | 7     | 4     |      | 8     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   | 5.0   | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)       | 10.0  | 25.0  | 25.0  | 8.0   | 25.0  |      | 9.0   | 10.0  |      | 10.0  | 10.0  | 10.0  |
| Total Split (s)         | 20.0  | 38.0  | 38.0  | 10.0  | 28.0  |      | 14.0  | 32.0  |      | 18.0  | 18.0  | 18.0  |
| Total Split (%)         | 19.4% | 36.9% | 36.9% | 9.7%  | 27.2% |      | 13.6% | 31.1% |      | 17.5% | 17.5% | 17.5% |
| Yellow Time (s)         | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 0.0   | 1.0   |      | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      | 4.0   | 5.0   |      | 5.0   | 5.0   | 5.0   |
| Lead/Lag                | Lead  | Lag   | Lag   | Lead  | Lag   |      | Lead  |       |      | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   | Yes   | Yes   |      | Yes   |       |      | Yes   | Yes   | Yes   |
| Recall Mode             | None  | Max   | Max   | None  | Max   |      | None  | None  |      | None  | None  | None  |
| Act Effect Green (s)    | 14.4  | 39.1  | 39.1  | 5.1   | 23.3  |      | 28.0  | 27.0  |      | 12.8  | 12.8  | 12.8  |
| Actuated g/C Ratio      | 0.17  | 0.47  | 0.47  | 0.06  | 0.28  |      | 0.33  | 0.32  |      | 0.15  | 0.15  | 0.15  |
| v/c Ratio               | 0.73  | 0.62  | 0.22  | 0.23  | 0.71  |      | 0.76  | 0.23  |      | 0.56  | 0.57  | 0.88  |
| Control Delay           | 50.3  | 24.3  | 4.4   | 46.6  | 33.3  |      | 39.5  | 22.1  |      | 48.2  | 43.7  | 22.1  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   |
| Total Delay             | 50.3  | 24.3  | 4.4   | 46.6  | 33.3  |      | 39.5  | 22.1  |      | 48.2  | 43.7  | 22.1  |
| LOS                     | D     | C     | A     | D     | C     |      | D     | C     |      | D     | D     | C     |
| Approach Delay          |       | 26.7  |       |       | 33.7  |      |       | 33.7  |      |       | 29.1  |       |
| Approach LOS            |       | C     |       |       | C     |      |       | C     |      |       | C     |       |
| Queue Length 50th (ft)  | 103   | 159   | 0     | 12    | 156   |      | 107   | 44    |      | 50    | 75    | 34    |
| Queue Length 95th (ft)  | #276  | #526  | 47    | 43    | #329  |      | #334  | 118   |      | #136  | #173  | #206  |
| Internal Link Dist (ft) |       | 583   |       |       | 1178  |      |       | 1094  |      |       | 793   |       |

# Intersection Capacity Analysis

## 2: High St/Grove St & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        |      |
| Growth Factor           |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 23.0 |
| Total Split (s)         | 23.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effect Green (s)    |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |

# Intersection Capacity Analysis

## 2: High St/Grove St & Route 53

02/27/2021

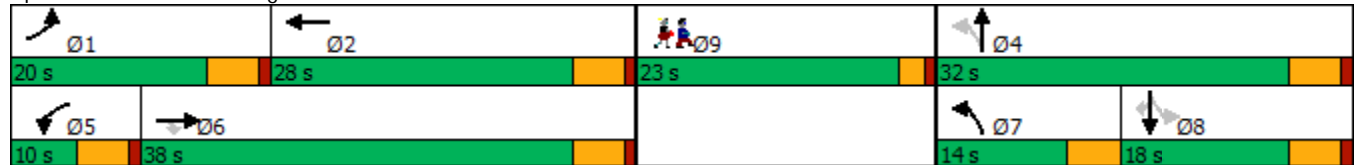


| Lane Group             | EBL  | EBT  | EBR  | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| Turn Bay Length (ft)   | 300  |      | 300  | 150  |      |     | 200  |      |     | 350  |      | 350  |
| Base Capacity (vph)    | 315  | 853  | 797  | 105  | 960  |     | 373  | 595  |     | 195  | 293  | 711  |
| Starvation Cap Reductn | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Spillback Cap Reductn  | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Storage Cap Reductn    | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Reduced v/c Ratio      | 0.70 | 0.62 | 0.22 | 0.23 | 0.71 |     | 0.76 | 0.23 |     | 0.55 | 0.55 | 0.88 |

### Intersection Summary

Area Type: Other  
 Cycle Length: 103  
 Actuated Cycle Length: 83.6  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 30.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 76.3%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

### Splits and Phases: 2: High St/Grove St & Route 53



HCM 6th TWSC  
3: Oak St & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.6  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NEL  | NER  |
| Lane Configurations      | ↔    |      | ↔    | ↑    | ↔    | ↔    |
| Traffic Vol, veh/h       | 514  | 24   | 94   | 579  | 27   | 80   |
| Future Vol, veh/h        | 514  | 24   | 94   | 579  | 27   | 80   |
| Conflicting Peds, #/hr   | 0    | 1    | 1    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | 75   | -    | 0    | 75   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 89   | 89   | 60   | 60   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 609  | 28   | 109  | 670  | 46   | 137  |

| Major/Minor          | Major1 | Major2 | Minor1 |   |             |
|----------------------|--------|--------|--------|---|-------------|
| Conflicting Flow All | 0      | 0      | 638    | 0 | 1512 624    |
| Stage 1              | -      | -      | -      | - | 624 -       |
| Stage 2              | -      | -      | -      | - | 888 -       |
| Critical Hdwy        | -      | -      | 4.13   | - | 6.43 6.23   |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.43 -      |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.43 -      |
| Follow-up Hdwy       | -      | -      | 2.227  | - | 3.527 3.327 |
| Pot Cap-1 Maneuver   | -      | -      | 941    | - | 131 484     |
| Stage 1              | -      | -      | -      | - | 532 -       |
| Stage 2              | -      | -      | -      | - | 400 -       |
| Platoon blocked, %   | -      | -      | -      | - | -           |
| Mov Cap-1 Maneuver   | -      | -      | 940    | - | 116 484     |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 116 -       |
| Stage 1              | -      | -      | -      | - | 531 -       |
| Stage 2              | -      | -      | -      | - | 354 -       |

| Approach             | EB | WB  | NE   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 1.3 | 25.5 |
| HCM LOS              |    |     | D    |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 116   | 484   | -   | -   | 940   | -   |
| HCM Lane V/C Ratio    | 0.4   | 0.284 | -   | -   | 0.116 | -   |
| HCM Control Delay (s) | 55.3  | 15.4  | -   | -   | 9.3   | -   |
| HCM Lane LOS          | F     | C     | -   | -   | A     | -   |
| HCM 95th %tile Q(veh) | 1.7   | 1.2   | -   | -   | 0.4   | -   |



HCM 6th TWSC  
4: Hall Dr/Driveway & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.3  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations      | ↖    | ↗    |      | ↖    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 8    | 516  | 12   | 30   | 716  | 6    | 13   | 3    | 41   | 2    | 2    | 2    |
| Future Vol, veh/h        | 8    | 516  | 12   | 30   | 716  | 6    | 13   | 3    | 41   | 2    | 2    | 2    |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 0    | -    | -    | 0    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 80   | 92   | 92   | 92   | 70   | 70   | 70   | 60   | 60   | 60   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 3    | 3    | 3    | 4    | 4    | 4    | 0    | 0    | 0    |
| Mvmt Flow                | 10   | 664  | 15   | 34   | 802  | 7    | 19   | 4    | 60   | 3    | 3    | 3    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|------|-----|
| Conflicting Flow All | 811    | 0 | 0 | 679    | 0 | 0 | 1569   | 1571  | 672   | 1600   | 1575 | 808 |
| Stage 1              | -      | - | - | -      | - | - | 692    | 692   | -     | 876    | 876  | -   |
| Stage 2              | -      | - | - | -      | - | - | 877    | 879   | -     | 724    | 699  | -   |
| Critical Hdwy        | 4.14   | - | - | 4.13   | - | - | 7.14   | 6.54  | 6.24  | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.14   | 5.54  | -     | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.14   | 5.54  | -     | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.236  | - | - | 2.227  | - | - | 3.536  | 4.036 | 3.336 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 806    | - | - | 908    | - | - | 89     | 109   | 452   | 86     | 111  | 384 |
| Stage 1              | -      | - | - | -      | - | - | 431    | 442   | -     | 346    | 369  | -   |
| Stage 2              | -      | - | - | -      | - | - | 340    | 363   | -     | 420    | 445  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -    | -   |
| Mov Cap-1 Maneuver   | 804    | - | - | 908    | - | - | 83     | 104   | 452   | 69     | 105  | 383 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 83     | 104   | -     | 69     | 105  | -   |
| Stage 1              | -      | - | - | -      | - | - | 426    | 437   | -     | 341    | 355  | -   |
| Stage 2              | -      | - | - | -      | - | - | 321    | 349   | -     | 356    | 440  | -   |

| Approach             | EB  |  |  | WB  |  |  | NE |  |  | SW |  |  |
|----------------------|-----|--|--|-----|--|--|----|--|--|----|--|--|
| HCM Control Delay, s | 0.1 |  |  | 0.4 |  |  | 34 |  |  | 40 |  |  |
| HCM LOS              |     |  |  |     |  |  | D  |  |  | E  |  |  |

| Minor Lane/Major Mvmt | NELn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SWLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 206   | 804   | -   | -   | 908   | -   | -   | 113   |
| HCM Lane V/C Ratio    | 0.407 | 0.013 | -   | -   | 0.037 | -   | -   | 0.091 |
| HCM Control Delay (s) | 34    | 9.5   | -   | -   | 9.1   | -   | -   | 40    |
| HCM Lane LOS          | D     | A     | -   | -   | A     | -   | -   | E     |
| HCM 95th %tile Q(veh) | 1.8   | 0     | -   | -   | 0.1   | -   | -   | 0.3   |

