TO: Commissioners

FROM: John Ziemba, Derek Lennon, Catherine Blue, Joe Delaney and Mary Thurlow
Members of the 2016 Community Mitigation Fund Review Team

DATE: July 21, 2016

RE: 2016 Community Mitigation Fund Application Review

This memorandum provides an analysis of the applications for funding under the three different components of the 2016 Community Mitigation Fund ("CMF"): Use of 2015/2016 Reserves; Transportation Planning Grants; and Specific Impact Grants. We, the community mitigation Review Team ("Review Team") reviewed the applications to determine the suitability of the applications and to ensure the applications were in compliance with the 2016 Guidelines. We also received input from Rick Moore of City Point Partners, who advises the Commission on environmental, transportation and mitigation matters. As part of this review process, copies of the applications were sent to the licensees for their review and comment. Telephone conferences or in-person meetings were held between the applicants and the Review Team. Additional information requests were submitted to the applicants (attached) and numerous meetings were held by the Review Team to ensure a thorough review process. The Review Team also considered comments that the Commission received after it issued a request for public comments on such applications.

For a brief background, in December 2015, the Commission established the Guidelines for the 2016 Community Mitigation Fund ("CMF"). In order to access funding from the 2016 CMF, communities and any other eligible entities were required to submit an application documenting the community's anticipated mitigation need.

On March 3, 2016, the Commission initially reviewed the 2016 applications, approved funding of the Springfield Historic Preservation Trust application, and created $100,000 reserves for a number of new communities, including the three host communities (Everett, Plainville, and Springfield), Revere, Attleboro, Hampden, Melrose, and North Attleboro. Four towns, Attleboro, Hampden, Melrose and North Attleboro the Commission preserved their right to apply for a reserve in 2016 as they had either not filed or did not file in time for the 2015 Reserve.

Since the Commission meeting on March 3, 2016, several events have occurred that may impact the projected annual allocation of funding in this and future years. The 2016 Application process anticipated that there would be approximately $4.9 million dollars available per year until the two Category 1 casinos are operational. That annual amount was based on projections of Wynn Boston Harbor opening sometime in 2018 and MGM

Springfield opening in September 2018. The CMF will not receive new funding until full casino facilities are operational and generate gaming taxes which partially go to the CMF. However, it is now apparent that the Wynn casino will not open until sometime in 2019 and thus will not contribute further funding to the CMF until that time.

Another factor to be considered in disbursing the CMF funds is that the Wampanoag Tribe began construction of a gaming facility in Taunton and stated the intention to open a facility in in 2017. Consequently, there may be some communities in Region C that soon may experience construction or operational impacts. According to the Compact between the Commonwealth and the Tribe, the Tribe will not begin to contribute to the CMF until after it has commenced operations.

Summary of the Community Mitigation Funds

Initial Balance from License Fees	**$17,500,000**
2015 Reserve and Preserved	($2,400,000)
2016 Reserve Funding	($400,000)
2016 Previously Awarded	
Springfield Preservation Trust	($350,000)
Balance of Community Mitigation Fund Not Reserved or Awarded	**$14,350,000**

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Below is a chart of the recommendations of the Review Team for consideration by the Commission. These recommendations are explained in detail below.

Requests to Use 2015/2016 Reserve Funds			
Community	Identified Mitigation	Requested Amount	Review Team Proposal
East Longmeadow	Transportation planning **Withdrawn**	$100,000	-
Chelsea	Transportation/Roadway Planning	$100,000	$100,000
Lynn	Transportation Studies	$100,000	$100,000
Malden	Planning and marketing	$100,000	$100,000
Saugus	Analysis of impacts and opportunities for Saugus businesses	$100,000 ($65,000 deferred)	$35,000
Wrentham	Study of Corridor - Route 1	$50,000	$50,000
	Total	**$550,000**	**$385,000**
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2016 Transportation Planning Applications			
Community	Identified Mitigation	Requested Amount	Review Team Proposal
Chelsea	Planning Study	$167,150	$167,150
Everett	Planning Study	$150,000	$150,000
Malden	Planning Study	$100,000	$100,000
Medford	Transportation Planner and Consultants, water transportation	$600,000(multi-year request)	$267,000 (one year funding)
West Springfield	Cover shortfall of SCA amount of Planning Study	$247,500	$247,500
	Total:	**$1,264,650**	**$903,500**

Specific Use			
Community	Identified Mitigation	Requested Amount	Review Team Proposal
Hampden County Sheriff's Department	Rental disparity	$2,000,000 (multi-year request)	$280,000 (one year funding)
Springfield/Caring Health	Parking, lost business,	$275,000	$150,000 **Pending further review**
	Total:	**$2,275,000**	**$430,000** **Pending further review**

2016 APPLICATIONS FOR USE OF RESERVE FUNDS

In accordance with the 2016 Guidelines, communities can use reserves to cover impacts that may arise in 2016 or thereafter. They may also use funds for planning, either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts. Communities that received reserves in 2015 or 2016 must first expend those funds before accessing any Transportation Planning Grant funds. Communities may submit applications for the use of reserves on a rolling basis throughout the year. Up for consideration by the Commission at this time are reserve applications from Chelsea, Lynn, Malden, Saugus, and Wrentham. East Longmeadow has withdrawn an application and has been informed that it can submit a proposal at a later time.

Chelsea – Use of Reserve $100,000: Discussed in analysis of Transportation Planning Grant Requests.

Lynn - Use of Reserve $100,000:

Lynn is concerned with potential additional traffic and transportation issues that may arise from the construction and operation of the Wynn Boston Harbor gaming facility. In this regard, Lynn plans to utilize its reserve to fund transportation studies to further Lynn's goals of reducing and and/or minimizing vehicular related congestion including a commuter rail study, a Route 107 connection study, Lynn ferry analysis, and studies related to Route 1A/Lynnway.

Lynn's impact description detailed how many of the "…[c]onstruction workers employed by the Licensee will reside in Lynn. These individuals will be traveling on Lynn's congested roadways during rush hour further congesting Lynn roads. It is likely the majority of these individuals will utilize Route 1A and Route 107 to travel back and forth to the construction site in Everett. Concrete/cement contractors from Lynn and the immediate surrounding areas will likely be utilized during the construction phase. These construction vehicles and trucks would be utilizing Routes 1A and 107 to and from the Everett facility."

"Lynn would utilize these funds to alleviate the significant traffic issues…The City is also actively seeking funding to continue to operate the ferry…the ferry shuttle from Lynn to Boston has been operational…. with the assistance of state funds. At this time, no such funding has been allotted to the City of Lynn."

"The city is also seeking funding to add additional stops of the Rockport/Newburyport Commuter Rail Line."

The applicant included a Conceptual Improvement Plan for Lynnway (Route 1A at Blossom Street in Lynn by VHB dated September 9, 2015; construction cost estimates by Vanasse Hangen Brustlin, Inc.; traffic counts by Precision Data Industries, LLC and a Long-Range Transportation Plan Needs Assessment by Boston Region Metropolitan Planning Organization dated April 17, 2015.

Wynn Commentary on Lynn Application

Upon review of this request, the licensee, Wynn Boston Harbor stated that: "Wynn supports the Lynn Mitigation Fund Application for improvements and alternatives aimed at streamlining vehicular traffic into and out of the city. We also support Lynn's efforts to operate ferry service during the busy summer season. These requests support the intent of our Neighboring Community Agreement."

Relevant Sections of Neighboring Community Agreement

The City of Lynn entered into a Neighboring Community Agreement in which there was no specific funding made available for impacts. However, Wynn "agrees to meet with the City to consider, in good faith, the mitigation of such impacts."

Recommendation: We believe that Lynn's request for assistance is consistent with the 2016 Community Mitigation Fund Guidelines. Lynn's proposed use of its CMF reserve for transportation studies fits within the allowed following uses of reserves in such Guidelines - "either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts."

In support of its application, Lynn referenced a study that opined that all efforts should be made by governmental actors to not add a single vehicle to Lynn's roadways." The city notes that it "is seeking to be ahead of the curve in avoiding and /or minimizing the effects of the Wynn Resort on its roadways."

As transportation planning studies and Lynn's goal of reducing and/or minimizing vehicular traffic related congestion are reasonable, the Review Team believes that these studies are an acceptable use of its reserve. We recommend that the Commission authorize the City of Lynn to utilize its $100,000 reserve for transportation studies, which may include a commuter rail study, a Route 107 connection study, Lynn ferry analysis, and studies related to Route 1A/Lynnway. Staff will continue to work with Lynn on the scope of its studies in the grant contract process.

Malden: Use of Reserve $100,000: Malden is requesting $25,000 a year for three years (2016-2019) to hire and subsidize the annual salary to be paid to a senior planner. The Malden Redevelopment Authority would pay the balance of the planner's salary ($65,000-$70,000 per year). Malden is also requesting $15,000 for the City to launch a comprehensive marketing campaign in partnership with the Malden Redevelopment Authority and the Malden Chamber of Commerce to promote opportunities and growth for Malden businesses as a result of the Wynn Everett project in Everett. Finally, Malden plans to utilize $10,000 of its reserve to launch a comprehensive Citizens Engagement Program for Malden residents promoting employment opportunities that will become available with this project.

Wynn Commentary on Malden Application. Upon review of the requests, Wynn Boston Harbor stated that "Wynn also supports Malden's request for planning and marketing efforts to reinvigorate the Malden commercial district abutting Everett in support of the Wynn Boston Harbor Project."

Relevant Sections of Surrounding Community Agreement: "…Malden believes that the Project will bring economic development to Malden, create new jobs for Malden residents and new sources of revenue for the Malden business community, and as such, Malden desires to enter into this Agreement with Wynn to address the anticipated impact on

Malden businesses, residents, infrastructure, public safety, transportation and roadway needs;"

"5.1. The Parties acknowledge that Malden desires to help its community members and residents who are interested in attaining employment at the Project. The Parties agree that Malden's demographic is an appropriate, suitable, desirable and employable work force for the Project, and therefore it is mutually beneficial to provide a structured program to educate Malden's residents about available employment opportunities.

5.2.B. Prior to beginning the process of hiring employees (other than internally) for the Project. Wynn shall advertise and hold at least one event for Malden residents at venues to be approved by Malden at which it will publicize its hiring needs and explain to attendees the process by which they may seek to be hired in connection with the Project. In seeking to fill vacancies at the Project, Wynn will give preference to properly qualified residents of Malden, to the extent that such a practice and its implementation is consistent with Federal, State or Municipal law or regulation.

5.2.D. Wynn agrees to work with Malden on an annual basis to identify prospective, qualified Malden employees to effectuate the terms and conditions herein."

Recommendation: We believe that Malden's request for assistance is consistent with the 2016 Community Mitigation Fund Guidelines. Malden's proposal to use its CMF Reserve fits within the purpose of reserve funds for planning: - "either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts."

Malden notes that the advertisement for the position has been written and that the hiring process can begin immediately. It also notes that its proposed citizen engagement program and marketing campaign may begin as soon as possible. Malden is providing significant matching funding for the grant of $40,000 to $45,000 for the planner position request of $25,000.

The City of Malden has also requested funding under the Transportation Planning Grant, discussed below. There is a potential timing issue involving the two requests. Pursuant to the 2016 CMF Guidelines "communities that requested and received reserves in 2015 or 2016 must first expend those funds before accessing any Transportation Planning Grant Funds."

Malden has indicated that it would like to utilize such planning funds in the near term. The City could potentially meet this requirement of the Guidelines by expending more grant funds in the first year for the planner (more than the $25,000 planned) and then utilize the dollars allocated for local match in future years. Malden would still need to demonstrate that all of the Malden planner's year one activities paid under the grant are gaming related. In the event that this does not remedy the timing issue, Malden could request relief from this timing guideline.

We recommend that the Commission authorize up to $100,000 for Malden for the Senior Planner, marketing campaign and a citizens engagement program. Malden will need to demonstrate that the activities of the Senior Planner through the Community Mitigation Fund are related to the Wynn Gaming facility.

Saugus – Use of Reserve $35,000

Saugus is requesting $35,000 to assess potential opportunities for Saugus businesses relative to the operation of the Wynn Boston Harbor facility. Saugus plans to connect with the Metropolitan Area Planning Council (MAPC) and the North Shore Economic Development Council in its efforts. Once specific steps are identified, Saugus would seek to utilize the balance of its reserve for implementation of steps identified in the assessment. The application is for an initial $35,000 for the procurement of a Phase one consultant. The balance "to be utilized for implementation of specific steps once they are identified and plotted" in the Phase one study.

Wynn Commentary on Saugus Application

Upon review of this request, Wynn Boston Harbor stated that: "Wynn supports the Saugus request for the 2015 Mitigation Reserve Fund. We understand the money will be used to assess potential opportunities for Saugus businesses to connect with the Wynn Boston Harbor Project through areas such as goods and services procurement".

Recommendation: The Review Team found this application to be well reasoned and in compliance with the 2016 Guidelines. We believe that Saugus's request for assistance is consistent with the 2016 Community Mitigation Fund Guidelines in that it is being used "either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts."

We recommend that the Commission authorize Saugus to utilize $35,000 of the 2015 Reserve for this purpose. Funding for implementation would require a subsequent approval by the Commission once those implementation steps are identified.

Wrentham - Use of Reserve $50,000: Wrentham applied for funding to be used to hire a consultant to conduct a study of the Route 1 corridor in Wrentham. The focus of the study would be "to determine constraints to development such as zoning, environmental factors and traffic" as well as "identify the type of development that would succeed along the corridor."

Plainridge Park Commentary on Wrentham Application: Upon review of this request, the licensee, Plainridge Park Casino stated that: "As you are aware, the Surrounding Community Agreement entered into between the Town and Plainville Gaming and Redevelopment, LLC ("PGR") requires PGR to conduct a series of baseline studies (the "Impact Studies") to address "traffic, public safety, emergency response, and problem gaming." Our understanding, based on the information contained in the Application, is that the studies being proposed by the Town will be focused on mitigating future development, as opposed to determining the impact of the Casino. We therefore have no reason to believe that the studies contemplated by the Application will be duplicative with the Impact Studies and, accordingly, support the Town's request as set forth in the Application."

Recommendation: The Review Team found this application to be well reasoned and consistent with the 2016 Community Mitigation Fund Guidelines. Wrentham's proposal to use its CMF Reserve fits within the purpose of reserve funds for planning: - "either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts." The town anticipates submitting further applications after the study is done.

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2016 APPLICATIONS FOR USE OF TRANSPORTATION PLANNING GRANTS

Chelsea – Use of Reserve $100,000 / Transportation Planning Grant $167,150

Although Chelsea's request to use its $100,000 reserve and its $167,150 Transportation Planning Grant application could be reviewed separately, we believe it advisable to view them together as they relate to the same use (transportation planning) and the same corridor (Beacham Street / Williams Street). The assessment of existing and future traffic conditions under the $100,000 reserve study would be utilized to develop a conceptual plan for this section of corridor between Pearl Street and the Everett City Line. Chelsea applied for the conceptual plan as part of its Transportation Planning Grant Request.

As noted by Chelsea in its July 7th response to the Review Team: "[i]mportantly, the Reserve study provides a necessary foundation through the collection and analysis of data that will directly inform the study carried out under the Transportation Planning Grant, specifically the collection and analysis of vehicular, pedestrian, and bicyclist volume and directional statistics."

Reserve Application: Chelsea applied to use its 2015 Mitigation Reserve Fund ($100,000) for a Transportation Corridor Study. The Scope of Work provided to Chelsea by Stantec Consulting detailed the use of funds "to prepare a comprehensive Transportation Corridor Study…The Corridor Study will assess existing and future traffic conditions at these key intersections…" The intersections listed in the scope of work are not specifically listed on the Surrounding Community Agreement ("SCA") or environmental filings.

Transportation Planning Grant Application: The City of Chelsea applied for $167,150 in its Transportation Planning Grant application to "further assess existing conditions and develop a conceptual plan for the section of corridor between Marginal Street/Pearl Street and the Everett City line." "The proposed Scope of Work includes a field survey, condition assessment, environmental screening, Road Safety Audit, and conceptual plan development with illustrative renderings. ... A final report will be prepared to summarize the major findings of the planning effort. The information contained in the report will form the basis for future funding applications prepared by the City."
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Wynn Commentary on Chelsea Application

Upon review of the requests, the licensee, Wynn Boston Harbor stated that "Wynn supports … the Chelsea Beacham Street/Williams Street Conceptual Planning Study… these requests fit with the cooperation envisioned in our Surrounding Community Agreements."

Relevant Sections of Chelsea Surrounding Community Agreement

In accordance with the Surrounding Community Agreement, Chelsea will receive additional funding by Wynn for Transportation related impacts as follows:

$275,000 (estimated)	Transportation Impacts	"Contingent upon …an unconditional, non-appealable License"; Wynn agreed to complete all necessary improvements as determined in accordance with MEPA process"
$300,000	Transitional Roads Payments: (a)	One-time, upfront, non-refundable payment; to "make certain roadway improvements on all transitional roads in preparation for the Project"
$225,000	(b)	On or before 90th day following opening (aesthetic quality, signage and safety needs)
$250,0000	(c)	On or before 90th day following opening (pedestrian and vehicular traffic)

Recommendation: We believe that Chelsea's request for assistance meets the purposes of the 2016 Community Mitigation Fund Guidelines. As noted in Chelsea's application.

"Beacham Street/Williams Street conceptual Planning Study": "The Beacham Street/ Williams Street corridor is a key connector route between East Boston, Chelsea and Everett. The corridor serves an important role for commerce, connecting to commercial and industrial areas in Chelsea and the Lower Broadway District in Everett. Once the Wynn Everett facility is operational, it is anticipated that this corridor will see increased use from casino patrons, employees, and deliveries and effectively function as one of the gateways to the casino.

…

This effort will also include additional public outreach with abutters and key stakeholders. A final report will be prepared to summarize the major findings of the planning effort. The information contained in the report will form the basis for future funding applications prepared by the City."

Chelsea also noted in its application that "Given the existing conditions of the corridor, which are poor with particularly damaged pavement conditions, a plan for the route is warranted in order to bring the roadway up to a standard with which it can accommodate casino traffic."

In this regard we believe that the project is "clearly related to addressing transportation issues or impacts directly related to the gaming facility," as required under the 2016 CMF Guidelines. Chelsea also noted significant public benefits that could be obtained from the improvement of road conditions including:

- "Enhanced bicycle and pedestrian amenities, including designated bike lanes, sidewalks, and crosswalks; none of which are currently present in the corridor;
- Access to Island End Park, a public park and boardwalk situated adjacent to the corridor, overlooking the Island End River;
- Economic development and job retention related to the New England Produce Terminal and associated food distribution facilities, large local employers that depend on the corridor for their logistics network. A reconstructed corridor would increasingly facilitate commerce while inducing economic development and reuse of underutilized facilities;
- Improved public safety, with a reconstructed, fully-marked, and signalized corridor reducing vehicular crashes and protecting the well-being of pedestrians and bicyclists. The addition of lighting along the corridor would also increase visibility and, subsequently, the safety of its users;
- A diminished urban heat island effect, as corridor reconstruction would include the installation of street trees, improving local air quality;
- Pollution control and environmental benefits related to the capturing and diversion of surface run-off, currently infiltrating and damaging the Island End River's salt marsh. A reconstructed corridor would include the strategic placement of green infrastructure to prevent polluted freshwater runoff from entering the salt marsh;
- Redevelopment of underutilized sites. We have found that public investment often results in private investment, and we see no reason why that will not be the case on Beacham Street. With the casino development less than a mile away, we expect that uses servicing or desiring close proximity to the facility will seek to locate in the area and that some of the underdeveloped parcels will undergo redevelopment."

The Review Team requested further information regarding how the City of Chelsea could coordinate the two studies for potential efficiencies and cost savings. The City of Chelsea's response emphasizes "a balanced analysis of preexisting conditions, traffic volume and directional data, and crash statistics" in its Reserve Study which would take place while school is in session. The City is planning on using the same consultant (Stantec) for both studies and anticipates that there would be cost savings ($15,000 - $20,000) if the two studies were approved at the same time. Chelsea is also working on its Complete Streets requirements to enable the City to obtain federal/state funding for the corridor reconstruction.

Therefore we recommend that the Commission approve $247,500 for these combined studies. $100,000 for the City of Chelsea's Reserve and $147,500 for the Transportation Planning Grant Funds.

Commission staff will monitor the achievement of the City's estimated cost efficiencies ($15,000-$20,000) from the coordination of the two grants through the grant contract process.

Everett: Transportation Planning $150,000

The City of Everett is requesting funding to study the expansion of the Everett portion of the Northern Strand Community Trail bike path. The scope of this study will include survey, environmental impact assessment, design development, public outreach and cost estimation up to the level required for a 25% design submission to appropriate state agencies. Completion of the bike path from its current terminus to the Wynn site will provide safe, convenient access for workers and patrons of the gaming facility, thereby reducing traffic on adjacent roadways.

This application included letters of support from: MyRWA; MassBike, Bike to the Sea, Inc., MAPC, Livable Streets Alliance Board, the Commissioner of DCR, the Lawrence &Lillian Solomon Foundation, and East Coast Greenway Alliance. The application also included a scope of work estimated by Nelson Nygaard for a Preliminary Design cost of $150,000.

Wynn Commentary on Everett Application

Upon review of the request, the licensee, Wynn Boston Harbor stated that "Wynn supports Everett's efforts to study the extension of the Northern Strand Community Trail to improve bicycle facilities from its current terminus to the Mystic River. This effort was envisioned as part of our Host Community Agreement with Everett."

Relevant Sections of Everett Host Community Agreement

In the Host Community Agreement: "A below grade connection beneath the MBTA Commuter Rail tracks will be developed and will include pedestrian and bicycle connections to the Project site, allowing for an extension of access to the linear park system along the Mystic River and as may be expanded as a riverwalk along the Project waterfront." In Section 6.C.5, "The City/DCR park and pathway system to the Project site to allow pedestrian and bicycle access to and from Wellington Station on the MBTA Orange line."

The following are payments Everett will receive as part of its Host Community Agreement between Wynn, MA LLC and the City of Everett:

Host Community Agreement:		
$30,000,000	Community Enhancement Fee	$5,000,000 after Wynn commences construction; $12,500,000 on or before 1st anniversary of initial payment; 12,500,000 on or before the 2nd anniversary of initial payment

$5,000,000	Annual Community Impact Fee	30 days after commencement of operations with increase of 2.5% per annum
$20,000,000	PILOT	30 days after commencement of operations with increase of 2.5% per annum
Second Amendment to the Host Community Agreement February __, 2016		
$1,000,000	Additional paragraph to Exhibit A – Community Impact Payment.	"new and innovative additional methods to deploy public safety resources in the general area…may include…expenses for enhanced police technology, infrastructure, supportive equipment, and personnel services, as well as … dissemination of information to the public."

Recommendation:

We believe that the City of Everett request for $150,000 to study the expansion of the Everett portion of the Northern Strand community Trail Bike Path is consistent with the 2016 Community Mitigation Fund Guidelines. We believe that the project is "clearly related to addressing transportation issues or impacts directly related to the gaming facility". Specifically, the study of the bike path extension could help promote greater options for pedestrians and bicyclists that may visit or work at the Wynn Boston Harbor facility. As noted by Everett, "Section 4.4.4 in the Final Environmental Impact Report issued on June 30, 2014 details the commitment by Wynn Everett to improving bicycle accommodations along Lower Broadway and the Mystic River. These commitments were re-iterated in section 2.2.3.2 of the Supplemental Final Environmental Impact Report issued on February 17, 2015. Subsequently, several cycling advocacy groups raised the issue that the proposed alterations to Sweetser Circle, which connects Lower Broadway to Everett Square and Malden, did not address a serious gap in the bicycle network as there were no safe provisions for bicycles in the traffic circle. A meeting was held at MassDOT on March 18, 2015 which included Wynn Everett, the City of Everett, and MassDOT staff. It was determined that right-of-way constraints would make formal bicycle accommodations impossible in the traffic circle."

The City has and will provide in-kind matching funds if it receives this assistance. As noted in its response letter from Tony Sousa, "[t]he City has provided and will continue to provide substantial in-kind services and staff time towards planning the extension and completion of the Northern Strand Trail. To date, the City has committed staff time for preliminary planning work, coordination with Wynn Boston Harbor, Gateway Mall, DCR and the MBTA. Going forward, the City will continue to provide staff time for the management of the planning study and coordination efforts between all parties. The City will also provide meeting space for any public outreach efforts necessary for the study."

Therefore we recommend that the Commission approve $150,000 for the study. As a community requesting a Transportation Planning Grant, Everett must first utilize its 2016 Reserve before receiving any Transportation Planning Grant funds. The review committee requests that the Commission allow the use of the Reserve for this project and grant an additional $50,000 to cover the planning study as requested.

Malden: Transportation Planning $100,000: The City of Malden is requesting $100,000 to assess parking capabilities and pedestrian safety around public transportation and parking. In particular these funds will be used to study the expanding demand by the Casino for the City's parking resources and determine an appropriate course of action to ensure that there are sufficient parking options for the current needs and City's expected growth. The study could and would encompass the feasibility of converting existing lots into additional parking structures. Additionally, the study will assess current facilities' physical conditions so as to understand the need and costs for upkeep over the life of increased casino use. The impacts requiring studies and planning and are anticipated at the following locations: 1. Jackson Street Garage, 2. Central Business District Garage, 3. Malden Center MBTA parking lot, 4. Main Street parking lot, 5. Dartmouth Street parking lot." The cost of this first part of the study is $60,000.

A second component of the study will be to oversee a full redesign of the Malden Center area and its environs to provide both pedestrian and bike rider safety improvements. The cost of this study is $40,000.

Relevant Sections of the Surrounding Community Agreement

In Section 1 of the Surrounding Community Agreement, Malden is recognized as a ""transportation hub" for the project". Wynn will be providing shuttle services from Malden Center for both employees and patrons by buses, trains, water services or commuter rail services. As a result of this, public safety upgrades, improved lighting, coordination of transit bodies as well as additional staffing by the City would be necessary.

The following are payments Malden will receive as part of its Surrounding Community Agreement between Wynn, MA LLC and the City of Malden:

$500,000	Transportation Hub Payment "THP"	One-time upfront date that the License is awarded
$325,000	Annual "THP"	On or before 90th day following opening with increase of 2.5% per annum
$100,000	Annual "THP"	On or before 90th day following opening (assist business in aesthetic updates) with increase of 2.5% per annum
$325,000	Transitional Roads Payment "TRP"	One-time upfront date that the License is awarded
$225,000	Annual "TRP"	On or before 90th day following opening (aesthetic quality, signage and safety needs) with increase of 2.5% per annum

$200,000	Public Safety Payment "PSP"	One-time upfront on the date that the License is awarded
$250,000	Annual PSP	On or before 90th day following opening (assist business in aesthetic updates) with increase of 2.5% per annum

Recommendation:

We believe that Malden's request for assistance is consistent with the 2016 Community Mitigation Fund Guidelines. The City of Malden in its response letter noted that it "needs to have a solid understanding of the new gaming facility related demands being placed on its parking facilities, in particular those new demands reviewed within the context of other developments. The City of Malden has viewed the potential for casino visitors to the City as a positive, and has embraced the potential that these visitors to the region will bring about additional business for their local restaurants. However, to fully understand the potential and the impacts, the additional demands on parking resources needs to be looked at in conjunction with:

• The redevelopment of 200 Exchange Street, which will bring on line up to 320,000 SF of office space and bring with it the potential for 2,000 additional professionals working in Malden.

• Ongoing construction of nearly 1,000 apartment homes in the downtown area.

• The addition of over 40,000 SF of new retail space coming on line over the next several years.

With the additional dynamic added from a gaming facility, it's critical that the city take a holistic approach in reviewing how to be positioned to not only meet the new demands but capitalize on them. Each of these uses have unique demands on parking facilities in terms of nights, weekends, weekdays, short term, long term. The City needs to take a proactive approach to being best positioned to deal with the additional gaming facility related demands in the context of the additional variables outlined above."

Malden further noted that "[i]n particular, these pedestrian and bicycle connections are related to the casino impacts because of the casino's role in that increase in congestion. Clearly, the largest transportation hub nearest to the Wynn Boston Harbor site will be a draw for patrons looking to visit the casino via bicycle trips or public transportation. Malden's bike path near Malden Center Station is a short, lovely ride to the casino, and will provide another mode for them of getting to the casino – without driving. Therefore, as stated in 2013, the connections used by pedestrians and bicyclists at a multi-modal transportation hub are imperative to be improved upon.

It further notes that "[t]he redesign of connecting from Malden Station to the Pleasant Street bike path will eliminate the constant crossing of the street at mid-block, walking between the cars that are stacked up because of the succession of lights ahead of them as they navigate around the Malden Center Station. There are five intersections adjoin the

Malden Center Station and cause backups through the intersections as traffic backs up due to the intermingling of pedestrians, bicyclists, and automobile traffic."

Given this background and the importance of the Malden Center as a transportation Hub, we believe that Malden's application for funding the study of a redesign of the Malden Center is in keeping with the Community Mitigation Fund Transportation Planning Grants program.

We recommend that the Commission authorize up to $100,000 for Malden's Transportation Planning Grant Program. Staff will work with Malden on the scope of such studies. Malden will need to address the timing issue regarding expenditures of funding identified in the discussion of Malden's Reserve Request.

Medford – Transportation Planning $600,000:

The City of Medford is requesting a total of $600,000 in transportation planning grants. The City of Medford's application stated that "[t]he City proposes to utilize $450,000 to hire a Transportation Planner and consultants to work with Wynn, private property owners and State transportation officials to identify a financing and implementation transportation plan within the City of Medford. Activities will also include creation of a city-wide parking permit program to prevent employees and other long term parking on neighborhood streets, as well as identification of essential roadway, bicycle, pedestrian and water transportation improvements to offset impacts, review financing and construction alternatives and conduct a participation process for input by the public and interested parties."

Medford also stated that: "… $150,000 of funds would be utilized to provide a match of a $750,000 federal earmark for studying the feasibility, design and construction of facilities for a water shuttle to key areas in Medford on the Malden and Mystic River including River's Edge, Wellington Circle Area and Medford Square."

Transportation Planner	$240,000	($80,000 x 3 years)
Consultant Services	$210,000	
Water Transportation Matching Funds	$150,000	
Total	$600,000	

As a community requesting Transportation Planning Grant funds, Medford must first utilize its 2015 Reserve before receiving any Transportation Planning Grant funds.

Wynn Commentary on Medford's Application. Upon review of this request, the licensee, Wynn Boston Harbor stated that: "We support the City of Medford's request for Transportation Planning Funding as they are a Surrounding Community to the Wynn Boston Harbor project."

Relevant Sections of the Medford Surrounding Community Agreement

In Section 1 of the Surrounding Community Agreement, Medford is recognized as a ""transportation hub" for the project". Wynn will be providing shuttle service for guests, invitees, employees and/or vendors of the Project arriving to the area via public transportation. Additionally it is anticipated that Medford and Wynn will be entering into a separate agreements related to parking facilities. As a result of this, public safety upgrades, improved lighting, coordination of transit bodies as well as additional staffing by the City could be necessary.

The following are some of the payments Medford will receive as part of its Surrounding Community Agreement between Wynn, MA LLC and the City of Medford:

$325,000	Transportation Hub Payment "THP	On or before 90th day following opening to promote Wellington MBTA Station and its surrounding areas
$100,000	Annual "THP"	On or before 90th day following opening (assist business in aesthetic updates)
$250,000	Annual Public Safety	On or before 90th day following opening to fund staffing and other public safety initiatives related to increased pedestrian and vehicular traffic
All annual payments will increase by 5% after the 15th year.		

In the SCA, Wynn agreed to complete all necessary improvements (as determined in accordance with the MEPA process) to the intersections listed on the Transportation Application at an estimated cost of $1,000,000. Additionally, Wynn will fund up to 25% of the concept design up to $1,500,000 for Wellington Circle improvements.

In the SCA, Wynn agreed to pay an annual $100,000 to facilitate a water transportation connection between Medford and the casino project.

Recommendation:

We believe that Medford's requests for assistance are consistent with the 2016 Community Mitigation Fund Guidelines. A significant percentage of Wynn Boston Harbor's traffic will go through the City of Medford, particularly through Wellington Circle. As part of the City of Medford's surrounding community agreement and as required by Wynn Boston Harbor's Section 61 Findings, Wynn is required to provide $1.5 million dollar to MassDOT toward a transportation study to develop alternatives for long-term fix for Wellington Circle. In addition to potential traffic impacts, Medford's Station Landing is proposed as a site for employee and construction parking. The City's request for finances for planning would enable Medford to continue to evaluate any additional potential needs related to the Wynn facility that were not anticipated during Wynn Boston Harbor's Section 61 process. In establishing the Transportation Planning Grants, the Commission determined that planning now is wise given the long lead time associated with transportation projects. By focusing on planning now, the Commission can significantly reduce any delays in responding to currently unanticipated impacts.

In this regard, Medford's request for a transportation planner is a reasonable request. The City currently does not have such a planner. We questioned whether the planner would be engaged in just casino related duties or would focus as well on non-casino related general municipal planning activities. Central to this question was the fact that the Community Mitigation Fund is not a general municipal funding program but instead is designed to address potential impacts from a gaming facility.

In Medford's application, during our conference call and in its follow-up response, Medford referenced a number of planning activities that relate to the casino, including further reviews of numerous intersections that could be impacted by gaming related traffic, parking impacts, the study of potential expansion of water ferry services, and coordination of the Wellington Circle Study. In our judgement, for the near term, these activities could reasonably take up the efforts of a full-time or part-time planner. Sometime after a planner is on board, the planner may need to utilize some technical consultants to assist the planner's work.

While such work may require the full-time efforts in the short-term, a planner may be needed to cover general municipal activities over time. We believe that the costs of such general municipal activity should more appropriately be borne by the City of Medford. In its response letter, Medford indicated that "[t]he City will not contribute planning funds unless planning funds can be received by a grant source." Although this lack of ability to provide funding may present an obstacle in future years, we believe that given the levels of activities in the short term, the CMF could reimburse the City for 100% of the cost of a planner in the first year. Similar to the conditions that the Commission placed on a Mansfield Community Mitigation Fund Grant, we would require the City to certify that all expenses to be reimbursed are gaming related. Medford indicated that it is unrealistic to expect a planner to work in an isolated fashion on one subject. We agree with that prognosis of the likelihood that the planner would likely be called upon to work on non-gaming matters at some point. However, we believe that given the projects listed, the planner's scope could be carefully monitored in the short term to ensure that the portion of the planner's salary paid with CMF funds is focused on gaming facility related activities. We do note that Medford will provide office space and oversight by the planner as in-kind services and will coordinate with the Metropolitan Area Planning Council.

Recommendation on Planner and Consultants:

Given this, we recommend that the Commission agree to pay for 100% of the planner's costs through FY17, subject to the requirements that Medford certifies that the planner's activities are gaming related. Medford would need to reapply for future years.
In such applications, Medford could specify and the Commission would evaluate what percentage of the planner's time would be on gaming related activities. Medford could use the first year to seek out additional fiscal funds or other grants to cover non-gaming related matters in future years.

Medford notes that it will hire a planner within 3 months of the grant award and that it plans to pay $80,000 for the planner. Thus we recommend the award of $60,000 for the planner, which represents 100% of the first year cost of the planner prorated.

Medford asked for $210,000 of consultants for the request grant period. We also recommend a one year allocation for the consultants. Medford does not anticipate to provide consultants until 2 months after the hire of a planner, or 5 months. Although a 7/12 proration of a year with worth of consultant service represents approximately $40K, we recommend that we authorize $50K for first year consultant services. Medford may apply in future years for additional assistance, assuming this future year's program will include planning.

Staff would work with the City of Medford to determine the scopes for the planner and consultant services. We recommend that such scopes could include work related to a parking permit program providing that it is related to potential gaming related parking. We would need to carefully evaluate what could be reimbursed for a city wide parking permit program that would have less of a connection to potential casino impacts.

Water Study

Medford has also requested funding for match funding for a water transportation study. The study could be useful in expanding the community options for Wynn's patrons and employees especially if it serves Station Landing. The current scope of the study does not include the Wynn Casino as a departure point.

Recommendation on Water Study:

We recommend that the Commission require that the study include an analysis of Wynn Boston Harbor as a docking facility and that the scope continues to include Station Landing. Staff would work with Medford on the final scope. We recommend that the Commission funding would only be made available upon approval of a revised scope by state and federal funding sources. Pursuant to the Commission 2016 Community Mitigation Fund Guidelines, $100,000 of the $150,000 would come from the City of Medford's 2015 CMF Fund Reserve. We finally recommend that this grant be up to $150,000 in the event that the overall scope of the study and cost is reduced.

West Springfield - Transportation Planning $247,500: West Springfield is requesting funding for the design and permitting of a project to reconstruct Memorial Avenue, which it notes will be impacted due to its close proximity and access to the MGM Springfield project.

West Springfield received $665,000 in its surrounding community agreement for design and permitting of Memorial Avenue Reconstruction project. When the Town issued a Request for Proposals for the design work, the bids came in substantially higher than the initial estimate ($665,000) by $147,500. There are also costs related to the Memorial Avenue Complete Streets project of $75,000 - $100,000. West Springfield included in its application a fully executed contract between the Town and GPI and a copy of the estimate for additional costs. The Funds would be expended solely to pay invoices from Greenman-Pedersen, Inc. ("GPI") related to the design and permitting of the Memorial Avenue reconstruction project.

<u>MGM Springfield Commentary on West Springfield Request</u>

Upon review of this request MGM stated that: "The Town of West Springfield has applied for a 2016 Transportation Planning Grant from the Community Mitigation Fund in the amount of $247,500 in addition to the substantial funding MGM has already provided for such design and permitting. MGM supports a disbursement in that amount from the Community Mitigation Fund to help further fund the design and permitting of the project to reconstruct Memorial Avenue, as that reconstruction project will likely be mutually beneficial to residents of West Springfield, residents of the Greater Springfield area and MGM's patrons and employees."

<u>Relevant Sections of the West Springfield Surrounding Community Agreement</u>

The West Springfield Surrounding Community Agreement, which was entered into after an arbitration between MGM Springfield and West Springfield, states that "MGM shall pay to the Community Six Hundred and Sixty-Five Thousand Dollars ($665,000.00), representing the design and permitting costs (but not the construction costs) for reconstruction of Memorial Avenue in West Springfield."

The following are payments West Springfield either has or will receive as part of its the Surrounding Community Agreement between Blue Tarp LLC and the City of West Springfield's:

$665,000	Upfront Payment	Within 30 days of award of Gaming License - Design and permitting costs for reconstruction of Memorial Avenue. (not construction costs)
$375,000	Annual	Annual Mitigation Payment
$750,000	$50,000 year 1; $100,000 year 2; $50,000 years 3-5; $100,000 year 6; $50,000 years 7 - 13	<u>Annual Study Cost Reimbursement</u>: Reimbursement of expenses for participation on Look Back Studies

West Springfield "shall look exclusively to the Annual Mitigation Payment for satisfaction of the first $375,000.00 of the Net Adverse Impact Amounts."

Recommendation:

The Review Team believes that West Springfield's request for assistance meets the purposes of the 2016 CMF Guidelines. In referencing MGM Springfield's MEPA approvals, West Springfield application states that "the MEPA office determined that the funding under the SCA for the Memorial Avenue redesign (believed at the time to be adequate to fully fund design and permitting of that project) was an appropriate mitigation measure by MGM. However, what was clearly not anticipated by any party was that the cost of designing the Memorial Avenue reconstruction would exceed the estimate by $247,500."

A panel of three arbitrators operating under the Commission's Surrounding Community Arbitration Regulations, 205 CMR 125.00, recognized the impact to the town of the MGM Springfield facility to this corridor stating the ""MGM shall pay to the Community Six Hundred and Sixty-Five Thousand Dollars ($665,000.000), representing the design and permitting costs (but not the construction costs) for reconstruction of Memorial Avenue in West Springfield."

