

Traffic Impact Report

Post Office Square Revitalization

Prepared for the
Town of Sharon, Economic
Development & Commercialization
Committee



Post Office Square Revitalization
Traffic Impact Report

SCOPE

Evaluate Traffic Impacts of Post Office Square Revitalization Projects

- DeLapa add 50 apartments (45 to 95 dwelling units)
- New Office-Retail 65,000 sq.-ft. (50% office – 50% retail)
- New office building near Bank of America (2,500 sq.-ft.)
- Sharon Public Library Expansion (10,000 to 27,000 sq.-ft.)

Recommend Intersection Improvements



Post Office Square Revitalization Traffic Impact Report

Traffic Study Area Intersections

- Int. #1 Post Office Square
- Int. #2 Pond St. & Billings St.
- Int. #3 South Main St. & Station St.
- Int. #4 Pond St. & Maple Ave-
- Int. #6 Pond St. & Tolman St.
- Int. #7 So. Main/Pine/E. Chestnut
- Int. #8 Pond St. & East Chestnut St.



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Safety – Study 3 Years of Crash Data

- Int. #1 Post Office Square 4.33 vehicle crashes per year
- Int. #2 Pond St. & Billings St. 2.00 vehicle crashes per year
- Int. #3 South Main St. & Station St. 0.67 vehicle crashes per year
- Int. #4 Pond St. & Maple Ave 0 vehicle crashes per year
- Int. #6 Pond St. & Tolman St. 0.67 vehicle crashes per year
- Ints. #7 & #9 So. Main St./E. Chestnut St./Pine Rd. 0.33 veh. Cr./yr.
- Int. #8 Pond St. & East Chestnut St. 0.67 vehicle crashes per year

Intersections do not exhibit high crash rates



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Existing Traffic Volumes

- New 24 Hour ATR counts - Depot St (9,200 ADT) - South Main St. (12,700 ADT)
- New Manual Turning Movement Counts in the morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) at 8 intersections

2015 No-Build Traffic Volumes

- Background Growth Adjustment 1% for 5 yrs 8 months
- Add Traffic from Pipeline Projects (Sharon Commons, Sharon Hills, Wilber School Apartments, Bella Estates)

2015 -Build Traffic Volumes

- Add Trips from P. O. Square Revitalization Projects (DeLapa redevelopment, New Office-Retail, New Office, Sharon Library expansion)
- Pass-by Trips – Vehicles already on the road (25% of retail trips)



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POST OFFICE SQUARE REVITALIZATION TRIP GENERATION SUMMARY

Apartment - Increase from 45 to 95 Dwelling Units (ITE LUC 220- Apartment)

Office (Office-Retail) - 32.5 Thousand. Sq. Ft. GFA (ITE LUC 710 Gen. Office Bldg.)