HCM 6th TWSC  
5: Washington Park Dr/Brantwood Rd & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.2  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↖    | ↗    |      | ↖    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 19   | 515  | 8    | 10   | 728  | 6    | 19   | 0    | 24   | 8    | 0    | 17   |
| Future Vol, veh/h        | 19   | 515  | 8    | 10   | 728  | 6    | 19   | 0    | 24   | 8    | 0    | 17   |
| Conflicting Peds, #/hr   | 2    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 2    | 2    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 50   | -    | -    | 50   | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 80   | 91   | 91   | 91   | 85   | 85   | 85   | 70   | 70   | 70   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 0    | 0    | 0    |
| Mvmt Flow                | 24   | 663  | 10   | 11   | 824  | 7    | 23   | 0    | 29   | 12   | 0    | 25   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|------|-----|
| Conflicting Flow All | 833    | 0 | 0 | 673    | 0 | 0 | 1578   | 1571  | 670   | 1585   | 1573 | 830 |
| Stage 1              | -      | - | - | -      | - | - | 716    | 716   | -     | 852    | 852  | -   |
| Stage 2              | -      | - | - | -      | - | - | 862    | 855   | -     | 733    | 721  | -   |
| Critical Hdwy        | 4.14   | - | - | 4.13   | - | - | 7.13   | 6.53  | 6.23  | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.13   | 5.53  | -     | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.13   | 5.53  | -     | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.236  | - | - | 2.227  | - | - | 3.527  | 4.027 | 3.327 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 791    | - | - | 913    | - | - | 88     | 110   | 455   | 89     | 111  | 373 |
| Stage 1              | -      | - | - | -      | - | - | 420    | 433   | -     | 357    | 379  | -   |
| Stage 2              | -      | - | - | -      | - | - | 348    | 373   | -     | 415    | 435  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -    | -   |
| Mov Cap-1 Maneuver   | 789    | - | - | 913    | - | - | 79     | 105   | 454   | 80     | 106  | 372 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 79     | 105   | -     | 80     | 106  | -   |
| Stage 1              | -      | - | - | -      | - | - | 407    | 420   | -     | 346    | 374  | -   |
| Stage 2              | -      | - | - | -      | - | - | 321    | 368   | -     | 376    | 422  | -   |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.3 |  |  | 0.1 |  |  | 42.4 |  |  | 31.5 |  |  |
| HCM LOS              |     |  |  |     |  |  | E    |  |  | D    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 147   | 789   | -   | -   | 913   | -   | -   | 172   |
| HCM Lane V/C Ratio    | 0.354 | 0.031 | -   | -   | 0.012 | -   | -   | 0.214 |
| HCM Control Delay (s) | 42.4  | 9.7   | -   | -   | 9     | -   | -   | 31.5  |
| HCM Lane LOS          | E     | A     | -   | -   | A     | -   | -   | D     |
| HCM 95th %tile Q(veh) | 1.5   | 0.1   | -   | -   | 0     | -   | -   | 0.8   |

# Intersection Capacity Analysis

## 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 10    | 586   | 39   | 44    | 762   | 13   | 46    | 2     | 51   | 18    | 2     | 14    |
| Future Volume (vph)     | 10    | 586   | 39   | 44    | 762   | 13   | 46    | 2     | 51   | 18    | 2     | 14    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 200   |       | 200  | 150   |       | 0    | 0     |       | 0    | 0     |       | 0     |
| Storage Lanes           | 1     |       | 1    | 1     |       | 0    | 1     |       | 0    | 0     |       | 0     |
| Taper Length (ft)       | 150   |       |      | 25    |       |      | 25    |       |      | 25    |       |       |
| Satd. Flow (prot)       | 1736  | 3440  | 0    | 1752  | 1838  | 0    | 1719  | 1521  | 0    | 0     | 1683  | 0     |
| Flt Permitted           | 0.950 |       |      | 0.344 |       |      | 0.728 |       |      |       | 0.804 |       |
| Satd. Flow (perm)       | 1721  | 3440  | 0    | 635   | 1838  | 0    | 1317  | 1521  | 0    | 0     | 1384  | 0     |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       | 10    |      |       | 1     |      |       | 58    |      |       |       | 18    |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 1093  |      |       | 907   |      |       | 396   |      |       |       | 538   |
| Travel Time (s)         |       | 24.8  |      |       | 20.6  |      |       | 9.0   |      |       |       | 12.2  |
| Confl. Peds. (#/hr)     | 3     |       |      |       |       | 3    |       |       | 2    | 2     |       |       |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90 | 0.80  | 0.80  | 0.80  |
| Growth Factor           | 103%  | 103%  | 103% | 103%  | 103%  | 103% | 103%  | 103%  | 103% | 103%  | 103%  | 103%  |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 3%    | 3%    | 3%   | 5%    | 5%    | 5%   | 4%    | 4%    | 4%    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 11    | 716   | 0    | 50    | 887   | 0    | 53    | 60    | 0    | 0     | 44    | 0     |
| Turn Type               | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |       |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      |       | 3     |      |       |       | 7     |
| Permitted Phases        |       |       |      | 2     |       |      | 3     |       |      | 7     |       |       |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 3     |      | 7     |       | 7     |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 3.0   | 5.0   |      | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Minimum Split (s)       | 8.0   | 10.0  |      | 8.0   | 10.0  |      | 10.0  | 10.0  |      | 10.0  |       | 10.0  |
| Total Split (s)         | 10.0  | 50.0  |      | 10.0  | 50.0  |      | 15.0  | 15.0  |      | 15.0  |       | 15.0  |
| Total Split (%)         | 10.4% | 52.1% |      | 10.4% | 52.1% |      | 15.6% | 15.6% |      | 15.6% |       | 15.6% |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   |       | 4.0   |
| All-Red Time (s)        | 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   |      | 0.0   |       | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      |       |       |      |       |       |       |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      |       |       |      |       |       |       |
| Recall Mode             | None  | Max   |      | None  | Max   |      | None  | None  |      | None  |       | None  |
| Act Effect Green (s)    | 5.1   | 50.6  |      | 54.2  | 54.6  |      | 8.0   | 8.0   |      |       |       | 8.0   |
| Actuated g/C Ratio      | 0.07  | 0.68  |      | 0.73  | 0.74  |      | 0.11  | 0.11  |      |       |       | 0.11  |
| v/c Ratio               | 0.09  | 0.30  |      | 0.09  | 0.66  |      | 0.37  | 0.28  |      |       |       | 0.27  |
| Control Delay           | 40.1  | 8.7   |      | 5.8   | 13.9  |      | 41.9  | 14.8  |      |       |       | 28.0  |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |       |       | 0.0   |
| Total Delay             | 40.1  | 8.7   |      | 5.8   | 13.9  |      | 41.9  | 14.8  |      |       |       | 28.0  |
| LOS                     | D     | A     |      | A     | B     |      | D     | B     |      |       |       | C     |
| Approach Delay          |       | 9.2   |      |       | 13.5  |      |       | 27.5  |      |       |       | 28.0  |
| Approach LOS            |       | A     |      |       | B     |      |       | C     |      |       |       | C     |
| Queue Length 50th (ft)  | 5     | 72    |      | 4     | 147   |      | 23    | 1     |      |       |       | 11    |
| Queue Length 95th (ft)  | 24    | 194   |      | 28    | #820  |      | 69    | 38    |      |       |       | 42    |
| Internal Link Dist (ft) |       | 1013  |      |       | 827   |      |       | 316   |      |       |       | 458   |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        |      |
| Growth Factor           |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 1.0  |
| Minimum Split (s)       | 21.0 |
| Total Split (s)         | 21.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |

# Intersection Capacity Analysis

## 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021

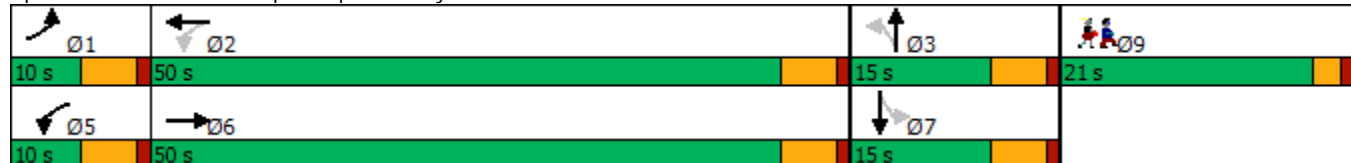


| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|-----|-----|------|-----|
| Turn Bay Length (ft)   | 200  |      |     | 150  |      |     |      |      |     |     |      |     |
| Base Capacity (vph)    | 119  | 2352 |     | 541  | 1354 |     | 181  | 260  |     |     | 206  |     |
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.09 | 0.30 |     | 0.09 | 0.66 |     | 0.29 | 0.23 |     |     | 0.21 |     |

### Intersection Summary

Area Type: Other  
 Cycle Length: 96  
 Actuated Cycle Length: 74.1  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 13.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 59.1%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

### Splits and Phases: 6: Sop&Shop Driveway/Jacob's Trail & Route 53



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.5  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔↔   |      |      | ↔    |      |      | ↔    |      |      | ↔    | ↔    |
| Traffic Vol, veh/h       | 148  | 493  | 10   | 14   | 579  | 33   | 4    | 8    | 9    | 6    | 5    | 219  |
| Future Vol, veh/h        | 148  | 493  | 10   | 14   | 579  | 33   | 4    | 8    | 9    | 6    | 5    | 219  |
| Conflicting Peds, #/hr   | 3    | 0    | 0    | 0    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | Stop |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 75   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 80   | 80   | 80   | 80   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 5    | 5    | 5    | 5    | 5    | 5    | 2    | 2    | 2    |
| Mvmt Flow                | 169  | 564  | 11   | 16   | 663  | 38   | 5    | 10   | 12   | 8    | 6    | 282  |

| Major/Minor          | Major1 |   | Major2 |        | Minor1 |   |        | Minor2 |        |       |       |       |
|----------------------|--------|---|--------|--------|--------|---|--------|--------|--------|-------|-------|-------|
| Conflicting Flow All | 704    | 0 | 0      | 575    | 0      | 0 | 1625   | 1644   | 288    | 1342  | 1630  | 685   |
| Stage 1              | -      | - | -      | -      | -      | - | 908    | 908    | -      | 717   | 717   | -     |
| Stage 2              | -      | - | -      | -      | -      | - | 717    | 736    | -      | 625   | 913   | -     |
| Critical Hdwy        | 4.16   | - | -      | 4.175  | -      | - | 7.375  | 6.575  | 6.975  | 7.33  | 6.53  | 6.23  |
| Critical Hdwy Stg 1  | -      | - | -      | -      | -      | - | 6.575  | 5.575  | -      | 6.13  | 5.53  | -     |
| Critical Hdwy Stg 2  | -      | - | -      | -      | -      | - | 6.175  | 5.575  | -      | 6.53  | 5.53  | -     |
| Follow-up Hdwy       | 2.238  | - | -      | 2.2475 | -      | - | 3.5475 | 4.0475 | 3.3475 | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver   | 880    | - | -      | 979    | -      | - | 73     | 97     | 702    | 119   | 101   | 447   |
| Stage 1              | -      | - | -      | -      | -      | - | 292    | 348    | -      | 420   | 433   | -     |
| Stage 2              | -      | - | -      | -      | -      | - | 414    | 418    | -      | 440   | 351   | -     |
| Platoon blocked, %   |        | - | -      | -      | -      | - |        |        |        |       |       |       |
| Mov Cap-1 Maneuver   | 877    | - | -      | 979    | -      | - | 19     | 67     | 702    | 79    | 70    | 446   |
| Mov Cap-2 Maneuver   | -      | - | -      | -      | -      | - | 19     | 67     | -      | 79    | 70    | -     |
| Stage 1              | -      | - | -      | -      | -      | - | 209    | 249    | -      | 300   | 420   | -     |
| Stage 2              | -      | - | -      | -      | -      | - | 146    | 405    | -      | 297   | 251   | -     |

| Approach             | EB |  | WB  |  | NB    |  | SB   |  |
|----------------------|----|--|-----|--|-------|--|------|--|
| HCM Control Delay, s | 3  |  | 0.2 |  | 104.5 |  | 27.7 |  |
| HCM LOS              |    |  |     |  | F     |  | D    |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 61    | 877   | -   | -   | 979   | -   | -   | 75    | 446   |
| HCM Lane V/C Ratio    | 0.443 | 0.193 | -   | -   | 0.016 | -   | -   | 0.189 | 0.632 |
| HCM Control Delay (s) | 104.5 | 10.1  | 0.9 | -   | 8.7   | 0   | -   | 63.9  | 25.9  |
| HCM Lane LOS          | F     | B     | A   | -   | A     | A   | -   | F     | D     |
| HCM 95th %tile Q(veh) | 1.7   | 0.7   | -   | -   | 0.1   | -   | -   | 0.6   | 4.3   |



Intersection Capacity Analysis  
 1: Pond St/Main St & Whiting St/Washington St

02/26/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 103   | 839   | 171  | 195   | 614   | 284  | 231   | 397   | 319   | 273   | 466   | 55   |
| Future Volume (vph)     | 103   | 839   | 171  | 195   | 614   | 284  | 231   | 397   | 319   | 273   | 466   | 55   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Storage Length (ft)     | 150   |       | 0    | 200   |       | 0    | 150   |       | 250   | 250   |       | 250  |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 1     | 1     |       | 1    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Satd. Flow (prot)       | 1770  | 3491  | 0    | 1770  | 3396  | 0    | 1787  | 1900  | 1615  | 1787  | 3452  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (perm)       | 1770  | 3491  | 0    | 1770  | 3396  | 0    | 1787  | 1900  | 1615  | 1787  | 3452  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 21    |      |       | 69    |      |       |       | 295   |       |       | 10   |
| Link Speed (mph)        |       | 35    |      |       | 35    |      |       | 45    |       |       |       | 45   |
| Link Distance (ft)      |       | 1282  |      |       | 602   |      |       | 877   |       |       |       | 701  |
| Travel Time (s)         |       | 25.0  |      |       | 11.7  |      |       | 13.3  |       |       |       | 10.6 |
| Peak Hour Factor        | 0.95  | 0.95  | 0.95 | 0.93  | 0.93  | 0.93 | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92 |
| Growth Factor           | 101%  | 101%  | 101% | 101%  | 101%  | 101% | 101%  | 101%  | 101%  | 101%  | 101%  | 101% |
| Heavy Vehicles (%)      | 2%    | 1%    | 0%   | 2%    | 1%    | 2%   | 1%    | 0%    | 0%    | 1%    | 3%    | 2%   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 110   | 1074  | 0    | 212   | 975   | 0    | 254   | 436   | 350   | 300   | 572   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | Prot  | NA    | Perm  | Prot  | NA    |      |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      | 3     | 8     |       | 7     | 4     |      |
| Permitted Phases        |       |       |      |       |       |      |       |       | 8     |       |       |      |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 8     | 8     | 7     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 1.0   | 5.0   |      | 1.0   | 5.0   |      | 1.0   | 5.0   | 5.0   | 1.0   | 1.0   |      |
| Minimum Split (s)       | 6.0   | 23.0  |      | 11.0  | 23.0  |      | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  |      |
| Total Split (s)         | 18.0  | 40.0  |      | 20.0  | 42.0  |      | 28.0  | 30.0  | 30.0  | 25.0  | 27.0  |      |
| Total Split (%)         | 15.7% | 34.8% |      | 17.4% | 36.5% |      | 24.3% | 26.1% | 26.1% | 21.7% | 23.5% |      |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      |
| 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   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lead  | Lead  |      | Lag   | Lag   |      | Lead  | Lead  | Lead  | Lag   | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Recall Mode             | None  | C-Max |      | None  | C-Max |      | None  | None  | None  | None  | None  |      |
| Act Effect Green (s)    | 11.3  | 35.0  |      | 15.0  | 38.7  |      | 20.2  | 25.0  | 25.0  | 20.0  | 24.8  |      |
| Actuated g/C Ratio      | 0.10  | 0.30  |      | 0.13  | 0.34  |      | 0.18  | 0.22  | 0.22  | 0.17  | 0.22  |      |
| v/c Ratio               | 0.63  | 1.00  |      | 0.92  | 0.82  |      | 0.81  | 1.06  | 0.60  | 0.97  | 0.76  |      |
| Control Delay           | 66.0  | 66.3  |      | 76.3  | 30.8  |      | 65.5  | 103.5 | 12.6  | 91.5  | 49.7  |      |
| Queue Delay             | 0.0   | 7.6   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 66.0  | 73.9  |      | 76.3  | 30.8  |      | 65.5  | 103.5 | 12.6  | 91.5  | 49.7  |      |
| LOS                     | E     | E     |      | E     | C     |      | E     | F     | B     | F     | D     |      |
| Approach Delay          |       | 73.2  |      |       | 38.9  |      |       | 63.6  |       |       | 64.1  |      |
| Approach LOS            |       | E     |      |       | D     |      |       | E     |       |       | E     |      |
| Queue Length 50th (ft)  | 79    | 411   |      | 157   | 329   |      | 180   | ~354  | 33    | 223   | 210   |      |
| Queue Length 95th (ft)  | 139   | #564  |      | m#268 | 362   |      | #274  | #553  | 127   | #397  | #304  |      |
| Internal Link Dist (ft) |       | 1202  |      |       | 522   |      |       | 797   |       |       | 621   |      |
| Turn Bay Length (ft)    | 150   |       |      | 200   |       |      | 150   |       | 250   | 250   |       |      |