The town is requesting $247,500 because the estimated cost of the design work will exceed the amount ordered in the arbitration. West Springfield has provided sufficient detail to justify the additional costs [see response to question 1 in West Springfield's July 8, 2016 response to the Review Team].

Specifically the increase in costs is attributable to the passage of the time between the arbitration estimate and the bidding of work and changes in transportation design criteria. As noted in West Springfield's response, "Since this project is following the MassDOT Design process and is pursuing state and federal funds, the above-referenced state and local engineering directives and design guidelines must now be followed." In addition to demonstrating that the project is "clearly related to addressing transportation issues or impacts directly related to the gaming facility" as required in the 2016 CMF Guidelines, the town of West Springfield detailed that it will "commit to a minimum of 10% in-kind service match ($24,750) of staff time for design support, development meetings, reviews, and coordination. This translates into 395 hours of municipal staff time. The Town has already committed substantial staff time to the project planning and development as well as $147,500 in funds as noted in the application."

Therefore, we recommend that the Commission approve $246,000 in Transportation Planning Grant Funds to assist the Town of West Springfield with the design costs of the Memorial Avenue Complete Streets Design. The town of West Springfield will be required to utilize the remaining $1,500 of its Reserve for the design program.

2016 SPECIFIC MITIGATION APPLICATIONS

Hampden County Sheriff's Department - Springfield - $2,000,000 Western Massachusetts Correctional Alcohol Center (WMCAC) Springfield was forced to move after 29 years due to the MGM-Springfield Casino. This regional correctional treatment facility's budget cannot afford the increase in rent. The annual rent at the former location in

Springfield was $666,276.17 including utilities and the rent at the new site is $1,025,000 which does not include utilities. The Sheriff's office is requesting to use the Community Mitigation Fund to offset the increased rent at the new location. The amount of the 2016 Specific Application is $2,000,000 and would enable the applicant to reduce its annual rent by over $400,000 per year.

MGM Commentary on Hampden County Sheriff Application

Upon review of this request the licensee, MGM Springfield, stated that:

"MGM fully supports the Hampden County Sheriff's application for a grant in the amount of $2 million to reduce the rent obligation in connection with the Sheriff's relocation of the Western Massachusetts Correctional Alcohol Center (WMCAC). As the Sheriff has indicated, the WMCAC is a very important program which has been widely recognized as a model correctional substance abuse treatment center over nearly three decades of operations. Sheriff Ashe rightly deserves praise for his efforts and success with this program.

It is our understanding that because (i) the Sheriff's rent for the W MCAC facility at 26 Howard Street has been well below market for years based on longstanding support of the prior landlord and (ii) any new location will require costly improvements associated with the modern security and surveillance requirements of a correctional facility, the Sheriff will likely face an annual rent increase (inclusive of utilities cost) in excess of $650,000 annually. MGM understands that this presents a challenge for the Sheriff and the Commonwealth. The Sheriff is effectively requesting a subsidy of $400,000 per year to offset this increase. His request is reasonable and understandable. MGM supports this request.

MGM's full support of the Sheriff's Application notwithstanding, I must address the repeated statement made in the Sheriff's Application that it would be "grossly unfair and unacceptable" for the WMCAC "to be put out of existence to make room for a casino, without appropriate mitigation." Of course, no one is suggesting that the WMCAC should be put out of existence. MGM has long recognized the importance of the WMCAC and the need to relocate this state facility to allow MGM's state-licensed casino development to timely open and accomplish the legislative objective of generating thousands of jobs, spin-off economic development and millions in tax revenues for the citizens of the Commonwealth. The Commonwealth, through the Legislature and the voters, has overwhelmingly endorsed and supported casino gaming as an economic development engine and form of entertainment appropriate and desirable in Massachusetts. We believe that any implication that the analysis surrounding the relocation of the WMCAC and the need for mitigation funding should be any different because MGM's project involves casino gaming is misplaced."

Relevant Sections of Springfield Host Community Agreement The Hampden County Sheriff's Department is a separate governmental entity from the City of Springfield. However, it is noted that Springfield's Host Community Agreement states that "[t]he

Developer will pay displaced tenants at the project site that agree to relocate within the City $3/square foot towards their new security deposit and moving costs, increasing to $4/square foot if such tenants relocate within the City's business improvement districts."

We received a comment from Michael Albano of the Governor's Council regarding the Hampden County Sheriff's Department's application. He noted his intention, if elected, to not locate the Western Massachusetts Correctional Alcohol Center at its currently planned location. He also noted litigation that had been filed in regarding to the planned location.

Recommendation:

We believe that the application by the Hampden County Sheriff's Department meets the purposes of the 2016 Community Mitigation Fund Guidelines. The Western Massachusetts Correctional Addiction Center (WMCAC) was impacted by the construction of the MGM Springfield facility as it was evicted from its location of over 29 years. Although the Hampden County Sheriff's Department is not a community, it is eligible for funding as a regional governmental entity. As noted in the 2016 CMF Guidelines, "[t]he Commissioners may also distribute funds to a governmental entity or district other than a single municipality in order to implement a mitigation measure that affects more than one community." Through the WMCAC, the Sheriff's office has provided a vital rehabilitative service for approximately 17,000 Berkshire, Franklin, Hampden, Hampshire and Worcester county offenders since 1985. Without the funding made available through the Community Mitigation Fund, this highly successful governmental program would be in jeopardy.
We recommend that the Commission approve funding to assist the Hampden County Sheriff's Office with its currently unfunded lease costs through FY17. The Sheriff's office request of $400,000 per year prorated due to the November 1, 2016 lease start date would be equivalent to $280,000.

$856,000 / $1,225,000	FY17 cost assuming November start	= approx. 70%
	70% x $400,000	=$280,000

Under the recommendation, the Sheriff's Office would be required to annually request funding for lease expenses. We further recommend that the Commission state that the total amount of assistance shall be no greater than $2 million spread over a period of 5 calendar years. As a condition to the grant, the Sheriff's office would be required to annually report to the Commission steps it is taking to allow it to pay for the costs of its lease. Further, given current litigation, we recommend that the Commission include language in its grant contract that provides the Commission with appropriate remedies in the event the facility does not move forward as planned.

City of Springfield on behalf of Caring Health Center, Springfield's Dept. of Health & Human Services $275,000.

The City of Springfield submitted an application for $275,000 on behalf of Caring Health Center.

The City of Springfield is requesting mitigation funds to address the additional costs incurred by Caring Health Center as a result of prior construction impacts and for mitigation funds to address the continuing impacts of construction which are present today and are expected to continue throughout the period of construction.

The City of Springfield's $275,000 application includes $143,042 for a valet parking pilot initiative for patient parking at Caring Health Center's complex; $66,050 for the net increased cost of replacement of off-street parking; $47,983 for additional staffing and contractor costs due to time expended on utility disruptions, securing new parking sources and managing problems related to parking, delays in patient arrival due to traffic congestion and not parking; and $17, 925 for administrative costs for the City of Springfield to administer a MA Gaming Commission Award.

MGM Springfield Commentary on Springfield Application

Upon review of this request the licensee, MGM Springfield, stated that:

"MGM Springfield is in support of the City of Springfield's request for 2016 Community Mitigation Funds for Specific Impacts related to the Caring Health Center Richard E. Neal Community Health Center at 1049 Main Street. MGM Springfield has been working with Caring Health Center to address the construction impacts upon their operations, particularly the needy patients served by Caring Health. MGM Springfield is providing a small off-street parking lot with twelve spaces for patient parking on a temporary basis until summer 2016. MGM believes the request for the Valet Parking Initiative pilot for patient parking is an excellent solution for patient parking given the extensive construction activity in the immediate area.

"The City is applying for $275,000 for various costs to Caring Health Center in connection with more limited parking and business interruptions due to construction within the MGM Springfield project vicinity, as well as to fund a valet parking program to address patient parking constraints moving forward. As set forth in my letter of support included with the application and for the reasons set forth therein, MGM fully supports this application.

MGM Springfield's strong support of the application and understanding that the City's need to make a compelling case for the requested funds notwithstanding, I feel it is important to make a few clarifications:

(i) as a good neighbor and in recognition of Caring Health Center's important mission, MGM has continued to work closely with Caring Health Center to mitigate impact stemming from the construction of our Project, including as referenced in the application, by donating temporary use of a lot for interim patient parking and as further evident from the enclosed letter of support of MGM from Caring Health Center's President/CEO, Tania Barber;

(ii) the application explains that increased real estate development pressures in the immediate vicinity of the project have caused the cost of parking to rise, and it is important to highlight that such "spin off" economic development is precisely one of the underlying goals of the Gaming Act;

(iii) the references to telecommunications and internet outages relative to local utility work do not acknowledge that there is ongoing utility work downtown and related inconveniences that are not directly part of nor necessarily related to the MGM's project; and (iv) the critical references to jersey barriers and construction fencing fail to acknowledge that those were erected as required by and pursuant to the Construction Management Plan and Temporary Traffic Control Plan requested and approved by the City."

Relevant Sections of Springfield Host Community Agreement

Springfield's Summary of Original Host Community Agreement

MGM is required to make substantial payments to the City. Upfront and advance payments total over $15 Million and annual payments to be made upon opening of the facility total over $25 Million.

This agreement has been recently modified.

The Review Team received several comment letters in support of Caring Health's application from the following parties: Representative Michael J. Finn; James W. Hunt, President and CEO of Massachusetts League of Community Health Centers; Mayor Domenic Sarno, Senator James T. Welch, Representative Jose F. Tosado, Jacqueline M. Johnson, C.O.O. of Caring Health Center; Jeffrey S. Ciuffreda, President, Springfield Regional Chamber of Commerce; Representative Benjamin Swan; a signed petition with signatures of employees of Caring Health and by the Board of Directors of Caring Health Center and Senator Eric P. Lesser.

Recommendation*:* The Review Team believes that it is unclear if portions of Springfield's application for funding are consistent with the 2016 Community Mitigation Fund Guidelines.

The 2016 Community Mitigation Fund Guidelines provided further guidance on funding for non-governmental entities. The Guidelines state that:

> "Communities and other parties may apply for funds to mitigate the impact to non-governmental entities. However, the Commission strongly encourages applicants to ensure the impacts are directly related to the gaming facility. For example, an applicant could limit a request for assistance for impacts to businesses within 1000 feet of a gaming facility. Further, applicants should demonstrate that the governmental entity, the licensee, or both will also financially contribute to any

> program of assistance. The Commission does not anticipate funding any applications for assistance to non-governmental entities unless the applicant governmental entity or the licensee or both provide significant funding to match or partially match the assistance required from the 2016 Community Mitigation Fund. Communities may ask the Commission to waive these match or partial match requirements. Communities seeking a waiver should include a statement in its application specifying the reason for its waiver request. Please note that as stated by the Commonwealth's Comptroller's Office: "The Anti-Aid Amendment of the Massachusetts Constitution prohibits "public money or property" from aiding non-public institutions…. Article 46 has been interpreted to allow the expenditure of public funds to non-public recipients solely for the provision of "public purposes" and not for the direct benefit or maintenance of the non-public entity….Any community seeking funding for mitigation to non-public entities should provide detail how its planned use is in conformity with this provision of the Massachusetts Constitution and with Municipal Finance Law."

Springfield did not pledge significant funding for assisting the non-governmental entity that was the subject of its application but did note in its answer that MGM has "assisted Springfield's Caring Health Center by providing off-street temporary parking on Union Street for Caring Health's patients at no cost to CHC. The value of these fourteen parking spaces at the Union Street lot as an MGM contribution for twelve months in 2015-2016 (based on market parking rates established by the Springfield Parking Authority) is $14,280. In addition, MGM has assisted Springfield's Caring Health Center as a facilitator to arrange parking through MGM partners and venders in the area."

Springfield requests a waiver of this matching requirement and noted that it "is willing to waive its administrative cost portion of the grant even though it is [their] practice to recover them as part of the sound municipal fiscal practices."

Before analyzing the specific requests in the application, we note that it is clear that even with the provision of the assistance requested that Caring Health would still face parking issues during the construction period. In Springfield's Response letter, Springfield noted that the Caring parking arrangement is due to expire six months before the availability of the garage. Pursuant to MGM Springfield's Section 61 requirements ordered by the Commission, "MGM or its general contractor shall develop a parking plan for the City of Springfield's review and approval, which shall include the general contractor's plans and protocols for enforcing the prohibition on construction personnel parking personal vehicles on streets in the adjacent neighborhood. Terms and conditions to maximize protection of the neighborhoods related to workforce parking will be written into each subcontract and reviewed with each worker during a mandatory orientation. Terms and conditions encouraging public transportation use will be included in each subcontract. MGM shall coordinate with the Springfield Parking Authority, City of Springfield, and owners of private parking facilities throughout downtown Springfield to identify locations to accommodate construction employee parking, as well as parking for uses displaced from the site during construction."

Although we have not sufficiently determined whether this application meets the 2016 CMF Guidelines and passes Constitutional muster, we do recommend that staff be requested to work with MGM Springfield and the City of Springfield to discuss short term and long term parking needs, taking into account concerns issued by Caring Health.

There remains a question whether Springfield's application sufficiently demonstrates that the request for assistance is in conformity with Article 46 of the Massachusetts Constitution.

The Commission is subject to state requirements relating to the expenditure of grant funds. Specifically, MMARS Policy: Procurements/ Contracts on State Grants, Federal Sub-Grants and Subsidies, states the following:

<u>Constitutional Restrictions of a Grant of Public Money to a Non-Public Entity</u>

The Anti-Aid Amendment of the Massachusetts Constitution prohibits "public money or property" from aiding non-public institutions. The Anti-Aid Amendment (Art. 46, § 2, as amended by art. 103 of the Amendments to the Massachusetts Constitution) provides in part that:

> "*No grant, appropriation or use of public money or property or loan of credit shall be made or authorized by the Commonwealth or any political subdivision thereof for the purpose of founding, maintaining, or aiding any infirmary, hospital, institution, primary or secondary school, or charitable or religious undertaking which is not publicly owned and under the exclusive control, order and supervision of public officers or public agents authorized by the Commonwealth or federal authority or both....*"

Article 46 was drafted primarily to prohibit the use of public funds for private and parochial schools, and other types of non-public institutions that did not provide a benefit to the general public. "Public money" is interpreted to include appropriated funds (state tax revenue) which can be either operating or capital appropriations. Although the language of Article 46 specifies only "institutions", the language could be interpreted to extend the prohibition to individuals, partnerships and corporations. Article 46 has been interpreted to allow the expenditure of public funds to non-public recipients solely for the provision of a "public purposes" and not for the direct benefit or maintenance of the non-public entity.

Therefore, absent specific legislative authorization authorizing a grant of state appropriated funds to a non-public entity, 815 CMR 2.00 provides that state appropriated funds *may not* be granted to a non-public entity *unless*:

1. the grant funds are used by the non-public entity solely to cover the actual costs of fulfilling a public purpose to benefit the general public or a segment of the general public, and may not provide a direct benefit or be used for maintenance of the non-public entity not associated with the fulfillment of the grant, and

2. absent specific legislative authorization awarding grant funds to a named non-public entity, or identifiable class of non-public entities, the non-public grantee has been selected through an open public award process as determined appropriate by the granting department in accordance with an authorized exception and the department's grant funding authority; and

3. the department has included a statement as part of the contract justifying the reasons why the award to the non-public entity supports the efficient, effective and appropriate use of state appropriated funds.

In regard to this Policy, the Commission does not have specific legislative authorization to provide funding to reimburse non-profits for parking expenses, utility outages, staff and consultant time associated with parking expenses and utilities outages, and a valet parking program. Therefore, in order to be able to provide funding for a non-profit (or for profit), the Commission would need to determine how such provision of funding would meet the above requirements under the Comptroller's guidance.

Specifically, will the grant funds be used by the non-public entity solely to cover the actual costs of fulfilling a public purpose to benefit the general public or a segment of the general public? In addition, will the grant funds not provide a direct benefit or be used for maintenance of the non-public entity not associated with the fulfillment of the grant?

Springfield argues that the necessary public purpose of the grant is "to assure that CHC can perform its obligations under existing grant agreements with the City to provide necessary care." The City further notes that "[t]he available public funds in the City's grant, like the funds sought from the Commission, must be used for the designated public purpose, and will allow the CHC to continue to further public purposes as set forth in its grant for the City."

It should be noted that the City in its award of a grant to CHC and the Commission in considering a grant to assist CHC are not in the same position. The City awarded a grant to CHC so that CHC would provide services to Springfield residents. If Springfield was required to abide by 815 CMR 2.00, then Springfield would need to demonstrate that the grant funds were used "to cover the actual costs of fulfilling a public purpose." There is a concern that the City is requesting funds not to cover the actual costs of fulfilling a public purpose but instead to provide general financial assistance so that CHC can continue its operations and, as stated by Springfield, enable CHC to fulfill its grant with Springfield.

In this regard, consistent with the Comptroller's Guidance, the Commission may need to evaluate if the funding requested is meant to cover the actual costs of fulfilling a public purpose or instead is being used for a direct benefit or maintenance of the not public entity not associated with the fulfillment of the grant.

Valet Parking Program

The provision of valet services for persons with disabilities and others to help such persons access a section of the City of Springfield experiencing significant construction is perhaps the most clear public purpose identified in Springfield's application.

The Community Mitigation Fund Review Team asked Springfield if it would consider a broader or alternative program to serve a wider section of the public that may be experiencing difficulties in the area. This request partially sprang from the need to demonstrate that the grant must be for a public purpose and the greater difficulty in showing such public purpose since the valet program was designed to serve only one entity. In its response, Springfield noted that it would expand the valet program to include its H&HS Department, which is located in the same vicinity as CHC.

To the degree that the Commission determines that the valet program meets this requirement under the Comptroller's guidance, the Commission would need to determine that the non-public grantee has been selected through an open public award process. In its response to the Review Team's questions, the City stated that during the Casino Overlay Site Plan Review process, "the City publically stated that it would consider any reasonable applications submitted to it which met the statutory and Constitutional limitations for mitigation funds. During that process, only one entity submitted a request for mitigation funds in accordance with the Community Mitigation Fund." It is unclear how aware other non-public entities were of the potential valet program or the City's grant application at the time of the application to the Commission.

In the summary of this memorandum, we included a placeholder amount for the funding of this program of $150,000. This figure, which is in excess of the amount requested for this sub-item, may need to be adjusted based on the number of participants in the valet program, if one is determined to be fundable. In any regard, further conversations with the City about the program would be necessary.

In comparison to the valet program, it is less clear that the provision of grant funds for increased CHC employee and patron parking costs is consistent with the Comptroller's guidance and the Anti-Aid provision in the Constitution. It is unclear if such assistance could be characterized as primarily for the direct benefit or maintenance of CHC. It is also unclear if this is a construction period impact or if the increased cost of parking will continue past the construction period.

Administrative Costs

The Commission's 2016 CMF Guidelines do not make provision for the costs of administering the local grant. Instead, they include provisions for communities to demonstrate that they provide in-kind matching funds. The Guidelines specifically request significant local or licensee contributions if assistance for non-public entities is being requested. In its response to the Review Team, Springfield offered to waive its administrative costs. In this regard, no reimbursement of administrative costs is recommended.

Compensation for Increased Parking Costs

It is quite unclear if compensating Caring Health center for increased parking costs would not be for the direct benefit or maintenance of this non-public entity. Further, it is unclear whether this is a construction period impact or may be reflective of ongoing or new increases in the cost of parking in the area. MGM Springfield noted that "the application explains that increased real estate development pressures in the immediate vicinity of the project have caused the cost of parking to rise, and it is important to highlight that such 'spin off' economic development is precisely one of the underlying goals of the Gaming Act. Given the above and the further need to evaluate MGM's required parking plan in conjunction with the City, we cannot recommend reimbursement for parking at this time.

Compensation for Additional Staffing and Contractor Costs. It is quite unclear if compensating Caring Health center for additional staffing and contractor costs would also not be for the direct benefit or maintenance of this non-public entity. Out of the $47,983 requested for such costs, the City of Springfield included $10,851 to address utility disruptions. MGM Springfield in its response noted that "the references to telecommunications and internet outages relative to local utility work do not acknowledge that there is ongoing utility work downtown and related inconveniences that are not directly part of or necessarily related to MGM's project." Springfield was not able to determine the cause of several of the utility outages. It is also noted that Caring Health Center noted that it could not get reimbursed from any outages because it is the policy of the Springfield Water & Sewer Commission not to compensate businesses and nonprofits for the impacts of water and sewer disruption. Given the above and the need for further conversation between the Commission, the City, and MGM Springfield to determine the cause and responsible party for such disruptions, we cannot recommend reimbursement for such outages at this time.

Copies of the Community Mitigation Fund Grant Applications can be found at the Massgaming.com website:

http://massgaming.com/blog-post/a-request-for-public-comment-2016-community-mitigation-fund-grant-applications/

The Community Mitigation Fund Grant Applications can also be found in the March 3, 2016 Commission Packet

http://massgaming.com/news-events/article/mgc-open-meeting-march-3-2016-2/

June 23, 2016

Alexander Train, Planner/Project Manager
Chelsea City Hall
500 Broadway, Room 101
Chelsea, MA 02150

John DePriest, Dir, of Planning & Development
Chelsea City Hall
500 Broadway, Room 101
Chelsea, MA 02150

Re: 2016 Transportation Planning Grant Application

Dear Messrs. Train and DePriest:

Thank you for meeting with the community mitigation review team on Friday. It was a pleasure discussing Chelsea's applications for community mitigation funds. The community mitigation review committee found the meeting to be very informative. As we discussed, the following are questions which the community mitigation review team would appreciate further clarification regarding your submission.

1. Use of Reserve – Transportation Corridor Study

   a. How will the Transportation Planning Grant study build off of the Reserve study requested as part of this $100,000 Reserve request?

   b. We discussed how the Transportation Planning Grant Study would sequentially follow the proposed Reserve study. What is the anticipated timing of each study from start to completion?

   c. Do you anticipate an increase in the number of vehicles, including potentially more gaming facility vehicles, traveling in this corridor if the road conditions are improved?

2. Transportation Planning Grant – Assessment and Conceptual Plan Marginal Street/Pearl Street and Everett Corridor

   a. Can you please explain what coordination there has been with Metropolitan Area Planning Council and what future coordination is planned regarding these requested funds?

   b. Can you please explain potential funding that could be utilized to make improvements in the corridor and how these planning grants could help Chelsea pursue such funding?

3. How do you anticipate coordinating the two funding requests? Are there any potential efficiencies and cost savings available if both studies are approved concurrently?
4. What additional public benefits would be obtained from the improvement of road conditions and rebuild?

The community mitigation review committee would like to present to the Commission their recommendation in July. In order to meet this timetable, the community mitigation review team would greatly appreciate receiving your response by July 8, 2016.

We look forward to reviewing this application with the Commission. Please do not hesitate to contact us with any questions or concerns.

Very truly yours,

John S. Ziemba, Ombudsman

cc: Thomas G. Ambrosino, City Manager
Catherine Blue, General Counsel
Derek Lennon, CFO
Joseph Delaney, Construction Oversight Manager
Mary Thurlow, Paralegal

City of Chelsea

DEPARTMENT OF PLANNING & DEVELOPMENT
John DePriest, AICP, Director of Planning and Development
City Hall, Room 101, 500 Broadway
Chelsea, Massachusetts 02150
Telephone (617) 466-4180 • Fax (617) 466-4195

July 7th, 2016

Ombudsman Ziemba
Massachusetts Gaming Commission
101 Federal St., 12th Floor
Boston, MA 02110

Dear Ombudsman Ziemba,

On behalf of the City of Chelsea, we appreciate the opportunity to meet with you and the staff at the Massachusetts Gaming Commission to elaborate on Chelsea's two recent funding requests through the Community Mitigation Fund. As detailed in our recent meeting, Chelsea's project proposals encompass a transportation corridor that requires attentive planning for future improvements. Per your letter dated June 23, 2016, please find contained in this letter the City's formal responses to the Commission's questions, enumerated in the order in which they originally appeared. We hope that this clarification will be helpful in aiding the Community Mitigation Review Team's and the Commission's assessment of both funding requests.

1. Use of Reserves – Transportation Corridor Study

a. How will the Transportation Planning Grant study build off of the Reserve study requested as part of this $100,000 Reserve request?

Importantly, the Reserve study provides a necessary foundation through the collection and analysis of data that will directly inform the study carried out under the Transportation Planning Grant, specifically the collection and analysis of vehicular, pedestrian, and bicyclist volume and directional statistics. Additionally, the Reserve study will model a number of future traffic scenarios under various development conditions out to the year 2021, touching upon expected corridor capacity and exploring the potential for traffic signalization.

This robust data, the majority from locations that were not analyzed in Wynn's Supplemental FEIR, would provide a baseline for future comparative analysis, once the Everett gaming facility opens. Some has already been collected by Eversource, who is preparing to install a new transmission line through the corridor, and has been provided to the City at no cost.

Contrarily, the Transportation Planning Grant study will commission a full survey, environmental screening, roadway safety audit, a public outreach process, and design recommendations related to corridor layout, streetscape, bike and pedestrian amenities, and improvements to overall functionality. Guiding these recommendations with the analysis of existing conditions, as well as scenarios for future conditions, the Reserve Study's quantitative scope of work is essential groundwork for physical planning and design. Without understanding the preexisting and potential future conditions of the corridor, planning activities risk unfolding inaccurately, unsubstantiated by quantitative information.

A final example, related to traffic accidents, illustrates the relationship quite vividly. During the Reserve study, all reported crash documentation, within a three (3) year timeframe, will be analyzed, highlighting locations of grave concern. A federally-mandated Roadway Safety Audit, a process where planners, engineers, designers, and advocates visit the corridor to critique its design and contemplate possibilities for improvement, falls under the Transportation Planning Grant study. An intensive two-day excursion, the Roadway Safety Audit is dependent upon a balanced analysis of preexisting conditions, traffic volume and directional data, and crash statistics, all of which would be completed during the Reserve Study.

b. *We discussed how the Transportation Planning Grant Study would sequentially follow the proposed Reserve study. What is the anticipated timing of each study from start to completion?*

c.

The Reserve Study will take approximately six (6) months, while the Transportation Planning Grant study will also take approximately six (6) months. The timing of the Reserve study is paramount, as traffic data collection should be conducted during a time of year when both school is in session and there are not seasonal variations present. For example, conducting the Reserve Study during the summer months would result in misleading data, as arguably less local trips are taken, with school out of session and a notable share of the region's population on vacation.

d. *Do you anticipate an increase in the number of vehicles, including potentially more gaming facility vehicles, traveling in this corridor if the road conditions are improved*?

Certainly, as existing road conditions are inhospitably poor for many vehicles, despite this corridor offering one of the most direct and toll-free routes to Everett. Given the existing conditions, vehicles must reduce speeds and navigate the conditions through the presence of significant truck traffic, without sufficient conditions for turning lanes or sidewalks. Improving this corridor would, arguably, result in not only more direct vehicular access to Wynn Boston Harbor, but also allow for the safe passage of pedestrians and bicyclists, elevating the number of trips taken via these modes.

2. Transportation Planning Grant – Assessment and Conceptual Plan

a. *Can you please explain what coordination there has been with the Metropolitan Area Planning Council and what future coordination is planned regarding these requested funds?*

The Department of Planning and Development routinely briefs our MAPC counterparts on on-going and upcoming projects, including these. The Department's Director, John DePriest, AICP, is the City's representative to MAPC, sits as a member of the MAPC

Executive Board, and co-chairs the MAPC Inner Core Committee, comprised of representatives and elected officials from the MAPC's Inner Core area. He also sits on a variety of MAPC project committees. On a technical level, the Boston Region Metropolitan Planning Organization, in conjunction with the MAPC, has identified the Spruce Street and Williams Street intersection as particularly problematic, scheduled for further study depending on funding availability. These two studies would not necessitate the need for this study, allowing for collaboration with both agencies throughout each's duration. Future coordination will also materialize as the Department regularly requests the MAPC's review of ongoing studies, public processes, and design documents, given their multi-disciplinary approach and regional lens.

b. Can you please explain potential funding that could be utilized to make improvements in the corridor and how these planning grants could help Chelsea pursue such funding?

There are local, state, and federal funding opportunities that could be attained to reconstruct the Beacham/Williams St. corridor. In Massachusetts, the project could advance its placement on the Transportation Improvement Program, the queue for state and federal transportation dollars, by accomplishing a 25% (conceptual) design process. The deliverables from both of these studies would enable this project to advance on the TIP, with the public outreach process being a preferred prerequisite to the funding of full design. Given the transportation, environmental, and public safety benefits that would be illustrated through these studies, the corridor would consequently score highly when evaluated as part of the TIP selection process.

Additionally, with the City presently undergoing the requirements for funding eligibility under the new Complete Streets program, this nascent source of funding could also be applied to the project's pedestrian and bicyclist components. MassWorks infrastructure funding is an additional public source of financing for corridor reconstruction, pending availability.

Federally, the majority of infrastructure funding is distributed through state Departments of Transportation. However, the Economic Development Administration maintains the Public Works and Economic Development Grant Program, intended to fund infrastructure projects of regional economic significance. With its immediacy to the New England Produce Terminal and the cluster other regional food distribution facilities, as well as vicinity to Wynn Boston Harbor, funding from this program could be procured for corridor improvements.

3. <u>How do you anticipate coordinating the two funding requests? Are there any potential efficiencies and cost savings available if both studies are approved concurrently?</u>

Coordination between the two funding requests will be managed by the City's Project Manager, Alexander Train, in the Department of Planning and Development, overseen by Director John DePriest, AICP. The City would also utilize the same engineering consultant for each of the projects, specifically Stantec Consulting Services with whom the City maintains an on-call engineering contract, to ensure consistency and cohesion between the two requests.

There would be efficiencies and cost savings achieved if the two studies were approved concurrently and combined. If the two studies were done simultaneously, the staffing requirements would be decreased, as one final deliverable would be produced. Additionally, numerous parts of each study could be combined for efficiency. Specifically, public outreach, stakeholder meetings, and portions of the conceptual design could be combined to save funds and time.

Conferring with our project management team, it is evident that approximately \$15k-\$20k could be saved via combining the studies. Furthermore, the overall time to complete the two could be reduced, with numerous tasks combined or done concurrently. A preliminary combined schedule can be found below for your reference, illustrating which tasks from each study could be completed within the same timeframe.

Combined Project Timeframe

3 months – Survey (TPG Study), pavement condition assessment (TPG Study), environmental screening (TPG Study), data collection and analysis (Reserve Study), and existing and future no-build analysis (Reserve Study);

2 months – Accident analysis (Reserve Study), Road Safety Audit (TPG Study), improvement alternatives (Reserve Study), concept development (both studies), and future build analysis (Reserve Study);

2 months - preferred concept development, renderings, report preparation (both studies);

2 months - ongoing coordination, abutter meetings, and public meetings (both studies);

Total Duration: Approximately nine (9) months.

4. What additional public benefits would be obtained from the improvement of road conditions and rebuild?

   Additional public benefits that could be derived from the improvements of road conditions / corridor reconstruction include, but are not limited to:

   - Enhanced bicycle and pedestrian amenities, including designated bike lanes, sidewalks, and crosswalks; none of which are currently present in the corridor;
   - Access to Island End Park, a public park and boardwalk situated adjacent to the corridor, overlooking the Island End River;
   - Economic development and job retention related to the New England Produce Terminal and associated food distribution facilities, large local employers that depend on the corridor for their logistics network. A reconstructed corridor would increasingly facilitate commerce while inducing economic development and reuse of underutilized facilities;
   - Improved public safety, with a reconstructed, fully-marked, and signalized corridor reducing vehicular crashes and protecting the well-being of pedestrians and bicyclists. The addition of lighting along the corridor would also increase visibility and, subsequently, the safety of its users;
   - A diminished urban heat island effect, as corridor reconstruction would include the installation of street trees, improving local air quality;
   - Pollution control and environmental benefits related to the capturing and diversion of surface run-off, currently infiltrating and damaging the Island End River's salt marsh. A

reconstructed corridor would include the strategic placement of green infrastructure to prevent polluted freshwater runoff from entering the salt marsh;

- Redevelopment of underutilized sites. We have found that public investment often results in private investment, and we see no reason why that will not be the case on Beacham Street. With the casino development less than a mile away, we expect that uses servicing or desiring close proximity to the facility will seek to locate in the area and that some of the underdeveloped parcels will undergo redevelopment.

The City of Chelsea is pleased to submit this formal response to the Massachusetts Gaming Commission. Please do not hesitate to contact me with any questions regarding the City's two funding applications.

Sincerely,

John DePriest, AICP
Director of Planning and Development

Cc: Thomas G. Ambrosino, City Manager, City of Chelsea

June 23, 2016

James Marsh, Director
Department of Community Development
Lynn City Hall
8 City Hall Square
Lynn, MA 01901

James Lamanna, City Solicitor
Lynn City Hall
8 City Hall Square
Lynn, MA 01901

Re: 2016 Community Mitigation Fund Reserve Application

Dear Mr. Marsh and Attorney Lamanna:

Thank you for participating in the conference call with the community mitigation review team. The community mitigation review team found the conference call very informative. As we discussed, the following are questions which the community mitigation review team would appreciate further clarification regarding your submission.

1. The 2016 Community Mitigation Fund Guidelines state that "[t]his reserve can be used to cover impacts that may arise in 2016 or thereafter. It may also be used for planning, either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts." Could you please provide further specificity how each of the requests in Lynn's application meets this Guideline?

   a. Given that the Wynn Boston Harbor facility is not yet operational and given that construction workers may be unlikely to use the potential Lynn ferry service to Boston to commute to the Everett construction location, what is the direct or indirect connection between the mitigation request and the gaming facility?

   b. Given that there are no current plans to serve the Wynn Boston Harbor facility through a commuter rail station, can you please provide further information how the potential expansion of Rockport/Newburyport commuter rail locations in Lynn is related to the gaming facility? It was explained that the City is concerned with the impact of additional traffic from the facility and that all options to reduce the number of vehicles on Lynn's roads should be considered.

   c. Can you please provide further information regarding the significance of Route 107 as a corridor to serve patrons or employees commuting to Wynn Boston Harbor and any plans to expand or improve Route 107?

2. Can you please provide an estimated breakdown for each of the activities included in the reserve request of $100,000 and how you arrive at this estimate?

3. Can you provide copies of any additional studies mentioned in our call relating to the items in the reserve request?

4. Does the City's application call for the utilization of reserve funding to study how best to reduce traffic impacts related to the Wynn Boston Harbor gaming facility or does it instead plan to utilize reserve funding for implementation items, such as the upgrade of traffic signals, upgrade of Riverwork Station, and the creation of a left hand turn into the ferry entrance? The Guidelines state that funds for the mitigation of specific impacts may be used for impacts that are occurring or have occurred, not impacts that are predicted or projected. However, funds can be used for planning activities "either to determine how to achieve further benefits from a facility or to avoid or minimize any adverse impacts."

5. Although the Community Mitigation Fund reserves must be annually reauthorized, it is expected that such reserves will be reauthorized for future years. Did the need for annual reauthorization of such reserves impact your decision to apply for funding now versus a future date? We note that applications for the use of reserves were not subject to the February 1, 2016 application deadline. They can be submitted on a rolling basis when needs are identified.

6. Can you please briefly explain the current funding need for the potential Lynn ferry?

The community mitigation review team would like to present to the Commission their recommendation in July. In order to meet this timetable, the community mitigation review team would greatly appreciate receiving your response by July 8, 2016.

We look forward to working with you on this grant process. Please do not hesitate to contact us with any questions or concerns.

Very truly yours,

John S. Ziemba, Ombudsman

cc: Judith Flanagan Kennedy, Mayor
Catherine Blue, General Counsel
Derek Lennon, CFO
Joseph E. Delaney, Construction Project Oversight Manager
Mary S. Thurlow, Paralegal

Office of Economic & Community Development
City of Lynn, Massachusetts
3 City Hall Square - Room 311 - Lynn, MA 01901

James M. Marsh
Director

Judith Flanagan Kennedy
Mayor

CITY OF LYNN 2016 COMMUNITY MITIGATION FUND RESERVE APPLICATION RESPONSES

1(a). The City of Lynn has conducted studies which clearly indicate that traffic and transportation issues are the single largest impediments to the redevelopment of the downtown area and the waterfront. Professor Bluestone of Northeastern University has opined that all efforts should be made by governmental actors to not add a single vehicle to Lynn's roadways. The operation of the ferry service reduces traffic congestion on Route 1A and Routes 107 by providing an alternative to rush hour traffic into Boston and points south.

The City anticipates that many construction workers and tradesmen from the Lynn area will be employed in the construction of the Wynn facility. These employees will be forced to utilize Lynn roads. The lack of a ferry system this summer has added thousands of vehicles to Lynn's roadways. The City anticipates that the increase in vehicular traffic will only become greater should Wynn employ construction workers and tradesmen form Lynn and the North Shore.

1(b). As referenced above, the City continues to explore all options to reduce vehicular traffic particularly during the morning and rush hour commutes. However, the Newburyport/Rockport commuter rail service provides direct access to North Station. North Station is less than a fifteen minute walk to the Wynn location. (It is anticipated that construction workers and tradesmen will utilize the commuter rail to travel to and from the construction site. It is also quite possible that Wynn officials will chose to employ charter buses to and from North Station. Partner's Health which is located in neighboring Charlestown employs such charter buses and vans to transport employees and patients.

1(c). The City of Lynn is actively seeking funding to construct a connector from Route 107 to the rotary near the Revere Movie Cinema Complex. A dirt roadway has previously been constructed in the 1970s as part of the Route 95 construction and design plans. Route 95 was relocated and this roadway bed was not used. However, the foundation of such a connector is currently in place which would reduce the costs of such a roadway construction considerably. It is anticipated that construction workers and tradesmen (and ultimately patrons of the Resort) will utilize Route 107 to gain access to Route 1/Tobin Bridge. Route 60 in Revere is also a congested highway. This proposed 107 connector would eliminate the need for drivers to utilize the Marsh Road and Route 60. Instead, drivers would have a straight thoroughfare directly to the rotary which provides direct access to Route 1.

2. The City of Lynn anticipates utilizing this funding for a transportation related studies to further our goal of reducing and or minimizing vehicular traffic related congestion. Specifically, the funds will be used for Commuter Rail studies, a Rt. 107 connection study and studies relative to 1A / Lynnway.

3. Yes, herewith. Lynnway Study, Waterfront Masterplan, TIP language for 107, Bluestone Study.

4. It is anticipated that the funding, if received will be utilized to examine all aspects of the City's current traffic and transportation woes. The City will certainly be looking at ways to reduce the direct impact the construction and ultimate operation of the Wynn Resort will have on Lynn's roadways. The City would utilize the funds consistent with the Guidelines to avoid and minimize the adverse impacts caused by the construction and operation of the gaming facility.

5. The City is seeking to be ahead of the curve in avoiding and/or minimizing the effects of the Wynn Resort on its roadways. Much of the desired traffic improvements will require studies to examine the best and most cost effective solutions to the traffic issues caused by the facility. The earlier these studies can be undertaken, the sooner decisions can be made as to the best manner to proceed. While construction is not imminent, Lynn officials wish to have traffic and transportation changes be completed prior to or shortly after the construction commences.

6. The City through the Economic Development Industrial Corporation (EDIC) is seeking $700,000 to complete the funding for purchase of a Ferry. We are collectively working with the Governor, the State Delegation and our Congressman's office for a target date of summer 2017.

Respectfully submitted

James M. Marsh

SASAKI

LYNN WATERFRONT MASTER PLAN REPORT

In collaboration with ZHA | GEI

SEPTEMBER 2007

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THE LYNN WATERFRONT MASTER PLAN VISION

Land of this magnitude in a strategic location along a beautiful waterfront is rare, particularly when it is located within 10 miles of downtown Boston.