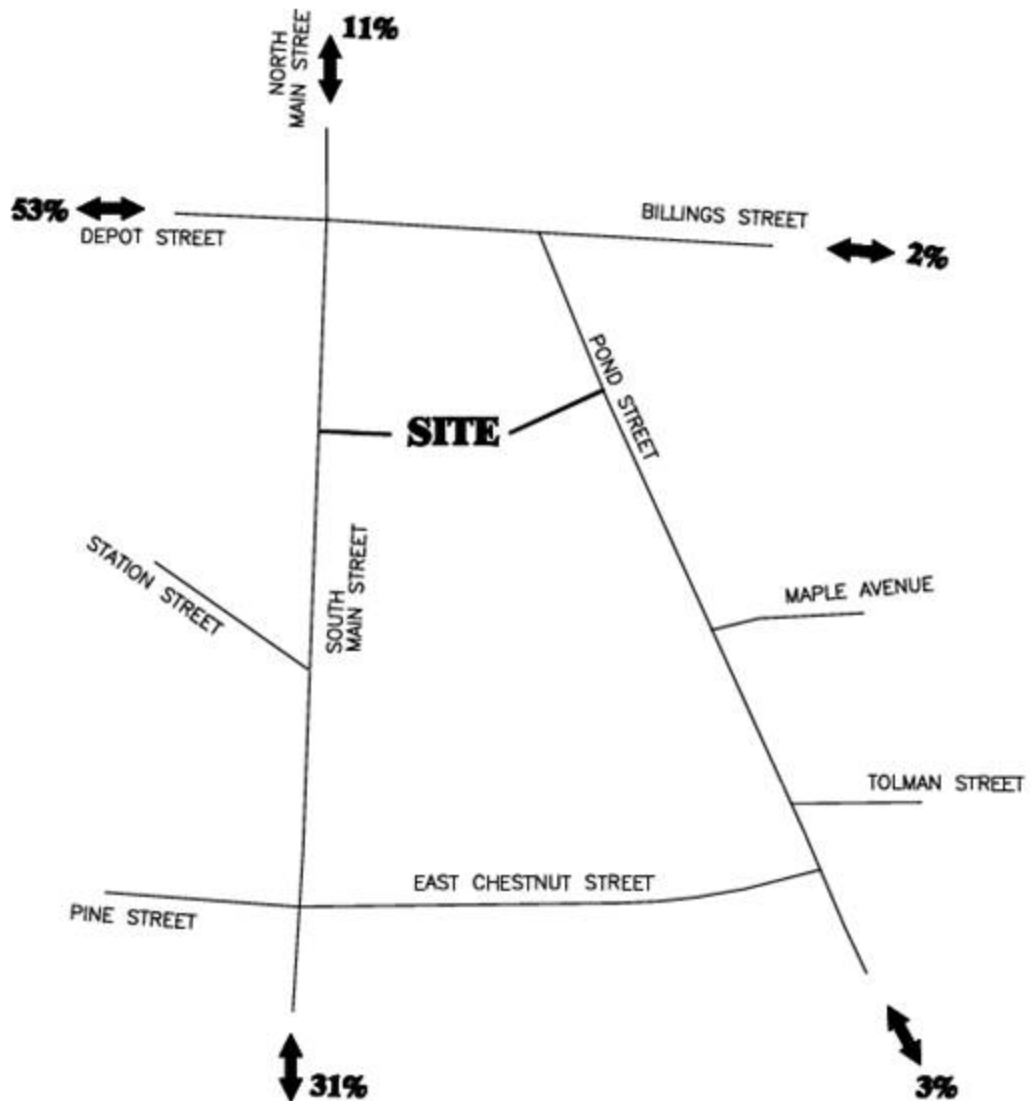
Retail (Office-Retail) - 32.5 Thousand. Sq. Ft. GFA (ITE LUC 820 Shopping Center)

Office - 2.5 Thousand. Sq. Ft. GFA (ITE LUC 710 General Office Building)

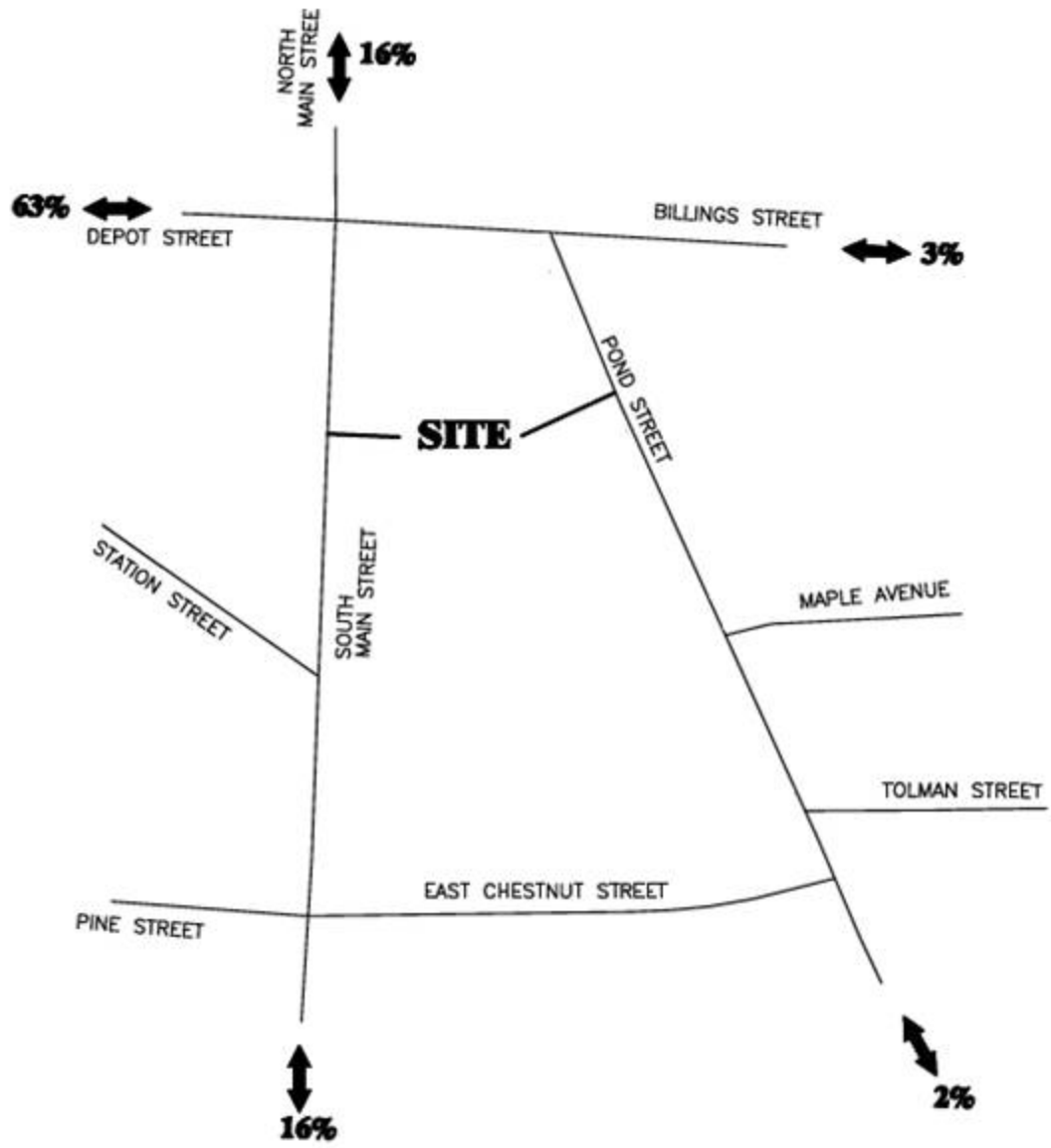
Library - Increase from 10 to 27 Thousand. Sq. Ft. GFA (ITE LUC 590 Library)