# Intersection Capacity Analysis

## 1: Pond St/Main St & Whiting St/Washington St

02/26/2021



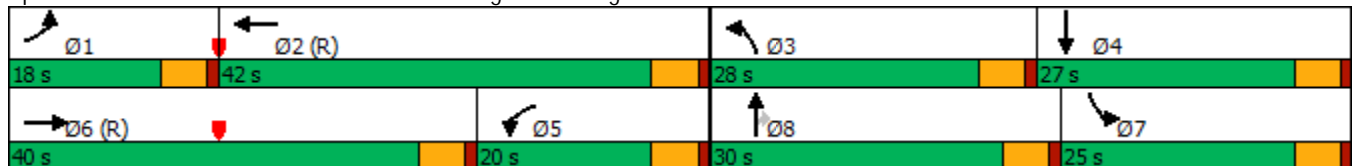
| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR  | SBL  | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|------|------|------|-----|
| Base Capacity (vph)    | 200  | 1077 |     | 230  | 1187 |     | 357  | 413  | 581  | 310  | 753  |     |
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    |     |
| Spillback Cap Reductn  | 0    | 29   |     | 0    | 0    |     | 0    | 0    | 2    | 0    | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    | 0    | 0    |     |
| Reduced v/c Ratio      | 0.55 | 1.02 |     | 0.92 | 0.82 |     | 0.71 | 1.06 | 0.60 | 0.97 | 0.76 |     |

### Intersection Summary

Area Type: Other  
 Cycle Length: 115  
 Actuated Cycle Length: 115  
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green, Master Intersection  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.06  
 Intersection Signal Delay: 59.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 92.9%  
 ICU Level of Service F  
 Analysis Period (min) 15

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

### Splits and Phases: 1: Pond St/Main St & Whiting St/Washington St



Intersection Capacity Analysis  
 QAP Driveway & Washington St

02/26/2021



| Lane Group              | EBT   | EBR  | WBL   | WBT   | NBL   | NBR   | Ø9   |
|-------------------------|-------|------|-------|-------|-------|-------|------|
| Lane Configurations     | ↑↑    |      | ↙     | ↑     | ↙     | ↗     |      |
| Traffic Volume (vph)    | 1323  | 44   | 86    | 1029  | 18    | 171   |      |
| Future Volume (vph)     | 1323  | 44   | 86    | 1029  | 18    | 171   |      |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  |      |
| Lane Width (ft)         | 12    | 12   | 12    | 15    | 12    | 12    |      |
| Storage Length (ft)     |       | 0    | 100   |       | 0     | 0     |      |
| Storage Lanes           |       | 0    | 1     |       | 1     | 1     |      |
| Taper Length (ft)       |       |      | 25    |       | 25    |       |      |
| Satd. Flow (prot)       | 3522  | 0    | 1770  | 2049  | 1770  | 1583  |      |
| Flt Permitted           |       |      | 0.099 |       | 0.950 |       |      |
| Satd. Flow (perm)       | 3522  | 0    | 184   | 2049  | 1770  | 1583  |      |
| Right Turn on Red       |       | Yes  |       |       |       | Yes   |      |
| Satd. Flow (RTOR)       | 4     |      |       |       |       | 198   |      |
| Link Speed (mph)        | 30    |      |       | 30    | 30    |       |      |
| Link Distance (ft)      | 602   |      |       | 376   | 271   |       |      |
| Travel Time (s)         | 13.7  |      |       | 8.5   | 6.2   |       |      |
| Peak Hour Factor        | 0.90  | 0.90 | 0.90  | 0.90  | 0.90  | 0.90  |      |
| Growth Factor           | 104%  | 104% | 104%  | 104%  | 104%  | 104%  |      |
| Shared Lane Traffic (%) |       |      |       |       |       |       |      |
| Lane Group Flow (vph)   | 1580  | 0    | 99    | 1189  | 21    | 198   |      |
| Turn Type               | NA    |      | pm+pt | NA    | Prot  | Perm  |      |
| Protected Phases        | 6     |      | 5     | 1     | 3     |       | 9    |
| Permitted Phases        |       |      | 1     |       |       | 3     |      |
| Detector Phase          | 6     |      | 5     | 1     | 3     | 3     |      |
| Switch Phase            |       |      |       |       |       |       |      |
| Minimum Initial (s)     | 5.0   |      | 3.0   | 5.0   | 5.0   | 5.0   | 5.0  |
| Minimum Split (s)       | 25.0  |      | 10.0  | 25.0  | 10.0  | 10.0  | 27.0 |
| Total Split (s)         | 62.0  |      | 11.0  | 73.0  | 15.0  | 15.0  | 27.0 |
| Total Split (%)         | 53.9% |      | 9.6%  | 63.5% | 13.0% | 13.0% | 23%  |
| Yellow Time (s)         | 4.0   |      | 4.0   | 4.0   | 4.0   | 4.0   | 2.0  |
| 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   | 0.0   |      |
| Total Lost Time (s)     | 5.0   |      | 5.0   | 5.0   | 5.0   | 5.0   |      |
| Lead/Lag                | Lag   |      | Lead  |       |       |       |      |
| Lead-Lag Optimize?      | Yes   |      | Yes   |       |       |       |      |
| Recall Mode             | C-Max |      | None  | C-Max | Min   | Min   | None |
| Act Effct Green (s)     | 80.7  |      | 92.2  | 92.2  | 7.4   | 7.4   |      |
| Actuated g/C Ratio      | 0.70  |      | 0.80  | 0.80  | 0.06  | 0.06  |      |
| v/c Ratio               | 0.64  |      | 0.42  | 0.72  | 0.18  | 0.69  |      |
| Control Delay           | 4.2   |      | 9.9   | 12.1  | 53.7  | 20.2  |      |
| Queue Delay             | 0.2   |      | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 4.4   |      | 9.9   | 12.1  | 53.7  | 20.2  |      |
| LOS                     | A     |      | A     | B     | D     | C     |      |
| Approach Delay          | 4.4   |      |       | 11.9  | 23.4  |       |      |
| Approach LOS            | A     |      |       | B     | C     |       |      |
| Queue Length 50th (ft)  | 38    |      | 8     | 213   | 15    | 0     |      |
| Queue Length 95th (ft)  | m228  |      | 54    | #1156 | 40    | 72    |      |
| Internal Link Dist (ft) | 522   |      |       | 296   | 191   |       |      |
| Turn Bay Length (ft)    |       |      | 100   |       |       |       |      |

Intersection Capacity Analysis  
 QAP Driveway & Washington St

02/26/2021



| Lane Group             | EBT  | EBR | WBL  | WBT  | NBL  | NBR  | Ø9 |
|------------------------|------|-----|------|------|------|------|----|
| Base Capacity (vph)    | 2472 |     | 237  | 1642 | 153  | 318  |    |
| Starvation Cap Reductn | 219  |     | 0    | 0    | 0    | 0    |    |
| Spillback Cap Reductn  | 0    |     | 0    | 0    | 0    | 0    |    |
| Storage Cap Reductn    | 0    |     | 0    | 0    | 0    | 0    |    |
| Reduced v/c Ratio      | 0.70 |     | 0.42 | 0.72 | 0.14 | 0.62 |    |

Intersection Summary

|                                   |   |
|-----------------------------------|---|
| Area Type:                        | Other   |
| Cycle Length:                     | 115   |
| Actuated Cycle Length:            | 115   |
| Offset:                           | 88 (77%), Referenced to phase 1:WBTL and 6:EBT, Start of Green  |
| Natural Cycle:                    | 90  |
| Control Type:                     | Actuated-Coordinated  |
| Maximum v/c Ratio:                | 0.72  |
| Intersection Signal Delay:        | 8.9   |
| Intersection LOS:                 | A   |
| Intersection Capacity Utilization | 68.8%   |
| ICU Level of Service              | C   |
| Analysis Period (min)             | 15  |
| #                                 | 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |
| m                                 | Volume for 95th percentile queue is metered by upstream signal.   |

Splits and Phases: 29: QAP Dr. & Washington St

|          |          |          |
|----------|----------|----------|
| <br>73 s | <br>15 s | <br>27 s |
| <br>11 s | <br>62 s |          |

Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |       |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 389   | 652   | 274   | 24    | 572   | 76   | 231   | 102   | 38   | 85    | 76    | 307   |
| Future Volume (vph)     | 389   | 652   | 274   | 24    | 572   | 76   | 231   | 102   | 38   | 85    | 76    | 307   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 300   |       | 300   | 150   |       | 150  | 200   |       | 0    | 350   |       | 350   |
| Storage Lanes           | 1     |       | 1     | 2     |       | 0    | 1     |       | 0    | 1     |       | 0     |
| Taper Length (ft)       | 25    |       |       | 150   |       |      | 150   |       |      | 150   |       |       |
| Satd. Flow (prot)       | 1770  | 1863  | 1583  | 1770  | 3476  | 0    | 1770  | 1786  | 0    | 1787  | 1881  | 1599  |
| Flt Permitted           | 0.950 |       |       | 0.950 |       |      | 0.489 |       |      | 0.659 |       |       |
| Satd. Flow (perm)       | 1770  | 1863  | 1583  | 1770  | 3476  | 0    | 911   | 1786  | 0    | 1240  | 1881  | 1599  |
| Right Turn on Red       |       |       | Yes   |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       |       | 297   |       | 12    |      |       | 15    |      |       |       | 333   |
| Link Speed (mph)        |       | 30    |       |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 933   |       |       | 1262  |      |       | 1358  |      |       |       | 807   |
| Travel Time (s)         |       | 21.2  |       |       | 28.7  |      |       | 30.9  |      |       |       | 18.3  |
| Peak Hour Factor        | 0.96  | 0.96  | 0.96  | 0.93  | 0.93  | 0.93 | 0.95  | 0.95  | 0.95 | 0.96  | 0.96  | 0.96  |
| Growth Factor           | 104%  | 104%  | 104%  | 104%  | 104%  | 104% | 104%  | 104%  | 104% | 104%  | 104%  | 104%  |
| Heavy Vehicles (%)      | 2%    | 2%    | 2%    | 2%    | 2%    | 2%   | 2%    | 2%    | 2%   | 1%    | 1%    | 1%    |
| Shared Lane Traffic (%) |       |       |       |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 421   | 706   | 297   | 27    | 725   | 0    | 253   | 154   | 0    | 92    | 82    | 333   |
| Turn Type               | Prot  | NA    | Perm  | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    | Perm  |
| Protected Phases        | 1     | 6     |       | 5     | 2     |      | 7     | 4     |      |       |       | 8     |
| Permitted Phases        |       |       | 6     |       |       |      | 4     |       |      | 8     |       | 8     |
| Detector Phase          | 1     | 6     | 6     | 5     | 2     |      | 7     | 4     |      | 8     | 8     | 8     |
| Switch Phase            |       |       |       |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   | 5.0   | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)       | 10.0  | 30.0  | 30.0  | 10.0  | 25.0  |      | 9.0   | 10.0  |      | 10.0  | 10.0  | 10.0  |
| Total Split (s)         | 32.0  | 51.0  | 51.0  | 10.0  | 29.0  |      | 12.0  | 26.0  |      | 14.0  | 14.0  | 14.0  |
| Total Split (%)         | 29.1% | 46.4% | 46.4% | 9.1%  | 26.4% |      | 10.9% | 23.6% |      | 12.7% | 12.7% | 12.7% |
| Yellow Time (s)         | 4.0   | 4.0   | 4.0   | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   | 4.0   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 0.0   | 1.0   |      | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      | 4.0   | 5.0   |      | 5.0   | 5.0   | 5.0   |
| Lead/Lag                | Lead  | Lag   | Lag   | Lead  | Lag   |      | Lead  |       |      | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   | Yes   | Yes   |      | Yes   |       |      | Yes   | Yes   | Yes   |
| Recall Mode             | None  | Max   | Max   | None  | Max   |      | None  | None  |      | None  | None  | None  |
| Act Effect Green (s)    | 26.6  | 52.1  | 52.1  | 5.0   | 24.2  |      | 22.2  | 21.2  |      | 9.1   | 9.1   | 9.1   |
| Actuated g/C Ratio      | 0.29  | 0.57  | 0.57  | 0.05  | 0.27  |      | 0.24  | 0.23  |      | 0.10  | 0.10  | 0.10  |
| v/c Ratio               | 0.81  | 0.66  | 0.29  | 0.28  | 0.78  |      | 0.85  | 0.36  |      | 0.74  | 0.44  | 0.73  |
| Control Delay           | 45.3  | 20.6  | 2.9   | 51.9  | 38.4  |      | 59.1  | 31.1  |      | 76.6  | 49.0  | 15.3  |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   |
| Total Delay             | 45.3  | 20.6  | 2.9   | 51.9  | 38.4  |      | 59.1  | 31.1  |      | 76.6  | 49.0  | 15.3  |
| LOS                     | D     | C     | A     | D     | D     |      | E     | C     |      | E     | D     | B     |
| Approach Delay          |       | 24.2  |       |       | 38.9  |      |       | 48.5  |      |       | 31.9  |       |
| Approach LOS            |       | C     |       |       | D     |      |       | D     |      |       | C     |       |
| Queue Length 50th (ft)  | 207   | 198   | 0     | 14    | 187   |      | 121   | 63    |      | 50    | 43    | 0     |
| Queue Length 95th (ft)  | #495  | #693  | 51    | 49    | #382  |      | #354  | 152   |      | #167  | 108   | #116  |
| Internal Link Dist (ft) |       | 853   |       |       | 1182  |      |       | 1278  |      |       | 727   |       |
| Turn Bay Length (ft)    | 300   |       | 300   | 150   |       |      | 200   |       |      | 350   |       | 350   |

Intersection Capacity Analysis  
 2: High St/Grove St & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| 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        |      |
| Growth Factor           |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 23.0 |
| Total Split (s)         | 23.0 |
| Total Split (%)         | 21%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |



Intersection Capacity Analysis  
2: High St/Grove St & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR  | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------|------|------|------|------|------|-----|------|------|-----|------|------|------|
| Base Capacity (vph)    | 530  | 1067 | 1033 | 98   | 934  |     | 298  | 427  |     | 124  | 187  | 459  |
| Starvation Cap Reductn | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Spillback Cap Reductn  | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Storage Cap Reductn    | 0    | 0    | 0    | 0    | 0    |     | 0    | 0    |     | 0    | 0    | 0    |
| Reduced v/c Ratio      | 0.79 | 0.66 | 0.29 | 0.28 | 0.78 |     | 0.85 | 0.36 |     | 0.74 | 0.44 | 0.73 |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 110                    |
| Actuated Cycle Length:  | 91                     |
| Natural Cycle:  | 95                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.85                   |
| Intersection Signal Delay:                                      | 32.2                   |
| Intersection LOS:   | C                      |
| Intersection Capacity Utilization                               | 74.7%                  |
| ICU Level of Service  | D                      |
| Analysis Period (min)   | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer. |                        |
| Queue shown is maximum after two cycles.                        |                        |

Splits and Phases: 2: High St/Grove St & Route 53



HCM 6th TWSC  
3: Oak St & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3    |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NEL  | NER  |
| Lane Configurations      | ↶    |      | ↷    | ↶    | ↷    | ↷    |
| Traffic Vol, veh/h       | 720  | 40   | 45   | 616  | 20   | 80   |
| Future Vol, veh/h        | 720  | 40   | 45   | 616  | 20   | 80   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | 75   | -    | 0    | 75   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 92   | 92   | 90   | 90   | 60   | 60   |
| Heavy Vehicles, %        | 2    | 2    | 1    | 1    | 0    | 0    |
| Mvmt Flow                | 814  | 45   | 52   | 712  | 35   | 139  |

| Major/Minor          | Major1 | Major2 | Minor1 |   |          |
|----------------------|--------|--------|--------|---|----------|
| Conflicting Flow All | 0      | 0      | 859    | 0 | 1653 837 |
| Stage 1              | -      | -      | -      | - | 837 -    |
| Stage 2              | -      | -      | -      | - | 816 -    |
| Critical Hdwy        | -      | -      | 4.11   | - | 6.4 6.2  |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.4 -    |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.4 -    |
| Follow-up Hdwy       | -      | -      | 2.209  | - | 3.5 3.3  |
| Pot Cap-1 Maneuver   | -      | -      | 786    | - | 109 370  |
| Stage 1              | -      | -      | -      | - | 428 -    |
| Stage 2              | -      | -      | -      | - | 438 -    |
| Platoon blocked, %   | -      | -      | -      | - | -        |
| Mov Cap-1 Maneuver   | -      | -      | 786    | - | 102 370  |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 102 -    |
| Stage 1              | -      | -      | -      | - | 428 -    |
| Stage 2              | -      | -      | -      | - | 409 -    |

| Approach             | EB | WB  | NE   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.7 | 27.8 |
| HCM LOS              |    |     | D    |

| Minor Lane/Major Mvmt | NELn1 | NELn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 102   | 370   | -   | -   | 786   | -   |
| HCM Lane V/C Ratio    | 0.34  | 0.375 | -   | -   | 0.066 | -   |
| HCM Control Delay (s) | 57.5  | 20.4  | -   | -   | 9.9   | -   |
| HCM Lane LOS          | F     | C     | -   | -   | A     | -   |
| HCM 95th %tile Q(veh) | 1.3   | 1.7   | -   | -   | 0.2   | -   |