EXECUTIVE SUMMARY

The focus of the Lynn Waterfront Master Plan is a 305-acre development site located in Lynn, Massachusetts. The site begins at the General Edwards Bridge and extends north to the intersection of the Lynnway and Market Street, and east along the inner harbor shoreline to the Nahant rotary. The waterfront property is an exceptional site made up of contiguous parcels of land that are severely underutilized. Land of this magnitude in a strategic location along a beautiful waterfront is rare, particularly when it is located within 10 miles of downtown Boston. Its exceptional location is an untapped asset waiting to be explored and transformed into a higher and better use neighborhood as an expression of Downtown Lynn on the water. The Lynn Waterfront Master Plan also examines lower Sagamore Hill in search of a better design concept to take advantage of its proximity to both downtown and the waterfront.

Historically, this land was utilized for a large variety of industrial uses ranging from active maritime commerce to power generation. In the last 50 years, New England experienced a significant change in its light to heavy industrial capital, as most relocated out of the region. Currently, the entire site is underutilized as a waterfront location, but serves the needs of industrial facilities and accommodates regional traffic with a mix of automobile oriented businesses, big box retail, and light industries. Existing uses include the regional sanitary sewer treatment plan, a creamery and associated cold storage, scrap iron yard, capped municipal land fill no longer in operation, fast food drive-thru restaurants, retail and auto body shops, car dealerships, Wal-Mart and Building 19½. As a result of the lands historical use and the continuation of many industrial uses, the land has some environmental issues that need to be addressed during future development.

Sasaki Associates Inc. was retained by the City of Lynn to develop a comprehensive conceptual Master Plan for this site and to set the necessary parameters to transform it into a vibrant place with direct linkage to the downtown and surrounding neighborhoods. Creating a significant presence on the City's waterfront is one of the main objectives of the plan. Because the land is located strategically on the Lynn Harbor and is accessible by the regional highway network and the commuter rail from Boston, it is a very valuable piece of land with great potential. The proposed mixed-use development recommended in the Master Plan will positively influence the area and spur future economic revitalization activity within the community at large. Implementing this project over the next few decades will raise the image of the community within the region and put the City back on the map with neighboring communities for quality of life, real estate land values and self image.

Sasaki's team, which included ZHA for market analysis and GEI for geotechnical expertise, studied the area, location, context within the neighboring communities, the physical condition of the land, current uses, and future potential. In the analysis phase of the project, ZHA performed a detailed market study and the City hosted several informative public workshops and set up numerous key stakeholder meetings to solicit input from the community at large and interested groups. Based on the site reconnaissance and information from the community, Sasaki prepared a series of alternative development options for review by the City and community. The preferred development option was refined to reflect the comments and input received and in accordance with the findings of the market study for the waterfront site. Additional meetings were held with Massachusetts Coastal Zone Management, who regulates future developments through the Chapter 91 waterways licensing process, and the Massachusetts Department of Conservation and Recreation, who controls the Lynnway. These meetings were held to promote and solicit further input and to test the proposed development limits with state agencies. Similarly, the plans were adjusted and revised based on the input received through the community process.

It is important to understand the intent of this exercise. The Master Plan was developed to synthesize the community's aspiration and create a vision framework plan to guide future development. The Master Plan has three main components:

A. Master Plan Vision

B. Waterfront Zoning Strategy

C. Lynn Harbor Plan

The Master Plan Vision represents future land use, proposed mixed-use density, open space, development program and identification of new neighborhoods. It is important to note that this plan dose not represent future development footprints. Identifying future development footprints requires additional work between the community and individual property owners, as well as all local and state governmental agencies that have jurisdiction in the area.

The proposed Waterfront Zoning Strategy needs to be reviewed further with the community and property owners to establish consensus on the appropriate regulations set forth for each area.

The Lynn Harbor Plan is a preliminary draft for preparing the official Lynn Municipal Harbor Plan. The Massachusetts Coastal Zone Management and the Department of Environmental Protection require the preparation and adoption of a Municipal Harbor Plan (MHP), since a significant portion of the land lies within the Chapter 91 waterways jurisdiction.

This plan is a pre-requisite for any development of the land that lies within the Chapter 91 designated area.

The Master Plan program for the Lynn Waterfront includes a diverse mix of uses. Three distinct neighborhoods were created within the Waterfront Area to create flexibility within the development process and to create a unique identity for each area within the overall plan and the City of Lynn. A fourth neighborhood, Sagamore Hill, already exists within the study area and will be strengthen by the concept plan for lower Sagamore Hill along Carroll Parkway and Washington Street. This process allows for future adjustments to the land use mix in response to changing market conditions as development projects are implemented over the next 25 years. Once development commences, the power of the market economy will transform the area from its current uses into a waterfront community that takes advantage of its strategic location and natural assets.

Key program highlights of the Master Plan include:

- Mix of residential types - 4,177,000 Sq. Ft.
- Commercial / Retail - up to 1,061,000 Sq. Ft.
- Office space - 401,200 Sq. Ft.
- Hotel - up to 304,800 Sq. Ft.
- Light Industry - up to 228,730 Sq. Ft.
- Port Designated Area for marine dependant use - 45 acres
- Mixed-use Marina for recreational and commercial boats
- Ample open park spaces for community and neighborhood recreational use

Housing demand on the north shore is diverse. Trends suggest future generations are looking into more urban living where diverse housing products are available within walking distance of downtowns and active densely populated urban areas. The availability of public transportation, by rail or ferry, within these new neighborhoods will continue to be an important factor as cost of energy continues to rise and road congestion during peak commuting time becomes more intolerable. This site's proximity to a major urban area, such as Boston, provides a very attractive setting for living, working, and playing. Given the size of the land, the current market conditions and the current existing uses, this site will most likely be developed in multiple phases. The exact makeup of the initial and subsequent phases is yet to be determined but the ultimate build out will be responsive to market demand and input from the City of Lynn, EDIC, and various regulatory approval agencies.

The City's dedication and the community's passion for this extraordinary waterfront site will have a remarkable effect on transforming the image of Lynn and its waterfront into a vibrant and diverse new urban community. This Vision Plan is the first step towards the reclamation of the waterfront for the Lynn community and its future residents, workers, and visitors.

THE EXISTING LYNN WATERFRONT AS SEEN FROM POINT OF PINES, REVERE

The City's dedication and the community's passion for this extraordinary waterfront site will have a remarkable effect on transforming the image of Lynn and its waterfront into a vibrant and diverse new urban community.

Introduction

01

The goal for the future of the Lynn waterfront is to create a mixed-use district with connections to downtown and the surrounding communities, through public and private investment.

AN AERIAL VIEW OF THE 250+ ACRE WATERFRONT SITE

GOALS OF THE STUDY

The City of Lynn commissioned the Lynn Waterfront Master Plan to build on the recent successes in downtown Lynn and to create a vision for the area that would help to overcome the negative image of the waterfront. The goal for the future of the Lynn waterfront is to create a mixed-use district with connections to downtown and the surrounding communities, through public and private investment. Other objectives of the Master Plan include cleaning up and developing underutilized areas, buffer conflicting adjacent uses, and maximizing use of the state-owned pier and city owned boat ramp.

PROCESS

In June of 2006, the City of Lynn, lead by the Economic Development and Industrial Corporation, embarked on the current Master Plan to create a vision for the waterfront, identify development parameters and guidelines, define community waterfront access, recommend transportation improvements, and develop a strategy for implementation.

The master plan process began in the summer of 2006 with a Steering Committee kick-off meeting, stakeholder and property owner interviews, and an analysis of the site, traffic, market, and regulations. The analysis and some preliminary framework concepts were presented to the community in September. As a result of feedback from the presentation and further study, a series of alternatives were developed and discussed at a large public meeting in December of 2006. The alternatives explored a range of concepts for open space, street network and hierarchy, views, and waterfront edge conditions. The presentation also included an analysis of the market opportunities for the region in terms of retail, office and residential potential as well as market directives for the master plan.

PUBLIC WORKSHOP, DECEMBER 2006

A NEW CAFE DOWNTOWN

A RECENT DOWNTOWN LOFT CONVERSION

LYNN HERITAGE STATE PARK ON THE WATERFRONT

The master plan, zoning strategy, chapter 91 plan, and harbor plan were presented to the Economic Development Committee of the Lynn City Council in August 2007 and will be presented to the entire City Council in September for approval.

The presentations were posted onto a website dedicated to the Waterfront Master Plan and stakeholders and residents were invited to submit comments via email. During early 2007, the project team, together with the City, reviewed the public comments and established a preferred direction. This concept plan was refined and presented to the public again in May 2007. The presentation included the draft master plan and the market implications for residential, retail and office capture. The fiscal and traffic implications of the plan were also presented.

Over the summer, the project team prepared a zoning strategy for the waterfront area, a plan that met the regulations of Chapter 91, and a preliminary Harbor Plan for the improvements to Lynn Harbor. The master plan, zoning strategy, chapter 91 plan, and harbor plan were presented to the Economic Development Committee of the Lynn City Council in August 2007 and will be presented to the entire City Council in September for approval.

The Lynn Waterfront Steering Committee met with the project team several times throughout the process and provided valuable feedback to the team for the betterment of the plan. The Lynn Waterfront Steering Committee members are:

Peter Capano
Ward 6 Councilor, City of Lynn

Michael Conlon
Mayoral Aide, City of Lynn

Brendan Creighton
Senator MeGee's Office, State of Massachusetts

James Marsh
Mayor's Office, City of Lynn

Thomas McEnaney
Council Member, Seaport Advisory Council

Tom McGee
Senator, State of Massachusetts

John C. Moberger
Director of Public Facilities, Office of Economic & Community Development

Jim Perry
Harbormaster, City of Lynn

Paul Robertson
Member, Friends of Lynn/Nahant Beaches

Andrea Scalise
Mayoral Aide, City of Lynn

Ted Smith
Board Member, EDIC

Robert Stilian
Chairperson, Lynn Planning Board

John Walsh
Fisherman

Steve Walsh
Representative, State of Massachusetts

Over the course of the master plan, the project team also met with numerous stakeholders, property owners, and interested developers. The stakeholders and property owners included:

- National Grid
- Lynn Water & Sewer Commission
- Representatives of the Miles/O'Brian site
- Representatives of the O'Donnell site
- Representative from Building 19 site & Lowe's
- The Mayo Group
- Lynn Business Partnership Executive Committee
- Mayor Clancy and Senior Staff
- North Shore Community College
- Representative of the Christie's Site
- Lynn Housing and Neighborhood Development
- Department of Conservation and Recreation
- Coastal Zone Management

Development Context

02

A VIEW OF THE WATERFRONT SITE WITH DOWNTOWN BOSTON VISIBLE IN THE DISTANCE

IN 1903, THE MAJORITY OF THE SITE WAS PART OF LYNN HARBOR


HISTORIC PHOTO ILLUSTRATING THE INDUSTRIAL USE OF THE SITE

BACKGROUND

Originally settled in 1629, Lynn played a major role in the regional tannery and shoe-making industries. The shoe-making industry drove urban growth in Lynn into the early nineteenth century. This historic theme is reflected in the city seal, which features a colonial boot, along with an anchor and a hammer. Shortly after Lynn was incorporated as a city in 1850, the northern section of the city, which was attracting wealthy patrons and growing as a resort town, seceded from Lynn and became the town of Swampscott. While the two municipalities continued to have strong ties, Lynn headed in an industrial direction, while Swampscott took a more upscale maritime and suburban direction. Despite industrial expansion as a mill town in the early 20th century, Lynn began to decline in the latter half of the century and was plagued by an increase in crime, similar to many other older Massachusetts urban centers. Lynn's problems were exacerbated by several large fires in the late 1970s and early 1980s, including a devastating fire in former shoe factories at Broad and Washington Streets in 1981. The fire destroyed 17 downtown buildings undergoing redevelopment. The site has since been largely redeveloped into a satellite campus of North Shore Community College. Despite its image in the late 20th century, Lynn remains home to some major national employers including a portion of the jet engine division of General Electric, West Lynn Creamery (now part of Dean Foods' Garelick Farms division) and Durkee-Mower, makers of "Marshmallow Fluff."

The City of Lynn currently has approximately 90,000 residents. Recent legislation streamlined the process for downtown building conversion into lofts. With new restaurants and cafes opening, the downtown has seen a small resurgence in popularity with a new influx of downtown residents and visitors to downtown. Mayor Edward "Chip" Clancy, who is currently serving his second term as the Mayor of Lynn, the Lynn City Council, and a new Site Plan Review Committee have been largely responsible for this urban revitalization of downtown.

EXISTING CONDITIONS

Located in Essex County, just 10 miles north of Boston, the City of Lynn has both commuter rail service and regional highway access. However, these two infrastructure systems have both benefited and hurt the Lynn Waterfront. The commuter rail station is located in downtown; however the elevated rail line has cut West Lynn off from direct access to the waterfront. A large parking garage was built in conjunction with the commuter rail station; however, the garage remains relatively empty further contributing to lack of safety and activity. Route 1A provides quick and easy access to downtown Boston, but it has also turned the Lynnway into a high-speed commuter route and created an additional barrier to the waterfront for the residents of Lynn. The businesses along the Lynnway are predominantly car dealerships, bargain retail stores, and fast food drive-thru restaurants. The former West Lynn Creamery, now part of Garelick Foods, has manufacturing and distribution facilities along the Lynnway and within the study area.

There are many public facilities already located along the waterfront with the potential to be great assets for the future development. Lynn Heritage State Park and Seaport Marina are enjoyed by the residents, but remain an isolated instance of community access and residential living on the Lynn Harbor waterfront.

THE 6-7 LANES OF THE LYNNWAY AND CARROLL PARKWAY ARE A FORMIDABLE BARRIER TO PEDESTRIANS

THE LNG TANK AND A DISTRIBUTION FACILITY ARE WINDOWLESS STRUCTURES FEET FROM THE WATER

The public launching ramp at Blossom Street Extension is in the process of being resurfaced and will provide ample parking for cars and trailers, the EDIC pier at Marine Boulevard is currently used by Horizons Edge Casino Cruises, and the Massachusetts Department for Conservation and Recreation's public fishing pier is located at the southern end of the site.

The Clocktower Office Building is a wonderful example of both the potential for office along the Lynnway and the retrofit possibilities of structures into landmark buildings. North Shore Community College is also a tremendous asset to the waterfront. The college has over 3,300 students and brings people from the area to the downtown Lynn. The college's plans for expansion will bring even more vitality to the area and will be an important connection in bridging the gap between the downtown and the waterfront—literally.

While there are several assets currently on the waterfront, there are also many constraints that new development must keep in mind. The liquid natural gas tank is located right on the waterfront, but is only a reserve tank and therefore only used during peak periods in the winter. The Water & Sewage Treatment Plant serves the region and has onsite landfill capacity for the disposal of residual incinerated ash for approximately 17 more years. The Treatment Plant is researching innovative measures for wind technology and is committed to working with the new development to create a livable environment for the future residents and workers. The municipal landfill was capped in 1986 and only grassy hill remains. There is, however, the potential to relocate some of the landfill away from the water to allow for more advantageous use of the waterfront site. Power lines currently run along an easement on the southern portion of the waterfront, then between the landfill and the Treatment Plant and connect to the power plant located along Marine Boulevard. National Grid recently completed an engineering study and the City of Lynn has received a grant to help pay for the relocation of the power lines from the waterfront to instead run along the GE property behind Lynnway businesses, cross over the Lynnway at Harding Street and return to the existing alignment between the landfill and the Treatment Plant, freeing up land along the waterfront to be redeveloped. While the power lines will soon be relocated, the Power Plant is a fixture on the waterfront and will need to be incorporated into any future plans.

STATE REGULATIONS

A significant portion of the waterfront site lies within the Chapter 91 designation. Chapter 91 is a state regulation to protect and promote the public use of tidelands and other waterways. Chapter 91 preserves pedestrian access along the water's edge in return for permission to develop non-water dependant projects on tidelands and provide facilities to enhance public use. Activities requiring authorization include structures, filling, dredging, change in use, structural alteration, and demolition/removal of structures.

A large portion of the central waterfront is a state Designated Port Area (DPA). There are 11 DPAs located throughout Massachusetts to promote the use and maintenance of designated areas for water-dependent industrial activities that require direct access to the waterfront. Examples of water-dependent industrial activities include marine terminals, commercial fishing facilities, marine repair and construction, and manufacturing facilities that rely on bulk receipt of goods by waterborne transportation.

REGIONAL MARKET ANALYSIS

The City of Lynn sits within an impressive regional economy. Boston, one of the largest and most powerful metropolitan economies in the nation, is located 10 miles to the south of Lynn. The Boston Metropolitan area housing cost is currently 69% above the US Metro average. City affordability issues are pushing middle and upper middle income households out of Boston and into the surrounding region. With Lynn's affordability and access to Boston both by car and by commuter rail, it is a prime candidate for increased residential and office product. Coupled with the amount of underutilized waterfront land, the Lynn Waterfront site is very attractive to the market.

According to the market analysis, there is the potential for 43,000 new households in Essex, Suffolk, and Norfolk Counties by 2020. One-third of the existing households in Essex County have lifestyles or "life-stages" such as "empty nester" or young & single, that would be inclined to choose urban residential products. It is anticipated that in the next 10 years, 70,000 of the "urban-inclined" households will relocate making the waterfront area attractive for moderately high price points for mid—to high—rise multifamily units.

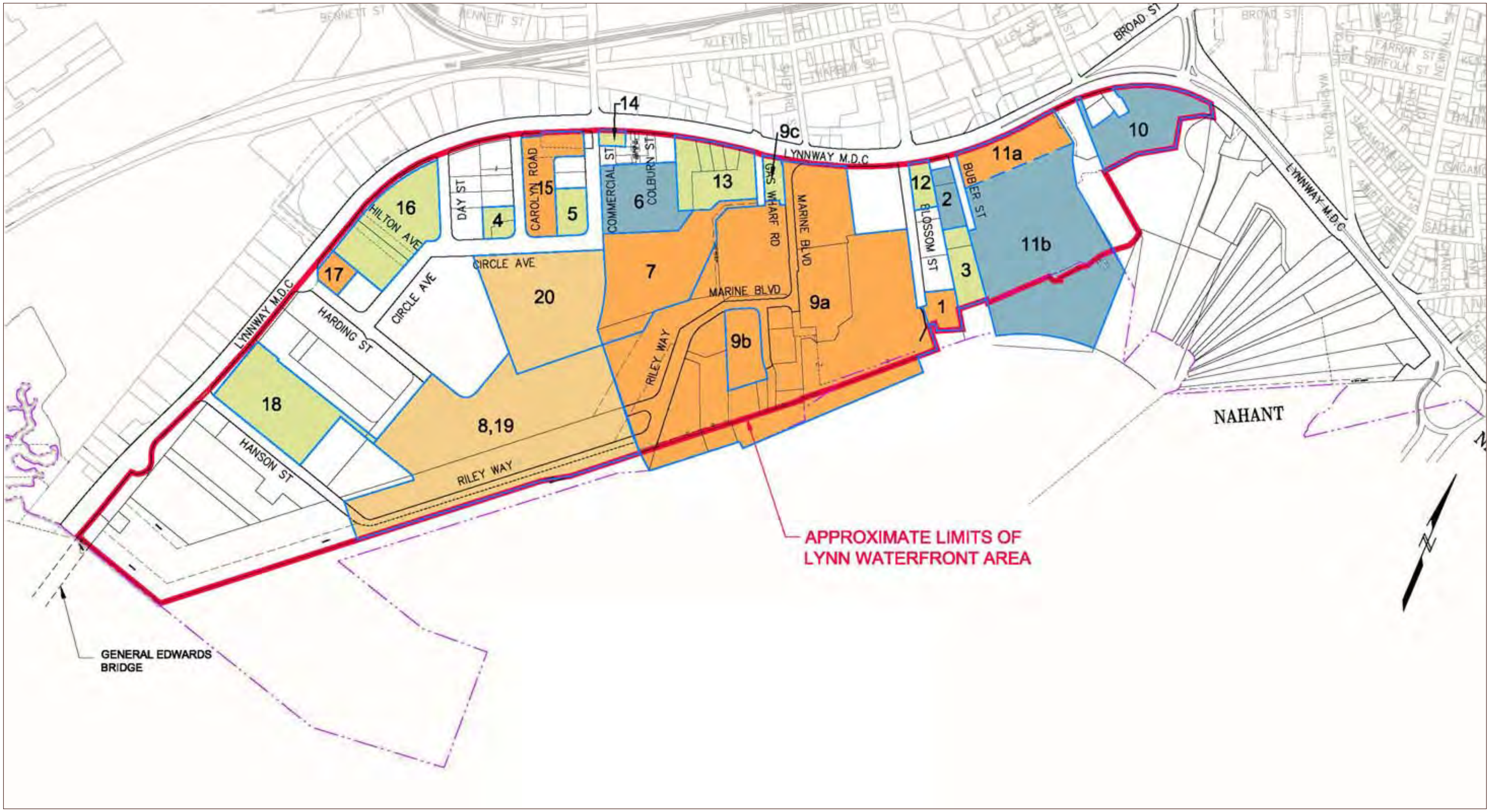
By 2027, there will be over 17,000 new jobs that demand office space in Essex County. These new jobs will require 4.4 million square feet of office space. The Lynn Waterfront's great access and high amenity mixed-use environment will make the waterfront a competitive office location for mid-rise office and mixed-use mid-rise built-to-suit.

The retail trade area for the Lynn Waterfront includes retail within the City of Lynn, Nahant, Swampscott, and part of Revere. The trade area is located within a 15 minute "drive time and cut back" of the Square One Mall and large retail along Route 1. The Lynn Waterfront Trade Area has the potential for $1.6 billion in retail expenditure. There is little competition within the trade area making the waterfront area poised to capture much of the retail potential. While the retail trade area is in need of some big box retail, the waterfront location is more suitable for eating and drinking establishment and small stores in a lifestyle environment that take advantage of the waterfront as an amenity.

Based on the market analysis, the directives from an economical standpoint for the Lynn Waterfront Master Plan are to create a mixed-use district, locate larger scale retail along the Lynnway, create lifestyle retail in the waterfront neighborhoods, buffer the conflicting adjacent uses, and maximize the inherent amenity of the waterfront with views and site orientation.

THE CHRISTIE'S BUILDING IS A PRIME REDEVELOPMENT SITE FOR MIXED-USE WITH MAGNIFICENT WATERFRONT VIEWS

With Lynn's affordability and access to Boston both by car and by commuter rail, it is a prime candidate for increased residential and office product. Coupled with the amount of underutilized waterfront land, the Lynn Waterfront site is very attractive to the market.



SITES IDENTIFIED BY THE DEP AS CONTAMINATED, HOWEVER, SEVERAL HAVE ALREADY BEEN REMEDIATED

- CLEAN UP TO UNRESTRICTED USE
- CLEANED UP WITH DEED RESTRICTION
- ADDITIONAL WORK REQUIRED
- LANDFILL
- 1 MAP ID FOR DEP-LISTED SITE OR LANDFILL

The Lynn Waterfront Area has been an active industrial and commercial area in the City of Lynn since the early 1800s.

ENVIRONMENTAL ISSUES

With new development imminent, the project team reviewed available environmental studies prepared for the properties within the Lynn Waterfront Area to evaluate the challenges to redevelopment posed by environmental degradation or contamination within the study area. The Lynn Waterfront Area has been an active industrial and commercial area in the City of Lynn since the early to mid 1800s. Historical uses of the Lynn Waterfront included a former manufactured gas plant which operated from 1853 until 1972; a wide variety of industrial and manufacturing facilities including dairy, textile, and electrical facilities; the municipal landfill; and the municipal wastewater treatment plant.

According to the Department of Environmental Protection's (DEP) online contaminated sites database, there are 38 reported releases of oil and/or hazardous materials located on 21 properties within the study area. Two additional properties that could be considered contaminated that are not reported releases under the DEP Bureau of Waste Site Cleanup program include the Lynn Municipal Landfill and the Lynn Wastewater Treatment Landfill. The sites are summarized in the Technical Appendix.

There are several challenges posed by the contamination. Some of these sites will require additional investigation and cleanup activities. Although several of the sites have been closed under the MCP, the residual contamination may affect how the properties may be redeveloped. The deed restrictions on properties prohibiting residential use could be revised with additional cleanup or an appropriate engineering solution. There are many design and construction alternatives that can mitigate environmental risks or the impact of contaminated soil and groundwater to project costs and schedule.

WATERFRONT SITE WHERE ADDITIONAL REMEDIATION WORK IS REQUIRED

There are many design and construction alternatives that can mitigate environmental risks or the impact of contaminated soil and groundwater to project costs and schedule.

03

Master Plan Vision & Development Opportunities

FRAMEWORK PLAN

RES. / MIXED USE
GREEN SPACE
PROMENADE
CONNECTION
ROAD/RAIL
FOCAL POINT
GATEWAY
RAIL STATION

VISION FOR THE LYNN WATERFRONT

Building upon Lynn's recent success in the downtown, the waterfront plan for the 250+ acre site transforms the underutilized industrial brownfield land into a vibrant mixed-use district. The plan for the Lynn Waterfront connects the City with the water by overcoming visual and physical obstacles, including the Lynnway, the railroad, overhead power lines, and a municipal landfill. Pedestrian-oriented connections culminate in much needed public spaces along a waterfront promenade. The plan creates mixed-use neighborhoods, acknowledging the existing site constraints and building upon the unique assets. Gateway development sites announce the arrival at Lynn's waterfront and a signature public plaza creates a focal point where downtown, North Shore Community College, the residents of Sagamore Hill and the waterfront come together.

The portion of the site designated as an industrial maritime port by the Commonwealth of Massachusetts has been incorporated into the plan to encourage the continuation of the working waterfront through commercial fishing, boat building and repair, a marine terminal and other water-dependant industrial uses. The plan also envisions a revitalized Washington Street corridor that supports North Shore Community College and the surrounding residential neighborhood with small scale retail and restaurants, as well as creates a pedestrian focused connection between downtown and the waterfront.

The vision for the Lynn Waterfront was created as a result of feedback from the community, property owners, and stakeholders. The project team developed a set of guiding principles for the development of the master plan:

- Connect the City with the waterfront
- Create connections that culminate in public spaces along waterfront promenade
- Establish a unified open space along the water
- Create a landmark open space for celebrations
- Design a mixed use neighborhood that takes advantage of views and connections
- Design the new development as an extension of the existing urban fabric
- Transform the Lynnway into a pedestrian friendly boulevard
- Transform lower Sagamore Hill area into a vital residential neighborhood
- Upgrade the traffic system to be more pedestrian friendly

The project team sought to develop design solutions for the Lynn Waterfront Master Plan that are not only economically viable and publicly supportable, but also development that is environmentally sustainable and elevates the quality of life for users and visitors alike. The United Nations World Commission on Environment and Developments described sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This sense of sustainability is ingrained in the approach towards the development of the Lynn Waterfront. This perspective creates a design plan that acknowledges a strong relationship between the natural setting and proposed development, supporting the best scientific analysis of the environment while responding to the underlying market and economic reality. The sustainability goals for the Lynn Waterfront are to:

- Create a walkable, livable community that promotes human interaction

GROUND FLOOR RETAIL ACTIVITY ADDS VITALITY

- Configure buildings on the site to minimize energy use by means of natural ventilation, daylighting and shading from vegetation.
- Explore diverse transportation options
- Design walking trails and bike paths that link the built environment with the natural environment
- Conserve water resources through reuse, on-site treatment and reduction in peak demand
- Use biofiltration where possible to ensure groundwater recharge and to reduce out-of-basin transfer through stormwater drains
- Establish a natural systems framework that preserves open space, habitat, buffers, and corridors to minimize impacts to the ecosystem.

THE LYNN WATERFRONT MASTER PLAN VISION

LYNN WATERFRONT MASTER PLAN DISTRICTS

The master plan vision for the Lynn Waterfront divides the immense project area into 4 distinct districts:

- Gateway Waterfront Neighborhood
- Marine Park Industry Center
- Downtown Waterfront
- Lower Sagamore Hill

Each of the districts has a distinct character created by its location, uses, assets, history, and surrounding environment.

Gateway Waterfront Neighborhood

Located at the southern edge of the site, this district serves as a gateway to Lynn as residents and visitors cross over the General Edwards Bridge from Revere along Route 1A. The street network in this district generally respects the existing streets within this portion of the site and organizes the streets and open spaces to create vistas towards the water. This district takes advantage of water on two sides by locating a marina on the Saugus River and creating a more natural landscape environment on the Lynn Harbor side. The design for the Saugus River marina incorporates the existing Department of Conservation and Recreation's fishing pier, taking it out of isolation and making it a real community asset.

For the marina on the Lynn Harbor side, a portion of the filled tidelands could be reclaimed to create this marina. It would need to be protected from the strong ocean current, but the marina meets the guidelines set forth in Chapter 91. It also creates a visual statement at the end of a linear public open space, as viewed from the Lynnway, giving even the businesses along the Lynnway a waterfront view.

MARINA WITH WATERFRONT RESIDENCES

WATERFRONT PROMENADE LINED WITH RESTAURANTS

PIER DESIGN THAT CELEBRATES MARITIME HISTORY

The master plan vision for the Lynn Waterfront divides the immense project area into 4 distinct districts. Each of the districts has a distinct character created by its location, uses, assets, history, and surrounding environment.

The vision for this district features a variety of housing types, block configurations, and price ranges, with supporting retail, restaurants, and some office space.

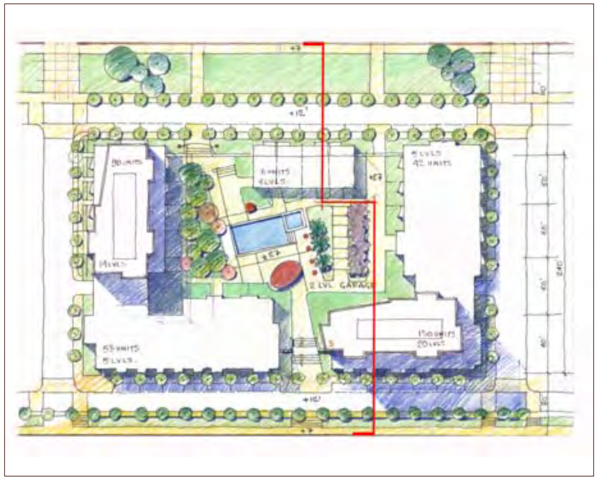
THE GATEWAY WATERFRONT NEIGHBORHOOD DISTRICT

Additionally, a generous open space is created along the Lynn Harbor that allows for a variety of active and passive recreation and gives the community a place to congregate along the waters edge.

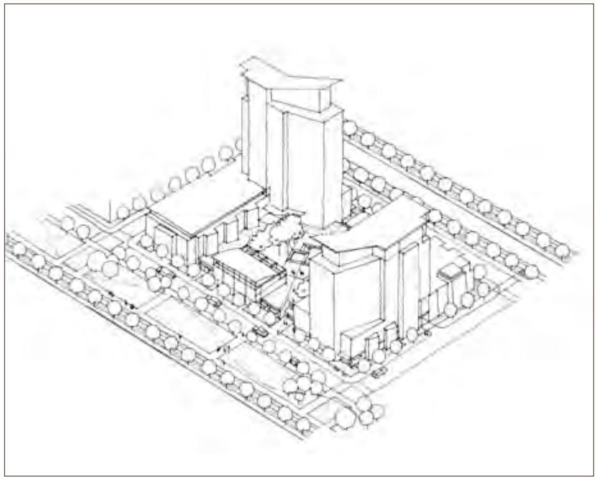
The vision for this district features a variety of housing types, block configurations, and price ranges, with supporting retail, restaurants, and some office space. The majority of the office space would be located along the Lynnway, with residential buildings making up the rest of the district. Ground floor retail is encouraged along the Lynnway, as well as along the waterfront and other primary streets within the district. Restaurants should be oriented towards the water with views of the ocean and Nahant.

A typical block within this district would have lower-rise residential along the waterfront, transitioning to high-rise in the middle of the district to maximize waterfront views for each development. Parking would be internal to the block and could be created with a green roof or other program to lessen the heat island effect and create a more pleasing view for the residents.

TYPICAL BLOCK SECTION



TYPICAL BLOCK PLAN



3D VIEW OF TYPICAL BLOCK

Surface parking or creative multipurpose paving could be used for a fish and farmer's market or festivals to celebrate the marine history of Lynn.

THE MARINE PARK INDUSTRY CENTER DISTRICT

Marine Park Industry Center

Given the multiple constraints in this district including the State's designated port area (DPA), the regional Water & Sewer Treatment Plan, and the liquid natural gas (LNG) reserve tank, this district is geared more towards light industry and office. Since the DPA is restricted to only marine related industrial activities, the majority of this area is envisioned as a working waterfront with a range of activities including a commercial fishing marina, boat building and boat repair, a marine terminal associated with the state-owned pier, and a passenger terminal for the proposed commuter ferry and public boat ramp.

Surface parking or creative multipurpose paving could be used for a fish and farmer's market or festivals to celebrate the marine history of Lynn. A portion of the landfill could be relocated to create the commercial fishing marina, again reclaiming the filled tidelands and creating a lasting environment that brings these water dependent uses back to the waterfront.

Along the Lynnway, office buildings should be approximately 6 to 10 stories, so as not to create a canyon effect along the Lynnway. Residential uses, although not encouraged in this district, would be acceptable given the proper amount of buffer between the light industrial uses and the residential buildings. While many may not believe that it is possible to have residences anywhere near uses such as a Water and Sewer Treatment Plant, precedent shows that given a waterfront location and innovative methods of mitigation, even million dollar condo have been developed nearby, as in Chesapeake Harbor, Maryland.

A FISH MARKET ALONG THE WATERFRONT

MILLION DOLLAR CONDO LOCATED NEXT TO TREATMENT PLANT IN CHESAPEAKE HARBOR

THE WORKING WATERFRONT

The creation of a signature park where the downtown meets the waterfront is envisioned as the main focus of this district.

THE DOWNTOWN WATERFRONT DISTRICT

Downtown Waterfront

The Downtown Waterfront District builds upon its proximity to downtown and existing assets such as the renovated Clocktower and Seaport Landing. The creation of a signature park where the downtown meets the waterfront is envisioned as the main focus of this district. While a realignment of the Lynnway into a tighter, more urban type of roadway significantly enhances the size and capability of this signature open space, the vitality of this district does not hinge upon it. The plan creates a waterfront promenade with magnificent views of the Harbor, Nahant and even Boston in the distance. Mixed-use buildings create a dense urban neighborhood with residences, offices, retail and a much needed hotel in the area. Buildings should be designed with ample glass to capitalize on the views of the water and to light up the area in the evenings.

With both the commuter rail and the commuter ferry in close proximity, this district could be the classic transit-oriented development with shared parking and a real pedestrian feel. The signature open space is the perfect place for community gatherings and festivals. An amphitheater, trellis structures, a play ground, and fountains make the park a place to enjoy throughout the year regardless of scheduled events.


A DOWNTOWN AMPHITHEATER ON THE WATER


TRELLIS STRUCTURES PROVIDE SHADE AS A PARK AMENITY


CREATIVE PAVING AND LANDSCAPE DESIGN

Low to mid-rise buildings are envisioned for Washington Street and lower Sagamore Hill to capitalize on views, but remain consistent with the existing scale of buildings in the neighborhood.

THE LOWER SAGAMORE HILL DISTRICT

Lower Sagamore Hill

Lower Sagamore Hill is anchored by both the existing North Shore Community College and the potential for a gateway development at the Nahant Rotary. In between, the character of Washington Street needs to be elevated to be consistent with the recent success downtown for restaurants and urban living, as well as provide support for the stable residential neighborhood found at the top of Sagamore Hill and the College.

Low to mid-rise buildings are envisioned for Washington Street and lower Sagamore Hill to capitalize on views, but remain consistent with the existing scale of buildings in the neighborhood. Along the waterfront, where there are already higher-rise buildings such as Seaport Landing and the senior housing near the rotary, buildings could be up to 10 stories, in line with other buildings along Lynn Shore Drive.

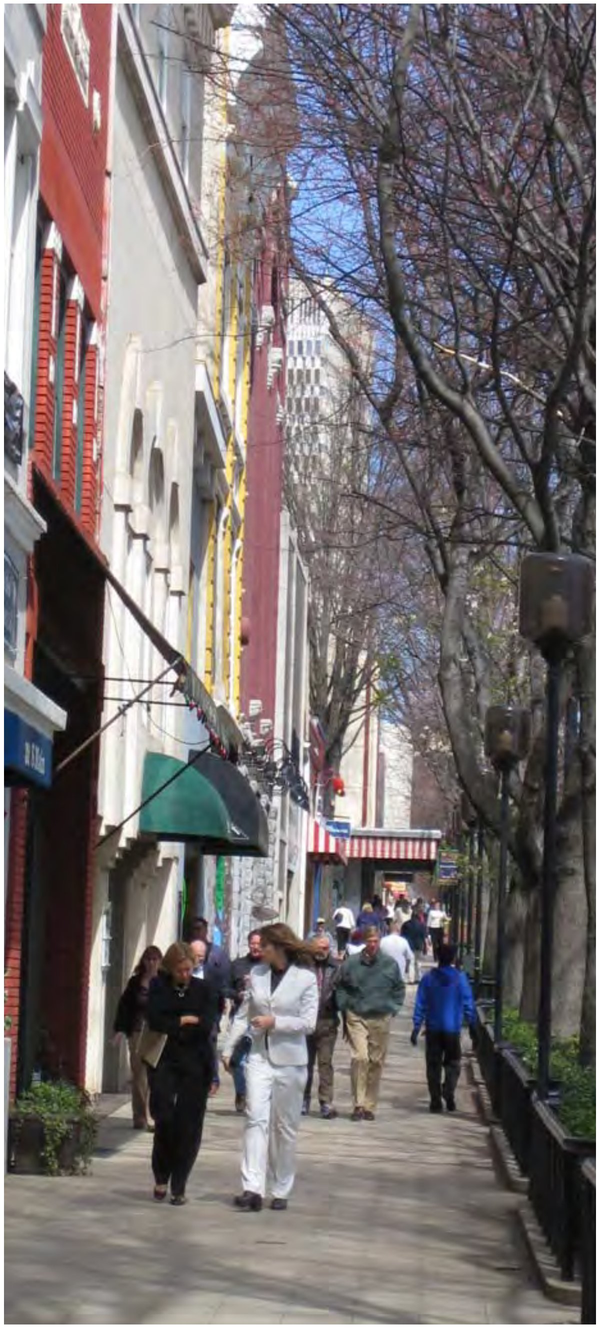
The Washington Street Corridor is envisioned as a lively extension of downtown that connects to the waterfront with ground floor retail and urban living above. Restaurants with views of the waterfront or retail stores that support the College, such as a bookstore or café would contribute to the revitalization of this district.

North Shore Community College is bound by the waterfront, downtown, and Sagamore Hill, making it difficult to place a back door. Unfortunately, since quality and consistency is currently lacking along Washington Street, the College has made recent plans to expand and will do so with a focus on the waterfront and downtown. Should they continue to grow, the master plan encourages them to also address the Sagamore Hill neighborhood with academic buildings facing onto Washington Street.

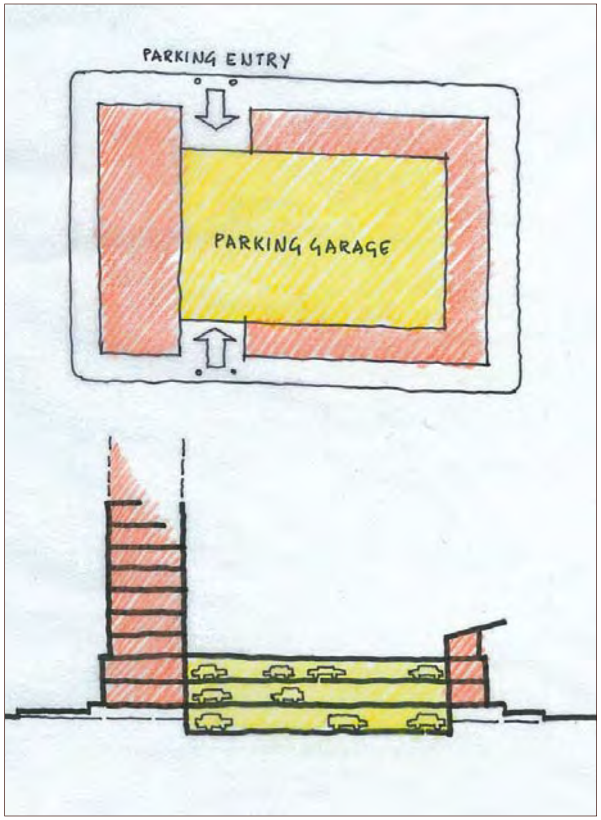
The Christie's site is envisioned as a signature development that announces ones arrival to the Lynn Harbor and creates a presence on the Nahant Rotary with 270 degree views of Lynn Harbor, Nahant, and Swampscott. The development should be predominantly residential, consistent with the surrounding residential neighborhood use, but have a mix of uses on the ground floors, accommodating to the pedestrian traffic at the beach and eye-catching for the commuters passing by.