| | Apartment Increase 45-95 DUs | Office 32.5 TSF GFA | Retail 32.5 TSF GFA | Office 2.5 TSF GFA | Library Expansion 10 to 27 TSF GFA | Total Project Trips |
|------------------|------------------------------------|------------------------|------------------------|-----------------------|---|---------------------------|
| Weekday 24 Hour | 240 | 562 | 3272 | 78 | 752 | <u>4904</u> |
| Weekday AM Pk Hr | 20 | 78 | 80 | 10 | 22 | <u>210</u> |
| Weekday PM Pk Hr | 22 | 116 | 300 | 82 | 110 | <u>630</u> |

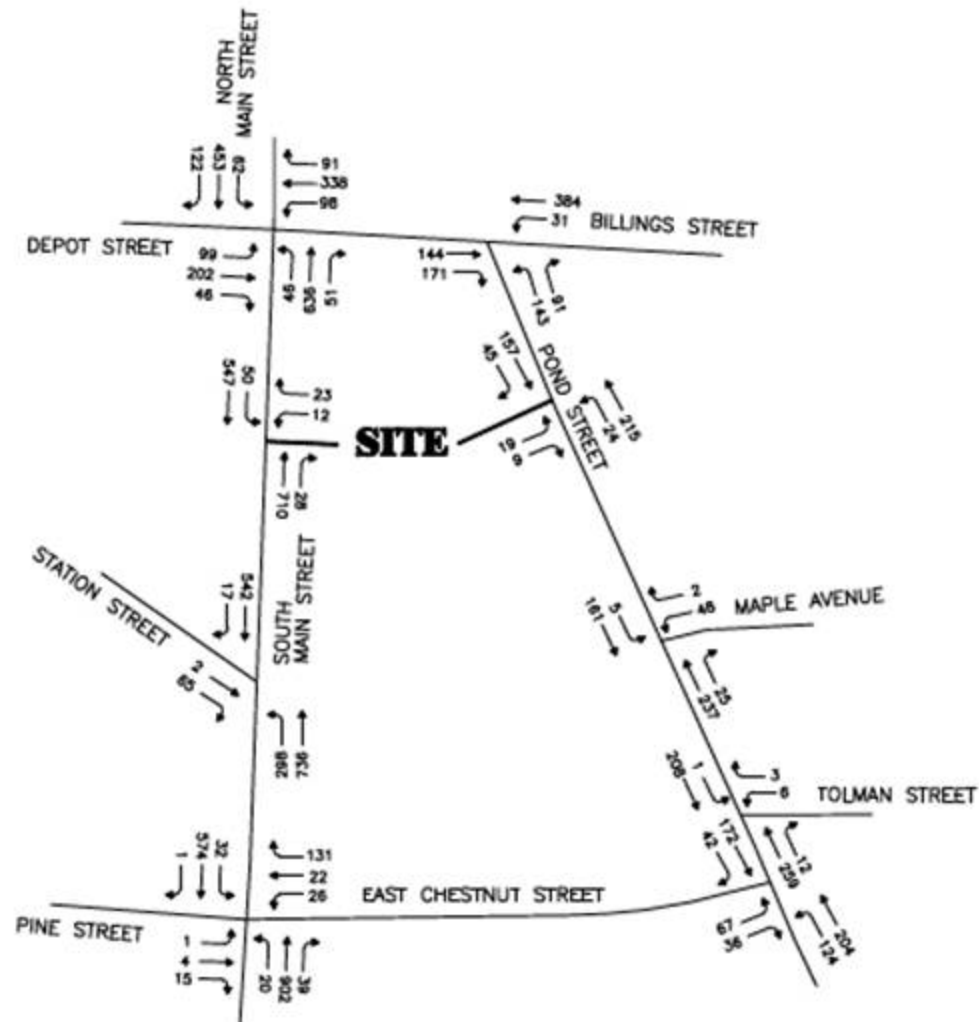




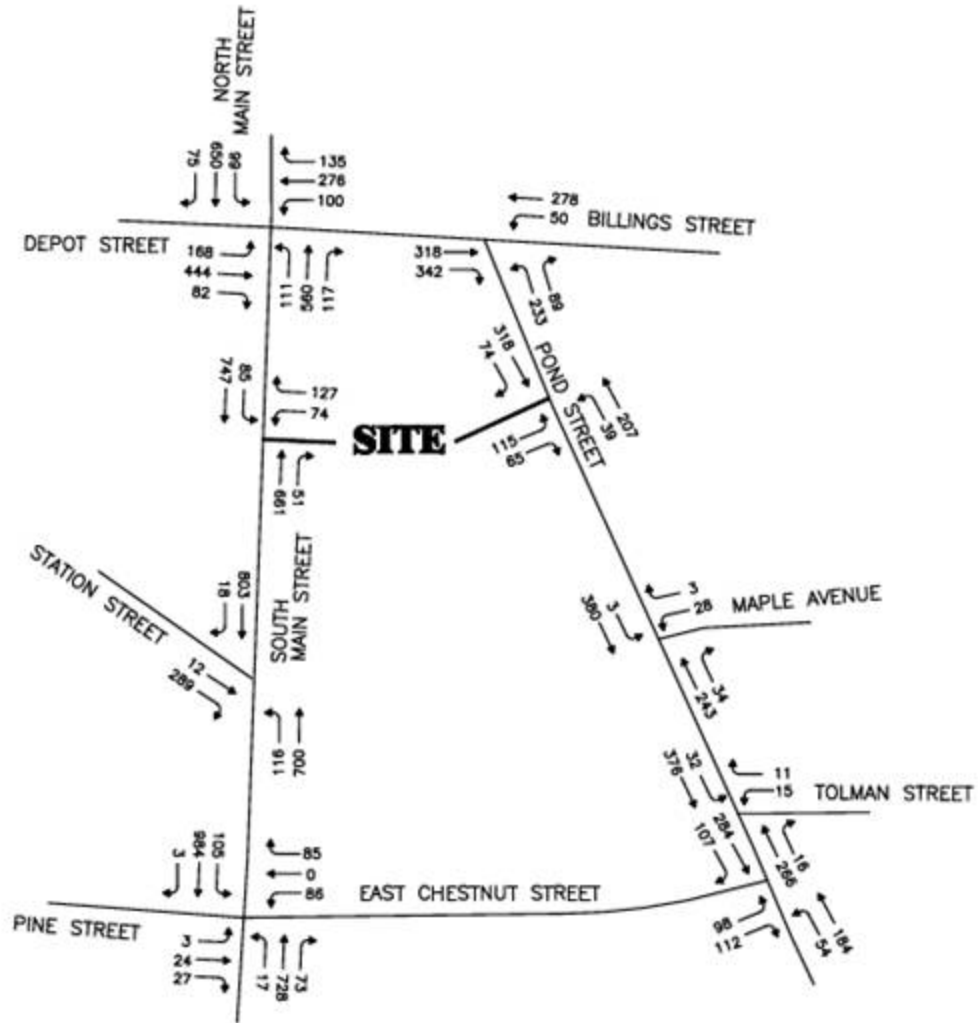
Office – Retail Trip Distribution



Residential Trip Distribution



2015 Build Weekday AM Peak Hour Traffic Volumes



2015 Build Weekday PM Peak Hr Traffic Volumes

Post Office Square Revitalization Traffic Impact Report

Intersection Operations Analysis

- Intersection operations were evaluated for Existing Traffic Volumes, 2015 No-Build Traffic Volumes and the 2015 Build Traffic Volumes
- Intersection operations were evaluated in accordance with the “Highway Capacity Manual (HCM)” using Trafficware’s® “Synchro 7” computer model.
- Roadway network and was evaluated using Trafficware’s® “SimTraffic” Computer model.
- SimTraffic has a graphic interface which allows intersection operations to be viewed

| A | Signalized Intersections | Two-Way Stop Controlled Intersections |
|------------------------|---|---------------------------------------|
| Level of Service (LOS) | Control Delay per Vehicle (secs./vehicle) | Average Control Delay (secs./vehicle) |
| A | ≤ 10 | 0-10 |
| B | 10-20 | > 10-15 |
| C | 20-35 | > 15-25 |
| D | 35-55 | > 25-35 |
| E | 55-80 | > 35-50 |
| F | >80 | > 50 |



SIGNALIZED INTERSECTION OPERATIONS

| Intersection | Existing Traffic Vols VIC / Delay / LOS | 2015 No-Build traffic Vols. VIC / Delay / LOS | 2015 Build traffic Vols. VIC / Delay / LOS |
|---|--|---|--|
| Post Office Square | | | |
| Weekday AM Pk Hr Overall | 0.83 / 42 s / LOS D | 1.06 / 76 s / LOS E | 1.01 / 75 s / LOS E |