Intersection Capacity Analysis  
4: Hall Dr/Driveway & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.6  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations      | ↖    | ↗    |      | ↖    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 1    | 771  | 22   | 42   | 715  | 1    | 6    | 0    | 24   | 2    | 0    | 2    |
| Future Vol, veh/h        | 1    | 771  | 22   | 42   | 715  | 1    | 6    | 0    | 24   | 2    | 0    | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 50   | -    | -    | 75   | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 88   | 88   | 88   | 60   | 60   | 60   | 50   | 50   | 50   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 1    | 891  | 25   | 50   | 845  | 1    | 10   | 0    | 42   | 4    | 0    | 4    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 846    | 0 | 0 | 916    | 0 | 0 | 1854   | 1852 | 904 | 1873   | 1864 | 846 |
| Stage 1              | -      | - | - | -      | - | - | 906    | 906  | -   | 946    | 946  | -   |
| Stage 2              | -      | - | - | -      | - | - | 948    | 946  | -   | 927    | 918  | -   |
| Critical Hdwy        | 4.12   | - | - | 4.11   | - | - | 7.1    | 6.5  | 6.2 | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.218  | - | - | 2.209  | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 791    | - | - | 749    | - | - | 57     | 75   | 338 | 56     | 74   | 365 |
| Stage 1              | -      | - | - | -      | - | - | 333    | 358  | -   | 317    | 343  | -   |
| Stage 2              | -      | - | - | -      | - | - | 316    | 343  | -   | 324    | 353  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -   | -      | -    | -   |
| Mov Cap-1 Maneuver   | 791    | - | - | 749    | - | - | 53     | 70   | 338 | 47     | 69   | 365 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 53     | 70   | -   | 47     | 69   | -   |
| Stage 1              | -      | - | - | -      | - | - | 333    | 358  | -   | 317    | 320  | -   |
| Stage 2              | -      | - | - | -      | - | - | 292    | 320  | -   | 284    | 353  | -   |

| Approach             | EB |  |  | WB  |  |  | NE   |  |  | SW   |  |  |
|----------------------|----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0  |  |  | 0.6 |  |  | 37.1 |  |  | 53.1 |  |  |
| HCM LOS              |    |  |  |     |  |  | E    |  |  | F    |  |  |

| Minor Lane/Major Mvmt | NELn1 | EBL   | EBT | EBR | WBL   | WBT | WBRSWLn1 |      |
|-----------------------|-------|-------|-----|-----|-------|-----|----------|------|
| Capacity (veh/h)      | 163   | 791   | -   | -   | 749   | -   | -        | 83   |
| HCM Lane V/C Ratio    | 0.319 | 0.001 | -   | -   | 0.066 | -   | -        | 0.1  |
| HCM Control Delay (s) | 37.1  | 9.6   | -   | -   | 10.1  | -   | -        | 53.1 |
| HCM Lane LOS          | E     | A     | -   | -   | B     | -   | -        | F    |
| HCM 95th %tile Q(veh) | 1.3   | 0     | -   | -   | 0.2   | -   | -        | 0.3  |

HCM 6th TWSC  
5: Washington Park Dr/Brantwood Rd & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.2  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↖    | ↗    |      | ↖    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 9    | 786  | 15   | 19   | 736  | 12   | 18   | 0    | 26   | 7    | 0    | 10   |
| Future Vol, veh/h        | 9    | 786  | 15   | 19   | 736  | 12   | 18   | 0    | 26   | 7    | 0    | 10   |
| Conflicting Peds, #/hr   | 1    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 3    | 3    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 50   | -    | -    | 50   | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 90   | 90   | 90   | 90   | 80   | 80   | 80   | 60   | 60   | 60   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 10   | 908  | 17   | 22   | 850  | 14   | 23   | 0    | 34   | 12   | 0    | 17   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |     | Minor2 |      |     |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 865    | 0 | 0 | 925    | 0 | 0 | 1847   | 1846 | 920 | 1859   | 1847 | 858 |
| Stage 1              | -      | - | - | -      | - | - | 937    | 937  | -   | 902    | 902  | -   |
| Stage 2              | -      | - | - | -      | - | - | 910    | 909  | -   | 957    | 945  | -   |
| Critical Hdwy        | 4.12   | - | - | 4.11   | - | - | 7.1    | 6.5  | 6.2 | 7.1    | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5  | -   | 6.1    | 5.5  | -   |
| Follow-up Hdwy       | 2.218  | - | - | 2.209  | - | - | 3.5    | 4    | 3.3 | 3.5    | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 778    | - | - | 743    | - | - | 58     | 76   | 331 | 57     | 75   | 359 |
| Stage 1              | -      | - | - | -      | - | - | 320    | 346  | -   | 335    | 359  | -   |
| Stage 2              | -      | - | - | -      | - | - | 332    | 357  | -   | 312    | 343  | -   |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -   | -      | -    | -   |
| Mov Cap-1 Maneuver   | 777    | - | - | 743    | - | - | 53     | 73   | 330 | 49     | 72   | 359 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 53     | 73   | -   | 49     | 72   | -   |
| Stage 1              | -      | - | - | -      | - | - | 316    | 342  | -   | 330    | 348  | -   |
| Stage 2              | -      | - | - | -      | - | - | 307    | 346  | -   | 276    | 339  | -   |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.1 |  |  | 0.2 |  |  | 74.3 |  |  | 55.4 |  |  |
| HCM LOS              |     |  |  |     |  |  | F    |  |  | F    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | 105   | 777   | -   | -   | 743  | -   | -   | 100   |
| HCM Lane V/C Ratio    | 0.545 | 0.013 | -   | -   | 0.03 | -   | -   | 0.295 |
| HCM Control Delay (s) | 74.3  | 9.7   | -   | -   | 10   | -   | -   | 55.4  |
| HCM Lane LOS          | F     | A     | -   | -   | A    | -   | -   | F     |
| HCM 95th %tile Q(veh) | 2.5   | 0     | -   | -   | 0.1  | -   | -   | 1.1   |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |       |
| Traffic Volume (vph)    | 30    | 824   | 80   | 90    | 793   | 20   | 75    | 5     | 95   | 10    | 5     | 10    |
| Future Volume (vph)     | 30    | 824   | 80   | 90    | 793   | 20   | 75    | 5     | 95   | 10    | 5     | 10    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  |
| Storage Length (ft)     | 200   |       | 200  | 150   |       | 0    | 0     |       | 0    | 0     |       | 0     |
| Storage Lanes           | 1     |       | 1    | 1     |       | 0    | 1     |       | 0    | 0     |       | 0     |
| Taper Length (ft)       | 150   |       |      | 25    |       |      | 25    |       |      | 25    |       |       |
| Satd. Flow (prot)       | 1770  | 3493  | 0    | 1787  | 1874  | 0    | 1805  | 1630  | 0    | 0     | 1760  | 0     |
| Flt Permitted           | 0.950 |       |      | 0.185 |       |      | 0.733 |       |      |       | 0.833 |       |
| Satd. Flow (perm)       | 1770  | 3493  | 0    | 348   | 1874  | 0    | 1393  | 1630  | 0    | 0     | 1496  | 0     |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes   |
| Satd. Flow (RTOR)       |       | 14    |      |       | 2     |      |       | 110   |      |       |       | 15    |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       |       | 30    |
| Link Distance (ft)      |       | 1093  |      |       | 907   |      |       | 368   |      |       |       | 415   |
| Travel Time (s)         |       | 24.8  |      |       | 20.6  |      |       | 8.4   |      |       |       | 9.4   |
| Peak Hour Factor        | 0.86  | 0.86  | 0.86 | 0.86  | 0.86  | 0.86 | 0.90  | 0.90  | 0.90 | 0.70  | 0.70  | 0.70  |
| Growth Factor           | 104%  | 104%  | 104% | 104%  | 104%  | 104% | 104%  | 104%  | 104% | 104%  | 104%  | 104%  |
| Heavy Vehicles (%)      | 2%    | 2%    | 2%   | 1%    | 1%    | 1%   | 0%    | 0%    | 0%   | 0%    | 0%    | 0%    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |       |
| Lane Group Flow (vph)   | 36    | 1093  | 0    | 109   | 983   | 0    | 87    | 116   | 0    | 0     | 37    | 0     |
| Turn Type               | Prot  | NA    |      | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |       |
| Protected Phases        | 1     | 6     |      | 5     | 2     |      |       | 3     |      |       |       | 7     |
| Permitted Phases        |       |       |      | 2     |       |      | 3     |       |      | 7     |       |       |
| Detector Phase          | 1     | 6     |      | 5     | 2     |      | 3     | 3     |      | 7     |       | 7     |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |       |
| Minimum Initial (s)     | 3.0   | 5.0   |      | 3.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Minimum Split (s)       | 8.0   | 10.0  |      | 8.0   | 10.0  |      | 10.0  | 10.0  |      | 10.0  |       | 10.0  |
| Total Split (s)         | 10.0  | 48.0  |      | 12.0  | 50.0  |      | 15.0  | 15.0  |      | 15.0  |       | 15.0  |
| Total Split (%)         | 10.4% | 50.0% |      | 12.5% | 52.1% |      | 15.6% | 15.6% |      | 15.6% |       | 15.6% |
| Yellow Time (s)         | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      | 4.0   |       | 4.0   |
| All-Red Time (s)        | 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   |      | 0.0   |       | 0.0   |
| Total Lost Time (s)     | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   | 5.0   |      | 5.0   |       | 5.0   |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      |       |       |      |       |       |       |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      |       |       |      |       |       |       |
| Recall Mode             | None  | Max   |      | None  | Max   |      | None  | None  |      | None  |       | None  |
| Act Effect Green (s)    | 5.1   | 44.4  |      | 51.8  | 47.9  |      | 9.0   | 9.0   |      |       |       | 9.0   |
| Actuated g/C Ratio      | 0.07  | 0.58  |      | 0.68  | 0.63  |      | 0.12  | 0.12  |      |       |       | 0.12  |
| v/c Ratio               | 0.31  | 0.53  |      | 0.30  | 0.83  |      | 0.53  | 0.40  |      |       |       | 0.19  |
| Control Delay           | 45.0  | 13.1  |      | 7.5   | 22.9  |      | 47.4  | 13.4  |      |       |       | 26.4  |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |       |       | 0.0   |
| Total Delay             | 45.0  | 13.1  |      | 7.5   | 22.9  |      | 47.4  | 13.4  |      |       |       | 26.4  |
| LOS                     | D     | B     |      | A     | C     |      | D     | B     |      |       |       | C     |
| Approach Delay          |       | 14.1  |      |       | 21.4  |      |       | 28.0  |      |       |       | 26.4  |
| Approach LOS            |       | B     |      |       | C     |      |       | C     |      |       |       | C     |
| Queue Length 50th (ft)  | 16    | 147   |      | 11    | 345   |      | 38    | 3     |      |       |       | 9     |
| Queue Length 95th (ft)  | 51    | 320   |      | 50    | #872  |      | #116  | 54    |      |       |       | 31    |
| Internal Link Dist (ft) |       | 1013  |      |       | 827   |      |       | 288   |      |       |       | 335   |
| Turn Bay Length (ft)    | 200   |       |      | 150   |       |      |       |       |      |       |       |       |

Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| 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        |      |
| Growth Factor           |      |
| Heavy Vehicles (%)      |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 5.0  |
| Minimum Split (s)       | 21.0 |
| Total Split (s)         | 21.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 2.0  |
| All-Red Time (s)        | 1.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |
| Queue Length 95th (ft)  |      |
| Internal Link Dist (ft) |      |
| Turn Bay Length (ft)    |      |



Intersection Capacity Analysis  
 6: Stop&Shop Driveway/Jacob's Trail & Route 53

02/27/2021



| Lane Group             | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|------|------|-----|------|------|-----|------|------|-----|-----|------|-----|
| Base Capacity (vph)    | 118  | 2045 |     | 372  | 1181 |     | 186  | 313  |     |     | 213  |     |
| Starvation Cap Reductn | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Spillback Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Storage Cap Reductn    | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |     | 0    |     |
| Reduced v/c Ratio      | 0.31 | 0.53 |     | 0.29 | 0.83 |     | 0.47 | 0.37 |     |     | 0.17 |     |

Intersection Summary

|   |                        |
|---|------------------------|
| Area Type:  | Other                  |
| Cycle Length:   | 96                     |
| Actuated Cycle Length:  | 76.1                   |
| Natural Cycle:  | 90                     |
| Control Type:   | Actuated-Uncoordinated |
| Maximum v/c Ratio:  | 0.83                   |
| Intersection Signal Delay:                                      | 18.7                   |
| Intersection LOS:   | B                      |
| Intersection Capacity Utilization:                              | 69.8%                  |
| ICU Level of Service:   | C                      |
| Analysis Period (min):  | 15                     |
| # 95th percentile volume exceeds capacity, queue may be longer. |                        |
| Queue shown is maximum after two cycles.                        |                        |

Splits and Phases: 6: Stop&Shop Driveway/Jacob's Trail & Route 53



HCM 6th TWSC  
7: Driveway/Assinippi Ave & Route 53

02/27/2021

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.9  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↔↔   |      |      | ↔    |      |      | ↔    |      |      | ↔    | ↔    |
| Traffic Vol, veh/h       | 205  | 713  | 2    | 4    | 704  | 11   | 0    | 2    | 8    | 5    | 0    | 180  |
| Future Vol, veh/h        | 205  | 713  | 2    | 4    | 704  | 11   | 0    | 2    | 8    | 5    | 0    | 180  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | Stop |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | 75   |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 88   | 86   | 86   | 86   | 50   | 50   | 50   | 90   | 90   | 90   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 242  | 843  | 2    | 5    | 851  | 13   | 0    | 4    | 17   | 6    | 0    | 208  |

| Major/Minor          | Major1 |   | Major2 |        | Minor1 |   | Minor2 |      |     |      |      |     |
|----------------------|--------|---|--------|--------|--------|---|--------|------|-----|------|------|-----|
| Conflicting Flow All | 864    | 0 | 0      | 845    | 0      | 0 | 2196   | 2202 | 423 | 1776 | 2197 | 858 |
| Stage 1              | -      | - | -      | -      | -      | - | 1328   | 1328 | -   | 868  | 868  | -   |
| Stage 2              | -      | - | -      | -      | -      | - | 868    | 874  | -   | 908  | 1329 | -   |
| Critical Hdwy        | 4.13   | - | -      | 4.115  | -      | - | 7.3    | 6.5  | 6.9 | 7.3  | 6.5  | 6.2 |
| Critical Hdwy Stg 1  | -      | - | -      | -      | -      | - | 6.5    | 5.5  | -   | 6.1  | 5.5  | -   |
| Critical Hdwy Stg 2  | -      | - | -      | -      | -      | - | 6.1    | 5.5  | -   | 6.5  | 5.5  | -   |
| Follow-up Hdwy       | 2.219  | - | -      | 2.2095 | -      | - | 3.5    | 4    | 3.3 | 3.5  | 4    | 3.3 |
| Pot Cap-1 Maneuver   | 777    | - | -      | 795    | -      | - | 29     | 45   | 585 | 59   | 46   | 359 |
| Stage 1              | -      | - | -      | -      | -      | - | 167    | 226  | -   | 350  | 372  | -   |
| Stage 2              | -      | - | -      | -      | -      | - | 350    | 370  | -   | 301  | 226  | -   |
| Platoon blocked, %   | -      | - | -      | -      | -      | - | -      | -    | -   | -    | -    | -   |
| Mov Cap-1 Maneuver   | 777    | - | -      | 795    | -      | - | 6      | 18   | 585 | 26   | 19   | 359 |
| Mov Cap-2 Maneuver   | -      | - | -      | -      | -      | - | 6      | 18   | -   | 26   | 19   | -   |
| Stage 1              | -      | - | -      | -      | -      | - | 69     | 93   | -   | 145  | 368  | -   |
| Stage 2              | -      | - | -      | -      | -      | - | 145    | 366  | -   | 115  | 93   | -   |

| Approach             | EB  |  | WB  |  | NB   |  | SB   |  |
|----------------------|-----|--|-----|--|------|--|------|--|
| HCM Control Delay, s | 4.3 |  | 0.1 |  | 65.1 |  | 32.1 |  |
| HCM LOS              |     |  |     |  | F    |  | D    |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h)      | 80    | 777   | -   | -   | 795   | -   | -   | 26    | 359   |
| HCM Lane V/C Ratio    | 0.26  | 0.312 | -   | -   | 0.006 | -   | -   | 0.222 | 0.579 |
| HCM Control Delay (s) | 65.1  | 11.7  | 2.2 | -   | 9.6   | 0   | -   | 179.3 | 28    |
| HCM Lane LOS          | F     | B     | A   | -   | A     | A   | -   | F     | D     |
| HCM 95th %tile Q(veh) | 0.9   | 1.3   | -   | -   | 0     | -   | -   | 0.7   | 3.5   |

**APPENDIX N**  
**MassDOT Project Development Process**

## Overview of the Project Development Process

Transportation decision-making is complex and can be influenced by legislative mandates, environmental regulations, financial limitations, agency programmatic commitments, and partnering opportunities. Decision-makers and reviewing agencies, when consulted early and often throughout the project development process, can ensure that all participants understand the potential impact these factors can have on project implementation. Project development is the process that takes a transportation improvement from concept through construction.

The MassDOT Highway Division has developed a comprehensive project development process which is contained in Chapter 2 of the *MassDOT Highway Division's Project Development and Design Guide*. The eight-step process covers a range of activities extending from identification of a project need, through completion of a set of finished contract plans, to construction of the project. The sequence of decisions made through the project development process progressively narrows the project focus and, ultimately, leads to a project that addresses the identified needs. The descriptions provided below are focused on the process for a highway project, but the same basic process will need to be followed for non-highway projects as well.