A PEDESTRIAN SCALE STREET WITH RETAIL AND HOUSING

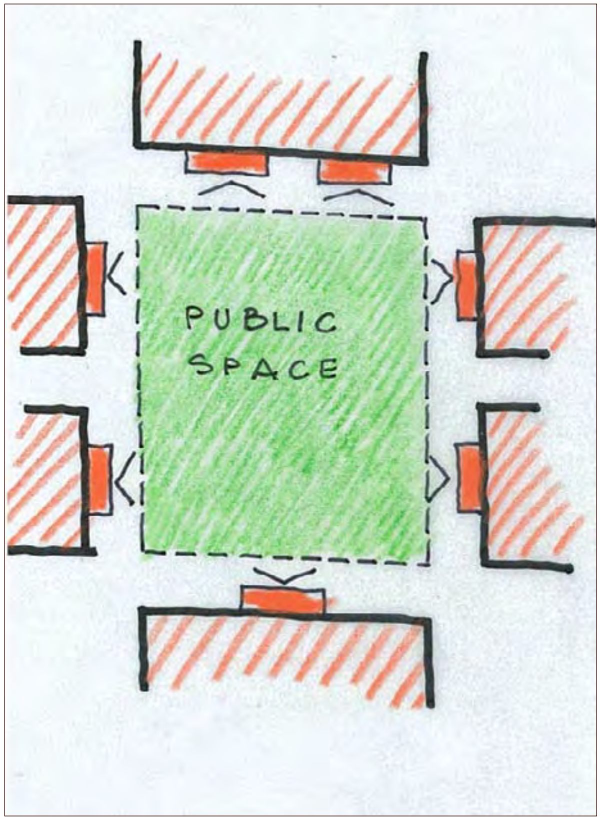
GALLERY STOREFRONTS WITH HOUSING ABOVE



WIDE SIDEWALKS AND LANDSCAPING CREATE A PEDESTRIAN FRIENDLY ENVIRONMENT



PARKING GARAGE IN PLAN AND SECTION



ORIENT ENTRIES, RETAIL, AND SEATING TO ACTIVATE PUBLIC SPACES

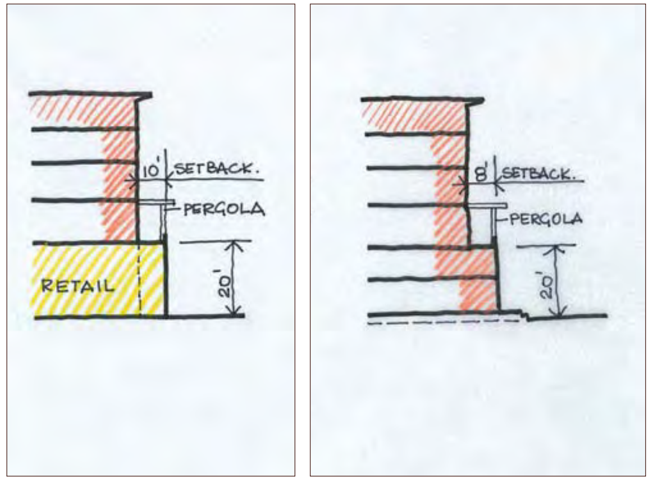
Development standards are intended to create a compact urbane waterfront with residences, shopping, cultural activities, waterfront amenities, and employment in close proximity.

DESIGN GUIDELINES

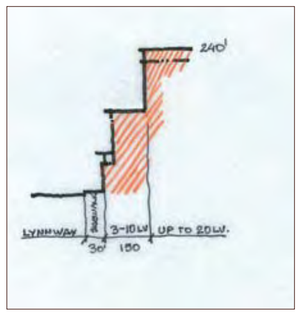
The Waterfront Master Plan has distinct districts, yet there are guidelines for development that apply generally to the entire area. Development standards are intended to create a compact urbane waterfront with residences, shopping, cultural activities, waterfront amenities, and employment in close proximity. In particular, the guidelines encourage an active pedestrian environment, balanced transportation, distinctive architecture, and ground floor retail on primary streets. These guidelines can form the basis of the site plan review and other forms of development review and regulation.

Buildings that engage the street shape the civic realm.

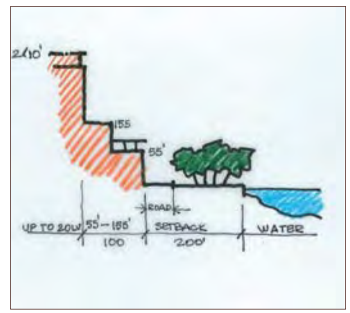
- Buildings should be set close to the street and should define open space and streets with consistent heights along their facades
- Where greater height is appropriate, the upper levels should be stepped back to provide consistent street walls along the street and in relation to the buildings on the opposite side.
- On residential streets, buildings may be set back on the site to allow for landscaped planting beds. For rowhouses, stoops may provide rhythm and interest along the street.
- Multiple building entrances should open out to the public realm of the street or open space.
- Buildings should be designed to accommodate ground floor retail. Where feasible, this use is encouraged, especially on prominent corners and where concentrated on both sides of the street or facing the waterfront.
- At the street level, buildings should be proportioned and offer details that relate to the pedestrian environment.



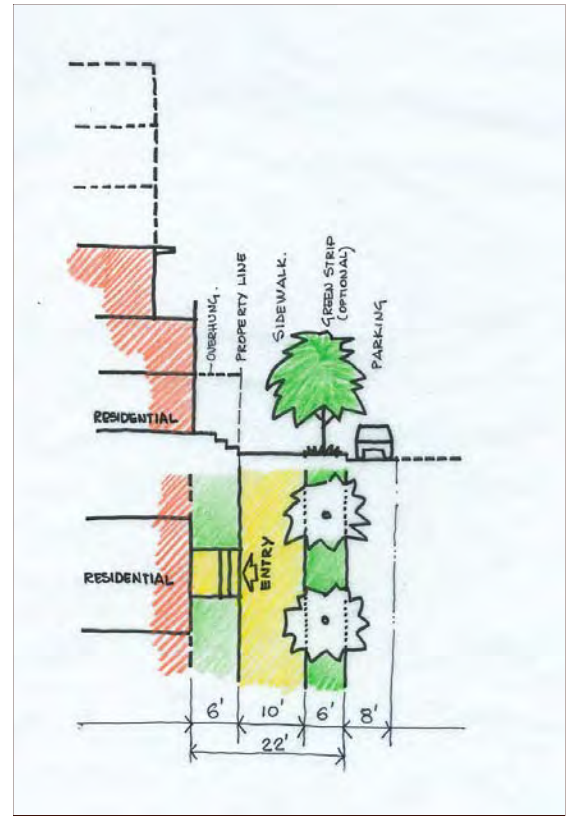
RESIDENTIAL STEPBACK WITH OR WITHOUT RETAIL



STEPBACK ON THE LYNNWAY



STEPBACK ON THE WATERFRONT



TYPICAL RESIDENTIAL SECTION

Pedestrian-friendly streets balance use by vehicles and people.

- Streets should be two-way wherever possible to make it easier to navigate and to calm traffic.
- On-street parking is recommended for at least one-side of all streets to increase the parking supply of convenient parking, to support retail use, to encourage people to park and walk on city streets to their destination, to buffer the pedestrian from moving traffic, and to calm traffic.
- Street trees are essential for pedestrian friendly streets since they create a cooler microclimate in the summer, buffer the pedestrian from moving traffic, and improve the image of the district.
- A palette of materials for lights, street furniture, and paving should be established to provide "connective tissue" within and between districts, minimize awkward district transitions, and is easier to maintain. Slight variations of this palette should be created for each of the districts.
- In the more industrial areas, truck routes should be carefully considered to minimize conflict with residential areas.

DEVELOPMENT PLAN

- NO BUILD ZONE (EXCEPT FOR DPA APPROVED USES)
- 3-4 LEVELS (LIGHT INDUSTRIAL) 392,034 SF FOOTPRINT
- 3-4 LEVELS (GROUND LEVEL RETAIL, RESIDENTIAL) 433,843 SF FOOTPRINT
- 6-10 LEVELS (MIXED USE) 165,181 SF FOOTPRINT
- 6-10 LEVELS (RETAIL-GROUND LEVEL, OFFICE ABOVE) 883,887 SF FOOTPRINT
- UP TO 20 LEVELS (MIXED USE) 2,313,688 SF FOOTPRINT

The Master Plan calls for a large amount of new residential, office, and retail space; however, with a 20 year full build out, the program is feasible given the regional market trends.

MARKET IMPLICATIONS

As a means of achieving the key goal of creating a vibrant mixed-use development, the market analysis focuses on the economic and fiscal implications of the Lynn Waterfront Master Plan. The Master Plan calls for a large amount of new residential, office and retail space; however, with a 20 year full build out, the program is feasible given the regional market trends outlined earlier in this document.

Based on community feedback, the project team prepared a vision plan and tested it against the market analysis. A land use mix program based on the initial design was created and its feasibility was tested given the market trends among residential, office, and retail land uses.

The project team created a development plan that highlights height and use for the Waterfront to maximize waterfront views, avoid canyon-like effects along open spaces, create vitality, and ensure proper transitions between districts and conflicting uses. From this diagram, land use assumptions were made for the project area and a conceptual build out program was established. Residential is the predominant land use with approximately 3,100 units assumed. Commercial uses account for approximately 1.6 million square feet. Light industrial amounts to 490,000 square feet. In total, the program incorporates approximately 5.7 million square feet of development.

LAND USE MIX ASSUMPTIONS, LYNN WATERFRONT PLAN

	USE	MIX RESIDENTIAL	MIX: RETAIL	MIX: OFFICE	MIX: LT INDUSTRY	MIX: HOTEL
PURPLE	LIGHT INDUSTRIAL	0 %	0 %	0 %	100 %	0 %
YELLOW	RETAIL AND RESIDENTIAL	80 %	20 %	0 %	0 %	0 %
PINK	RETAIL AND OFFICE	20 %	50 %	20 %	0 %	10 %
ORANGE	MIXED-USE ZONE	80 %	10 %	5 %	0 %	5 %
RED	MIXED-USE ZONE	80 %	10 %	5 %	0 %	5 %

CONCEPTUAL BUILD-OUT PROGRAM, LYNN WATERFRONT PLAN

	PURPLE		YELLOW		PINK		ORANGE		RED		TOTAL	
	SQ. FT.	UNITS	SQ. FT.	UNITS	SQ. FT.	UNITS	SQ. FT.	UNITS	SQ. FT.	UNITS	SQ. FT.	UNITS
RESIDENTIAL	0		404,920	340	183,850	150	206,146	170	2,887,480	2,410	3,682,396	3,100
RETAIL	0	0	101,230		459,620		25,768		360,940		947,558	
OFFICE	0		0		183,850		12,884		180,470		377,204	
HOTEL	0		0		91,920		12,884		180,468		285,272	
LIGHT INDUSTRIAL	490,380		0		0		0		0		490,380	
TOTAL	490,380		506,150		919,240		257,682		3,609,358		5,782,810	

The Residential Market

The Lynn Waterfront Plan's residential program consists of moderate to high rise, multi-family residential projects. Given this product, the primary target markets for the Lynn Waterfront residential units will be young households with no children and empty nester/retiree households.

The particular market segments most likely attracted to Lynn's Waterfront in the near term are moderate income households who demand affordable housing in the Lynn Region. These households will be attracted to Lynn for its central location, great access and its waterfront.

Claritas PRIZM data categorizes households on the basis of lifestage, lifestyle, tastes and preferences and income. Given the development program envisioned on Lynn's Waterfront, the project team calculated the number of households in the Essex, Suffolk and Norfolk Counties that possess the following characteristics:

- Urban-inclined in tastes and preferences;
- Singles and couples with no or few children;
- Retirees and empty nesters; and,
- Moderate income (median income below $70,000 and above $45,000).

There are 202,000 such households in the Lynn region. These households are Lynn Waterfront's "target market". These households represent one-third of the total households in the three-county region. This share was applied to the 2010 household projection to estimate the potential market for Lynn Waterfront residential units.

The Lynn Waterfront program calls for approximately 3,100 housing units. Waterfront residential projects will have to capture approximately four percent of the potential moving market over the next ten years. Over a longer absorption period the capture rate required would be lower.

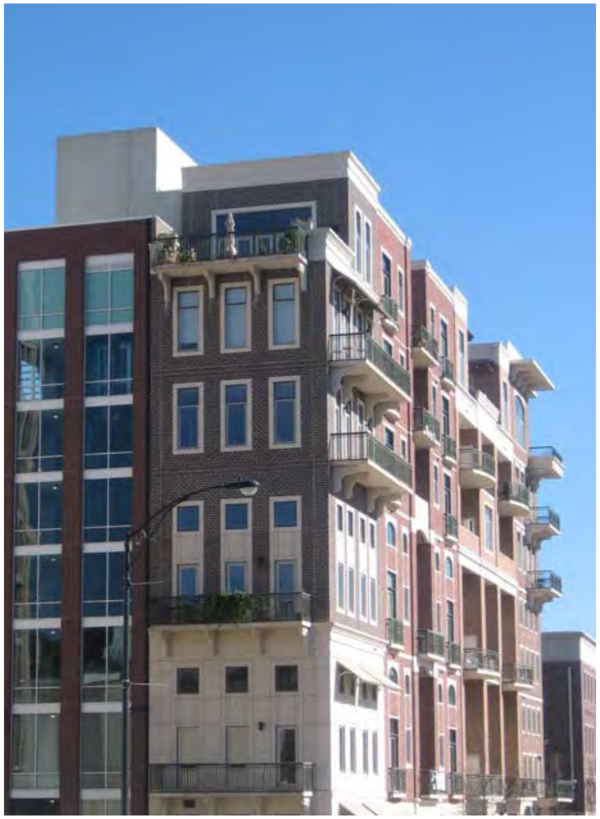
Given the demand for waterfront living, Lynn's strategic location and access and the general lack of affordable housing options in the Boston Metropolitan Area, it is reasonable to assume that Lynn can capture 2.5 to 5 percent of the moderate income, multi-family residential market that will be moving over the next 10 to 20 years. Even though the project anticipates a 20-year build-out of the Waterfront, a lion's share of the residential can likely be built in a 10-15 year timeframe.

The Office Market

The Lynn Waterfront Plan accommodates approximately 377,000 square feet of office space. Office development will likely occur over a 20-year period as the attractiveness of the Waterfront as a business location evolves out of the environment created with higher density residential development.

According to economy.com employment projections, Essex County office-inclined employment is projected to increase by 9,350 jobs between 2007 and 2017 and 17,480 jobs between 2007 and 2027. At 250 square feet per employee, job growth will create a demand for 2.3 million square feet of office space between 2007 and 2017 and 4.4 million square feet between 2007 and 2027.

Assuming a 20-year build-out, it is reasonable to assume that the Lynn Waterfront can capture less than ten percent of this net new demand for office space. It is important to note, that this analysis does not take into consideration the potential for businesses located in Norfolk and/or Suffolk County relocating to Lynn's Waterfront because of its unique locational attributes. Lynn's Waterfront will be a competitive location for office because of its excellent access (Lynnway and transit), waterfront location, mixed-use environment and proximity to Boston.



MID-RISE MULTIFAMILY LIVING

The Retail Market

As envisioned, the retail mix on the Waterfront could incorporate an urban version of community-oriented stores like Target and Home Depot, neighborhood stores like a super market and pharmacy, eating and drinking establishments and other smaller community-oriented stores. These store types would exist in a mixed-use environment with larger format stores on the Lynnway and smaller stores and restaurants in the Waterfront neighborhoods.

For the primary trade area, the project team extrapolated Claritas' 2011 retail expenditure projections to 2020. The primary trade area's retail spending potential by general store type is summarized below.

Applying average sales to the Waterfront's conceptual retail build-out program results in $332 million in total sales. To support the retail development program will require that the Waterfront capture approximately one–fifth of the primary trade area's shopping center-inclined retail potential. This capture rate is reasonable given the current lack of competition within and in the immediate vicinity of the primary trade area.

RETAIL EXPENDITURE POTENTIAL: PRIMARY TRADE AREA, LYNN WATERFRONT AREA 2020		
SHOPPING CENTER INCLINED STORE TYPES		
LARGE FLOORPLATE STORE-TYPES		$ 881,970,728
General Merchandise/Wholesale	$ 325,751,000	
Home Improvement/ Building	$ 237,228,000	
Food	$ 318,991,728	
OTHER STORES		$ 491,472,000
Furniture/Home Accessories	$ 68,079,000	
Electronics/Home Appliance	$ 60,975,000	
Health/Personal Care	$ 138,828,000	
Clothing	$ 90,770,000	
Jewelry	$ 19,280,000	
Sporting Goods, Hobby, Book, Music	$ 47,063,000	
Miscellaneous	$ 66,476,000	
EATING AND DRINKING ESTABLISHMENT		$ 267,140,000
Sub-Total		$ 1,640,582,728
OTHER RETAIL TYPES		
Non-Store		$ 174,151,000
Automotive/Gas		$ 757,235,000
Sub-Total		$ 931,386,000
TOTAL		$ 2,571,968,728

RETAIL WITH OFFICE ABOVE

Economic Implications: Jobs

The project team estimated the Conceptual Build-Out Program's development costs, construction costs, and market value by land use. The project team employed industry standards, RS Means construction cost estimates and recent work with developers in Massachusetts to develop the cost and value estimates.

Construction on Lynn's waterfront will create employment by virtue of the land and materials required for construction. In contrast to annual "operating" impacts, which occur on an ongoing basis, "construction phase" impacts are one- time impacts. Construction costs form the bases for projecting construction jobs. As shown above, construction costs are estimated to total approximately $1.18 billion. The analysis relied on a recent IMPLAN analysis of a major Massachusetts mixed-use development to determine the construction jobs generated from Lynn Waterfront's Conceptual Build-Out Program. The redevelopment of Lynn's Waterfront will generate approximately 9,620 construction jobs. Development will occur in phases and, as such, these jobs will be realized over a 20-year period.

Employment ranges by retail store type. Based on the understanding of Lynn Waterfront's position in the retail market, the project team has estimated a general mix of store-types in order to generate employment estimates. Given the store mix assumed, the retail component of the development program will support 2,180 jobs. The office, hotel, and light industrial uses in the Plan will support an additional 2,740 employees. In total, the Waterfront redevelopment will support 9,920 construction jobs and 4,920 full time jobs over the next 20 years.

CONCEPTUAL BUILD-OUT PROGRAM, LYNN WATERFRONT PLAN

	SQ. FT.	DEVELOPMENT COST/SF	CONSTRUCTION COST/SF	CONSTRUCTION COST	MARKET VALUE/SF	MKT VALUE
RESIDENTIAL	3,682,396	$ 238	$ 208	764,097,000	$ 244	$ 898,937,820
RETAIL	947,558	$ 250	$ 228	215,569,000	$ 268	$ 253,611,175
OFFICE	377,204	$ 280	$ 253	95,433,000	$ 298	$ 112,273,696
HOTEL	285,272	$ 208	$ 181	51,492,000	$ 212	$ 60,578,302
LIGHT INDUSTRIAL	490,380	$ 120	$ 108	52,961,000	$ 127	$ 62,307,106
TOTAL	5,782,810			$ 1,179,552,000		$ 1,887,708,099

Fiscal Implications

The project team calculated annual fiscal impacts attributable to Lynn Waterfront's redevelopment as envisioned in the Waterfront Plan. These preliminary calculations incorporate City revenues from real property taxes, motor vehicle excise taxes, personal property taxes and lodging taxes. The assumptions with regard to real personal property taxes are derived from interviews with City officials. The assumptions regarding other taxes are derived from a recent detailed Fiscal and Economic Analysis performed for another Massachusetts town.

The Waterfront Development Plan at build-out represents $1.4 billion of real property value. Values are based on development costs and industry standards with regard to return on investment. As shown in the table, waterfront development as envisioned will generate an estimated $17.8 million in annual property tax revenues.

For residential properties, automobiles comprise the primary source of personal property taxes. These taxes can be projected assuming there are 1.5 vehicles per residential unit with an average assessed value (based on State depreciation formulas) of $6,000 per vehicle. Applying these assumptions, the project's annual vehicle excise tax revenue is approximately $697,500 per annum.

In the Town of Somerville, Massachusetts personal property value represented approximately 1.9 percent of commercial real property value. The project team has applied this ratio to estimate the personal property tax implications of waterfront redevelopment. Applying this ratio, personal property tax revenues associated with the Waterfront's redevelopment are estimated to total $197,400 per year.

Combining the various revenue streams outlined, total annual revenues accruing to the City of Lynn as a result of the Master Plan's implementation amount to approximately $18.7 million.

BUID-OUT PROPERTY TAX REVENUE, LYNN WATERFRONT PLAN 2007 DOLLARS

	MKT VALUE	% ASSESSED	TAX/$1,000 ASSESSED VALUE	ANNUAL PROPERTY TAX REVENUE
RESIDENTIAL	$ 898,937,820	90%	$ 10.41	$ 8,422,148
RETAIL	$ 253,611,175	90%	$ 21.26	$ 4,852,596
OFFICE	$ 112,273,696	90%	$ 21.26	$ 2,148,245
HOTEL	$ 60,578,302	90%	$ 21.26	$ 1,159,105
LIGHT INDUSTRIAL	$ 62,307,106	90%	$ 21.26	$ 1,192,184
TOTAL	$ 1,387,708,099			$ 17,774,279

One of the primary goals of the Waterfront Master Plan is to balance the needs of thru traffic with those of pedestrians and local drivers, whose access to the waterfront is now hindered by the multi-lane roadways running between the city and the shore.

THE PROPOSED RECONFIGURATION OF THE TRAFFIC FLOW

TRAFFIC STRATEGY

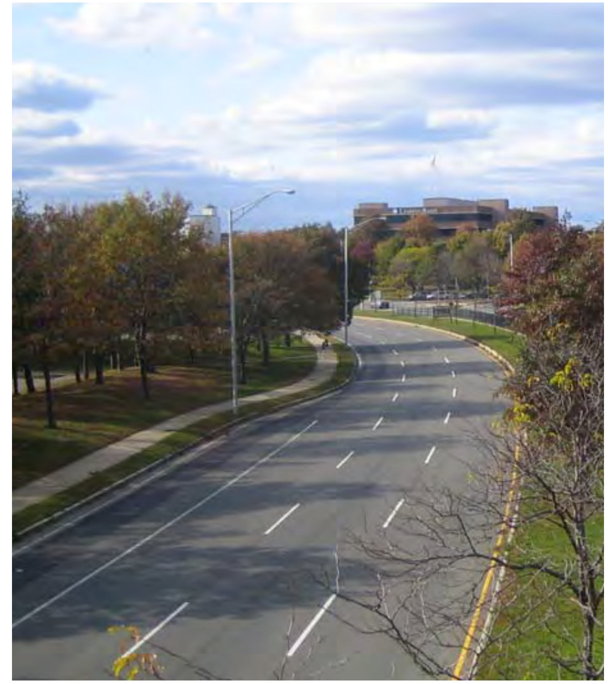
As the Lynn waterfront redevelops into a walkable urban environment, the Lynnway, Carroll Parkway and the streets which feed them will need to continue to serve a regional transportation function. One of the primary goals of the Waterfront Master Plan is to balance the needs of thru traffic with those of pedestrians and local drivers, whose access to the waterfront is now hindered by the multi-lane roadways running between the city and the shore.

The Waterfront Master Plan asserts the importance of these roadways to the City of Lynn, both as streets for driving and as part of the urban fabric. While recognizing that Rte. 1A, Carroll Parkway and Lynn Shore Drive must continue to handle the regional traffic that relies on them, the Master Plan does not take intersection levels of service and vehicular travel time to be the only relevant considerations in determining how traffic should be managed. Also important are the walkability of the downtown, access to the waterfront, and the use and design of the land at the eastern end of Market Street. At present, this land is taken up by roadways (the Lynnway, Market Street Extension and Broad Street) and the vacant space between them. This area separates the downtown from the waterfront, and is a formidable barrier to bringing them together. To free up the land for reuse as a civic space, it will be necessary to simplify and consolidate the roadway system.

The alignment of the Lynnway is the main problem. Its swooping curve as it transitions to Carroll Parkway is designed to carry high volumes of thru traffic at maximum speeds. Furthermore, an auto-oriented reconfiguration of the circulation pattern has distorted the path of Route 1A, forcing eastbound drivers to turn left onto the eastern end of Market Street and then immediately to turn right to return to Broad Street/ Route 1A. This tangle of streets consumes a large area of land, making it unattractive and inhospitable to pedestrians, and creating a no-man's land that renders the waterfront practically inaccessible. The primary objective of roadway planning in this area is to channel vehicular traffic into narrower streams that will be easier to cross and less land-intensive.

THE INTERSECTION OF THE LYNNWAY AND MARKET STREET

Because of the heavy volumes of traffic on the Lynnway/ Carroll Parkway (westbound in the AM rush hour and eastbound in the PM), and because the split between the Lynnway and Route 1A creates a queue from the Market/Broad intersection back toward the Lynnway, it is not possible simply to move the Lynnway to the north and reduce the radius of its curve as it becomes Carroll Parkway. The most feasible alternative is to split the traffic going between the Lynnway and Lynn Shore Drive between its two directions—with eastbound traffic staying on the water side of North Shore Community College, and westbound traffic shifting to the land side, via Washington Street and Broad Street.



THREE LANES OF THE SIX LANE BARRIER BETWEEN DOWNTOWN AND THE WATERFRONT

The proposed reconfiguration of traffic flow would consolidate the existing Market/Broad and Market Extension/Lynnway/Carroll Parkway intersections into one, realigning the eastern end of the Lynnway back into the original path of Route 1A (Broad Street) west of Market Street. Eastbound Lynnway traffic would turn right at the Market/Broad/Carroll Parkway intersection, facilitated by double free-right lanes and entering Carroll Parkway under Yield-sign control but also protected by the intersection's signal. Westbound traffic coming from Lynn Shore Drive and the Nahant Rotary would flow onto Washington, which would be converted into a one-way street with two lanes running northbound. At its approach to Broad Street, Washington would widen to three lanes—two left-only lanes and one allowing both left and right turns onto Broad. Westbound traffic from Carroll Parkway would thus travel on Broad Street through the Market/Broad intersection, where the realigned Lynnway would begin. Traffic operations would be aided by the signalization of the Lynnway/Pleasant Street intersection. This would permit left turns from the Lynnway eastbound onto Pleasant, making it possible to prohibit left turns from eastbound Lynnway onto Market during peak AM periods.

Traffic operations analysis, using the traffic volumes projected by the DCR study for 2011, shows that such a reconfiguration will produce acceptable levels of service at all times. The table below shows those levels of service, in the standard grading format of A (no congestion) through F (severely congested). D is generally considered to be acceptable in urban conditions.

INTERSECTION	AM PEAK HOUR	PM PEAK HOUR
Broad (Lynnway) / Pleasant	C	C
Market / Broad / Carroll Parkway	B	B
Broad / Washington B	B	B

Projected Levels of Service, 2011

The circulation scheme proposed here has the critical advantage of removing the section of the Lynnway that now separates the downtown from the water, allowing the creation of a signature open space at the eastern end of Market Street. Another advantage of the proposed circulation pattern is that it will restore the directness of Route 1A, which will once again follow Broad Street in both directions, rather than being diverted onto the Market Street Extension in the eastbound direction as is the case today.

INFRASTRUCTURE

Roads and Streets

To minimize property ownership displacement, the Master Plan retained most of the existing roads and public Right of Ways. All primary access intersections along the Lynnway were maintained and enhanced to make access in and out of the project memorable and hassle free for the anticipated increase in vehicular trips that will be generated at full build out. Additional road network, primary (connecting three of the newly created districts) and secondary (roads within each district) were identified and carefully laid out to serve future needs of the project.

Special care was taken to ensure all roadway cross sections are wide enough to provide ample room for pedestrian circulation and bicycle traffic. All roads, primary and secondary, will have parallel parking along both sides dedicated for public use on a first come, first serve basis. Development, such as residential, office, and retail, will have its own dedicated parking internally to meet the needs of each use. This configuration will reserve roadway parking for the general public to encourage visitation to the site at all hours of the day.

By maintaining the majority of the existing roadway alignments, the Master Plan reduces the cost of utility construction and encourages direct connectivity to the project site from adjacent city neighborhoods and the downtown. Key access roads that are centrally located within the overall project and each district should be constructed with wide landscaped medians to create a pedestrian friendly environment, reduce the heat island effect, and enhance the visual appeal and user experience. To offset the proposed density of development throughout of the project, ample land has been reserved for open public spaces. Special care was exercised to establish ample open space in the form

AMPLE STREET WIDTH ALLOWS FOR BIKE LANES, PARKING, AND LANDSCAPING

By maintaining the majority of the existing roadway alignments, the Master Plan reduces the cost of utility construction and encourages direct connectivity to the project site from adjacent city neighborhoods and the downtown.

of small community based pocket parks. These parks will serve the daily needs of the newly established community, as well as city residents at large.

The Master Plan proposes adding parallel parking on both the inbound and outbound sections of the Lynnway during off peak traffic flow to balance the image of the Lynnway, making it a more friendly environment during non-peak times, while maintaining its use as a commuter throughway during peak times. Essentially, the three lane roadway section will be reduced to two in its respective direction after morning and before evening rush hours. This action will encourage city residents to come and visit the existing businesses and commercial establishments along both sides of the Lynnway with ample places to park. This will be good for business owners, as well as city residents and shoppers from the regional area.

Utilities

Historically, the 250 acres that constitute the waterfront project area, were used for a large variety of light to heavy industrial uses. Industrial uses require ample electrical power supply, domestic water, natural gas, and other basic utility services. Hence, there is ample residual capacity within the area to serve the needs of project build-out for the suggested program in the Master Plan. However, most of the existing utility service lines are over 50 years old and most likely will require complete overhaul and upgrade.

This Master Plan assumes that new utility service lines will be provided as part of the overall development initiative to serve the needs of the project. Furthermore, the Master Plan recommends that all utility service lines such as electrical power, cable, and telecommunication will be buried in conduits underground to avoid the unsightly telephone poles throughout of the area. Water service, sanitary sewer, storm drain and natural gas will be separate services and extended along the public right of way. The regional sanitary sewer treatment facility has ample capacity to meet the needs of the proposed program.

The City of Lynn has a golden opportunity to make this development project an environmentally sustainable one by obligating itself and potential developers to follow the international Green Design initiative. This project could have a great and positive impact on the region and could attract national and international interest because of its unique location. By adopting low impact development techniques in lieu of standard past development practices, the City can create a unique new neighborhood unlike any other in the area by showing ultimate sensitivity to the living environment.

By reducing or eliminating direct discharge of storm water runoff to the Lynn Harbor, the water quality in the harbor will improve over the life cycle of the project. By following best water management practices, surface water runoff from street and roof drains can be cleaned and filtered by channeling it into the numerous neighborhood green spaces for pre-treatment. The pocket parks and all other green open spaces can be utilized to store, filter and cleanse the surface runoff prior to discharge into the harbor.

Green design technology is making remarkable advancement on a monthly basis. By committing to a sustainable design approach, the consumption of energy can be reduced and diversified to gain the benefits of solar, wind, geothermal and other emerging industries. This initiative can make this project attractive and desirable to new residents and make future development sustainable for generations to come.

Creating a smart development project that uses natural energy sources to augment the high cost of imported fuel will enhance the economic rate of return on investment.

A GREEN ROOF REDUCES STORM WATER RUNOFF AND THE HEAT ISLAND EFFECT

Implementation Strategy

04

THE LYNN WATERFRONT MASTER PLAN VISION

PHASING

The Lynn Waterfront Master Plan calls for significant changes in existing uses from the current mix of heavy and light industry and automotive retail to the proposed mixed of residential, office, and lifestyle retail. The plan also must take into consideration the fact that much of the land requires environmental mitigation. An undertaking of this magnitude will take several decades, if not more, to complete. Future trends, market demand, social behaviors, and community needs tend to be cyclical and will, therefore, affect the time frame of project completion.

To make the development of this land more manageable over a long period of time, the Master Plan identifies four distinct neighborhood districts:

A. Gateway Waterfront Neighborhood

B. Marine Park Industry Center

C. Downtown Waterfront

D. Lower Sagamore Hill

Each district is large enough to be developed in multiple phases. Due to pent up demand by current ownership of the land, particularly parcels located in districts A and C mentioned above, multiple project commencement is possible and imminent. Upon the approval of the Master Plan, the recommended zoning changes, and the Municipal Harbor Management Plan, development interest will readily present itself. The approval of the Master Plan, along with its components, will clarify the intent of the City, the community, and the State regulatory agencies and pave the way to commence the work. The City of Lynn has already done a great service for the private ownership of the parcels within the project area by undertaking the initiative to prepare this master plan. The Lynn Waterfront Master Plan will serve as a framework and a guiding tool by establishing the long term vision for developing this valuable area along the Lynn Harbor. As development commences, the Master Plan should be reviewed approximately every five years to ensure it remains valid and continues to reflect the vision of the City and the community.

The significant effort the City undertook to negotiate the relocation of the overhead electrical power lines with North East Utility National Grid and securing a grant towards the cost of relocation is a clear massage to the private sector and the landowners of the City's determination to see that the land is developed in the near future . Once the relocation of the overhead power lines is complete, the vacated land within the previous utility right of way (ROW) will create a parcel large enough to develop, increase the value of the land, and, with initiative, will pave the way to commence development in the South Waterfront Neighborhood.

It is premature at this point to arbitrarily identify which parcel should be developed first, second, and third when ownership, remediation, and development interest all contribute to the timeliness of the 305-acre development. As interest continues to grow and the first proponent of development emerges, market demand will incite additional development projects. To accelerate the development initiative by the private sector, however, the City may start the process by initiating some of the needed infrastructure improvements. Often, this process is referred to as a public / private partnership. The public sector starts the improvement process by investing in basic overall site cleanup and improving access to the various portions of the site, hence sending a clear message to the private sector that the City is committed to share the effort in commencing development.

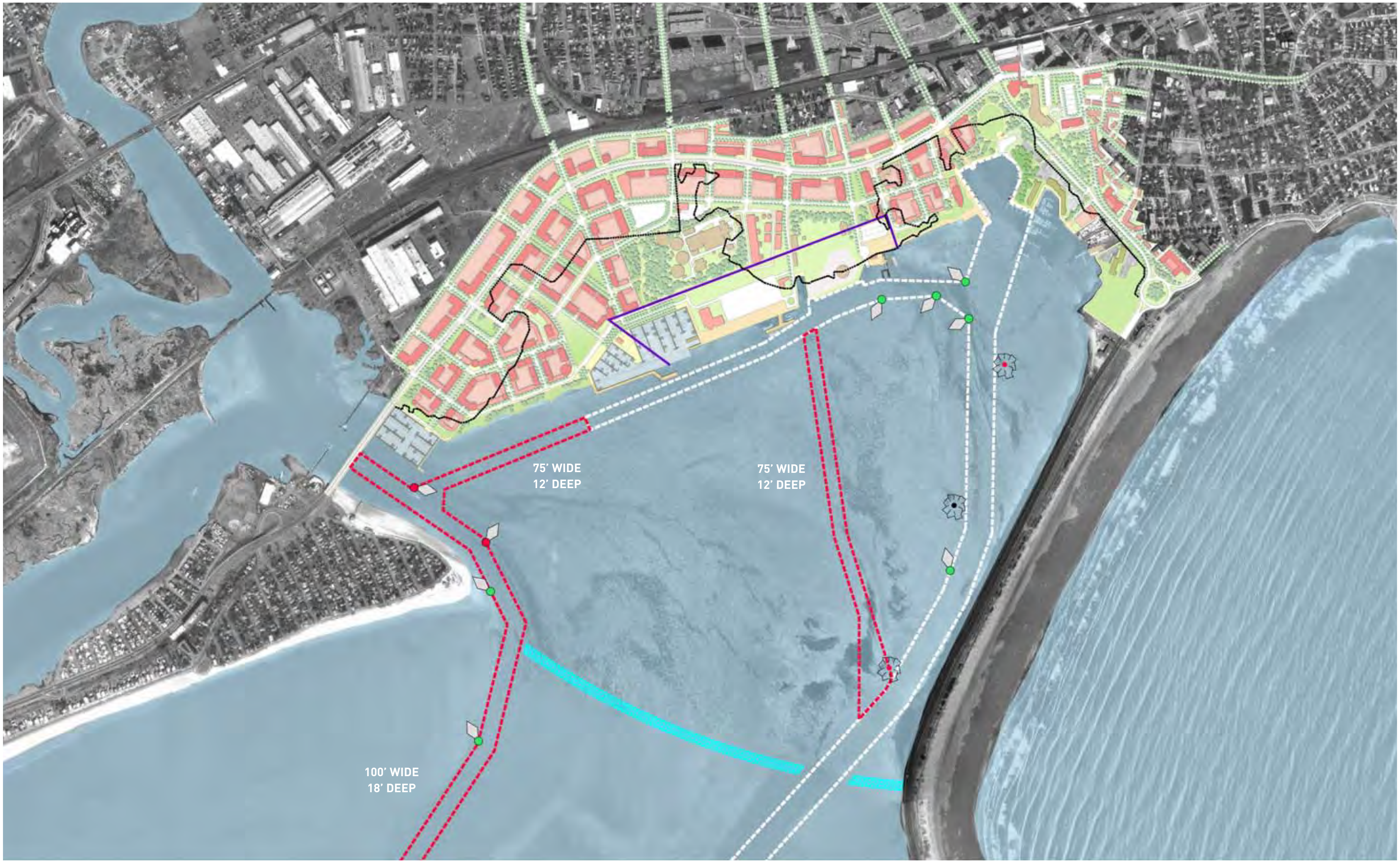
STATE AND FEDERAL PERMITTING PROGRAMS

Development of portions of the Lynn Waterfront site are subject to state and federal permitting programs and departmental review including the Chapter 91 Licensing Program, Massachusetts Wetlands Protection Act, Massachusetts Environmental Policy Act (MEPA), Water Quality Certification, Massachusetts Coastal Zone Management, and the U.S. Army Corps of Engineers. For more detailed information, please see the Lynn Waterfront Master Plan Technical Appendix.

Chapter 91

Most of the waterfront area is filled tidelands and therefore falls under the jurisdiction of the state's Chapter 91 waterways licensing programs. Chapter 91 is a state regulation to protect and promote the public use of Commonwealth tidelands and other waterways. Chapter 91 preserves pedestrian access along the water's edge in return for permission to develop non-water dependant projects on tidelands and provide facilities to enhance public use. Activities requiring authorization include structures, filling, dredging, change in use, structural alteration, and demolition/removal of structures. Tidelands within the master plan study area consist of both private tidelands and Commonwealth tidelands.