| Weekday PM Pk Hr Overall | 0.99 / 62 s / LOS E | <u>1.28 / 144 s / LOS F</u> | <u>1.39 / 237 s / LOS F</u> |
| So. Main St., Pine Rd. & East Chestnut St. | | | |
| Weekday AM Pk Hr Overall | 0.76 / 70 s / LOS E | 0.85 / 74 s / LOS E | 0.84 / 66 s / LOS E |
| Weekday PM Pk Hr Overall | 0.65 / 25 s / LOS C | 0.83 / 34 s / LOS C | 0.87 / 37 s / LOS D |



UNSIGNALIZED INTERSECTION OPERATIONS

| Intersection | Existing Traffic Vols V/C / Delay / LOS/ 95 th Q | 2015 No-Build traffic Vols. V/C / Delay / LOS/ 95 th Q | 2015 Build traffic Vols. V/C / Delay / LOS/ 95 th Q |
|--|---|--|---|
| #2 Pond St. and Billings St. | | | |
| Weekday AM Pk Hr Pond St. NB LT/RT | 0.44 / 18 s / LOS C / 2 | 0.55 / 21 s / LOS C / 3 | 0.63 / 26 s / LOS D / 4 |
| Weekday PM Pk Hr Pond St. NB LT/RT | 0.56 / 24 s / LOS C / 3 | 0.72 / 37 s / LOS E / 6 | <u>1.33 / 203 s / LOS F / 20</u> |
| #3 So. Main St. and Station St. | | | |
| Weekday AM Pk Hr Station St. EB LT/RT | 0.13 / 13 s / LOS B / - | 0.16 / 13 s / LOS B / 1 | 0.16 / 13 s / LOS B / 1 |
| Weekday PM Pk Hr Station St. EB LT/RT | 0.58 / 20 s / LOS C / 4 | <u>0.86 / 51 s / LOS F / 9</u> | <u>0.99 / 83 s / LOS F / 11</u> |
| #4 Pond St. and Maple Ave. | | | |
| Weekday AM Pk Hr Maple St. WB LT/RT | 0.09 / 12 s / LOS B / - | 0.10 / 12 s / LOS B / - | 0.10 / 13 s / LOS B / - |
| Weekday PM Pk Hr Maple St. WB LT/RT | 0.06 / 13 s / LOS B / - | 0.07 / 13 s / LOS B / - | 0.08 / 15 s / LOS B / - |
| #6 Pond St. and Tolman St. | | | |
| Weekday AM Pk Hr Tolman St. WB LT/RT | 0.02 / 11 s / LOS B / - | 0.02 / 12 s / LOS B / - | 0.02 / 12 s / LOS B / - |
| Weekday PM Pk Hr Tolman St. WB LT/RT | 0.05 / 13 s / LOS B / - | 0.06 / 13 s / LOS B / - | 0.07 / 14 s / LOS B / - |
| #8 Pond St. and East Chestnut St. | | | |
| Weekday AM Pk Hr E Chestnut EB LT/RT | 0.19 / 15 sec / LOS B / 1 | 0.21 / 15 s / LOS B / 1 | 0.28 / 18 s / LOS C / 1 |
| Weekday PM Pk Hr E Chestnut EB LT/RT | 0.37 / 15 s / LOS C / 2 | 0.41 / 17 s / LOS C / 2 | 0.56 / 22 s / LOS C / 3 |