### 1. Needs Identification

For each of the locations at which an improvement is to be implemented, MassDOT leads an effort to define the problem, establishes project goals and objectives, and defines the scope of the planning needed for implementation. To that end, it has to complete a Project Need Form (PNF), which states in general terms the deficiencies or needs related to the transportation facility or location. The PNF documents the problems and explains why corrective action is needed. For this study, the information defining the need for the project will be drawn primarily, perhaps exclusively, from the present report. Also, at this point in the process, MassDOT meets with potential participants, such as the Metropolitan Planning Organization (MPO) and community members, to allow for an informal review of the project.

The PNF is reviewed by the MassDOT Highway Division district office whose jurisdiction includes the location of the proposed project. MassDOT also sends the PNF to the MPO, for informational purposes. The outcome of this step determines whether the project requires further planning, whether it is already well supported by prior planning studies, and, therefore, whether it is ready to move forward into the design phase, or whether it should be dismissed from further consideration.

### 2. Planning

This phase will likely not be required for the implementation of the improvements proposed in this planning study, as this planning report should constitute the outcome of this step. However, in general, the purpose of this implementation step is for the project proponent to identify issues, impacts, and approvals that may need to be obtained, so that the subsequent design and permitting processes are understood.

The level of planning needed will vary widely, based on the complexity of the project. Typical tasks include: define the existing context, confirm project need, establish goals and objectives, initiate public outreach, define the project, collect data, develop and analyze alternatives, make

recommendations, and provide documentation. Likely outcomes include consensus on the project definition to enable it to move forward into environmental documentation (if needed) and design, or a recommendation to delay the project or dismiss it from further consideration.

### **3. Project Initiation**

At this point in the process, the proponent, MassDOT Highway Division, fills out a Project Initiation Form (PIF) for each improvement, which is reviewed by its Project Review Committee (PRC) and the MPO. The PRC is composed of the Chief Engineer, each District Highway Director, and representatives of the Project Management, Environmental, Planning, Right-of-Way, Traffic, and Bridge departments, and the MassDOT Federal Aid Program Office (FAPO). The PIF documents the project type and description, summarizes the project planning process, identifies likely funding and project management responsibility, and defines a plan for interagency and public participation. First the PRC reviews and evaluates the proposed project based on the MassDOT's statewide priorities and criteria. If the result is positive, MassDOT Highway Division moves the project forward to the design phase, and to programming review by the MPO. The PRC may provide a Project Management Plan to define roles and responsibilities for subsequent steps. The MPO review includes project evaluation based on the MPO's regional priorities and criteria. The MPO may assign project evaluation criteria score, a Transportation Improvement Program (TIP) year, a tentative project category, and a tentative funding category.

### **4. Environmental Permitting, Design, and Right-of-Way Process**

This step has four distinct but closely integrated elements: public outreach, environmental documentation and permitting (if required), design, and right-of-way acquisition (if required). The outcome of this step is a fully designed and permitted project ready for construction. However, a project does not have to be fully designed in order for the MPO to program it in the TIP. The sections below provide more detailed information on the four elements of this step of the project development process.

#### *Public Outreach*

Continued public outreach in the design and environmental process is essential to maintain public support for the project and to seek meaningful input on the design elements. The public outreach is often in the form of required public hearings, but can also include less formal dialogues with those interested in and affected by a proposed project.

#### *Environmental Documentation and Permitting*

The project proponent, in coordination with the Environmental Services section of the MassDOT Highway Division, will be responsible for identifying and complying with all applicable federal, state, and local environmental laws and requirements. This includes determining the appropriate project category for both the Massachusetts Environmental Protection Act (MEPA) and the National Environmental Protection Act (NEPA). Environmental documentation and permitting is often completed in conjunction with the **Preliminary Design** phase described below.

### *Design*

There are three major phases of design. The first is **Preliminary Design**, which is also referred to as the 25-percent submission. The major components of this phase include full survey of the project area, preparation of base plans, development of basic geometric layout, development of preliminary cost estimates, and submission of a functional design report. Preliminary Design, although not required to, is often completed in conjunction with the Environmental Documentation and Permitting. The next phase is **Final Design**, which is also referred to as the 75-percent and 100-percent submission. The major components of this phase include preparation of a subsurface exploratory plan (if required), coordination of utility relocations, development of traffic management plans through construction zones, development of final cost estimates, and refinement and finalization of the construction plans. Once Final Design is complete, a full set of **Plans, Specifications, and Estimates (PS&E)** is developed for the project.

### *Right-of-Way Acquisition*

A separate set of Right-of-Way plans are required for any project that requires land acquisition or easements. The plans must identify the existing and proposed layout lines, easements, property lines, names of property owners, and the dimensions and areas of estimated takings and easements.

## **5. Programming (Identification of Funding)**

Programming, which typically begins during the design phase, can actually occur at any time during the process, from planning to design. In this step, which is distinct from project initiation, the proponent requests that the MPO place the project in the region's Transportation Improvement Program (TIP). The proponent requesting the project's listing on the TIP can be the community or it can be one of the MPO member agencies (the Regional Planning Agency, MassDOT, and the Regional Transit Authority). The MPO then considers the project in terms of state and regional needs, evaluation criteria, and compliance with the regional Transportation Plan and decides whether to place it in the draft TIP for public review and then in the final TIP.

## **6. Procurement**

Following project design and programming of a highway project, the MassDOT Highway Division publishes a request for proposals. It then reviews the bids and awards the contract to the qualified bidder with the lowest bid.

## **7. Construction**

After a construction contract is awarded, MassDOT Highway Division and the contractor develop a public participation plan and a management plan for the construction process.

## **8. Project Assessment**

The purpose of this step is to receive constituents' comments on the project development process and the project's design elements. MassDOT Highway Division can apply what is learned in this process to future projects.



## Project Development Schematic Timetable

| Description  | Schedule Influence   | Typical Duration                                |
|--|--|---|
| <p><b>Step I: Problem/Need/Opportunity Identification</b><br/>The proponent completes a Project Need Form (PNF). This form is then reviewed by the MassDOT Highway District office which provides guidance to the proponent on the subsequent steps of the process.</p>  | <p>The Project Need Form has been developed so that it can be prepared quickly by the proponent, including any supporting data that is readily available. The District office shall return comments to the proponent within one month of PNF submission.</p>   | <p>1 to 3 months</p>                            |
| <p><b>Step II: Planning</b><br/>Project planning can range from agreement that the problem should be addressed through a clear solution to a detailed analysis of alternatives and their impacts.</p>  | <p>For some projects, no planning beyond preparation of the Project Need Form is required. Some projects require a planning study centered on specific project issues associated with the proposed solution or a narrow family of alternatives. More complex projects will likely require a detailed alternatives analysis.</p>                | <p>Project Planning Report: 3 to 24+ months</p> |
| <p><b>Step III: Project Initiation</b><br/>The proponent prepares and submits a Project Initiation Form (PIF) and a Transportation Evaluation Criteria (TEC) form in this step. The PIF and TEC are informally reviewed by the Metropolitan Planning Organization (MPO) and MassDOT Highway District office, and formally reviewed by the PRC.</p> | <p>The PIF includes refinement of the preliminary information contained in the PNF. Additional information summarizing the results of the planning process, such as the Project Planning Report, are included with the PIF and TEC. The schedule is determined by PRC staff review (dependent on project complexity) and meeting schedule.</p> | <p>1 to 4 months</p>                            |
| <p><b>Step IV: Design, Environmental, and Right of Way</b><br/>The proponent completes the project design. Concurrently, the proponent completes necessary environmental permitting analyses and files applications for permits. Any right of way needed for the project is identified and the acquisition process begins.</p>                     | <p>The schedule for this step is dependent upon the size of the project and the complexity of the design, permitting, and right-of-way issues. Design review by the MassDOT Highway district and appropriate sections is completed in this step.</p>   | <p>3 to 48+ months</p>                          |
| <p><b>Step V: Programming</b><br/>The MPO considers the project in terms of its regional priorities and determines whether or not to include the project in the draft Regional Transportation Improvement Program (TIP) which is then made available for public comment. The TIP includes a project description and funding source.</p>            | <p>The schedule for this step is subject to each MPO's programming cycle and meeting schedule. It is also possible that the MPO will not include a project in its Draft TIP based on its review and approval procedures.</p>   | <p>3 to 12+ months</p>                          |
| <p><b>Step VI: Procurement</b> The project is advertised for construction and a contract awarded.</p>  | <p>Administration of competing projects can influence the advertising schedule.</p>  | <p>1 to 12 months</p>                           |
| <p><b>Step VII: Construction</b> The construction process is initiated including public notification and any anticipated public involvement. Construction continues to project completion.</p>   | <p>The duration for this step is entirely dependent upon project complexity and phasing.</p>   | <p>3 to 60+ months</p>                          |
| <p><b>Step VIII: Project Assessment</b> The construction period is complete and project elements and processes are evaluated on a voluntary basis.</p>   | <p>The duration for this step is dependent upon the proponent's approach to this step and any follow-up required.</p>  | <p>1 month</p>                                  |

Source: MassDOT Highway Division Project Development and Design Guide