Licenses issued for the use of private tidelands are to be restricted to water-dependent uses and/or uses which serve a proper public purpose. Licenses issued for the use of commonwealth tidelands are to be restricted to uses which serve a proper public purpose such that the private advantages of use are merely incidental to the achievement of public purposes. The Lynn Waterfront Master Plan includes both water-dependent uses and extensive public facilities to ensure that the future



THE CHAPTER 91 LINE, DPA, AND HARBOR PLAN

CHAPTER 91 LINE
DESIGNATED PORT AREA
EXISTING CHANNEL
PROPOSED CHANNEL
PROPOSED WAVE ATTENUATOR
NAVIGATION MARKET

use of tidelands in the study area complies with these basic standards for tidelands licensing.

To facilitate its administration of the tidelands licensing program, the MADEP has issued regulations which define the minimum design and use standards which must be met for a nonwater-dependent use project located on private tidelands to be considered as serving a "proper public purpose". These standards are designed to ensure that land is conserved for the accommodation of water-dependent uses and that the project will have the effect of activating commonwealth tidelands for public use. The standards include, among others, setbacks from shorelines, restrictions on building heights, and restrictions on extent of building ground coverage. These standards may be waived by the Department if the project conforms with the provisions of a "municipal harbor plan", approved by the secretary of the executive office of energy and environmental affairs (EOEEA), in which alternative standards have been set. The MADEP regulations also specify that all licensed projects, whether water-dependent or nonwater-dependent, must comply with applicable environmental regulatory programs of the Commonwealth and that nonwater-dependent use projects must be consistent with the policies of the Massachusetts Coastal Zone Management Program.

Municipal Harbor Plan

The master planning process took the initial steps towards identifying the concept of a Municipal Harbor Plan (MHP) by creating the Lynn Waterfront Master Plan which represents the goals and objectives of the City and the community. The Master Plan recommends development and design standards for the site and identifies a plan for Lynn Harbor improvements. Technically, a Municipal Harbor Plan is a document which sets forth a municipality's goals and objectives for the use of a specific harbor area together with an implementation strategy designed to focus legal, institutional, and financial resources on the achievement of those goals and objectives. The MHP is developed by a municipality through a process of public dialogue. An approved MHP serves three primary functions: it enhances the responsiveness of state agency actions to local objectives, harbor conditions, and circumstances; it ensures that tidelands licensing actions on individual properties are taken in the context of the objectives and goals for the development of the larger waterfront planning area; and it provides a mechanism for the establishment of harbor-specific development/design standards as replacements for those specified in the legislation. MHPs must be prepared by the municipality and approved by the secretary of EOEEA in accordance with the provisions of 301 CMR 23.00 through 23.09. An approved MHP becomes effective, with regard to Chapter 91 licensing decisions, when the secretary determines that the municipality has met all relevant conditions of the approval decision, including as applicable the adoption and implementation of any ordinances or by-laws, capital improvements, programmatic initiatives, or organizational measures. Further, MHPs must be renewed periodically in accordance with a schedule specified in the MHP.

Massachusetts Wetlands Protection Act

All work to be conducted in or within 100 feet of the following resource areas located within the Lynn Waterfront Master Plan study area will be subject to the review and conditional approval of the Lynn conservation commission pursuant to the provisions of the Massachusetts Wetlands Protection Act and its implementing regulations:

- Bank (coastal or inland)
- Coastal Beach, including Tidal Flat
- Salt Marsh
- Bordering Vegetated Wetland

DCR'S FISHING PIER

Also, any work to be conducted within 200 feet of the bank of the Saugus River and/or within the following resource areas will be subject to such review and approval:

- Land Under a Water Body (ocean or river/stream)
- Land Subject to Coastal Storm Flowage (i.e., FEMA A- and V-zones)
- Land Subject to Tidal Action

Massachusetts Environmental Policy Act (MEPA)

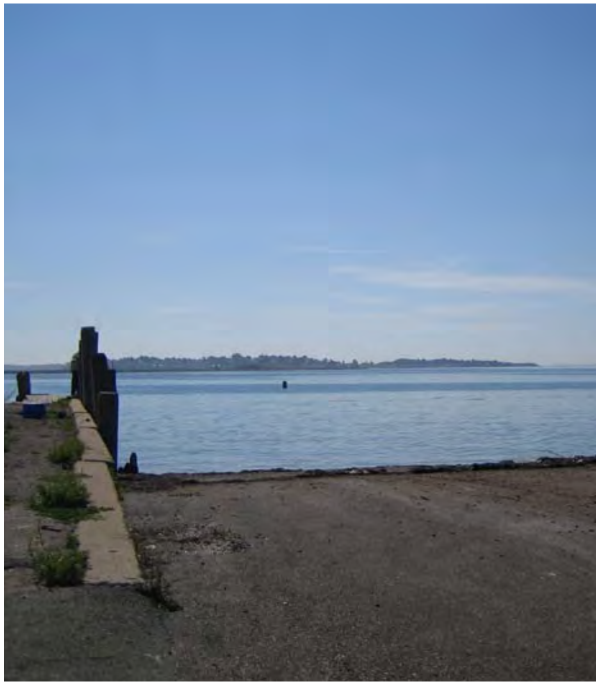
Any project which is conducted with state funds and/or requires the issuance of state permits or approvals is subject to the provisions of MEPA. Those projects which are subject to MEPA and exceed specific review thresholds are further subject to the review procedures specified at 301 CMR 11.00. Review thresholds of particular relevance to developments within the Lynn Waterfront Master Plan study area include the following:

REVIEW ACTION	REVIEW THRESHOLDS
Environmental Notification Form and Environmental Impact Report Required	» New nonwater-dependent use or expansion of existing nonwater-dependent structure where the use or structure occupies one or more acres of tidelands. » Creation of 10 or more acres of impervious area. » Generation of 3,000 or more new average daily trips on roadways providing access to a single location.
Environmental Notification Form Required and Other Review per Discretion of Secretary of EOEEA	» New nonwater-dependent use of tidelands. » Creation of five or more acres of impervious area. » Generation of 2,000 or more new average daily trips on roadways providing access to a single location. » Generation of 1,000 or more new average daily trips on roadways providing access to a single location and construction of 150 or more new parking spaces at a single location. » Construction of 300 or more new parking spaces at a single location.

The objective of MEPA reviews is to ensure that all Commonwealth agency actions, including permitting actions, are undertaken in a manner which avoids or minimizes, to the maximum extent practicable, damage to the environment. MEPA reviews are administered by the secretary of EOEEA through the MEPA Office.

Water Quality Certification

Water Quality Certification from the MADEP is required as a prerequisite to the issuance of a Department of the Army Permit pursuant to the Federal Clean Water Act (see Technical Appendix). The focus of this permitting program is to ensure that dredging activities and/or the discharge of dredged or fill materials into “the waters of the United States” do not result in violations of the Massachusetts Water Quality Standards.



THE CITY’S PUBLIC BOAT RAMP

Massachusetts Coastal Zone Management Consistency Statement

All projects to be conducted within the Massachusetts "coastal zone" (i.e., all lands and water extending from the three-mile ocean limit of Massachusetts' jurisdiction to a point located 100 feet landward of the first major transportation route encountered) which are subject to federal permitting and/or Massachusetts Chapter 91 licensing are assessed for their compliance with the policies of the Massachusetts Coastal Zone Management Program. Proponents of such projects are required to prepare a statement to support a finding that the proposed action is consistent with these policies. The MACZM reviews such statements and provides comments to the permitting/licensing agencies indicating either concurrence with or objection to the specific findings.

An issue of particular concern to the MACZM is the preservation of "designated port areas" (DPA) within the Commonwealth for the exclusive use of maritime industrial activities and the siting of associated supporting structures and facilities. The MACZM considers the siting of facilities and uses other than those which are marine-industrial in nature within a "designated port area" to be categorically inconsistent with the policies of the Massachusetts Coastal Zone Management Program. The central waterfront portion of the Lynn Waterfront is a designated port area. After consultation with MACZM, the project team revised the master plan for consistency with the long term vision of a DPA.

Department of the Army Permit

A Department of the Army Permit from the U.S. Army Corps of Engineers (ACOE) is required pursuant to the provisions of Section 10 of the Rivers and Harbors Act of 1899 for the placement of any structure and/or the dredging of any material within the navigable waters of the United States (i.e., Lynn Harbor) and pursuant to the provisions of Section 404 of the Federal Clean Water Act for the discharge of any dredged or fill material within the "waters of the United States", including wetlands. These permit applications are subject to both interagency (e.g., U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, etc.) and pubic review and comment. As indicated herein under Commonwealth of Massachusetts Permitting Programs, prerequisites to the issuance of Department of the Army Permits include the issuance of Water Quality Certification by MADEP and a finding of project consistency with the policies of the Massachusetts Coastal Zone Management Program.

COST ESTIMATE

To establish a preliminary order of magnitude implementation budget, the Master Planning Team prepared an initial estimate of probable cost for the project. The estimate is based on preliminary concept design drawings, with general understanding and forecasting future market targets for mixed housing products, commercial / retail, light industry and marine related features, such as marinas. There are many factors that will have significant influence on the final outcome and ultimate cost of the development at total build out. This estimate should be used as an order-of-magnitude guide only, to anticipate early expenditure, physical impact on annual budgets and project startup costs. More detailed design and planning efforts should be undertaken to develop the final program, identify technical site constraints, clarify extent of environmental cleanup, and study construction sequence and challenges facing implementation from early regulatory permitting to final construction bid documents. Therefore, the overall project construction cost has the potential to change significantly.

The estimate is based on the following assumptions:

- All costs reflect 2007 dollars and no specific escalation or inflation has been included other than straight 25% factor at the end of the spread sheet.
- The cost of site cleanup for sections of the land identified in the soils and geotechnical memorandum based on early review of available information (no physical testing or sampling has been done under this Master Plan study) will change significantly. Once detailed exploration is conducted and specific site use and program is identified for the land in question, the regulatory process will dictate the level of cleanup necessary, and accordingly actual project cost can be forecasted.
- Street and public right of way improvement construction costs were developed based on previous project development experience of similar projects in the New England and Boston Metro area.
- For the purpose of the Master Plan, it was assumed all primary utility trunk lines for sanitary sewer, domestic water supply, electrical power, cable, gas and communication will be new. The existing system is quiet old and upgrading will be necessary and prudent to meet the needs of the project in the future.
- Per square foot cost for housing construction assumes "custom" level of finish.
- Cost for retail and office space assumes raw space finish; tenant fit-out will be provided by tenants or through lease arrangement.
- A general and modest 25% contingency has been added to the total estimate; this contingency would be used to offset cost of planning and design, permitting fees, financing, and general project development refinements. No allowance was made for inflation and escalation.

ITEM	QUANTITY	UNIT	UNIT COST	CONSTRUCTION COST	COMMENTS
GENERAL					
MOBILIZATION	1	LS	$150,000.00	$150,000.00	Land and water
SITE PREPARATION	315	AC	$1,750.00	$551,250.00	
SECURITY / FENCING / TRAILER SET UP	15,200	LF	$18.00	$273,600.00	
EROSION SEDIMENT CONTROL	9,900	LF	$8.00	$79,200.00	Along waters edge
DEMOLITION / DISPOSAL	1	LS	$2,000,000.00	$2,000,000.00	General estimate, actual cost will vary
SITE CLEANUP	1	LS	$3,500,000.00	$3,500,000.00	General estimate, actual cost will vary
CONSTRUCTION PERMIT	1	LS	$95,000.00	$95,000.00	1 % of total project construction cost
TOTAL				$6,649,050.00	
ENVIRONMENTAL MITIGATION & CLEANUP					
CATEGORY A	18	AC	$1,100,000.00	$19,800,000.00	Remove and dispose off site
CATEGORY B	22	AC	$550,000.00	$12,100,000.00	Process & treat on site
CAPPING	40	AC	$95,000.00	$3,800,000.00	2 feet of clean fill / Vapor barrier
TOTAL				$35,700,000.00	
SEA WALL					
REMOVE AND REPLACE EXISTING WALL	6,500	LF	$1,850.00	$12,025,000.00	Existing timber wall is deteriorated
REPAIR EXISTING RIP RAP SECTIONS	1,400	LF	$350.00	$490,000.00	
TOTAL				$12,515,000.00	
ROADS					
PRIMARY	25,400	LF	$480.00	$12,192,000.00	2 lanes with parallel parking and a median
SECONDARY	7,400	LF	$390.00	$2,886,000.00	2 lanes with parallel parking
PEDESTRIAN TRAILS	11,800	LF	$255.00	$3,009,000.00	12 feet wide
RELOCATE 1A NEAR DOWNTOWN	1,400	LF	$1,850.00	$2,590,000.00	Near Lynn Landing / Waterfront park
ENHANCE 1A	2,300	LF	$650.00	$1,495,000.00	From Downtown to Rotary
ENHANCE 1A FROM DOWNTOWN TO GE BRIDGE	7,600	LF	$550.00	$4,180,000.00	Landscaping, parking lanes, lighting etc.
BOARDWALK	6,800	LF	$450.00	$3,060,000.00	Along the edge
IMPROVE WASHINGTON	1,500	LF	$450.00	$675,000.00	Landscaping, lighting & widening
TOTAL				$30,087,000.00	
UTILITIES					
POTABLE WATER	32,800	LF	$75.00	$2,460,000.00	12" minimum trunk size
SANITARY SEWER	32,800	LF	$65.00	$2,132,000.00	16" & 12" lines
ELECTRIC	32,800	LF	$42.00	$1,377,600.00	Underground distribution
GAS	32,800	LF	$35.00	$1,148,000.00	
TELEPHONE / FIBER OPTICS / CABLE	32,800	LF	$38.00	$1,246,400.00	Underground distribution
STORM WATER	32,800	LF	$65.00	$2,132,000.00	
TOTAL				$10,496,000.00	
MARINA "A"					
EXCAVATE BASIN	195,000	CY	$16.00	$3,120,000.00	Assume most of the material is clean
BASIN EDGE	2,600	LF	$1,450.00	$3,770,000.00	Combination of vertical and slopped
OUTER PIER / WALL	900	LF	$1,500.00	$1,350,000.00	
FLOATING DOCS	26,950	SF	$48.00	$1,293,600.00	375 boats
ANCHORING SYSTEM	125	EA	$3,350.00	$418,750.00	18" diameter piles, 60' long each
UTILITIES	375	EA	$3,500.00	$1,312,500.00	Power posts and hookups

BOAT REPAIR EMBAYMENT	1	EA	750,000	$750,000.00	Travel lift
FACILITY BUILDING	35,000	SF	$250.00	$8,750,000.00	Showers, lockers, club house etc.
SURFACE PARKING	175	EA	$3,500.00	$612,500.00	1/2 space per boat
GANGWAYS	4	EA	$65,000.00	$260,000.00	One is for ADA
MISCELLANEOUS	1	LS	500,000	$500,000.00	
TOTAL				$22,137,350.00	
MARINA "B"					
DREDGING	35,000	CY	$22.00	$770,000.00	Assumes upland disposal on the site
NEW BULKHEAD	600	LF	$1,650.00	$990,000.00	
FLOATING DOCS	14,400	SF	$48.00	$691,200.00	190 boats
ANCHORING SYSTEM	75	EA	$3,350.00	$251,250.00	
UTILITIES	190	EA	3,500	$665,000.00	
GANGWAYS	2	EA	55,000	$110,000.00	One is an ADA ramp
TOTAL				$3,477,450.00	
WATERFRONT LANDING					
PARK	202,500	SF	$21.00	$4,252,500.00	Soft and hardscape
PEDESTRIAN PATHS	2,400	LF	$275.00	$660,000.00	12 feet wide
LIGHTING	45	EA	$3,600.00	$162,000.00	
BENCHES / FURNISHING	60	EA	$1,800.00	$108,000.00	Durable
PLANTING	1	LS	$300,000.00	$300,000.00	Trees, shrubs & lawn
AMENITY PACKAGE	1	LS	$500,000.00	$500,000.00	
GATEWAY FEATURE	1	LS	150,000	$150,000.00	Arbor / identity sign
TOTAL				$6,132,500.00	
PARKS					
SOUTH WATERFRONT NEIGHBORHOOD	13.5	AC	$550,000.00	$7,425,000.00	Community oriented open spaces
MARINE INDUSTRY PARK	8	AC	$350,000.00	$2,800,000.00	
DOWNTOWN WATERFRONT	2.2	AC	$950,000.00	$2,090,000.00	
TOTAL				$13,277,500.00	
LYNNWAY, RT. 1A					
VISUAL IMPROVEMENT	8,300	LF	$675.00	$5,602,500.00	New lights, trees, striping, new sidewalks, etc.
GATEWAY FEATURE AT GE BRIDGE	1	LS	$1,500,000.00	$1,500,000.00	
GATEWAY FEATURE AT NAHANT CIRCLE	1	LS	$1,000,000.00	$1,000,000.00	
TOTAL				$8,102,500.00	
VERTICAL CONSTRUCTION / TAXABLE PROPERTY					
RESIDENTIAL	3,682,396	SF	$208.00	$765,938,368.00	Condominium, townhouses, apartments, etc.
RETAIL	947,558	SF	$228.00	$216,043,224.00	Mixed product raw space finish
OFFICE	337,204	SF	$253.00	$85,312,612.00	
HOTEL	285,272	SF	$181.00	$51,634,232.00	4 star quality
LIGHT INDUSTRY	490,380	SF	$108.00	$52,961,040.00	
TOTAL				$1,171,889,476.00	
TOTAL PROJECT				$1,320,463,826.00	2007 dollar value
CONTINGENCY				$330,115,956.50	25%
GRAND TOTAL				$1,650,579,782.50	Future Value (+/- 25 years)

A PUBLIC/PRIVATE PARTNERSHIP IS RESPONSIBLE FOR RELOCATING THE POWER LINES

PUBLIC/PRIVATE PARTNERSHIPS AND INCENTIVES

Implementing a large scale project over several decades, such as the Lynn Waterfront Development, requires the cooperation of all involved parties. A true partnership should be fostered between the public sector and private development interests. Each will have to do its own share to begin the process of value making for each other. Often developers wait to see how much of a commitment the local governing body establishes before they agree to invest in the area. This process reduces the significant risk for the private sector that is inherent in this type of development initiative.

Once the Lynn City Council approves the Master Plan for its future vision, agrees on a new zoning ordinance for the Waterfront Districts, and prepares the official Municipal Harbor Plan, a clear signal will go out to all interested developers to take notice of the historic event.

The City of Lynn already embarked on this journey by consummating the agreement with the power company to relocate the over head regional utility transmission lines. By investing the first dollars to undertake the engineering study and agreeing to share in the cost of relocation, the City announced its intent for their long-term commitment to improve the area. Continuation of such effort, by seeking additional grants and raising the necessary capital to begin roadway and public infrastructure improvements will open the way for the private sector involvement. Spearheading early public improvements raises the credibility of the community in the region and establishes the necessary foundation to sustain the long term development effort.

In addition to commencing the public investment process, the City should establish a clear development strategy by establishing a local review and approval committee with empowerment from City Council to operate on its behalf to screen all initial proposals. This empowerment will allow the review Committee to negotiate, work out relevant project details, and assure the community that development initiatives are carefully screened to uphold the City's and public's best interest prior to presenting the project to City Council for approval. This process will streamline the effort, foster true collaboration between the public and private sector and keep the public at large informed through concise procedure. In turn, the private sector will be asked to co-share in some of the cost for improving the public realm through betterment incentives or density bonuses for proposed programs. In addition, securing local municipal approval will be essential prior to initiating required State and Federal permits.

During the Master Planning effort, the Planning team was approached by a large number of interested private businesses who had great interest in the outcome of the master plan. These organizations should be contacted to discuss the nature of their interest and to see what the City can do to assist them in initiating their projects.

THE LYNN WATERFRONT ZONING STRATEGY

ZONING STRATEGY

As the master planning process evolved, it was apparent that a review of the zoning ordinances for this area became necessary. The current format of the Lynn Zoning for this area is the result of modifications over the years with the intention of attracting development. While the intent was good, the overlay and underlying zoning needed to be reexamined to best suit the proposed development and desired outcome for the Lynn Waterfront.

As an overlay, the existing ordinance does not restrict the owners right to the underlying zoning, heavy industrial. It also does not permit many of the proposed uses such as a hotel or marina. The height allows for 20 stories on the southern half of the site, but only 10 stories closer to downtown and the MBTA commuter rail station. The off-street parking regulations are quite conservative for the proposed urban area and given the proximity of the commuter rail station. In addition, the current site plan review mainly rests with the City Council making it a laborious and unpredictable process.

The master plan recommends a new zoning district for the waterfront area and an overlay for the Washington Street Corridor. These are recommendations that are consistent with the master plan vision, but require further discussion before they are officially approved.

The intent of the Lynn Waterfront Zoning Strategy is to:

- Facilitate the development of a mix of uses including residential, office, retail, research and development, and hotels;
- Increase real estate investment and maximize development;
- Improve the Lynn waterfront and create new community open space;
- Promote the accessibility within the district by improving existing and creating new roadways, pedestrian walkways and bicycle paths;
- Replace vacant or underutilized land, low-density development, and incompatible uses with high-density mixed-use development;
- Clean environmentally contaminated sites to a level suitable for a mix of uses including residential;
- Improve utilities and infrastructure;
- Create new jobs at a variety of income and skill levels;

Encourage transit-oriented development.

A Waterfront Zone Site Plan Review Committee should be established to ensure consistency with the Lynn Waterfront Master Plan. The committee should be made up of two City Councilors and five representative of the City of Lynn, including city staff with planning, real estate, and engineering qualifications and business or resident community representation. The Waterfront Zone is divided into 3 districts that vary only slightly in use or height allowances.

Waterfront Zone 1

Zone 1 governs the southern portion of the site, as well as the area closest to downtown. This zone allows by right:

- Multifamily residential, with 75% of the first floor along primary streets and streets facing Lynn Harbor or the Saugus River dedicated to retail uses
- Office
- Research and development
- Hotel
- Conference Center
- Retail, excluding drive-through facilities
- Restaurant
- Yacht Club
- Marina
- Civic Building
- Transit facility
- Public park/open space

Zone 1 does not allow automobile sales, automobile repair, drive-through windows, storage facilities, adult entertainment, or check cashing stores. Existing uses are allowed to remain, but any changes to those sites that require site plan review triggers the new zoning, which defines permitted uses. The recommended maximum height is 240 feet or 20 stories, which is already allowed on the southern portion of the site under current zoning, but institutes a minimum height of 36 feet or 3 stories to ensure a more productive use of each parcel and create more vitality in the area.

The current maximum floor area ratio (FAR) is 3.0. The recommended FAR is 2.8, however, it is still possible to achieve the existing 3.0 with the addition of affordable housing, additional public open space, or a Leadership in Energy and Environmental Design (LEED) certified building. The maximum block size is recommended to be 4 acres to ensure a proper road network and accessibility to the waterfront. The recommended parking ratios have been reduced and shared parking is recommended for mixed-use buildings to take advantage of differences in peak demand times for parking. The placement of ground level and parking garages encourages more lively and active street frontages for pedestrians.

Waterfront Zone 2

Zone 2 is located along the northern edge of Lynn Harbor and the Nahant Rotary. This zone serves as a gateway to Lynn Harbor from the north. This zone is similar to Zone 1 except it does not allow research & development or transit facilities and the maximum height is 120 feet and 10 stories. The recommended differences are necessary because this district does not have the same depth of parcels, is adjacent to the lower scale residential area of Sagamore Hill, and serves as a transition between neighborhoods.

Waterfront Zone 3

Zone 3 is located between approximately Blossom Street on the north and the extension of Carolyn Road on the south, the water on the east, and the west side of the Lynnway. This zone allows by right:

- Office
- Research and development
- Conference Center
- Retail excluding drive-through facilities
- Restaurants
- Marina
- Civic Buildings
- Transit facility
- Public park/open space

The prohibited uses are the same as Zones 1 and 2. The following uses are permitted as a conditional use given adequate separation is provided between conflicting uses and vehicular and pedestrian circulation is addressed:

- Multifamily residential above the second floor
- Marine Industry
- Light Industry

The height, FAR, and block size are consistent with Zone 1, which surrounds this zone on either side. Parking, garage placement, and shared parking are consistent among the various zones.

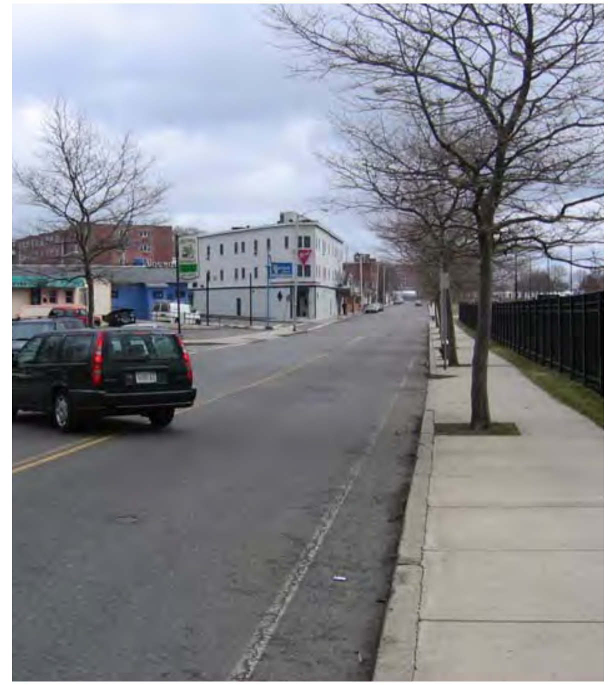
Washington Street Corridor Overlay Strategy

The Master Plan recommended design changes to the lower portion of Sagamore Hill to compliment the adjacent stable residential neighborhood and revitalize Washington Street, an important connection between downtown and the waterfront. The intent of the overlay district is to:

- Facilitate the development of a mix of uses including retail, residential, and office to create vitality;
- Increase real estate investment and development;
- Improve the Washington Street corridor and create a connection between Sagamore Hill , North Shore Community College, and the waterfront;
- Promote the accessibility within the district by improving the existing street pattern and sidewalks;
- Replace vacant or underutilized land, low-density development, and incompatible uses with moderate-density mixed-use development;
- Encourage transit-oriented development.

Uses permitted by right are:

- Single family, two family, row house, apartment house, multifamily residential high rise
- Retail, excluding drive-through facilities
- Professional office, bank, food service establishment
- Hotel
- Church
- School, public library or museum



WASHINGTON STREET EXISTING CONDITIONS

- Private club not for profit
- Public buildings

Uses not allowed in the overlay district, as well as the setbacks and recommended maximum and minimum heights are consistent with the intent to ensure the urban nature of this residential neighborhood adjacent to downtown remains intact.

LAND USE	PERCENTAGE OF PEAK DEMAND FOR KEY TIMES									
	Weekdays					Saturday - Sunday				
	10am	1pm	5pm	8pm	10pm	10am	1pm	5pm	8pm	10pm
Residential	85	80	85	95	100	70	65	75	95	100
Office	100	90	50	5	5	15	15	5	0	0
Retail	50	75	75	65	25	50	100	90	65	35
Hotel	45	30	60	90	100	40	30	60	90	100
Restaurant	20	70	70	100	95	5	45	60	100	95
Marina	20	20	30	30	20	35	45	4		
Mixed-Use Shared Parking										

Boston Region Metropolitan Planning Organization

Project Funding Application Form

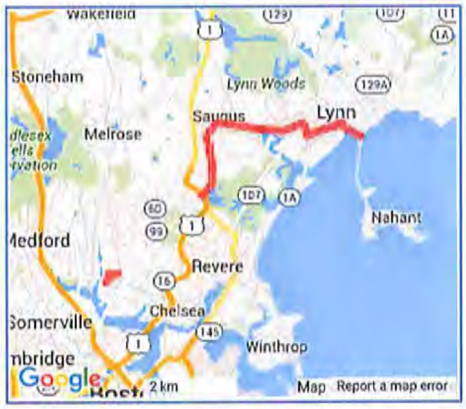
You are not logged in. You may view but not edit the information for this project.

User ID:
Password:
Log in

Printable Version

Overview | Readiness | Safety | System Preservation | Capacity Management/ Mobility | Clean Air/ Clean Communities | Transportation Equity | Economic Vitality | Other

Proponent-Provided
Data last entered on: **02/02/2012**
Tip status: **Conceptual**



1. I.D. Number: **1320**
2. Municipality(ies): **Lynn & Saugus**
3. Project Name: **Route 1 (Copeland Circle, Fox Hill Bridge)**
4. Project Category: **Bridge**
5. MassDOT Highway Division District: **4**
6. MAPC Subregion: **ICC**
7. MAPC Community Type: **Regional Urban Center**
8. Estimated Cost:
9. Evaluation Rating: **(No evaluations provided)**
10. Description:
11. Project Length (Miles): **6.85**
12. Project Lane Miles:

Community Support

P1 Community Priority

Additional Status

13. MPO/CTPS Study:
14. Air Quality Status:

Boston Region Metropolitan Planning Organization

Project Funding Application Form

You are not logged in. You may view but not edit the information for this project.

User ID:
Password:
Log in

Printable Version

Overview | Readiness | Safety | System Preservation | Capacity Management/ Mobility | Clean Air/ Clean Communities | Transportation Equity | Economic Vitality | Other

System Preservation

28. Existing Pavement Condition
  Pavement Roughness (IRI):
  IRI:
  Year:

29. Equipment Condition

Number of Signals:	**11**
Signal Descriptions:	**FULLY-ACTUATED, SEMI-ACTUATED, SEMI-ACTUATED,**

30. Natural Hazard Zones**

Project lies within a flood zone:	**Yes, within flood zone**
Project lies within a hurricane surge zone:	**Yes, within hurricane surge zone**
Project lies within 1/4 mile of an emergency support location:	**Yes, within emergency support location**
Project lies within an area of liquefiable soils:	**(No data available)**

*****Please refer to the All-hazards Planning Application for more information on natural hazard zones.***

P3 What are the infrastructure condition needs or issues of the project area?

The proposed project consists of adding a new highway spur to the Route One overpass at Copeland Circle and running over the existing road beds to connect near the Lynn Fox Hill Brigde. Current vehicles on Route One from north to south must pass through residential areas or a heavily signalized, commercial area in order to get to Lynn. From the south cars and trucks either drive down Route 60 to Route 107 or take one of four exits through Saugus and Lynn residential streets. Route One at Route 60 in Revere is already on the TIP list for recommended improvements. Our concept would make a connection at Route one north over Route 60 where Route One takes a sharp left and narrows down. There is already the preparation for that connection where the original Route 95 project would have continued north. The old foundation beds appear to exist in the marsh for this spur so that the marsh would not have to be disturbed further. This connection would run directly down Route 107 and tie into that road where appropriate. This spur would allow traffic from Route One heading north to travel directly into Lynn on Western Avenue, Route 107, near General Electric. Cars and trucks would not have to conflict with airport and Boston traffic on Route 60 or pass through Saugus to get to downtown Lynn and the waterfront.

P4 How does this project address the infrastructure condition needs or issues in the project area?

P5 What is the primary security need associated with this project, and how does it address that need?

Route 1A/Lynnway/Carroll Parkway Study in Lynn

Route 1A/Lynnway/Carroll Parkway Study in Lynn

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Directed by the Boston Region Metropolitan Planning Organization. The MPO is composed of state and regional agencies and authorities, and local governments.

June 2016

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ABSTRACT

Following a selection process based on safety conditions, congested conditions, multimodal significance, regional significance, regional equity, and implementation potential, the Route 1A/Lynnway/Carroll Parkway arterial segment in Lynn was approved for study by the Boston Region Metropolitan Planning Organization (MPO). The roadway runs through an area that has been classified as a Commonwealth of Massachusetts Growth District, an important designation for older urban cities in need of increased tax bases and commercial and residential development. The City of Lynn has made major progress toward redevelopment by completing the physical and legal changes necessary to redevelop 305 acres of underutilized waterfront land. However, the current configuration and size of the Lynnway inhibits access to the waterfront—six-to-seven lanes of traffic act as a barrier, cutting off the waterfront from Lynn's downtown and neighborhoods.

MPO staff, working with the study advisory task force, has developed short- and long-term alternatives that would transform the Lynnway and Carroll Parkway into a pedestrian- and bicyclist-friendly roadway as well as a transportation corridor that serves all modes of transportation and maintains regional travel capacity. This study provides the City of Lynn, the Department of Conservation and Recreation (DCR), the Massachusetts Department of Transportation (MassDOT), and other stakeholders with an opportunity to begin researching the needs of the Lynnway and Carroll Parkway—in light of the city's vision for the Waterfront—and to start planning design and engineering efforts.

This report summarizes the analyses and improvement alternatives resulting from the study. The opening sections provide background information for the study by describing the existing conditions and problems. An assessment of the safety and operational problems, and a discussion of the potential improvement alternatives, follows the background sections. The report also includes technical appendices, which cite the methods used and data applied in the study, including detailed reports about the intersection and arterial capacity analyses. If implemented, the report's recommendations would result in an improved roadway corridor: one where it is safe to walk or bicycle to shops, recreational areas, and work; that provides safer access to businesses; and where traffic operates efficiently.

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Chapter 1—Introduction

1.1 ORIGIN OF STUDY

The Boston Region MPO's Long-Range Transportation Plan (LRTP), *Charting Progress to 2040,* identified needs for all modes of transportation in the MPO region.[1] This plan guides decision making about which projects to include in current and future Transportation Improvement Plans (TIPs).[2] Projects address the region's current mobility needs, focusing on maintaining and modernizing roadways with high levels of congestion and safety problems; expanding the quantity and quality of walking and bicycling; and making transit service more efficient and modern. Based on previous and ongoing transportation planning work, including the Boston Region MPO's Congestion Management Process (CMP), the Massachusetts Bay Transportation Authority's (MBTA) Program for Mass Transportation (PMT), and other MPO planning studies, the LRTP identified 52 arterial segments in 38 communities where highways need improvements.

To identify strategies and solutions for addressing the problems in some of these arterial segments, an arterial segment study was included in the federal fiscal year (FFY) 2015 Unified Planning Work Program (UPWP). An arterial segment study is a logical way to identify and address multimodal transportation needs in a corridor. Typically, these studies use a holistic approach that analyzes services and then makes associated recommendations within the roadway's right-of-way, and takes into account the needs of all abutters and users—pedestrians, bicyclists, motorists, and public-transportation riders.

During the past five years, the MPO has conducted five arterial segment studies, and municipalities have been receptive to them. The studies provide cities and towns with the opportunity to review the requirements of a specific arterial segment, starting at the conceptual level, before committing design and engineering funds to a project. If the project qualifies for federal funds, the study's documentation also may be useful to the DCR, MassDOT, and the City of Lynn.

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[1] *Charting Progress to 2040*, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization, approved by the Boston Region Metropolitan Planning Organization on July 30, 2015.

[2] Transportation Improvement Program and Air Quality Conformity Determination, Federal Fiscal Years 2016–20, endorsed by the Boston Region Metropolitan Planning Organization on July 30, 2015.

Chapter 2—Background and Objectives

2.1 SELECTION PROCESS

Following a selection process based on safety conditions[3], congested conditions[4], multimodal significance[5], regional significance[6], regional equity[7], and implementation potential[8], the Route 1A/Lynnway/Carroll Parkway arterial segment in Lynn was approved on April 2, 2015, for study by the Boston Region MPO from a short list of 52 arterial segments. DCR, MassDOT Highway Division District 4, Metropolitan Area Planning Council (MAPC), and the City of Lynn supported the study, and participated by collecting the data needed for the analyses.

2.1.1 STUDY LOCATION

Figure 1 shows a regional map with the segment of focus indicated in red (all figures are included at the end of the report). The City of Lynn is pursuing redevelopment of the Lynn Waterfront, and because of this mission it conducted a comprehensive Masterplan for the waterfront in 2007.[9] Presently, the Lynnway and Carroll Parkway present a barrier to connecting the Lynn downtown area to businesses and developments along the Lynn Waterfront. Safety for pedestrians and bicyclists using the Lynnway and Carroll Parkway is a major concern that affects development of the Lynn Waterfront. Lack of accommodations for bicycles and long crosswalks (as long as 100 feet) discourage pedestrians and bicyclists from using the roadway.

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[3] Safety Conditions: Location has a higher-than-average crash rate for its functional class, contains a Highway Safety Improvement Program (HSIP)-eligible crash cluster, contains a top-200 high crash location, or has a significant number of pedestrian and bicycle crashes (two or more per mile).

[4] Congested Conditions: Travel time index is at least 1.3.

[5] Multimodal Significance: Location carries bus route(s), is adjacent to a transit stop or station; supports bicycle or pedestrian activities or has an implementation project to support one or more of these activities; has need to accommodate pedestrians and bicyclists and improve transit; or high truck traffic serving regional commerce.

[6] Regional Significance: Location is in National Highway System; carries a significant portion of regional traffic (ADT >20,000); lies within 0.5 miles of EJ transportation analysis areas or zones; or is essential for the region's economic, cultural, or recreational development.

[7] Reginal Equity: That is, it was important not to select 1) more than one location in a subregion and 2) a location in same subregion as in the preceding cycle of this study.

[8] Implementation Potential: Location is proposed or endorsed by its roadway administrative agency (agencies); proposed or endorsed by its subregion and is a priority for that subregion; or has strong support from other stakeholders.

[9] Sasaki Associates in collaboration with ZHA and GEI, Lynn Waterfront Master Plan Report, September 2007.

2.2 VISION FOR THE LYNN WATERFRONT

2.2.1 Redevelopment of the Waterfront

Over the past decade, during some of the most trying economic times, the City of Lynn made major progress by completing the physical and legal changes necessary to develop 305 acres of its waterfront land, some of the most underutilized waterfront land along the entire US Eastern Seaboard. In June 2006, the city partnered with Sasaki Associates and implemented a comprehensive waterfront Master Plan and Municipal Harbor Plan that will guide development on these waterfront parcels:[10]

- More than four million square feet of residential development
- Almost two million square feet of commercial/retail, hotel, office and light industrial space
- About 45 acres designated as a port area, a boardwalk, marinas, and ample open public space

Staff estimate that a fully implemented plan and built-out waterfront would provide almost 10,000 construction jobs, 5,000 permanent jobs, and approximately $18 million in annual property tax revenue

In addition, the City of Lynn implemented a comprehensive set of zoning regulations for this area that will transform the waterfront plans into easily understandable city ordinances, streamlining the permitting process by which development can occur. The city, through the Economic Development Industrial Corporation (EDIC), finished and implemented an MBTA ferry terminal and service, designed to supplement the existing MBTA commuter rail and bus service, and situated it within 100 yards of the waterfront. The area has also been classified a Commonwealth of Massachusetts Growth District, an important designation for older urban cities in need of increased tax bases and commercial and residential development. The city partnered with National Grid, General Electric, and a number of other private entities to relocate two large 115 kV power lines that had been inhibiting waterfront development for more than 40 years. Together, these actions have resulted in the sale of two major parcels of land—specifically, the so-called Beacon Chevrolet site and the General Electric (GE) Gear plant are under agreement and are now primed for development.

2.2.2 Access to Waterfront

The next major step is to create public access, transforming the waterfront into a vibrant destination point with direct linkage to Lynn's downtown and surrounding neighborhoods. The current configuration and size of the Lynnway inhibits

[10] Ibid.

access to the waterfront—six-to-seven lanes of traffic act as a barrier, cutting off the waterfront from residents and tourists. Balancing the needs of vehicular commuters with the need for pedestrian and bicycle access to the waterfront is critical to making the city's vision a reality.

The proposed GE commuter rail stop and waterfront access from this stop across the Lynnway are necessary developments. Much like Storrow Drive and the Charles River, the city is envisioning a boardwalk along the full length of the waterfront; therefore, access from the other side of the Lynnway and Carroll Parkway is essential to its full use. In addition, the city anticipates that small retail businesses will continue to sprout up on the waterside of the Lynnway and that access will be essential to their sustainability. Thousands use the Lynn Ferry and thousands more would join them if access were more readily available via bicycle or on foot. Lastly, the need for safe havens in addition to overpasses is essential to the safety of those crossing the Lynnway. In all, access to the waterfront from neighborhoods and downtown is a vital component to the future of the City of Lynn.