LOW IMPACT INTERSECTION IMPROVEMENTS

Intersection #1 – Post Office Square Intersection

- Control - Optimized signal timing - No Exclusive Pedestrian Phase – 90 Second cycle
- Coordination – Common Cycle Length with So. Main/Chestnut/Pine Intersection
- Lane Use and Geometric Improvements – Change Westbound Approach to Left/Thru & Thru/Right Lanes
- Remove 2 Parking Spaces on North Side of Depot Street

Intersection #2 – Pond St. and Billings St. Intersection

- Control - Unsignalized – Pond St NB (stop sign) – Billings St. EB-WB (free)
- Add Northbound Right Lane
- Remove 3 Parking Spaces on South Side of Pond Street

Intersection #3 – South Main St. and Station St. Intersection

- Control - Unsignalized – Station St EB (stop sign) – South Main St. EB-WB (free)
- Turn Restrictions – No left turn on Station Street eastbound
- Lane Use and Geometric Improvements – None

Intersection #7 – South Main/Pine/East Chestnut Intersection

- Control - Optimized signal timing - No Exclusive Pedestrian Phase – 90 Second cycle
- Offset Roadways (Pine Rd. and E. Chestnut St.) Share Common Controller
- Coordination – Common Cycle Length with P.O. Square Intersection



RECOMMENDED INTERSECTION IMPROVEMENTS

Intersection #1 – Post Office Square Intersection

- Control - Optimized signal timing - No Exclusive Pedestrian Phase – 90 Second cycle
- Shares Common Controller with Pond and Billings Sts. Intersection
- Coordination – Common Cycle Length with So. Main/Pine/Chestnut Intersection
- Lane Use and Geometric Improvements
 - Change Westbound Approach to Left/Thru & Thru/Right Lanes
 - Add Left Turn Lane on No. Main Street Southbound
 - Add Left Turn Lane on So. Main Street Northbound
- 14 Parking Spaces Lost – 8 So. Main St. (west) – 4 No. Main St. (west) – 2 Depot St. (north)