2.3 STUDY GOALS AND OBJECTIVES

Figure 2 shows the land uses surrounding the Lynnway and Carroll Parkway, including the Lynn downtown area, neighborhoods, transportation centers and terminals, and the waterfront developments. Objectives of this study were to document existing problems, and develop multimodal improvements for them:

- Transform the Lynnway into a pedestrian- and bicyclist-friendly boulevard to create a walkable and livable community that promotes human interaction.
- Upgrade the traffic system to increase safety for all modes, including pedestrians, bicyclists, and motorists.
- Improve connectivity from Lynnway and Carroll Parkway to Lynn's downtown and neighborhoods, transportation centers, and the waterfront development.
- Improve access and mobility by moving people and goods efficiently across the corridor and local streets to support economic activities.
- Promote MassDOT's Healthy Transportation Compact by balancing vehicular traffic need with pedestrian and bicyclist needs.[11]

[11] The Healthy Transportation Compact is a key requirement of the landmark transportation reform legislation signed into law in June 2009, to facilitate transportation decisions that balance the needs of all transportation users, expand mobility, improve public health, support a cleaner environment and create stronger communities.

The objectives include considering short- and long-term improvements that address Lynn's vision of the waterfront. Keeping in mind the problems in the arterial segment and the suggestions made by the study's task force, the study focused on evaluating roadway cross-sectional modifications to improve safety and mobility and make the roadway more accommodating for both pedestrians and bicyclists.

2.4 PUBLIC PARTICIPATION

An advisory task force—composed of representatives from Lynn, DCR, MAPC, MassDOT, and state legislators from Lynn—was established to participate in this study. MPO staff met with the task force twice: the first meeting discussed the work scope and existing problems, such as lack of accommodation for bicyclists, long crosswalks, lack of pedestrian refuge areas, high speeds of vehicles, and the Lynnway presenting a barrier between the Lynn Waterfront and downtown and neighborhoods. The second meeting presented the existing conditions, analyses and improvements and obtained comments. This report reflects the task force's feedback. Appendix A includes a list of task force members and their comments.

Chapter 3—Characteristics of the Corridor

3.1 ROADWAY

The Lynnway and Carroll Parkway corridor, approximately two miles long, is a six-lane divided roadway with turn lanes and a median at designated locations. Figure 3 shows the map of the study area. The two roadways create a continuous artery, and thus are both directionally designated as north-south principal arterial roadways under the jurisdiction of the DCR. They connect several communities to the north of Lynn, including Swampscott, Salem, Marblehead, and Nahant, as well as several communities to the south of Lynn, such as Revere, Boston, Chelsea, and Everett. In addition, the roadways provide access to Lynn's downtown area, neighborhoods, transportation centers and a ferry terminal close to the study area. The roadways are classified as "urban principal arterial" on the National Highway System (NHS) program, making them eligible for federal funds. The right-of-way varies between 100 and 110 feet wide, the posted speed limit is 35 miles per hour (mph) in both directions and the land uses adjacent to the roadway are mixed—commercial, residential, and recreational. The following characterizes the current conditions in the corridor:

- Sidewalks on both sides of the Lynnway and Carroll Parkway are located close to the back of curbs, which places pedestrians close to the travel lanes.
- The six travel lanes result in a wide roadway, which encourages higher vehicle speeds during off-peak periods and places motorists, pedestrians, and bicyclists at risk. It also creates inequity by placing more emphasis on vehicular use rather than pedestrian and bicycle use.
- The lack of trees in the Lynnway portion of the corridor, which would create a separation between pedestrians and vehicles, encourages high vehicular speeds, reduces pedestrian comfort, and does not provide a welcoming environment for pedestrians and bicyclists.
- Long crosswalks and a lack of pedestrian refuge areas create long crossing times and unsafe conditions.
- High vehicular speeds put users at risk, especially pedestrians and bicyclists.
- Obstructions in crosswalks, non-compliant ADA curb ramps, and broken sidewalks create an unfriendly environment for pedestrians.
- A lack of shoulders makes the roadway uncomfortable for bicyclists and forces them to use the sidewalks instead.

3.2 MAJOR INTERSECTIONS

Several minor arterials and collector roadways intersect the Lynnway and Carroll Parkway, resulting in seven signalized intersections and a rotary along the corridor, which are described below.

3.2.1 Hanson Street Intersection

Hanson Street is a city-owned local street that intersects the Lynnway to form a three-leg signalized intersection, as shown in Figure 4. Each of the Lynnway's approaches has three through lanes. An exclusive left-turn lane has been provided on the southbound Lynnway approach for access to the businesses on Hanson Street. Hanson Street has two lanes at the approach: one for turning left and one for turning right. The intersection has a fully actuated traffic signal with functioning pedestrian signals with pushbuttons for crossing the Lynnway. The traffic signal heads are a mixture of mast-arm and post mounts. A bus stop is located at the intersection in each direction of the Lynnway; however, only the northbound side has a bus shelter with a bench. Walmart, Pride Hyundai and KIA, Dollar Tree, and several automobile service shops are located at the intersection.

3.2.2 Harding Street Intersection

Harding Street is a city-owned local street that intersects the Lynnway to form a four-leg signalized intersection (Figure 4). Each of the Lynnway's approaches has three through lanes and an exclusive left-turn lane. Each approach on Harding Street has two travel lanes: on the westbound approach (one for left/through turns and one for right turns) and on the eastbound approach (one for left turns and one for through/right turns). The intersection has a fully actuated traffic signal and the signal heads are a mixture of mast-arm and post mounts. There are crosswalks with curb ramps for crossing Harding Street, but there is no crosswalk across the busy Lynnway. The intersection lacks pedestrian signals. A bus stop is located in each direction of the Lynnway, but only the one on the northbound side has a shelter with a bench. The intersection curb radii are adequate for trucks and buses servicing commercial and retail businesses in the area. Pride Chevrolet, Atlantic Toyota and Scion, a Mobil gas station and a KFC restaurant are located at the intersection. In the future, Harding Street could be extended and improved to provide direct connection to the proposed GE commuter rail station and to the waterfront.

3.2.3 Commercial Street Intersection

Commercial Street is a city-owned minor arterial that intersects the Lynnway to form a four-leg signalized intersection, as shown in Figure 4. The intersection is one of the critical intersections in the corridor (high traffic volumes on both streets). Near the intersection, Lynnway has four lanes on each approach: on the northbound approach (exclusive left-turn lane and three through lanes) and on the southbound approach (exclusive right-turn lane and three through lanes). Commercial Street provides direct access from the Lynnway to the residential areas west of the roadway and downtown Lynn; it has three travel lanes on the eastbound approach (exclusive left-turn lane, through lane, and exclusive right-turn lane). There is no westbound approach on Commercial Street because of the one-way outbound movement. The intersection has a fully actuated traffic signal and the signal heads are a mixture of mast-arm and post mounts. The intersection is equipped with functioning pedestrian signals and crosswalks with curb ramps at all corners. One bus stop is located in each direction of the Lynnway, but neither of them has a shelter. The intersection curb radii are adequate for trucks and buses servicing commercial and retail businesses in the area. The land uses in the vicinity are commercial: among the businesses located at the intersection are Shell and Spiro gas stations, Kelly Honda, Sleepy’s, and Midas Automotive Service.

3.2.4 Shepard Street/Marine Boulevard Intersection

Shepard Street and Marine Boulevard are city-owned local streets that intersect the Lynnway to form a four-leg signalized intersection, as shown in Figure 4. Each Lynnway approach has four lanes (exclusive left-turn lane and three through lanes). Shepard Street has one lane for all traffic movements and Marine Boulevard has two travel lanes at the approach: one for turning left and one for through/right turns. The intersection is equipped with a fully actuated traffic signal with functioning pedestrian signals for crossing the Lynnway. The signal heads are a mixture of mast-arm and post mounts. There are crosswalks with curb ramps for crossing Shepard Street and Marine Boulevard but they lack pedestrian signals with pushbuttons. One bus stop is located in each direction of the Lynnway, but neither of them has a shelter. Marine Boulevard provides access to the industrial area located east of the Lynnway; the intersection curb radii are adequate for trucks and buses. The land uses near the intersection are commercial and industrial: Honey Dew, Lynnway Mini Mall, and Harbor Place Mall are located close to the intersection on the west side of the Lynnway, and an industrial area is located at the waterfront.

3.2.5 Blossom Street Intersection

Blossom Street is a city-owned major collector that, because of the Lynnway's median, intersects the Lynnway to form two unsignalized T-intersections. Each of the Lynnway's approaches has three through lanes and each approach of Blossom Street has one lane servicing all movements. There are crosswalks with curb ramps for crossing Blossom Street, but the Lynnway has no crosswalks. One bus stop is located in each direction of the Lynnway, but only the bus stop on the northbound side has a shelter with a bench. The intersection curb radii are adequate for trucks and buses servicing commercial businesses in the area. The land uses in the area are commercial and industrial services—Wendy's, Dunkin' Donuts, and Ferguson Showroom and Supplies are located at the intersection. In addition, the Lynn Ferry terminal is located on Blossom Street, about 800 feet from the intersection.

Because of the raised median at the intersection, only right-in right-out movements are allowed on Blossom Street. The operation results in circuitous traffic circulation for the thousands of commuters accessing or exiting the ferry terminal. A lack of crosswalks also puts pedestrians at risk when they try to cross the Lynnway to the business areas. There is a strong need to open the median on the Lynnway, add left-turn lanes and crosswalks, and signalize the intersection to provide safe and direct access to the ferry terminal. Pedestrian access to the businesses located at the intersection also would be enhanced by installing a crosswalk.

3.2.6 Kingman Street Intersection

Kingman Street is a city-owned local street that intersects the Lynnway to form a T-intersection with modifications to allow northbound U-turns and access to businesses located on the west side of the intersection (Figure 4). Each of the Lynnway's approaches has four lanes (exclusive left-turn lane and three through lanes). There are two lanes for traffic exiting from Kingman Street (exclusive right-turn lane and shared through/left-turn lane). The intersection has a fully actuated traffic signal with functioning pedestrian signals with pushbuttons. The signal heads for the traffic movements are a mixture of mast-arm and post-mounts. There are crosswalks with curb ramps for crossing the Lynnway and Kingman Street. A bus stop is located in the southbound direction of the Lynnway but not in the northbound direction. The intersection curb radii are adequate for trucks and buses. The land uses in the area are commercial, retail, and professional services: the Clocktower Business Center, Dunkin' Donuts, and U-Haul are located at the intersection.

3.2.7 Market Street Intersection

Market Street is a city-owned minor arterial that intersects the Lynnway and Carroll Parkway to form a T-intersection, as shown in Figure 4. It is a gateway to the Lynn downtown area. Each of the Lynnway and Carroll Parkway approaches has three through lanes. In addition, the Lynnway's northbound approach has two exclusive left-turn lanes and the southbound approach of the Carroll Parkway has an exclusive right-turn lane. Market Street has two lanes on the approach; both are for turning left onto Carroll Parkway. The intersection has a fully actuated traffic signal with functioning pedestrian signals for crossing the Carroll Parkway and Market Street. The signal heads are a mixture of mast-arm and post mounts on the median and on the sidewalks. The intersection curb radii are adequate for trucks and buses. The land uses near the intersection are recreational and educational: the intersection provides access to the Lynn downtown area, North Shore Community College, Lynn Heritage Park, and the Lynn Waterfront.

3.2.8 Nahant Rotary

The Nahant Rotary is a three-leg intersection, as shown in Figure 4. It is the intersection of Carroll Parkway, Lynn Shore Drive and Nahant Road. At the rotary Carroll Parkway has three lanes (exclusive right turn lane and two left turn lanes); Lynn Shore Drive and Nahant Road has two lanes on each approach. There are crosswalks with curb ramps on each leg of the rotary; two of the crosswalks (on Carroll Parkway and Lynn Shore Drive) are controlled with pedestrian signals. The land uses near the rotary are recreational and residential—Lynn Shore and Nahant Beach are located close to the intersection.

3.2.9 Broad Street (Route 1A) and Market Street Intersection

Broad Street is a city-owned minor arterial that intersects Market Street to form a four-leg signalized intersection (not shown in Figure 4 because of limited space). It is located about 350 feet west of the Lynnway and Carroll Parkway in the downtown area. The Market Street northbound approach has three lanes (exclusive right-turn lane, through lane, and shared through/left-turn lane) while the southbound approach has two lanes (shared through/left-turn lane and shared through/right-turn lane). Broad Street's westbound approach has three lanes (exclusive right-turn lane, through lane, and shared through/left-turn lane). The intersection has a fully actuated traffic signal with functioning pedestrian signals for crossing at the intersection. The signal heads are a mixture of mast-arm and post mounts. There are crosswalks with curb ramps at all corners of the intersection. The intersection curb radii are adequate for trucks and buses. The land uses near the intersection are recreational, educational, and professional services. The North Shore Community College, Lynn Heritage Park, and the

Central Square-Lynn commuter rail station and busway are located at or near the intersection.

3.2.10 Broad Street, Washington Street, and Spring Street Intersection

Washington Street is a city-owned minor arterial that intersects Broad Street to form a complex five-leg signalized intersection (not shown in Figure 4 because of limited space). At the intersection, each approach of Broad Street has two lanes (shared through/left-turn lane and shared through/right-turn lane). Washington Street northbound has two lanes on its approach (exclusive left-turn lane and shared through/right-turn lane), while the southbound approach is a one-way street heading to the intersection. Spring Street is a two-way, two-lane street. The intersection has a fully actuated traffic signal with functioning pedestrian signals for crossing at the intersection. The signal heads are mixture of mast-arm and post mounts. There are crosswalks with curb ramps at all corners of the intersection and the curb radii are adequate for trucks and buses. The land uses near the intersection are recreational, educational, and professional services. The North Shore Community College, Lynn commuter rail station, Harbor Loft Apartments, and the Lynn Museum and Historical Society are located at the intersection.

Chapter 4—Existing Transportation

4.1 HIGHWAY

The MassDOT Highway Division's Traffic Data Collection Section performed turning-movement counts (TMCs) at the study area's signalized intersections in May 2015, while schools were in session. The counts were conducted during the weekday AM peak travel period (7:00 AM–9:00 AM), the PM peak travel period (4:00 PM–6:00 PM), and the Saturday midday travel period (12:00 AM–2:00 PM). Heavy vehicles such as school buses, transit buses, and trucks were counted separately. Pedestrian and bicycle counts were conducted simultaneously with the TMCs.

In addition, MassDOT Highway Division's Traffic Data Collection Section conducted automatic traffic recorder (ATR) counts at seven locations on the Lynnway, Carroll Parkway, Broad Street, Washington Street, Nahant Road and Lynn Shore Drive. The ATR counts are continuous 48-hour traffic counts used to determine the average weekday traffic (AWDT) of a roadway. MassDOT Highway Division Traffic Data Collection Section also collected spot speed data at three locations on the Lynnway and Carroll Parkway. Similar to the ATR counts, the spot speed data are continuous 48-hour records. The TMC, AWDT, and spot speed data are included in Appendix B.

4.1.1 Vehicle Traffic Volumes

Figure 5 shows the AWDT at selected locations in the study area. The AWDT on the Lynnway ranges between 41,000 and 44,000 vehicles per day and between 30,000 and 33,000 vehicles on Carroll Parkway. Figure 6 shows the daily distribution of the hourly traffic volumes at three locations on the Lynnway and Carroll Parkway. The distributions show peak-period volumes in the range of 1,800 to 2,300 vehicles per hour in the southbound direction during the AM peak period and about the same volume in the northbound direction during the PM peak period. Outside of the four-hour AM and PM peak periods, the traffic volumes in each direction of the Lynnway and Carroll Parkway are less than 1,600 vehicles per hour. The theoretical capacity of a six-lane roadway is about 2,200 to 2,400 vehicles per hour per direction, and for a four-lane roadway capacity is about 1,600 to 1,800 vehicles per hour per direction. In other words, the Lynnway and Carroll Parkway have excess capacity during off-peak periods.

4.1.2 Turning Movement Volumes

Figure 7 shows the turning movement volumes at the major intersections during the weekday AM peak hour (7:00–8:00 AM), weekday PM peak-hour (4:45–5:45 PM), and Saturday PM peak (12:00–1:00 PM). Based on the peak turning movement volumes, MPO staff determined that:

- The majority of traffic in the corridor is pass-thorough commuter traffic.
- The peak flow direction is southbound during the AM peak period and northbound during the PM peak period.
- The critical intersections controlling traffic flow in the corridor and with a significant proportion of turning movements are:
    - Lynnway and Market Street
    - Lynnway and Commercial Street
    - Lynnway and Hanson Street

4.1.3 Pedestrian Traffic Volumes

Figure 8 presents the number of pedestrians observed at the major intersections during the two-hour AM and two-hour PM peak periods on a weekday and the two-hour peak period on Thursday, May 28 and Saturday, May 30, 2015. These volumes may be low because of the colder weather in May and the high traffic volume during peak periods. Nonetheless, the retail, commercial, industrial, and recreational services, office buildings, and ferry and bus transit services along the Lynnway and Carroll Parkway generated significant pedestrian activity in the corridor, especially at the following intersections: Hanson Street, Harding Street, Commercial Street, Blossom Street, Kingman Street, Pleasant Street and Nahant Rotary.

4.1.4 Bicycle Traffic Volumes

Figure 9 presents the number of bicyclists observed at the major intersections, during the two-hour AM and two-hour PM peak periods on a weekday and the two-hour peak period on Thursday, May 28 and Saturday, May 30, 2015. These volumes may be low because of the colder weather in May, high traffic volume during peak periods, and the lack of amenities that provide safety and comfort for bicyclists, such as functioning shoulders or bicycle lanes. In addition, the roadway setting of the Lynnway and Carroll Parkway is unfriendly and intimidating to bicyclists, as the six-lane roadway encourages high vehicular speeds, making bicycling unsafe. In addition, the high number of heavy vehicles exacerbates the existing problems. Despite these adverse conditions, the counts indicate moderate bicycle volumes in the corridor, the majority of which were observed riding on the sidewalk.

4.1.5 Heavy-Vehicles Volumes

The percentage of heavy vehicles (light goods, buses, single-unit trucks, and articulated trucks) in the study-area intersections ranges between 8.0 and 11.0 percent on a weekday and between 6.0 and 9.0 percent on a Saturday. These rates are considered particularly high for peak-period traffic conditions. The percentages of heavy vehicles are included in the TMC (Appendix B).

4.1.6 Spot Speeds

Figure 10 shows the results of the spot speed data collected on the Lynnway and Carroll Parkway. The average spot speeds observed in the corridor range between 33 and 36 mph, identical to the 35 mph posted speed limit. In addition, 85 percent of the drivers travel at 42 mph or slower. The spot speed data indicated that the majority of drivers—about 62 percent—travel between 30 mph and 40 mph, which is known as the 10-mph-pace speed. Analysis shows that between 10 and 15 percent of drivers travel in the 45-to-55 mph range, which is considerably higher than the posted speed limit.

4.1.7 Signal Timing and Layout Information

DCR provided the existing signal timings, already-built traffic signal plans, and signal phase sequences of the signalized intersections (included in Appendix C). MPO staff used Google Maps and field visits to identify recent modifications to the intersection layouts and signal plans. The information was used to analyze existing traffic operations conditions.

4.2 TRANSIT

There are several public transportation services close to the Lynnway, including bus, commuter rail, ferry, and subway (Blue Line) services. These are displayed in Figure 11, a transit service map.

4.2.1 Bus Service

The MBTA operates six bus routes along the Lynnway:

- Route 426: Central Square Lynn - Haymarket or Wonderland Station
- Route 439: Bass Point Nahant - Central Square Lynn
- Route 441: Marblehead - Haymarket or Wonderland Station via Paradise Road
- Route 442: Marblehead - Haymarket or Wonderland Station via Humphry Street
- Route 448: Marblehead - Downtown Crossing
- Route 449: Marblehead - Downtown Crossing

These bus services connect Lynn and nearby communities to Central Square Station on the Newburyport Commuter Rail Line, Wonderland Station on the Blue

Line, and Downtown Boston, including South Station. Routes 441, 442, 448, and 449 operate Monday through Friday every 10 minutes from 5:13 AM to 12:28 AM and Saturday through Sunday every 30 minutes from 6:06 AM to 12:39 AM. Route 439 operates only on weekdays, with five trips from Bass Point to Lynn at 6:30 AM, 7:30 AM, 2:25 PM, 6:05 PM and 6:52 PM; and five trips from Lynn to Bass Point at 6:15 AM, 7:10 AM, 2:08 PM, 5:44 PM, and 6:32 PM. The schedules of the six bus routes are included in Appendix D.

On the Lynnway, there are six bus stops in the northbound direction and nine in the southbound direction. Three of the bus stops in the northbound direction have shelters equipped with benches but none in the southbound direction have either. The lack of bus shelters creates inconveniences for passengers, especially during inclement weather. Table 1 below shows the bus service performance evaluation of each route in terms of service objectives: span, frequency, loading, schedule adherence, daily ridership, and average number of passengers per trip. The evaluation is based on the 2010 service delivery policy standard and spring 2011 schedule.

TABLE 1
Bus Service Evaluation, 2010–11

Route Number	Route Description	Span	Fre-quency	Load-ing	Schedule Adherence	Daily Ridership	Average Number of Passengers per Trip
426	Central Square Lynn - Haymarket or Wonderland Station	Pass	Pass	Pass	55.0%	2,006	28
439	Bass Point Nahant - Central Square Lynn	Pass	Pass	Pass	63.0	88	5
441	Marblehead - Haymarket or Wonderland Station via Paradise Road	Pass	Fail	Fail	49.0	1,442	37
442	Marblehead - Haymarket or Wonderland Station via Humphrey Street	Pass	Fail	Fail	52.0	2,112	28
448	Marblehead - Downtown Crossing	Fail	Pass	Pass	49.0	162	32
449	Marblehead - Downtown Crossing	Fail	Pass	Pass	52.0	181	30

Notes: “Pass” means the bus service meets the performance standards established for that service objective. “Fail” means the bus service does not meet the performance standards established for that service objective. “Span” is based on the 2010 service delivery policy standard for the route type and spring 2011 schedule; correcting this failure would always require additional resources. “Frequency” is based on 2010 service delivery policy standard for the route type and spring 2011 schedule; correcting this failure would always require additional resources.
“Loading” is based on the 2010 service delivery policy and same ridership data used above; standard is less than 140% of seated load averaged over 30-minute period during peak periods and less than 100% of seated load averaged over 60-minute period during off-peak periods; correcting this failure would always require additional resources.
“Schedule Adherence” is based on the 2010 service delivery policy (definition of this service objective varies by frequency of service and time point crossings for start/mid/endpoints of the bus route); percentage shown is the proportion of all time point crossings during fall 2010, which were on time; goal is 75 percent on time. Correcting this failure would NOT always require additional resources.
Source: Massachusetts Bay Transportation Authority.

Based on the performance evaluation presented in Table 1:

- Routes 426, 441, and 442 have a high level of ridership; together they carry about 5,560 passengers daily.
- Routes 441 and 442 fail the frequency and loading standard and require additional resources.
- Routes 448 and 449 fail the span standard and require additional resources.
- All of the routes have a schedule adherence performance of between 49 and 63 percent, which implies that they meet on-time performance no more than 63 percent of the time.

4.2.2 Ferry Service

The Lynn Ferry service is a partnership between the Economic Development Industrial Corporation of Lynn (EDIC) and Boston Harbor Cruises. The service completed a two-year pilot program that started in 2014 and ended in 2016. Ridership in the first year of operation exceeded the projected estimate of 10,000 by more than 3,000 and much better success is expected in the second year of operation. The ferry operates seasonally, starting in May and running throughout the remainder of spring and summer, with stops at Blossom Street Landing (just off the Lynnway) and Central Wharf in Boston. There is ample free parking at the Blossom Street Landing and the trip takes about 30 minutes. The ferry service operates Monday through Friday with three departure trips from Lynn at 6:30 AM, 8:00 AM, and 6:30 PM; and three return trips from Central Wharf at 7:15 AM, 5:45 PM, and 7:15 PM. Information about ferry tickets and fares is included in Appendix D.

Currently, a raised median on the Lynnway at the Blossom Street intersection makes access to and from the Lynn Ferry terminal on Blossom Street difficult, as it prevents drivers from turning left onto Blossom Street. The raised median forces drivers southbound on the Lynnway heading to the ferry terminal to proceed to the Shepard Street/Marine Boulevard intersection then make a U-turn at the intersection and proceed back to Blossom Street in order to access the ferry terminal. Similarly, drivers from the ferry terminal heading to Commercial Street, Shepard Street, and Blossom Street have to proceed northbound on Lynnway to Kingman Street intersection, make a U-turn at that intersection, then continue southbound on the Lynnway in order to access those streets. These maneuvers put drivers and the growing number of commuters using the ferry terminal at risk.

In addition, many pedestrians and bicyclists cross the Lynnway at the Blossom Street intersection to access businesses located at the intersection and the ferry terminal. The absence of a pedestrian signal and marked crosswalks across the Lynnway compel pedestrians and cyclists to go to the adjacent signalized intersections in order to cross the busy Lynnway safely and legally, a maneuver which increases delay for pedestrians and bicyclists because of the extra distance involved. Therefore, many pedestrians and bicyclists still choose to cross the Lynnway at Blossom Street, which puts them at risk. These challenges to drivers, pedestrians, and bicyclists support the need for short-term improvements that will open the median at Blossom Street to provide safe and direct access to the ferry terminal and the businesses located at the intersection.

4.2.3 Commuter Rail Service

The MBTA Newburyport/Rockport Line has a station in Lynn at Central Square on Market Street. This MBTA station (just off the Lynnway) is also a transportation center connecting passengers to several bus lines. The commuter rail operates a full schedule Monday through Friday from 5:00 AM to 12:10 AM and an abbreviated service on Saturday and Sunday from 7:00 AM to 11:30 PM (the full train schedules are included in Appendix D). Peak-period frequency for both the inbound and outbound trains is approximately 30 minutes. The typical weekday boarding (inbound trains) at the station is about 700-to-800 passengers. There is parking at the Central Square station with 965 spaces, of which 23 are ADA accessible. The parking rate is $4.00 daily and the average weekday availability is 79 percent (very low utilization rate compared to the parking facilities at many other stations in the MBTA system).

There is also a plan to convert the GE commuter rail station, which currently serves only GE employees, into a full station servicing the future waterfront development. Connections from the Lynnway to the proposed GE commuter rail station and the waterfront development would be needed in order to provide direct and safe access amongst and between these locations.

Chapter 5—Existing Conditions Analyses

5.1 SAFETY ANALYSIS

MPO staff used crash data from MassDOT's Registry of Motor Vehicles database for January 2010 through December 2012 to evaluate safety for motorists, pedestrians, and bicyclists in the study area. The following sections describe the analyses and results of this safety assessment.

5.1.1 Segment Crash Summary

Table 2 presents a crash summary that identifies severity; manner of collision; road-surface, ambient-light, and weather conditions; number of bicyclists and pedestrians involved; and time of occurrence. The crash data is included in Appendix E.

TABLE 2
2010–12 Segment Crash Summary

Crash Variable	Lynnway	Carroll Parkway
Crash Severity	--	--
Fatal injury	2	0
Non-fatal injury	52	12
Property damage only	136	23
Unknown/not reported	10	6
Manner of Collision	--	--
Rear-end	78	12
Angle	56	4
Single vehicle crash	32	17
Sideswipe, same direction	23	8
Head-on	4	0
Sideswipe, opposite direction	2	0
Not reported/unknown	5	0
Road Surface Conditions	--	--
Dry	150	33
Wet	41	8
Sand, mud, dirt, oil, gravel, water, slush	2	0
Snow	4	0
Not reported	3	0
Ambient Light Conditions	--	--
Daylight	145	27
Dark with lighted roadway	39	13
Dark with roadway not lighted	3	0
Dawn	4	1
Dusk	5	0
Not reported/unknown	4	0

Crash Variable	Lynnway	Carroll Parkway
Weather Conditions	--	--
Clear	103	22
Cloudy	27	4
Rain	19	4
Snow/ice/freezing rain	7	1
Not reported/unknown	44	10
Bicyclists and Pedestrians Involved	--	--
Bicyclist	7	1
Pedestrian	11	1
Time Period	--	--
Peak period	39	4
Off-peak period	161	37
Total crashes	**200**	**41**
Three-year average (rounded)	**67**	**13**
Segment crash rate	**3.23**	**2.49**
Principal arterial (other)—average statewide crash rate	**3.35**	**3.35**

Note: The AM peak period is 7:00 AM–9:00 AM; PM peak period is 4:00 PM–6:00 PM.
Source: Central Transportation Planning Staff.

Between 2010 and 2012, there were241 crashes on the Lynnway and Carroll Parkway, involving 453 vehicles. These crashes resulted in 84 injuries (two of them fatal), meaning that injury crashes represent approximately 30 percent of crashes overall. The predominant crash types were rear-end, angle, single-vehicle crash, and same-direction sideswipe. Together, the crashes of these types constitute more than 94 percent of the crashes in the corridor. Many of these crashes occurred because of motorists running red lights, failing to yield right-of-way, following too close, and being inattentive or distracted. The segment crash rates for the Lynnway and Carroll Parkway were 3.23 and 2.49 crashes per million vehicles-miles traveled (MVMT), respectively. The most recent 2012 statewide average crash rate for an urban principal arterial is 3.35 crashes per MVMT.[12] Overall, the segment crash rate for the Lynnway is close to the statewide average crash rate, but the segment crash rate for the Carroll Parkway is below the statewide average.

5.1.2 Intersection Crash Summary

Figure 12 shows automobile, bicycle, and pedestrian crashes at the major intersections. Motorists, pedestrians, and bicyclists are exposed to risk because of the roadway design.

- The intersections with the highest concentration of automobile crashes are: Lynnway and Hanson Street, Lynnway and Commercial Street,

[12] Published by MassDOT based on crash information queried on August 13, 2014.

Carroll Street at Nahant Road and Lynn Shore Drive, Broad Street and Market Street, and Broad Street and Washington Street.

- The intersections with the greatest concentration of pedestrian and bicycle crashes are Lynnway and Hanson Street, Lynnway and Commercial Street, Broad Street and Market Street, and Broad Street and Washington Street.

Table 3 presents a summary of crashes at the major intersections in terms of severity; manner of collision; road-surface, ambient-light, and weather conditions; number bicycles or pedestrians involved; and time of occurrence. For MassDOT Highway Division District 4 (which includes the City of Lynn), the average crash rate for signalized intersections is 0.73 crashes per million entering vehicles (MEV) and 0.56 MEV for unsignalized intersections.[13] The crash rate worksheets are presented in Appendix F.

The analyses presented in Table 3 indicate higher-than-average crash rates for the following intersections:

- Lynnway and Commercial Street intersection (Highway Safety Improvement (HSIP) crash cluster)
- Lynnway and Kingman Street intersection
- Carroll Parkway at Nahant Rotary (HSIP crash cluster)

As noted, two of the three intersections with high-crash rates (Lynnway and Commercial Street intersection and Carroll Parkway at Nahant Rotary) are on the list of the HSIP crash clusters and are eligible for HSIP funding. Based on the HSIP crash-cluster status, they also would require a road safety audit (RSA) to discuss additional safety countermeasures. An HSIP-eligible cluster is one in which the total number of "equivalent property damage only" crashes in the cluster is within the top five percent of all clusters in that region[14].

TABLE 3
2010–2012 Crash Summary: Study Intersections

Characteristics	Hanson Street	Harding Street	Commercial Street	Marine Blvd.	Kingman Street	Market Street	Nahant Rotary
Crash Severity	--	--	--	--	--	--	--
Fatal injury	2	0	0	0	0	0	0
Non-fatal injury	12	3	13	3	13	5	7
Property damage only	15	19	44	12	31	14	20
Not reported/unknown	2	4	2	1	1	0	6
Manner of Collision	--	--	--	--	--	--	--
Angle	10	4	23	4	11	2	3
Rear-end	7	16	21	6	18	9	8
Sideswipe, opposite	1	0	1	0	0	0	0

[13] Published by MassDOT based on crash information queried on January 23, 2013.

[14] "Equivalent property damage only" is a method of combining the number of crashes with the severity of crashes based on a weighted scale where a fatal crash is worth 10, an injury crash is worth 5, and a property-damage-only crash is worth 1.

Characteristics	Hanson Street	Harding Street	Commercial Street	Marine Blvd.	Kingman Street	Market Street	Nahant Rotary
direction							
Sideswipe, same direction	2	3	3	3	6	5	8
Single vehicle collision	8	2	9	2	8	3	14
Head-on	0	1	2	1	0	0	0
Not reported/unknown	3	0	0	0	2	0	0
Road Surface Conditions	--	--	--	--	--	--	--
Dry	23	20	44	10	37	14	27
Wet	5	6	13	5	6	5	6
Snow	1	0	1	1	2	0	0
Not reported/unknown	2	0	1	0	0	0	0
Ambient Light Conditions	--	--	--	--	--	--	--
Daylight	24	17	45	12	35	8	22
Dark with lighted roadway	1	8	11	3	9	7	11
Dark with roadway not lighted	1	0	0	0	1	1	0
Dawn	1	0	2	0	0	1	0
Dusk	0	1	1	1	0	2	0
Not reported/unknown	4	0	0	0	0	0	0
Weather Conditions	--	--	--	--	--	--	--
Clear	15	10	35	6	27	8	18
Cloudy	5	5	5	2	6	4	3
Rain	2	1	8	2	3	2	2
Snow	2	0	0	2	1	1	1
Not reported/unknown	7	10	11	4	8	4	9
Bicyclists and Pedestrians Involved	--	--	--	--	--	--	--
Bicyclist	0	0	3	0	0	0	1
Pedestrian	4	1	2	0	2	1	0
Time Period	--	--	--	--	--	--	--
Peak period	4	9	12	3	11	7	5
Off-peak period	27	17	47	13	34	12	28
Total Crashes (2010-2012)	**31**	**26**	**59**	**16**	**45**	**19**	**33**
Three-year average crash rate	**10**	**9**	**20**	**5**	**15**	**6**	**11**
Average crash rate	**0.71**	**0.57**	**1.07**	**0.35**	**0.93**	**0.45**	**0.89**
MassDOT Highway Division District 4 average crash rate	**0.73**	**0.73**	**0.73**	**0.73**	**0.73**	**0.73**	**0.56**

Notes: The AM peak period is 7:00 AM–9:00 AM; the PM peak period is 4:00 PM–6:00 PM.
Shading denotes an intersection with a high crash rate.
Source: Central Transportation Planning Staff.

5.1.3 Collision Diagrams

MPO staff used police crash reports to prepare collision diagrams, which are useful for examining patterns and developing safety strategies.[15] The collision diagrams, along with the crash records, are included in Appendix G. The collision

[15] Staff did not prepare diagrams for a few crash reports because they lacked police-drawn sketches showing how they occurred, and so those reports are not included in Figures 5 through 9.

diagram numbers uniquely identify each crash and may be used to cross-reference the crash records. According to the collision diagrams, rear-end and angle crashes, usually associated with signalized intersections, were the predominant crash type. Nine pedestrian crashes occurred at midblock locations on the Lynnway and two in crosswalks at intersections. Three bicycle crashes occurred in sidewalk locations with driveways. The roadway design is a major contributor to these crashes: it encourages high vehicular speeds, reduces pedestrian comfort, and does not provide a welcoming environment for pedestrians and bicyclists; and the long crosswalks and lack of pedestrian refuge areas create long pedestrian crossing times and unsafe crossing conditions.

5.2 TRAFFIC OPERATIONS ANALYSES

Staff conducted traffic operations analyses consistent with the Highway Capacity Manual (HCM) methodologies.[16] HCM methodology demonstrates driving conditions at signalized and unsignalized intersections in terms of a level-of-service (LOS) rating from A to F. LOS A represents the best operating conditions (little to no delay), while LOS F represents the worst operating conditions (long delay). LOS E represents operating conditions at capacity (limit of acceptable delay). Table 4 presents the control delays associated with each LOS for signalized and unsignalized intersections. Using the data collected, MPO staff built traffic analysis networks for the AM and PM peak hours and Saturday PM peak hour using Synchro traffic simulation software[17] to assess the capacity and quality of traffic flow.

TABLE 4
Intersection Levels of Service Criteria, 2010

Level of Service	Signalized Intersection Control Delay (seconds per vehicle)	Unsignalized Intersection Control Delay (seconds per vehicle)
A	0-10	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

Source: Highway Capacity Manual 2010.

[16] Highway Capacity Manual 2010, Transportation Research Board of the National Academies, Washington, DC, December 2010.
[17] Trafficware Inc., Synchro Studio 8, Synchro plus SimTraffic, Build 801, Version 563, Sugar Land, Texas.

Figure 13 shows the existing lane configuration of the Lynnway and Carroll Parkway. Figures 14 through 16 show the results of the existing conditions analyses in terms of LOS and delays for the weekday AM, weekday PM and Saturday PM peak hours, respectively. The existing conditions LOS analysis worksheets are included in Appendix H. None of the intersections in the corridor appear to be failing. Delays and queues occur only during the peak periods at the following critical intersections, where the levels of service are still acceptable:

- Lynnway and Hanson Street during the weekday PM and Saturday PM peak periods because of the high volume heading northbound and the traffic turning left into the Walmart store or Lynnway Market.
- Lynnway and Commercial Street during the weekday AM, weekday PM, and Saturday PM peak periods. High volume of traffic at the intersection is the major cause of the delays.
- Lynnway and Market Street during the weekday PM peak period because of the high volume of left-turning traffic at the intersection.
- Nahant Rotary during the weekday PM peak period because of the high volume of traffic at of the rotary

5.3 IDENTIFIED PROBLEMS

Based on analyzing the existing conditions, field reconnaissance, and task force discussions, the following problems were identified in the corridor.

5.3.1 Pedestrian and Bicyclist Issues

Figures 17 and 18, and the issues listed below, show some of the problems and challenges facing pedestrians and bicyclists and the reasons why the roadway is considered unfriendly for pedestrians and bicycles:

- Long crosswalks (as long as 100 feet) and inadequate median refuge area on the Lynnway make crossing a challenge and put pedestrians at risk.
- Sidewalks on the Lynnway and Carroll Parkway are located close to the back of curbs, placing pedestrians close to the travel lanes. A lack of trees in the Lynnway segment, which would serve to create a separation between pedestrians and vehicles, also reduces pedestrian comfort and does not provide a welcoming environment for pedestrians and bicyclists.
- Six-to-seven travel lanes results in a wide roadway, encouraging higher vehicle speeds and placing motorists, pedestrians, and bicyclists at risk. In addition, it creates inequity by placing too much emphasis on vehicular use rather than pedestrian and bicycle use.
- A lack of shoulders or bike lanes or shared-lane markings makes the roadway uncomfortable and unsafe for bicyclists and forces them to ride on the sidewalks instead.
- Pedestrian and bicyclist access to the Lynn Ferry terminal on Blossom Street and the businesses located near the Blossom Street intersection is

confusing to navigate and dangerous. There is no crosswalk across the Lynnway at the intersection: pedestrians and bicyclists must go to the adjacent signalized intersections about 600-to-700 feet away, which would result in a significant delay and therefore encourages them to cross the Lynnway unprotected, and unexpected by drivers.

- Obstructions in crosswalks, non-compliant ADA curb ramps, and broken sidewalks create an unfriendly environment for pedestrians, especially for people with disabilities.
- Pedestrian and bicyclist access to the businesses located at the Harding Street intersection is difficult because the intersection lacks a crosswalk across the Lynnway. The collision diagram in Appendix G shows a pedestrian-vehicle crash at the intersection.
- Many of the side streets at the unsignalized intersections lack stop signs, and at the signalized intersections some lack pedestrian signals with pushbuttons, both of which put pedestrians at risk.
- The absence of a sidewalk along the park located between Broad Street, Market Street, and the Lynnway limits pedestrian access and connection to the waterfront. There is a strong desire line[18], which shows that people are walking along the Lynnway where no sidewalks are provided.
- The high volume of heavy trucks in the corridor poses safety problems for pedestrians and bicycles.