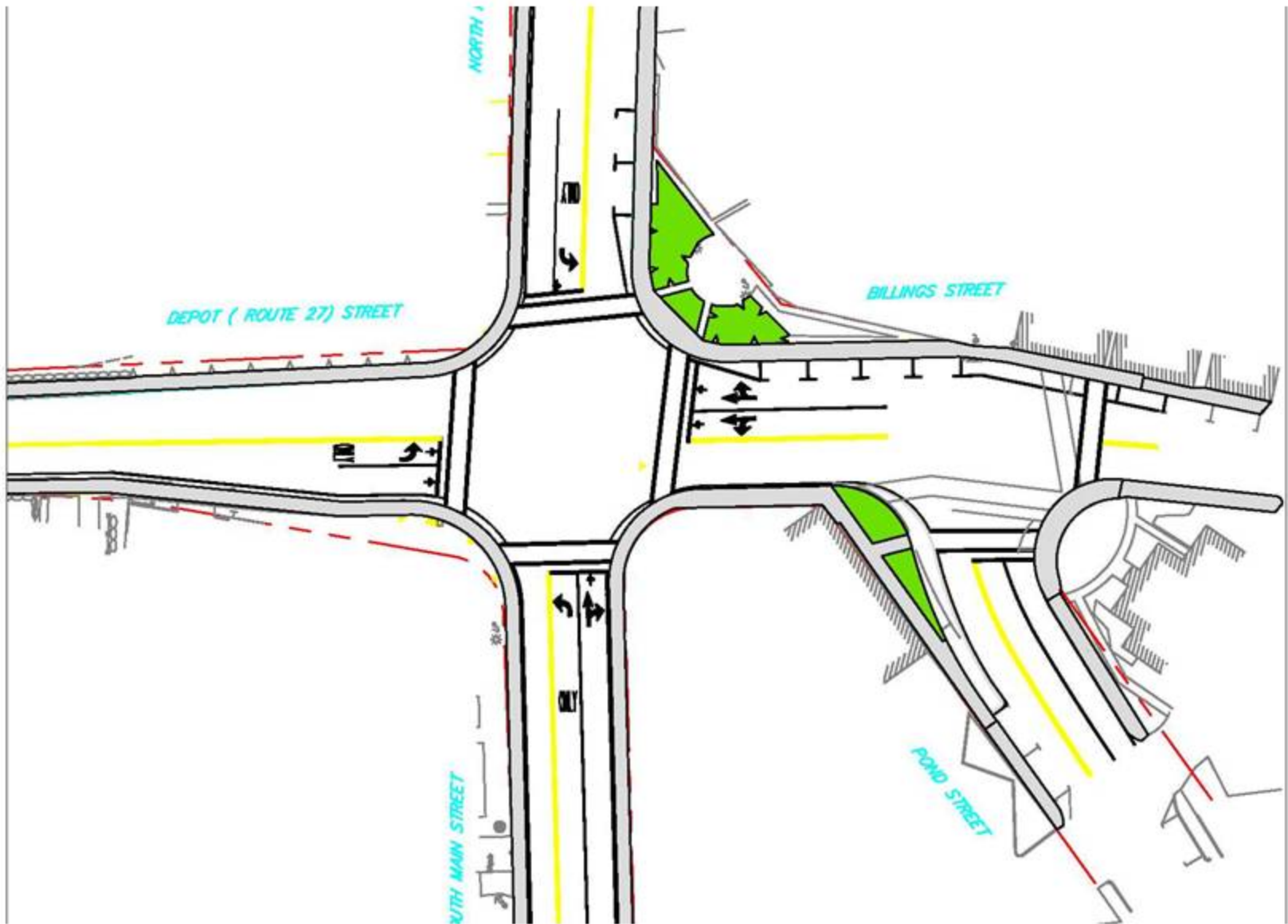
Intersection #2 – Pond St. and Billings St. Intersection

- Control – New Traffic Signal Control – 90 Second Cycle
- Shares Common Controller with P.O. Square Intersection
- Add Northbound Right Lane
- Remove 3 Parking Spaces on South Side of Pond Street

Intersection #7 – S. Main St./Pine St./E. Chestnut St. Intersection

- Control – New Traffic Signal Control – 90 Second Cycle
- Coordination – Common Cycle Length with Post Office Square
- Lane Use and Geometric Improvements
 - Change Southbound Approach to Left/Thru & Thru/Right Lanes
 - Minor curbing adjustments to provide two receiving lanes on South Main Street Southbound





COMPARATIVE INTERSECTION OPERATIONS

P.O. Square and Pond & Billings Streets

| | 2015 Build | 2015 Build with Low Impact Improvements | 2015 Build With Recommended Improvements |
|--|----------------------|--|---|
| P.O. Square Intersection | | | |
| Weekday AM Pk Hr Overall | 1.01 / 75 s / LOS E | 0.85 / 28 s / LOS C | 0.78 / 17 s / LOS B |
| Weekday PM Pk Hr Overall | 1.39 / 237 s / LOS F | 1.65 / 171 s / LOS F | 1.00 / 35 s / LOS C |
| Pond Street and Billings St. Intersection | | | |
| Weekday AM Pk Hr Overall | – | – | 0.44 / 12 s / LOS B |
| Weekday PM Pk Hr Overall | – | – | 0.42 / 12 s / LOS B |
| South Main St./Pine Road/E. Chestnut St. Intersection | | | |
| Weekday AM Pk Hr Overall | 0.84 / 66 s / LOS E | 0.71 / 15 s / LOS B | 0.71 / 16 s / LOS B |
| Weekday PM Pk Hr Overall | 0.87 / 37 s / LOS D | 0.93 / 42 s / LOS D | 0.71 / 18 s / LOS B |