5.3.2 Traffic Safety and Operations Issues

- Access to the Lynn Ferry terminal is confusing to navigate and unsafe for drivers and commuters. The turn prohibition at the Blossom Street intersection creates overly complicated traffic circulation for drivers.
- High vehicular speeds result in many crashes involving motorists, pedestrians, and bicyclists throughout the corridor.
- Outdated signal-timing plans need to be updated to make the flow of traffic efficient.
- The substandard signal equipment reduces signal visibility and needs upgrades in order to be responsive to complex signal-timing plans and changing traffic flow patterns.
- The lack of an Opticom system to handle emergency vehicles obstructs emergency and rescue services.
- There are no transit priority signals, which would improve on-time performance for buses.
- The insufficient length of left-turn lanes creates traffic queues that spill over into through travel lanes, causing disruptions.

[18] “Desire line” refers to a path worn into the ground by pedestrians who repeatedly take the same shortcut to get from one area to another.

- The high speed of drivers turning right from Carroll Parkway onto Market Street, because of a wide curb-line radius, puts pedestrians at risk.
- The high volume of traffic turning left off the Lynnway creates queue storage problems on northbound Market Street for the high volume of traffic turning right onto Broad Street.

5.3.3 Public Access Issues—Connections between the Waterfront Development and Lynn's Downtown and Neighborhoods

Developing the waterfront into a vibrant destination with direct linkage to Lynn's downtown and surrounding neighborhoods would require improvements to the Lynnway, Carroll Parkway and ancillary[19] local streets that accommodate all road users. Plans for the waterfront include residential development; retail stores; boardwalk, entertainment and recreation areas; and office parks. Residents and visitors to the waterfront would walk, bicycle, or drive. Hence, the following access issues need to be addressed in order to realize the city's vision for the waterfront.

- Renovate the Lynnway and Carroll Parkway to provide a pedestrian friendly roadway.
- Renovate the Lynnway and Carroll Parkway to accommodate bicycle use.
- Balance the needs of vehicular commuters with the need for pedestrian and bicycle access to the waterfront.
- Open the median at Blossom Street and signalize the intersection to provide safe and direct access to the Lynn Ferry terminal.
- Improve the strategic ancillary streets that connect the Lynnway and Carroll Parkway to transportation service centers, Lynn's downtown and neighborhoods, and the waterfront development in order to provide a safe and comfortable roadway experience for pedestrians and bicyclists. Candidate streets include Harding Street, Commercial Street, Marine Boulevard/Shepard Street, Blossom Street, Pleasant Street, Market Street, and Washington Street.
- Extend and renovate Harding Street to connect to the proposed General Electric commuter rail station and to the waterfront. Enhance pedestrian and bicycle access at the intersection to encourage pedestrians and bicyclists to walk or bike to the proposed commuter rail station and to the waterfront.
- Improve the bus transit service that connects Lynn Central Square Station and Wonderland Station to better serve businesses on the Lynnway and waterfront development. Improvements should include increased frequency; improved coordination among modes (buses, commuter trains, ferries); reduced delay to transit vehicles; and improved stops/shelters.

[19] Ancillary streets are major side streets.

Chapter 6—Short-Term Improvements

MPO staff worked with the study's advisory task force to develop short-term strategies for addressing the safety, operations, and access issues identified in the corridor. The time frame categorized as "short-term" is typically less than five years. In addition, short-term improvements are less complicated to perform and require a smaller amount of funding, design and engineering.

6.1 ALTERNATIVE 1: SHORT-TERM IMPROVEMENTS

Alternative 1 maintains the existing roadway cross-section and makes short-term improvements that address some of the issues affecting pedestrian and bicycle safety, access to the Lynn Ferry terminal, and traffic flow. Figure 19 shows some possible short-term improvements, which are described in detail in the following two sections; Figure 20 also illustrates short-term improvements that will be discussed as they become relevant. All of the improvements described are low- and medium-cost and can be implemented within one-to-five years using either maintenance funds or special funds.

6.1.1 Improvements throughout the Corridor

- Retime and coordinate traffic signals in the corridor using recent turning movement volumes—including those for pedestrians and bicycles—at the signalized intersections.
- Add backplates to the signal heads to improve visibility during sun glare. This would require a structural review of the signal equipment to ensure that it could accommodate the additional wind load.
- Convert curb lanes on Lynnway and Carroll Parkway into shared-use lanes. For example, reduce the existing lane widths to 10 feet in order to create 13-foot curb lanes for shared use by bicycles.
- Add advance street name, intersection, and wayfinding signs to guide drivers, bicyclists, and pedestrians through the corridor.
- Work with the City of Lynn, the MBTA, and business owners to increase number of bus shelters in the corridor, especially on the Lynnway southbound, and improve both service frequency and span for bus routes 441, 442, 448, and 449.
- Add countdown timers at the Lynnway intersections that have high volumes of pedestrians and bicycles, such as the intersections at Hanson Street, Commercial Street, Marine Boulevard/Shepard Street, and the Market Street Extension.
- Repair broken sidewalks and remove obstructions from crosswalks.

- Add detectable warning plates to curb ramps and ADA-compliant accessible pedestrian signals (APS).

6.1.2 Intersection-Related Improvements

Hanson Street Intersection:

- Add countdown timers for crossing the Lynnway.
- Work with MBTA to examine feasibility of adding a bus shelter on the southbound direction to complement the one installed on the northbound direction.

Harding Street Intersection:

- Remove portion of the median on the eastern leg of Harding Street that is blocking the crosswalk.
- Add a crosswalk on the Lynnway.
- Add countdown timers for crossing the Lynnway.

Commercial Street Intersection:

- Add countdown timers for crossing the Lynnway

Marine Boulevard/Shepard Street Intersection:

- Remove portion of the median on Marine Boulevard that is blocking the crosswalk.
- Add countdown timers for crossing the Lynnway.

Blossom Street Intersection:

- Open median, add a southbound left-turn lane, and signalize the Blossom Street intersection to provide safe and direct access to the Lynn Ferry terminal and the businesses located at the intersection. Figure 20 shows improvements that MPO staff recommend at the intersection.
- Install crosswalks on the Lynnway with pedestrian signals and pushbuttons to protect pedestrians and bicycles.
- Install bicycle detection equipment, pavement markings and signs to protect and guide bicyclists through the intersection.
- Install curb extensions or bulb-outs[20] to reduce the crosswalk distance on Blossom Street.

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[20] "Curb extensions (also called bulb-outs) extend or widen the sidewalk into the parking lane to narrow the roadway and provide additional pedestrian space at key locations; they can be used at corners and at mid-block. Curb extensions enhance pedestrian safety by increasing pedestrian visibility, shortening crossing distances, slowing turning vehicles, and visually narrowing the roadway." (Source: http://www.sfbetterstreets.org/find-project-types/pedestrian-safety-and-traffic-calming/traffic-calming-overview/curb-extensions/)

Kingman Street Intersection:

- Add countdown timers for crossing the Lynnway.
- Relocate pedestrian signal with pushbutton closer to the curb ramps.

Pleasant Street/Broad Street Intersection:

- Add a marked crosswalk on Broad Street.

Market Street Extension Intersection:

- Remove the portion of the median on the Lynnway that is blocking the crosswalk.
- Add countdown timers for crossing the Lynnway.
- Install a sidewalk on the southbound Lynnway between the Market Street Extension and Broad Street.

6.1.3 Level of Service

Figures 21 through 23 show the results of the LOS and delays analyses for the weekday AM and PM and Saturday PM peak hours. The results show that the Alternative 1 recommendations operate satisfactorily (LOS D or better for high-volume through traffic). The LOS analysis worksheets for Alternative 1 are included in Appendix I.

6.1.4 Advantages

Alternative 1 has the following advantages:

- Addresses short-term improvements to increase safety for pedestrians and bicyclists.
- Improves access to the Lynn Ferry terminal and to the businesses located at the Blossom Street intersection.
- Makes traffic flow more efficient by retiming and coordinating signals.

6.1.5 Disadvantages

Alternative 1 has the following disadvantages:

- Does not support long-term vision for the waterfront's development.
- Does not address connections amongst the waterfront, downtown and nearby neighborhoods.
- Does not renovate the Lynnway and Carroll Parkway in ways that provide a pedestrian-and-bicyclist-friendly roadway that accommodates all users safely.
- Does not include corridor-specific traffic-calming mitigation measures that would reduce traffic speeds.

6.1.6 Cost

Based on the reconstruction costs of similar past projects in the MassDOT project information database, MPO staff estimate Alternative 1 to cost approximately \$5-to-\$7 million. This cost estimate includes the elements described above, such as a new traffic signal at the Blossom Street intersection, new signal coordination, installation of signal head backplates, and improved signage. It includes safety improvements for pedestrians and bicycles, such as adding countdown timers and shared-use curb lanes, repairing broken sidewalks, and making ADA improvements, including removing obstructions from crosswalks, adding detectable warning plates to the curb ramps, and installing accessible pedestrian signals.

Chapter 7—Long-Term Improvements

The time frame categorized as “long-term” is typically greater than five years and can be as long as 15 years. Long-term improvements are more complicated than their short-term counterparts are, and require more funding resources and design and engineering efforts. Because the waterfront area has been classified as a Commonwealth of Massachusetts Growth District and rezoned for commercial and residential development, the strategy for the Lynnway and Carroll Parkway renovations was to evaluate different roadway cross-sections to see what must be done in order to improve safety, operations, and access for all users to the waterfront, and to connect it with the downtown area and surrounding neighborhoods.

Based on discussions with the advisory task force, MPO staff have developed five long-term alternatives for consideration. Some of the alternatives have improvements that mostly fall within the existing roadway’s right-of-way width and take into account the needs of abutters and users (for example, Alternatives 2, 4, and 6). Other alternatives propose improvements that would require more space to build the improvements (such as Alternatives 3 and 5). All of the long-term alternatives would require the proposed land use changes at the waterfront area—for example, land uses that attract pedestrians and bicyclists, such as entertainment and recreation areas, residential and commercial developments, and office parks—in order to be successful.

For each of the long-term alternatives, staff recommend major landscape and streetscape improvements to make the Lynnway and Carroll Parkway more attractive to pedestrians and bicyclists, the aforementioned waterfront land use changes, and support improved connectivity from the waterfront to the Lynn downtown area and to the residential neighborhoods along the corridor.

7.1 ALTERNATIVE 2: ROAD DIET AND COMPLETE STREET

7.1.1 Roadway Setting

Alternative 2 would remove a travel lane in each direction on the Lynnway and Carroll Parkway and reconfigure the roadway to facilitate installation of a wider median (between 12 and 20 feet); wider sidewalks; shorter crosswalks with pedestrian refuge areas; and separated bicycle lanes; and introduce more landscaping and better streetscape design, as shown in Figure 24. The new streetscape would include bus shelters with benches, sidewalks with tree or grass buffers, and ornamental street lighting. Examples of model roadways would be the Veterans of Foreign War (VFW) Parkway in West Roxbury and the

Blue Hills Parkway in Milton, both of which are shown in Figure 25, among other examples.

Alternative 2 promotes renovation of the corridor to make it easier to walk and bike to the waterfront. The separated bicycle lanes would provide greater protection and higher visibility for both bicyclists and motorists, improving safety for all road users. The bicycle lanes would support connections to the proposed Bike-to-the-Sea trail[21] and proposed General Electric commuter rail station and encourage biking to the waterfront. Alternative 2 is multimodal and, in tandem with improved ancillary local streets, would fulfill the vision of connecting the waterfront to the Lynn downtown area, nearby neighborhoods, and the pertinent transportation service centers.

7.1.2 Operational Features

In addition to the renovation efforts discussed above, providing the following features would modernize the Lynnway and Carroll Parkway to increase safety and make the roadway efficient for all users:

- Upgrade signal equipment to MassDOT standards (consider adaptive traffic signal control system: this technology monitors traffic and adjusts the timing of red, yellow and green lights to accommodate changing traffic patterns and ease traffic congestion).
- Retime and coordinate signals.
- Install protected-permitted left-turn treatment.
- Add accessible pedestrian signals.
- Install detection for bicycles.
- Add Opticom system for handling emergency-vehicle preemption.
- Install transit signal priority to reduce bus service delays.
- Install advance street name signs to guide motorists.

7.1.3 Level of Service

Figures 26 through 28 show the resulting performance of Alternative 2 in terms of LOS and delays for the weekday AM and PM and Saturday PM peak hours. Appendix J includes the LOS worksheets for this alternative. The analyses show that with signal coordination, protected-permitted left-turn treatments, and concurrent pedestrian phases, Alternative 2 would operate satisfactorily (LOS D or better for the high volume of through traffic).

[21] Bike-to-the-Sea trail is a multiuse path, free of cars, from the Malden/Everett area of Massachusetts to the beaches in Revere, Lynn and Nahant. It is still in construction and the section in Lynn has not been built.

Alternative 2 may reduce traffic volumes on the Lynnway and Carroll Parkway. Studies have shown that reducing roadway capacity to accommodate all users influences trip-making decisions, which eventually result in the following:

- Diverted trips from the Lynnway and Carroll Parkway to other roadways.
- Peak-hour spread, for example the two-hour (7:00 AM–9:00 AM) AM peak period may spread to a three-hour (6:30 AM–9:30 AM) peak period.
- Change in transportation mode, for example from automobile to commuter rail, ferry boat, bus, bicycle, and/or walking
- Reduced and efficient trips, where trips are planned and chained together.

7.1.4 Advantages

Alternative 2 has the following advantages:

- Supports the renovation of the Lynnway and Carroll Parkway corridor to make it more pedestrian and bicyclist friendly.
- Fulfills the vision of connecting the Lynn downtown area and nearby neighborhoods to the waterfront, and would better support the mixed land uses that the City is proposing for the waterfront, such as recreational, residential and commercial developments and office parks.
- Consistent with MassDOT's Healthy Transportation Compact: the pedestrian amenities and separated bike lanes would attract more people to walk and bike to the waterfront. Separated bike lanes can appeal to a broad range of people, and in doing so would contribute to increases in bicycling volumes and rates by as much as 10-to-20 percent, compared to five-to-seven percent for traditional bike lanes. [22,23] In addition, providing separated bike lanes where they currently do not exist would reduce vehicle-bicycle crashes by approximately 60-to-74 percent.[24]
- Functions well and would not cause any significant delays to motorists: therefore, it would remake the Lynnway and Carroll Parkway into a pedestrian-oriented roadway while maintaining traffic flow.

7.1.5 Disadvantages

Alternative 2 has the following disadvantages:

- Requires land takings at selected locations in order to widen the median.
- Construction would have an impact on traffic flow and affect commuters and business activities

[22] New York City Department of Transportation, Prospect Park West: Bicycle Path and Traffic Calming Update, Retrieved from http://www.nyc.gov/html/dot/downloads/pdf/ 2012_ppw_trb2012 .pdf.
[23] Parks J., Ryus P., Tanaka A., Monsere C., McNeil M., Dill J., Schultheiss W., District Department of Transportation Bicycle Facility Evaluation, Project No. 11404, (2012). Retrieved from http://ddot.dc.gov/node/477212.
[24] Ibid.

7.1.6 Cost

Based on the reconstruction costs of similar past projects recorded in the MassDOT project information database, MPO staff estimate Alternative 2 to cost approximately between $15-and-$20 million, excluding any land takings required for the improvement. This estimate includes drainage improvements, sidewalk and ADA-compliant ramp construction, landscape and streetscape renovation, paving, traffic signals and equipment upgrade, and street lighting.

7.2 ALTERNATIVE 3: BOULEVARD STYLE ROADWAY

7.2.1 Roadway Setting

Alternative 3 would convert the Lynnway and Carroll Parkway into a boulevard-style roadway with a wider, planted median (20-to-30 feet wide), especially in the Lynnway segment. It would consist of two travel lanes and a separated bicycle lane in each direction (see Figure 29). The design includes wider sidewalks and new landscaping and streetscape design, including trees, bus shelters with benches, and ornamental lighting. Figure 30 gives examples from existing models of how Alternative 3 would look, such as North and South Common Streets in Lynn or a smaller-scale Commonwealth Avenue in Boston.

Alternative 3 promotes a renovation of the Lynnway and Carroll Parkway into a pedestrian- and bicycle-oriented boulevard while maintaining traffic flow. The wider median (compared to Alternative 2) would significantly soften the traffic-dominant environment that characterizes the Lynnway and attract more pedestrians and bicyclists to walk or bike to the waterfront. It would also make the daunting Lynnway far easier for pedestrians to cross. By transforming the Lynnway and Carroll Parkway into a boulevard, the roadway would become both a transportation corridor as well as a neighborhood amenity that supports livable communities and vibrant waterfront activities. With space for driving, walking, and bicycling, Alternative 3 would support multimodal connections to downtown Lynn, including the proposed Bike-to-the-Sea trail, the General Electric commuter rail station and transportation service centers such as Lynn Central Square Station and the Lynn Ferry terminal.

7.2.2 Operational Features

In addition to the landscape and streetscape and welcoming environment for pedestrians and bicyclists, providing the following operational features would increase safety and modernize the roadway to serve all users efficiently:

- Upgrade signal equipment to MassDOT standards, preferably to an adaptive traffic signal control system
- Retime and coordinate signals.
- Install protected-permitted left-turn treatments.

- Add accessible pedestrian signals.
- Install detection for bicycles.
- Add an Opticom system for handling emergency-vehicle preemption.
- Install transit signal priority to reduce bus service delays.
- Install advance street name signs to guide motorists.

7.2.3 Level of Service

With signal coordination, protected-permitted left-turn treatments, and concurrent pedestrian phases, the expected performance of Alternative 3 in terms of LOS and delay for the weekday AM and PM and Saturday PM peak hours would be similar to those of Alternative 2: operates satisfactorily (LOS D of better for the high-volume through traffic). In addition, the reduction in traffic capacity possibly would reduce traffic volumes on the Lynnway and Carroll Parkway through peak-hour spreading and contribute to changes in mode of transportation from automobile to transit.

7.2.4 Advantages

The following are the advantages of Alternative 3:

- Remakes the Lynnway and Carroll Parkway into a pedestrian- and bicyclist-friendly transportation corridor, as well as into a neighborhood amenity that supports livable communities and vibrant waterfront activities.
- Beautification of the roadway, reduction in travel lanes, and corridor-specific improvements such as a wider median, shorter crosswalks, and separated bike lanes can appeal to a broad range of people and together are expected to calm traffic (lower speeds and improve safety). Research has shown that such corridor-specific traffic calming improvements can reduce crashes by about 30 percent.[25]
- Fulfills the vision of connecting the Lynn downtown area and surrounding neighborhoods with a vibrant waterfront.
- Consistent with MassDOT's Healthy Transportation Compact: the pedestrian amenities and separated bike lanes would attract more people to walk and bike to the waterfront, thereby better supporting mixed the land uses that the city has proposed for the waterfront.
- Functions well and would not cause any significant delays to motorists, remaking the Lynnway and Carroll Parkway into a pedestrian-oriented roadway while maintaining traffic flow.

7.2.5 Disadvantages

The following are the disadvantages of Alternative 3:

[25] Crash Modification Factors Clearinghouse, U.S. Department of Transportation, Federal Highway Administration, http://www.cmfclearinghouse.org/index.cfm.

- Requires more land takings to accommodate a wider median, as the median proposed would not fit into the existing right-of-way.
- Costs considerably more to build compared to Alternative 2.
- Construction would affect traffic flow and affect commuters and business activities, as the improvements in Alternative 3 necessitate a complete roadway reconstruction.
- Access to side streets would be affected, such as to Commercial Street.
- Intersections along the corridor would have to undergo major reconstructions in order to create the wider median, which would require a relocation of utilities and a possible negative impact to the commuter rail bridges located on the west side of the Lynnway.
- Extending the improvements to the Carroll Parkway and Nahant rotary would be difficult: the rotary may need to be reconstructed.

7.2.6 Cost

Based on the reconstruction costs of similar past projects archived in the MassDOT project information database, MPO staff estimate Alternative 3 to cost approximately $25-to-$30 million, excluding the land takings required for the improvements. This estimate includes drainage improvements, accommodation and relocation of utilities, sidewalk and ADA-compliant ramp construction, landscape and streetscape renovation, paving, traffic signals and equipment upgrade, and installation of street lighting.

7.3 ALTERNATIVE 4: ADDING PEDESTRIAN BRIDGES TO THE LYNNWAY

7.3.1 Roadway Setting

This alternative was added because pedestrian bridges were discussed during the advisory task force meetings. Pedestrian bridges over the Lynnway have been discussed in the community as a means to open West Lynn to the waterfront. Presently there is a pedestrian bridge over the Carroll Parkway connecting the North Shore Community College and the Lynn Heritage State Park. Two options were developed for Alternative 4.

Option 1: Keep Existing Travel Lanes

Alternative 4 would keep the existing roadway cross-section and add pedestrian bridges at selected locations for crossing the Lynnway to increase safety and mobility for pedestrians. Additional improvements include reducing lane widths to 10 feet from 11 feet in order to create a 13-foot curb lane in both directions for shared-use with bicyclists (Figure 31). MPO staff recommend pavement markings in the shared-use lanes (sharrows) to alert drivers to share the roadway and watch for bicyclists. New sidewalks with buffers, bus shelters with benches, and landscape and streetscape beautification are suggested in this alternative to provide a welcoming experience for pedestrians and bicyclists. Figure 32 gives examples models for Alternative 4, such as Soldiers Field Road in Allston and Brighton, Storrow Drive in Boston, or extending the Carroll Parkway roadway character to the Lynnway portion of the corridor.

Option 2: Reduce Travel Lanes

Much like Alternative 2, Alternative 4 could also be reconfigured to reduce travel lanes to four lanes (two lanes in each direction) and add pedestrian bridges at selected locations for crossing the Lynnway and separated bicycle lanes in both directions.

7.3.2 Candidate Locations

In locating the pedestrian bridges, we must consider the land uses proposed for the waterfront and the desired connections amongst the Lynn downtown area, the waterfront's surrounding neighborhoods, and the pertinent transportation centers. Candidate locations include the busy Commercial Street intersection; the Harding Street intersection, which lacks a crosswalk on the Lynnway; and the Blossom Street intersection, which would provide access to the Lynn Ferry terminal. These three options are discussed below.

- The Blossom Street and Lynnway intersection is a candidate location. It provides access to the Lynn Ferry Terminal, Lynn Commons and the surrounding neighborhoods. Presently, a raised median at the intersection prevents direct access to the ferry terminal, resulting in inefficient traffic circulation for thousands of commuters. In addition, the intersection lacks a crosswalk on the Lynnway, which puts pedestrians and bicyclists at risk.
- The Commercial Street and Lynnway intersection would be a good location for a pedestrian bridge. It is a busy intersection with high volumes of traffic that conflict with pedestrian and bicycle movements. The intersection has one of the longest crosswalks across the Lynnway and it is intimidating to many pedestrians and bicyclists. Another supporting factor is that Commercial Street connects directly with the waterfront, Lynn Commons, and the neighborhoods.
- The Harding Street and Lynnway intersection is a potential location for a pedestrian bridge. Presently, it has no crosswalk on the Lynnway. Harding Street, although it presently carries very little traffic, could be extended to the west in the future in order to connect to the proposed General Electric commuter rail station, thereby becoming an access road for waterfront residents and visitors to the commuter rail station. Because it has direct access to the waterfront, a pedestrian bridge at this location could make it easier to walk or bike to the waterfront or commuter rail station.

7.3.3 Operational Features

In addition to the pedestrian bridges and bicycle lanes, incorporating the following operational features into Alternative 4 would help to modernize the Lynnway and Carroll Parkway, increase safety, and make traffic flow efficiently:

- Upgrade signal equipment to MassDOT standards.
- Retime and coordinate signals.
- Add accessible pedestrian signals.
- Install detection for bicycles.
- Add an Opticom system for handling emergency-vehicle preemption.
- Installing transit signal priority to reduce bus service delays.
- Install advance street name signs to guide motorists.

7.3.4 Level of Service

Option 1: Keep Existing Travel Lanes

Figures 33 through 35 show the resulting performance of Alternative 4, Option 1, in terms of LOS and delays for the weekday AM and PM and Saturday PM peak hours. The analyses show that with signal coordination, protected left-turn treatments, and concurrent pedestrian phases, Alternative 4 would operate satisfactorily (LOS D or better for the high volume of through traffic).

Option 2: Reduce Travel Lanes

With signal coordination, protected-permitted left-turn treatments, and concurrent pedestrian phases, the expected performance of Alternative 4, Option 2, in terms of LOS and delay for the would be similar to those of Alternative 2: operates satisfactorily (LOS D of better for the high-volume through traffic). The reduction in traffic capacity could reduce traffic volumes on the Lynnway and Carroll Parkway through peak-hour spreading and encourage changes in mode of transportation from automobile to transit.

7.3.5 Advantages

The following are the advantages of Alternative 4:

- Fulfills the vision of connecting the Lynn downtown area, neighborhoods to the Waterfront, and would better support mixed land uses that the City is proposing for the Waterfront such as recreational, residential and commercial developments, and office parks.
- Supports transformation of the Lynnway and Carroll Parkway corridor to make it more pedestrian and bicyclist friendly
- Serve all users safely and efficiently. Pedestrian bridges would make it easier to cross the Lynnway and connect Waterfront development to Lynn downtown and neighborhoods, Lynn Ferry terminal, and the proposed General Electric commuter rail station.

- Functions well by making traffic flow efficient, as it provides more green time to serve vehicular traffic.
- Fits into the existing right-or-way and would require minor land takings—only at locations where the pedestrian bridges would be constructed.

7.3.6 Disadvantages

The following are the disadvantages of Alternative 4:

- MassDOT standards require pedestrian bridges to comply with current ADA standards. Fulfilling this ADA requirement would result in very long (or complex, winding) ramps and very large bridge footprints that may not follow pedestrian desire lines, and may also require real estate takings to accommodate this infrastructure.
- Pedestrian bridges work very well when the roadway is depressed so the pedestrian bridge is at grade level (no ramps) and seems more convenient than descending to road level.
- Because of their expense, pedestrians bridges are usually far apart and most pedestrians will not voluntarily accept the added inconvenience of walking five or ten minutes out of their way simply to use a bridge, and instead will cross at grade at the nearest convenient location. This can have the effect of actually reducing pedestrian safety, as drivers will not expect at-grade crossings if pedestrian bridges are present. An easier solution to this problem would be to erect fences and barriers to force pedestrians to use the bridge.
- Erecting fences might improve safety by forcing pedestrians and bicyclists to use pedestrian bridges, but generally, it reduces mobility and connectivity and results in a loss of pedestrian access. The addition of fencing to the roadway would reduce access for all motorists and bicyclists, in addition to pedestrians, and may not be feasible with the number of curb cuts present.

7.3.7 Cost

Based on the reconstruction costs of similar past projects archived in the MassDOT project information database, MPO staff estimate Alternative 4 to cost approximately $20-to-$25 million, excluding the cost of the land takings required for the improvements. This estimate includes two ADA-compliant pedestrian bridges, drainage improvements, accommodation and relocation of utilities, sidewalk and ADA-compliant ramps, landscape and streetscape renovation, paving, traffic signals and equipment upgrade, and the installation of street lighting.

7.4 ALTERNATIVE 5: ALTERED TRAFFIC CIRCULATION PATTERN

7.4.1 Roadway Setting

Alternative 5 was suggested in the Lynn Waterfront Master Plan prepared by Sasaki Associates.[26] This alternative is comparable to Alternative 2 except that the traffic circulation pattern is altered on the Lynnway and Carroll Parkway close to the downtown area and North Shore Community College area, as shown in Figure 36. The high volume of traffic on the Lynnway and the split between the Carroll Parkway and Route 1A creates a traffic queue from the Market Street and Broad Street intersection toward the Lynnway. This alternative eliminates the problem by splitting the traffic going between the Lynnway and Lynn Shore Drive, with northbound traffic staying on the water side of North Shore Community College and southbound traffic shifting to the land side, via Washington Street and Broad Street. Another purpose of this alternative is that splitting the roadway into one-way traffic circulation would make it easier for pedestrians to cross the roadway to the waterfront. MPO staff analyzed this alternative in order to provide more information for stakeholders' decision making. As with the other alternatives, the design would include new sidewalks, landscape and streetscape renovation with trees and plants, and bus shelters with benches to provide a welcoming experience for motorists, pedestrians, and bicyclists. Examples for Alternative 5 from existing roadways are similar to those of Alternative 2: Veterans of Foreign War (VFW) Parkway in West Roxbury and Blue Hills Parkway in Milton, both of which are shown in Figure 25.

7.4.2 Operational Features

The following operational features should be incorporated into Alternative 5 to increase safety and modernize roadway efficiency:

- Upgrade signal equipment to MassDOT standards, preferably to an adaptive traffic signal control system.
- Retime and coordinate signals.
- Install a protected-permitted left-turn treatment.
- Add accessible pedestrian signals.
- Install detection for bicycles.
- Add an Opticom system for handling emergency-vehicle preemption.
- Install transit signal priority to reduce bus service delays.
- Install advance street name signs to guide motorists.

[26] Sasaki Associates, Inc., in collaboration with ZHA and GEI, Lynn Waterfront Master Plan Report, prepared for the City of Lynn, September 2007.

7.4.3 Level of Service

Figures 37 through 39 show the performance of Alternative 5 in terms of LOS and delay for the weekday AM and PM and Saturday PM peak hours. The analyses indicate that this alternative would increase traffic congestion in the downtown area because of the high-volume AM peak-period traffic that would be rerouted to Washington Street and Broad Street. Appendix L includes the LOS worksheets for this alternative.

7.4.4 Advantages

The following are the advantages of Alternative 5:

- Transforms the Lynnway and Carroll Parkway corridor to make it more pedestrian and bicyclist friendly.
- Fulfills the vision of connecting the Lynn downtown area and surrounding neighborhoods to the Waterfront, and would better support the mixed land uses that the city is proposing for the waterfront, such as recreational, residential and commercial developments, and office parks.
- Benefits pedestrian and bicycle traffic because the one-way traffic circulation makes it easier for them to cross the Carroll Parkway.
- Consistent with MassDOT's Healthy Transportation Compact: the pedestrian amenities and separated bike lanes would attract more people to walk and bike to the waterfront.

7.4.5 Disadvantages

The following are the disadvantages of Alternative 5:

- Requires widening Broad Street/Route 1A and Washington Street to accommodate the high volume of traffic that would be shifted to these roads.
- Increases congestion and traffic queues on Broad Street and Market Street, which may have an impact on traffic circulation in the downtown area.
- Results in inefficient traffic flow, which could affect emergency-response services.
- Increases U-turn volume at the Nahant Rotary: traffic going to the North Shore Community College would need to go through the rotary to access Washington Street, which would exacerbate problems at the rotary, especially during the weekday PM peak period when traffic volumes through the rotary are high.

7.4.6 Cost

Based on the reconstruction costs of similar past projects archived in the MassDOT project information database, MPO staff estimate Alternative 5 to cost approximately $15-to-$20 million, excluding the land takings required for the improvements. This estimate includes roadway reconstruction, drainage improvements, the accommodation and relocation of utilities, sidewalk- and ADA-compliant ramp construction, landscape and streetscape renovation, paving, traffic signals and equipment upgrade, and the installation street lighting.

7.5 ALTERNATIVE 6: BUS RAPID TRANSIT (BRT) LANES

7.5.1 Roadway Setting

There are six bus routes on the Lynnway serving Lynn and the surrounding communities, with total average daily ridership of 6,000 passengers or more. The service connects passengers to transportation centers such as Lynn's Central Square, Wonderland Station, and Downtown Boston. The bus service meets on-time performance or schedule adherence only 50 percent of the time because of traffic congestion and interruptions. Median-oriented BRT lanes would improve bus service performance, as such lanes effectively avoid the interruptions caused by traffic access, egress from business driveways or right turn onto side streets. Exclusive bus lanes and a transit signal priority for BRT systems would reduce traffic delays and improve on-time performance.

Alternative 6 keeps the existing roadway cross-section and converts the lanes close to the median into median-oriented BRT lanes (see Figure 40). The alternative would provide two lanes in each direction of the Lynnway and Carroll Parkway for general-purpose traffic and left-turn lanes at selected locations for the traffic accessing driveways and side streets. Additional improvements include widened curb lanes (about 14 feet) for shared use with bicycles or widened shoulders (about 4 feet) for use by bicyclists. Figure 41 shows examples of roadways with BRT facilities.

7.5.2 Operational Features

Additional improvements included in Alternative 6 to increase safety and modernize the roadway's efficiency are:

- Upgrade signal equipment to MassDOT standards, preferably to an adaptive traffic signal control system.
- Install transit signal priority to reduce bus service delay.
- Install an Opticom system for handling emergency-vehicle preemption.
- Add accessible pedestrian signals.
- Install detection for bicycles.
- Install advance street name signs to guide motorists.

7.5.3 Level of Service

The performance of Alternative 6 in terms of LOS and delay for the weekday AM and PM and Saturday PM peak hours would be similar to Alternative 2: operates satisfactorily at LOS D or better for the high volume of through traffic.

7.5.4 Advantages

The following are some of the benefits of Alternative 6:

- Minimizes the traffic conflicts that come from vehicles parking, turning, and entering the arterial, thereby improving safety, reliability, and the on-time performance of the local bus service, and increasing bus ridership.
- Fulfills the vision of connecting the Lynn downtown area and surrounding neighborhoods to a vibrant waterfront. Provides improved connectivity amongst the waterfront, Lynn's downtown area and Wonderland Station through frequent and reliable bus service. Although the Lynnway represents a small portion of the routes for which the local bus services are responsible, future development along the corridor would benefit from the BRT connecting with Lynn's downtown area and Wonderland.
- Consistent with MassDOT's Healthy Transportation Compact: the pedestrian amenities and separated bike lanes would attract more people to walk and bike to the waterfront, thereby better supporting the mixed land uses that the city has proposed for the waterfront.
- BRT systems generally include rapid transit features like more frequent service than local bus service provides, which results in ridership increase and supportive land development.
- Pedestrian- and bicyclist-friendly: a median space makes it safer for pedestrians and bicyclists crossing the Lynnway and minimizes traffic interference. In addition, one platform with shelter and benches can potentially serve both directions of travel.
- Functions well and would not cause any significant delays to motorists; hence, it would remake the Lynnway and Carroll Parkway into a pedestrian-oriented roadway while maintaining traffic flow.

7.5.5 Disadvantages

- Alternative 6 would not fit into the existing right-of-way and may require additional space to widen the median in areas where it is less than 12-feet wide in order to accommodate stops and amenities such as bus shelters.
- Requires special MBTA buses with doors on the left side to allow passengers to board and alight from a space in the median.

7.5.6 Cost

Based on the reconstruction costs of similar past projects archived in the MassDOT project information database, MPO staff estimate Alternative 6 to cost approximately $25-to-$30 million, excluding the cost of any land takings or new buses. This estimate includes drainage improvements, the accommodation and relocation of utilities, sidewalk and ADA-compliant ramp construction, bus shelters and benches, landscape and streetscape renovation, paving, new traffic and transit priority signals, equipment upgrade, and installation of street lighting.

7.6 ALTERNATIVE ANALYSIS

7.6.1 Performance Measures

Table 5 presents the peak-hour arterial performance measures for each alternative. The arterial performance measure contains information about the LOS and speeds for the principal arterial streets: Lynnway and Carroll Parkway. The analyses indicate that for each alternative, the arterial streets would operate at LOS D or better. Table 6 presents the peak-hour network performance measures for the alternatives. The network performance measures contain information about total delay, average travel speed, and total travel time for the street network, including the side streets. The analyses indicate higher delays for Alternative 5 compared to the remainder of the alternatives.

TABLE 5
Arterial Performance Measures

--	--	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS
--	--	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Alternative	Year	AM	AM	PM	PM	SAT	SAT	AM	AM	PM	PM	SAT	SAT
Existing Conditions	2015	24.4	B	22.5	C	19.8	C	21.9	C	21.6	C	22.1	C
Alternative 1	2015	24.5	B	22.8	C	24.2	B	25.7	B	23.9	C	24.5	B
Alternative 1	2040	23.3	C	22.1	C	22.7	C	24.2	B	23.2	C	20.6	C
Alternatives 2, 3, and 6	2040	23.3	C	16.9	D	21.6	C	19.3	C	20.4	C	19.3	C
Alternative 4	2040	23.3	C	22.1	C	22.7	C	24.2	B	23.2	C	20.6	C
Alternative 5	2040	23.1	C	16.4	D	22.9	C	15.5	D	21.3	C	20.6	C

AM = ante meridiem (before noon). LOS = level-of-service rating. NB = northbound. PM = post meridiem (after noon). SAT = Saturday. SB = Southbound.
Source: Central Transportation Planning Staff.

TABLE 6
Network Performance Measures

--	--	Total Delay (hr)	Total Delay (hr)	Total Delay (hr)	Average Speed (mph)	Average Speed (mph)	Average Speed (mph)	Total Travel Time (hr)	Total Travel Time (hr)	Total Travel Time (hr)
Alternative	**Year**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
Existing Conditions	2015	117	134	148	22	22	20	312	350	349
Alternative 1	2015	97	118	113	23	23	22	293	335	314
Alternative 1	2040	104	124	124	23	22	22	307	344	331
Alternatives 2, 3, and 6	2040	128	198	143	21	19	21	327	431	348
Alternative 4	2040	104	124	124	23	22	22	307	344	331
Alternative 5	2040	226	223	146	17	18	21	445	462	366

AM = ante meridiem (before noon). PM = post meridiem (after noon). SAT = Saturday.
Source: Central Transportation Planning Staff.

Table 7 summarizes how each of the alternatives accomplishes the goals and objectives of the study. The evaluation criteria are intended to provide qualitative and quantitative measures of the alternatives, providing insight into how the alternatives compare or relate to one another. The goals and objectives are:

- Supports Lynn's vision for the waterfront.
- Promotes healthy transportation.
- Increases safety for all road users.
- Makes traffic flow efficiently (reduce congestion).
- Creates a pedestrian- and bicyclist- friendly roadway.
- Makes transit service more efficient.
- Promotes land use and economic and cultural activities.

TABLE 7
Summary of Alternatives Analyses

Goals and Objectives	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Supports Lynn's vision for the waterfront	No benefit	Significant benefit	Significant benefit	Significant benefit	Significant benefit	Significant benefit
Promotes healthy transportation	No benefit	Significant benefit	Significant benefit	Significant benefit	Significant benefit	Significant benefit
Increases safety for all road users	Moderate benefit	Significant benefit	Significant benefit	Significant benefit	Significant benefit	Significant benefit
Makes traffic flow efficiently	Moderate benefit	Moderate benefit	Moderate benefit	Significant benefit	No benefit	Moderate benefit
Promotes multimodal transportation	Moderate benefit	Significant benefit	Significant benefit	Moderate benefit	Significant benefit	Significant benefit

Goals and Objectives	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Makes transit service more efficient	No benefit	Moderate benefit	Moderate benefit	Moderate benefit	Moderate benefit	Significant benefit
Promotes land use and economic and cultural activities	No benefit	Significant benefit	Significant benefit	Moderate benefit	Significant benefit	Significant benefit
Potential property impacts	None	Moderate	Significant	Moderate	Moderate	Significant
Associated construct cost*	Low	Moderate	High	Moderate	Moderate	High

*Associated construction costs for those alternatives, which require an expansion of the right-of-way, as land takings will add to the total cost but are not accounted for in the study.
Source: Central Transportation Planning Staff.

7.6.2 Selecting Preferred Alternatives

The primary factors for selecting the preferred long-term alternatives are cost and effectiveness in meeting the goals and objectives described above. The one short-term alternative we have offered would not support many of the study's goals and objectives, but it addresses immediate safety and operations concerns, such ADA concerns, safety for pedestrians, traffic operations issues, and access to the Lynn ferry terminal.

Generally, all of the long-term alternatives meet the goals and objectives of the study, which, overall, aim to support Lynn's vision for the waterfront development. With improved local street connectivity, the long-term alternatives would facilitate linkage between the waterfront and Lynn's downtown area and surrounding neighborhoods. In addition, they are expected to improve safety for all users and promote healthy transportation modes: the proposed sidewalks with buffers, separated bicycle lanes, pedestrian bridges, and median refuge areas for pedestrians would not only increase safety for users but also create a pedestrian- and bicyclist-friendly roadway and encourage walking and bicycling.

Furthermore, the traffic analyses indicate that the long-term alternatives would function well while not contributing significantly to traffic congestion (except for Alternative 5 in the downtown area), and would balance regional traffic needs with pedestrian and bicycle needs and support vibrant waterfront economic activities. Again, with improved local street connectivity, all of the alternatives would allow direct and safe public access to the Lynn ferry terminal, the proposed GE commuter rail station, and Lynn Central Square Station. However, Alternative 6 provides the most effective improvements to bus transit service in the corridor to support the economic activities of the waterfront.

Chapter 8—Public Access and Connectivity

8.1 OVERVIEW

An essential step to fully implementing the city's vision for the waterfront is to improve the connectivity from the Lynnway and Carroll Parkway to foster the cohesion of the abutting land uses, connect people to places, and promote economic activities. Among the activity locations where direct public access from the Lynnway and Carroll Parkway would promote connectivity are:

- Waterfront development.
- Lynn's downtown and surrounding neighborhoods.
- North Shore Community College.
- Transportation Centers: Lynn ferry terminal, Lynn commuter rail station, Central Square bus terminal, and General Electric commuter rail station.
- The proposed Bike-to-the-Sea trail.

8.2 CONNECTIVITY POTENTIAL FOR MINOR STREETS

Several minor arterials and collector roadways that intersect the Lynnway have the ability to facilitate public access and connectivity from the waterfront to Lynn's downtown area, surrounding neighborhoods, and transportation centers. However, they would need improvements in order to meet Complete Streets standards and support multimodal transportation. Figure 42 shows the land uses surrounding the Lynnway and Carroll Parkway and the streets with potential to facilitate connectivity among the land uses. Figure 43 shows the roadway characteristics of those streets. The following are brief descriptions of the problems at each location and the improvements needed to make those streets capable of supporting connectivity among the different land uses in the study area.

8.2.1 Harding Street

Although it presently carries very little traffic, Harding Street is a potential access road for waterfront residents and visitors to the proposed General Electric commuter rail station. It would need an extension and reconstruction to provide a welcoming experience for pedestrian and bicyclists, such as the inclusion of sidewalks, high-visibility crosswalks, street lighting, and bicycle lanes. MPO staff noted in Alternative 4 that the intersection of Harding Street and the Lynnway is a potential candidate for a pedestrian bridge, which would make it easier to walk or bike to the waterfront or commuter rail station from the other side of the corridor.

8.2.2 Oakville Street

MPO staff recommend extending Oakville Street to connect to the Lynnway and the waterfront. The extension would benefit the surrounding neighborhood and waterfront residents and visitors because Oakville Street connects to Western Avenue (Route 107) via Summer Street. Although the extension would require new roadway construction, a bridge over the MBTA Newburyport/Rockport commuter rail line, and a new intersection on the Lynnway, it is expected to reduce the high volume of traffic on Commercial Street and prevent future widening of that roadway. While the extension would require land takings to construct, it presents an opportunity to modernize Oakville Street to accommodate pedestrians and bicyclists with good a sidewalk experience and bike lanes or shared-use lanes to connect to the waterfront.

8.2.3 Commercial Street

This is one of the busiest streets connecting with the Lynnway and provides access to the waterfront, Lynn Common and the surrounding neighborhood, and Western Avenue via Summer Street. The intersection of Commercial Street and the Lynnway is busy, with high volumes of traffic that conflict with pedestrian and bicycle movements. The intersection has long crosswalks, which intimidate many pedestrians and bicyclists. Commercial Street needs improvements to provide a welcoming environment for pedestrians and bicyclists, such as good sidewalks and shoulders, or sharrows or bike lanes. In addition, the intersection of Commercial Street and the Lynnway is a potential candidate for a pedestrian bridge; it would make it easier to walk or bike to the waterfront or the surrounding neighborhoods by separating pedestrian and vehicular traffic at the intersection.

8.2.4 Blossom Street

Blossom Street provides access to the Waterfront, the Lynn ferry terminal, Lynn Common and surrounding neighborhood and Lynn’s downtown. Opening the raised median and signalizing the intersection to provide safe turns would provide direct access to the ferry terminal for thousands of commuters and for waterfront residents and visitors. Besides the improvements needed at its intersection with the Lynnway to make it easier for pedestrians and bicyclists to cross the streets, Blossom Street also needs improvements along the segment to balance traffic needs with pedestrian and bicycle needs, including sidewalk repairs, shoulders or shared-use lanes or bike lanes, street lights, high-visibility crosswalks, and signage.

8.2.5 Pleasant Street

Pleasant Street connects to the Lynnway and provides access to the Lynn Common and surrounding neighborhood. St Mary’s Parish and High School, Shaw's Supermarket, and many small retail stores and offices are located on Pleasant Street. Pleasant Street has sidewalks on both sides of the street but would need improvements to give pedestrians a welcome experience and to better accommodate bicyclists, such as high-visibility crosswalks and shared-use lanes.

8.2.6 Market Street

Market Street is the main entry to Lynn's downtown area and North Shore Community College and in the future could connect to a vibrant waterfront. Market Street is about one half-mile long and is configured to serve downtown businesses and activities: it has two travel lanes in each direction, sidewalks and on-street parking on both sides of the street, and six signalized intersections. Market Street lacks gateway status and is not bicycle-friendly. In order to become a gateway to the city, it would need reconstruction to beautify it, with median landscape and streetscape treatments, and multimodal renovations to help it balance vehicular needs with pedestrian and bicyclist needs and link it to the waterfront development, North Shore Community College, and the Lynn Heritage State Park, thereby providing cohesion amongst the land uses.

8.2.7 Washington Street

Washington Street connects to the North Shore Community College, Sagamore Hill neighborhood, and Lynn's downtown area. It is a two-lane, two-way roadway, with a much lower volume of traffic compared to Market Street. It has sidewalks and on-street parking on both sides. Much like Market Street, the Washington Street corridor lacks gateway status and does not provide a comfortable experience for pedestrians and bicyclists. In 2008, the city developed a masterplan for the corridor.[27] Similar to that of the waterfront development, the city envisions the development of a mix of land uses, including retail, residential, and office spaces, in order to create vitality, increase real estate investment, and maximize development in the corridor. To implement this vision, as well as the vision for the waterfront, this corridor would need access and beautification improvements to create a friendly environment for pedestrians and bicyclists and promote connections between Sagamore Hill, North Shore Community College, Lynn's downtown area, and the waterfront.

[27] Washington Street Gateway District Plan, Sasaki Associates, Inc., April 2008.

Chapter 9—Conclusion and Next Steps

9.1 CONCLUSIONS

This study identified the transportation needs of the Lynnway and Carroll Parkway, which include safety, operations, and mobility. MPO staff, working with the study's advisory task force, has developed short- and long-term alternatives that would transform the Lynnway and Carroll Parkway into a pedestrian- and bicyclist-friendly roadway as well as into a transportation corridor that serves all modes of transportation and maintains regional travel capacity. MPO staff evaluated different roadway cross-sections to accommodate all road users safely and fulfill Lynn's vision for the waterfront, including improved connectivity from the Lynnway and Carroll Parkway to Lynn's downtown area, surrounding neighborhoods and the waterfront itself, thereby fostering cohesion among the abutting land uses, connecting people and their destinations, and promoting economic activity.

9.2 NEXT STEPS

This study provides the City of Lynn, DCR, MassDOT, and other stakeholders with an opportunity to begin researching the needs of the Lynnway and Carroll Parkway in light of the city's vision for the waterfront, and to start planning their design and engineering efforts. The next step is to select alternatives that are sensitive to the goals and needs of stakeholders and then advance them through the planning process. DCR currently owns both the Lynnway and Carroll Parkway and is responsible for implementing any short- and long-term recommendations. The City of Lynn owns the minor arterials and the local collectors that connect to the Lynnway and Carroll Parkway and is responsible for renovating those streets to enhance their connectivity. Therefore, it is important for the City of Lynn and DCR to examine the design of the long-term alternatives with everyone involved in mind: participation in this process by other stakeholders is important as well.

This study aligns with the MPO goals of modernizing roadways to reduce congestion, increasing safety on the region's highway system, expanding the quantity and quality of walking and bicycling, and making transit service more efficient and modern. It also addresses Lynn's goal of making the Lynnway and Carroll Parkway a more bicycle- and pedestrian-friendly roadway, conforming to its vision for the waterfront and for the cohesion of the abutting land uses. Any of the long-term alternatives this report offers, if implemented, would increase traffic safety, make traffic operations more efficient, and modernize the roadway to accommodate all users.

Transportation decision making is complex, and is influenced by factors such as financial limitations and agency programmatic commitments. Project development is the process that takes a transportation improvement from concept to construction. Appendix M includes an overview of the project development process.

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FIGURE 1
Regional Map

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

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FIGURE 2
Map of Existing and Proposed Land Use

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

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FIGURE 3
Study Area

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

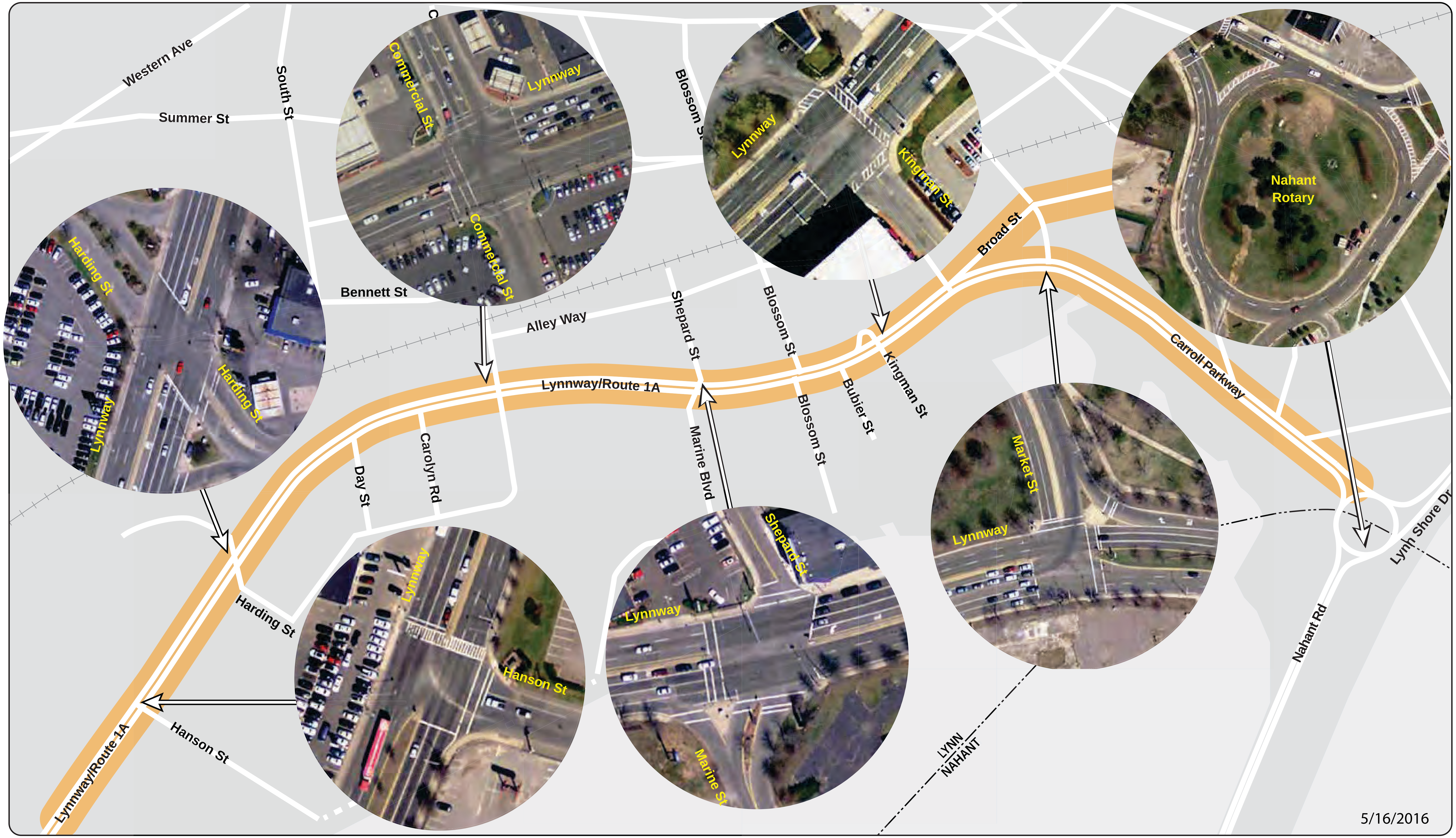

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FIGURE 4
Study Area Intersections

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

BOSTON REGION MPO

FIGURE 5
Average Weekday Traffic Volumes

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

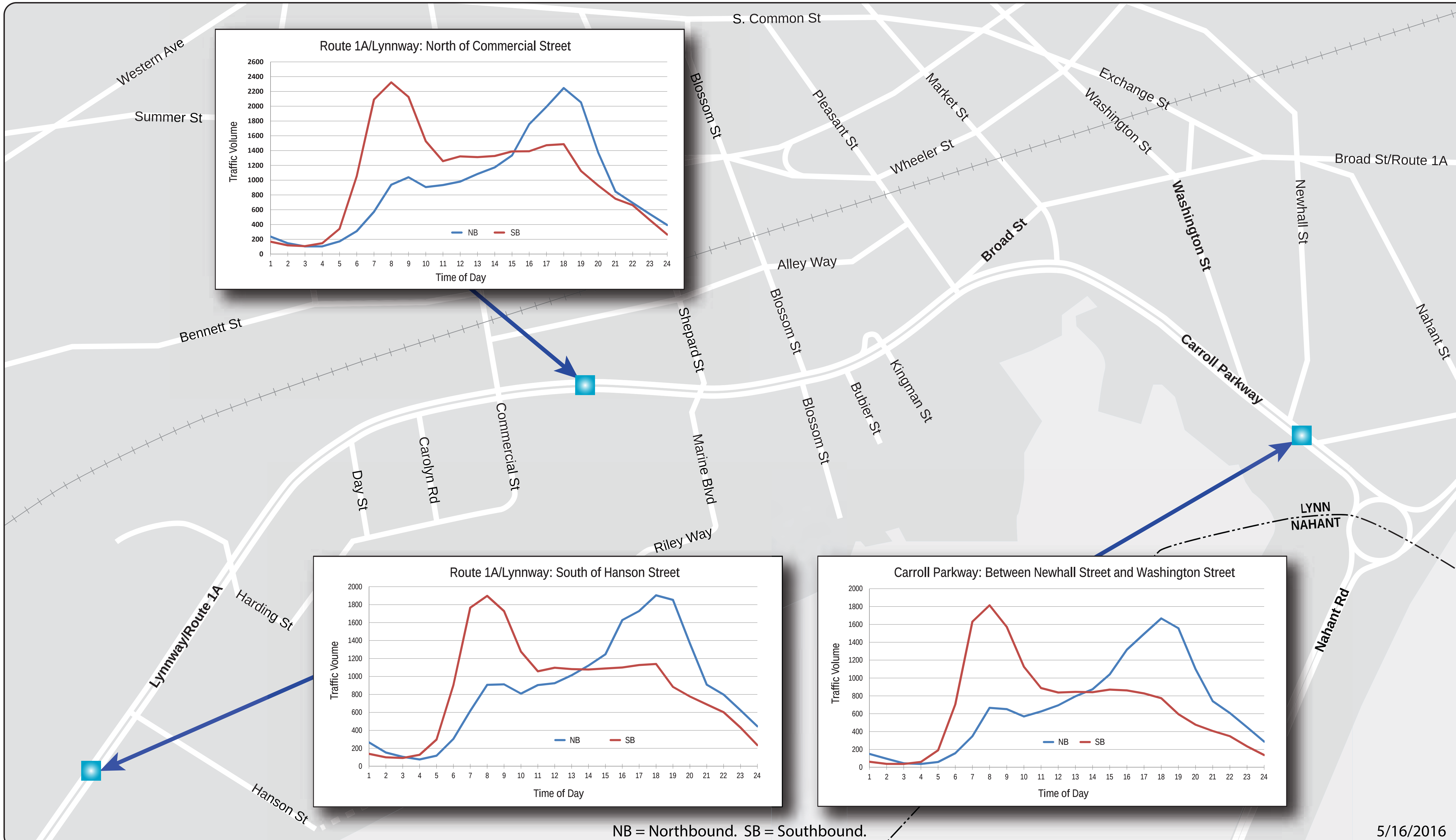

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FIGURE 6
Hourly Traffic-Volume Distribution

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

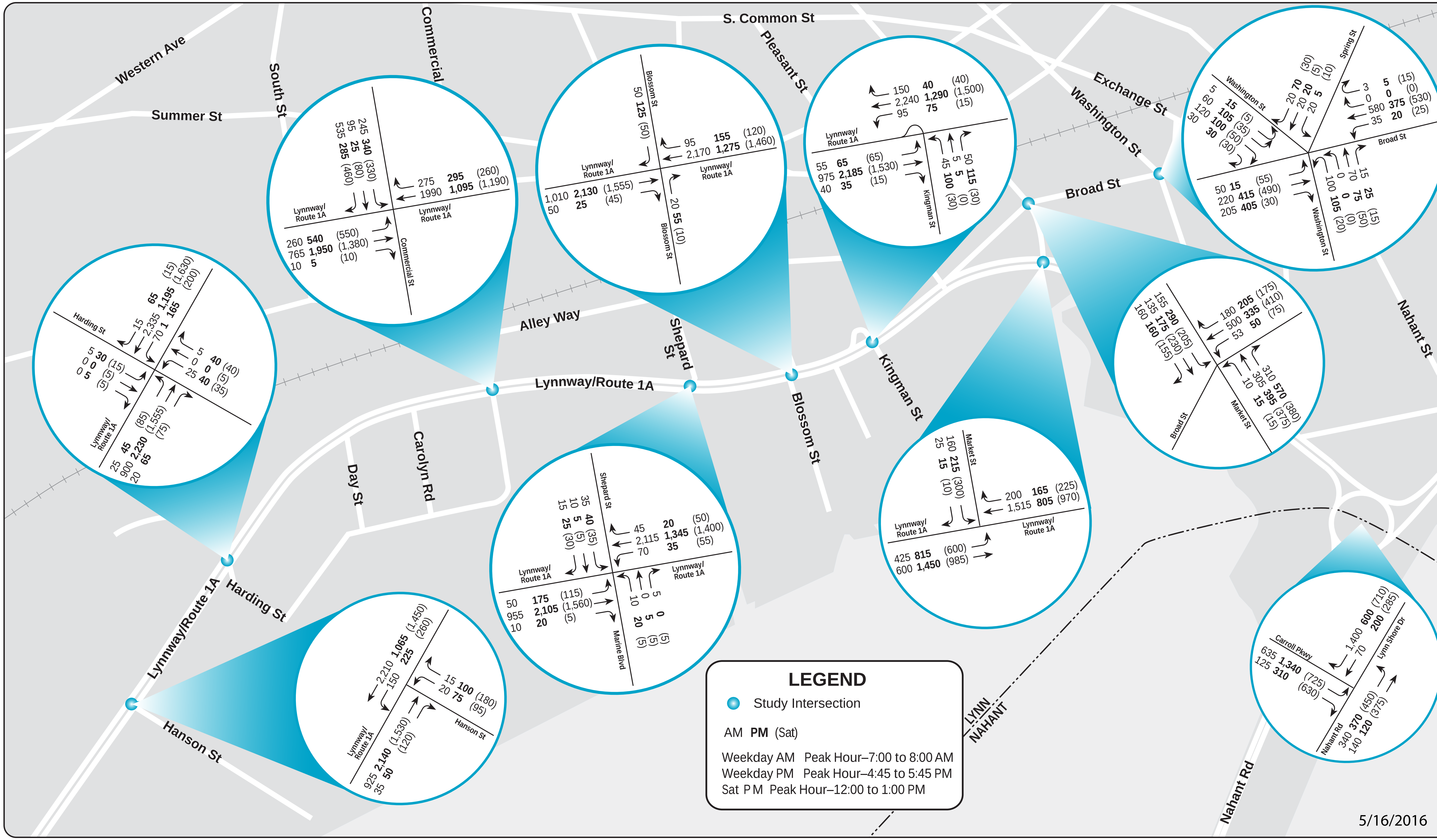

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FIGURE 7
Turning Movement Volumes

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

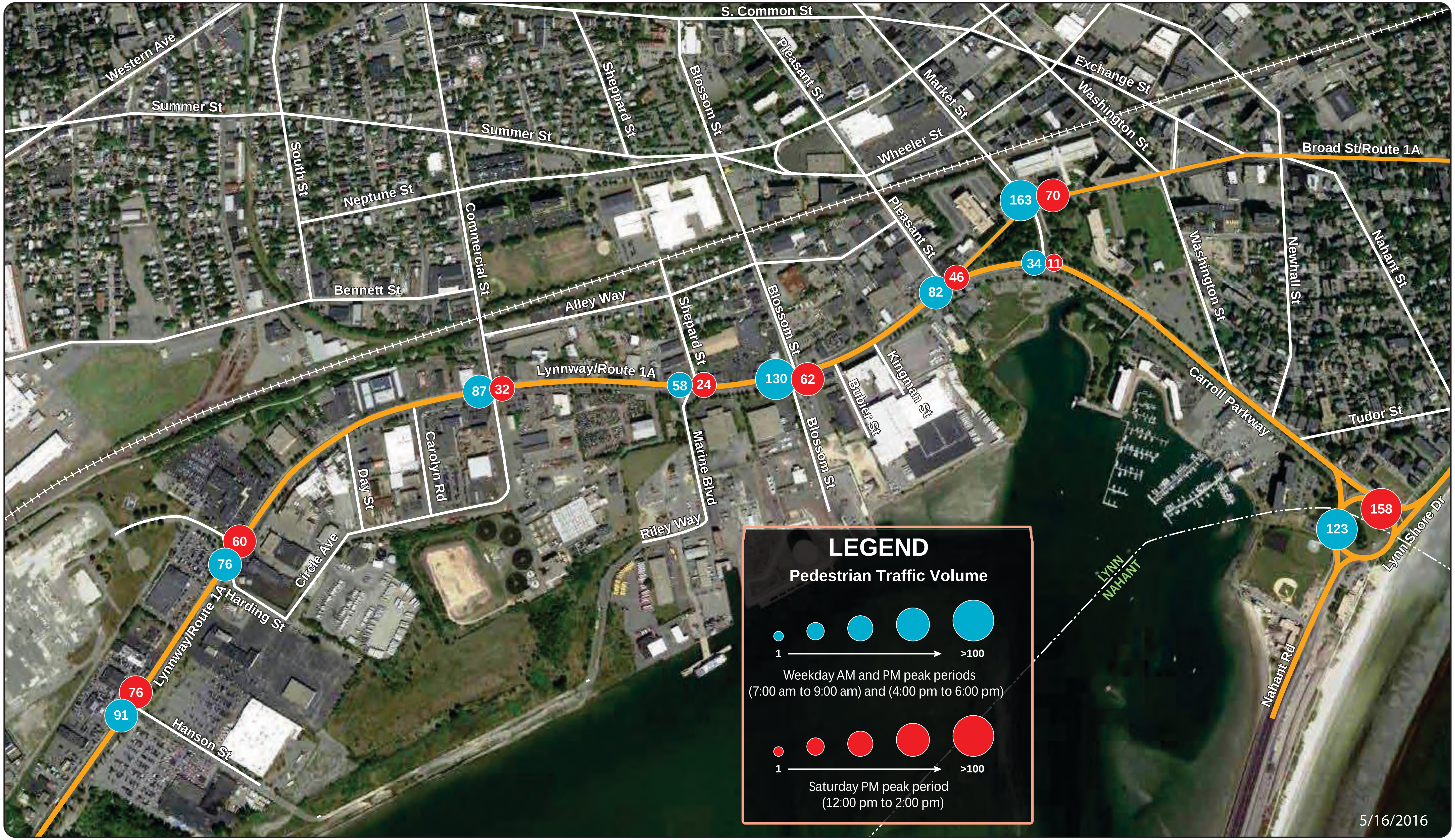

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FIGURE 8
Pedestrian Traffic Volumes at Selected Intersections

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

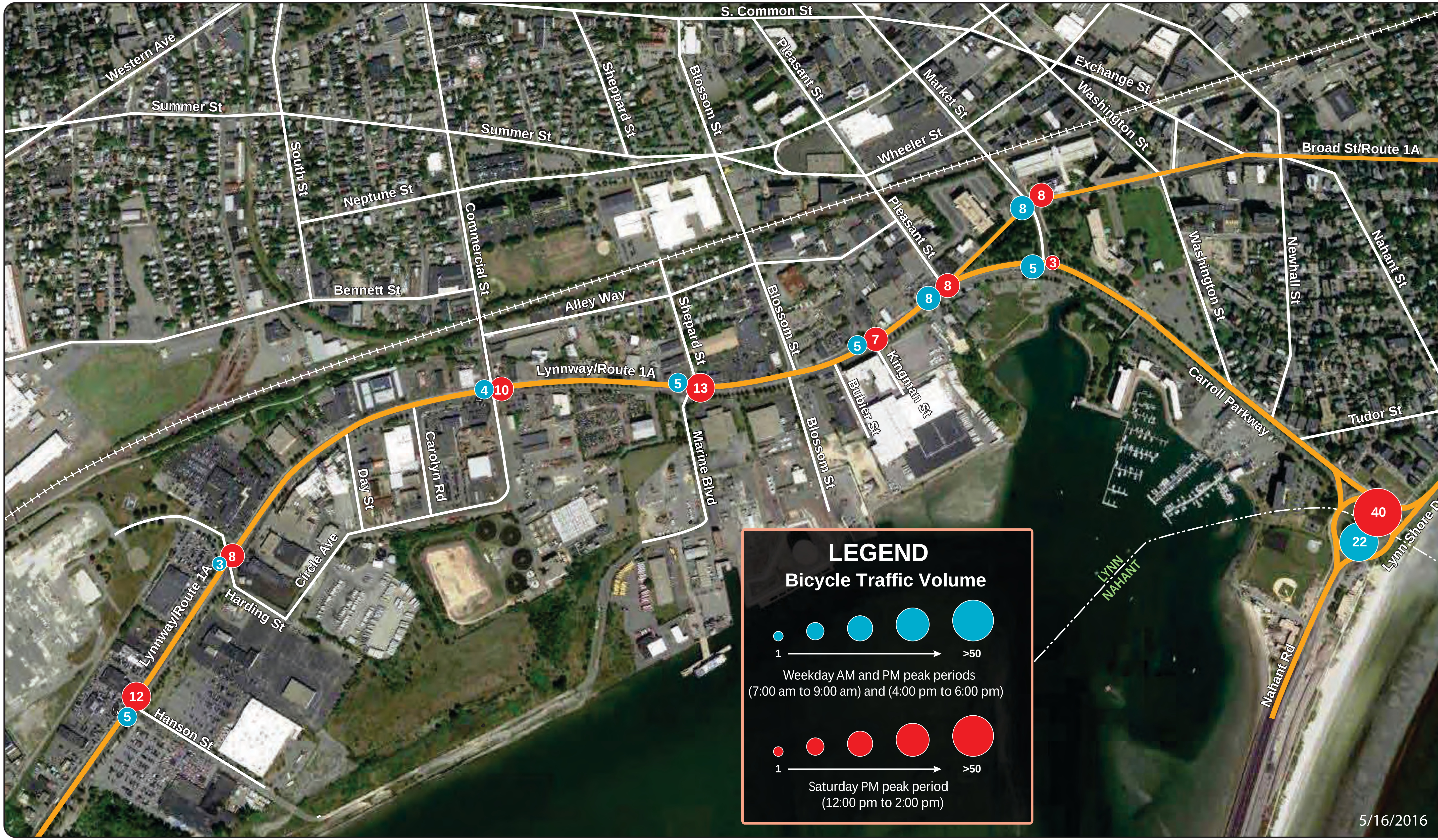

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FIGURE 9
Bicycle Traffic Volumes at Selected Intersections

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

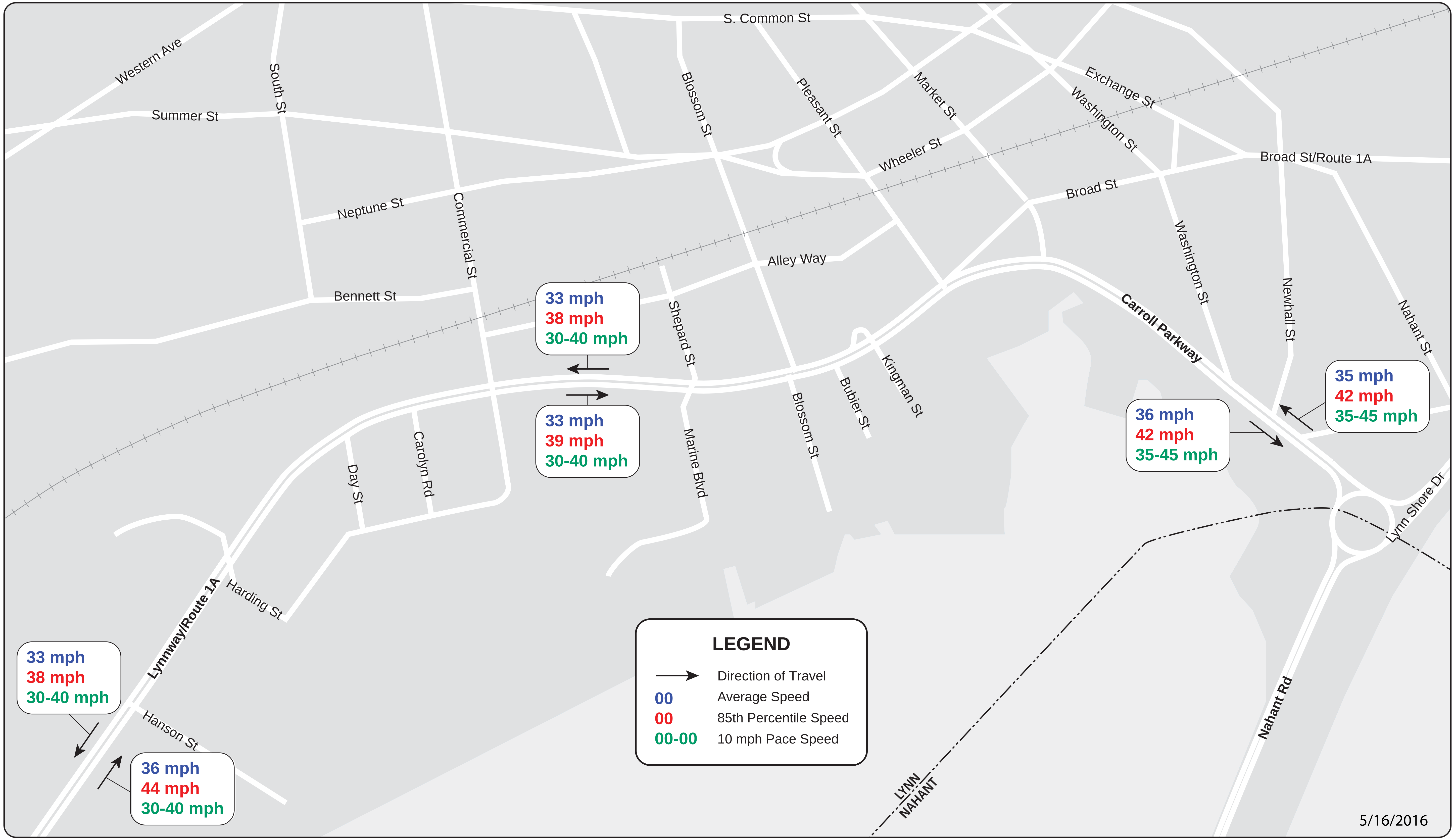

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FIGURE 10
Summary of Spot Speeds

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

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FIGURE 11
Regional Transit Service

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

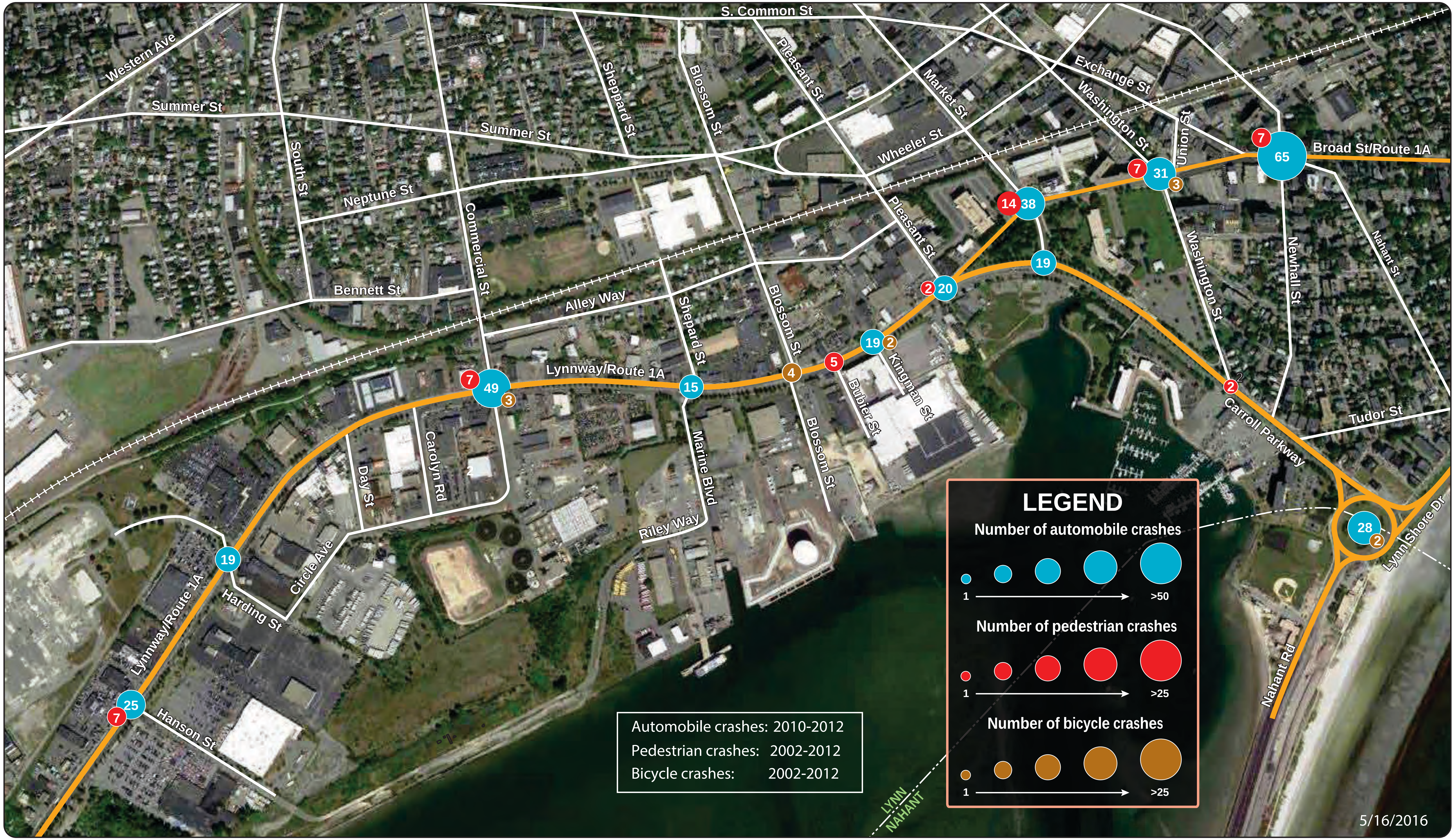

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FIGURE 12
Automobile, Pedestrian, and Bicycle Crashes at Selected Intersections

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

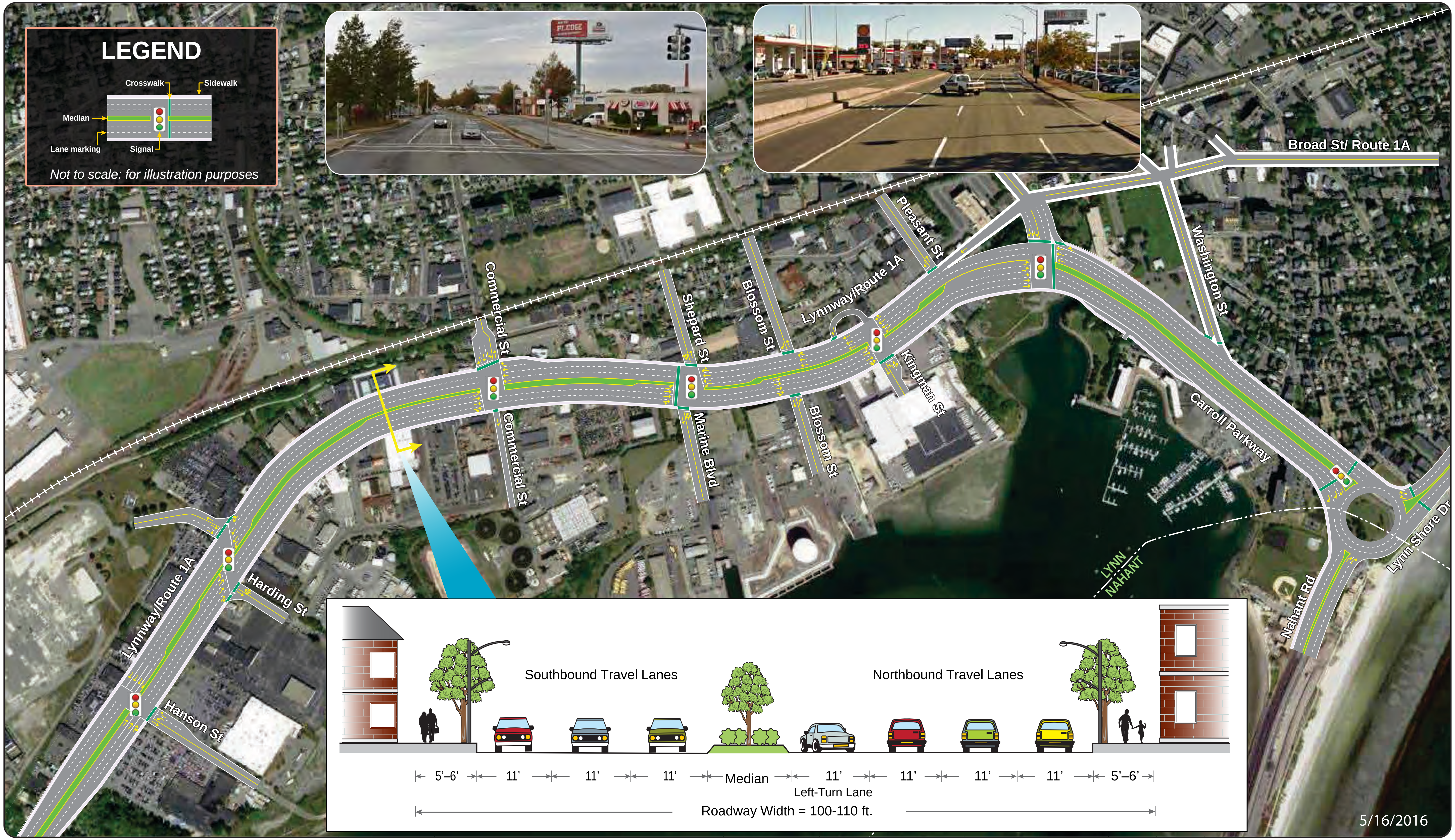

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FIGURE 13
Existing Roadway Lane Configuration

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

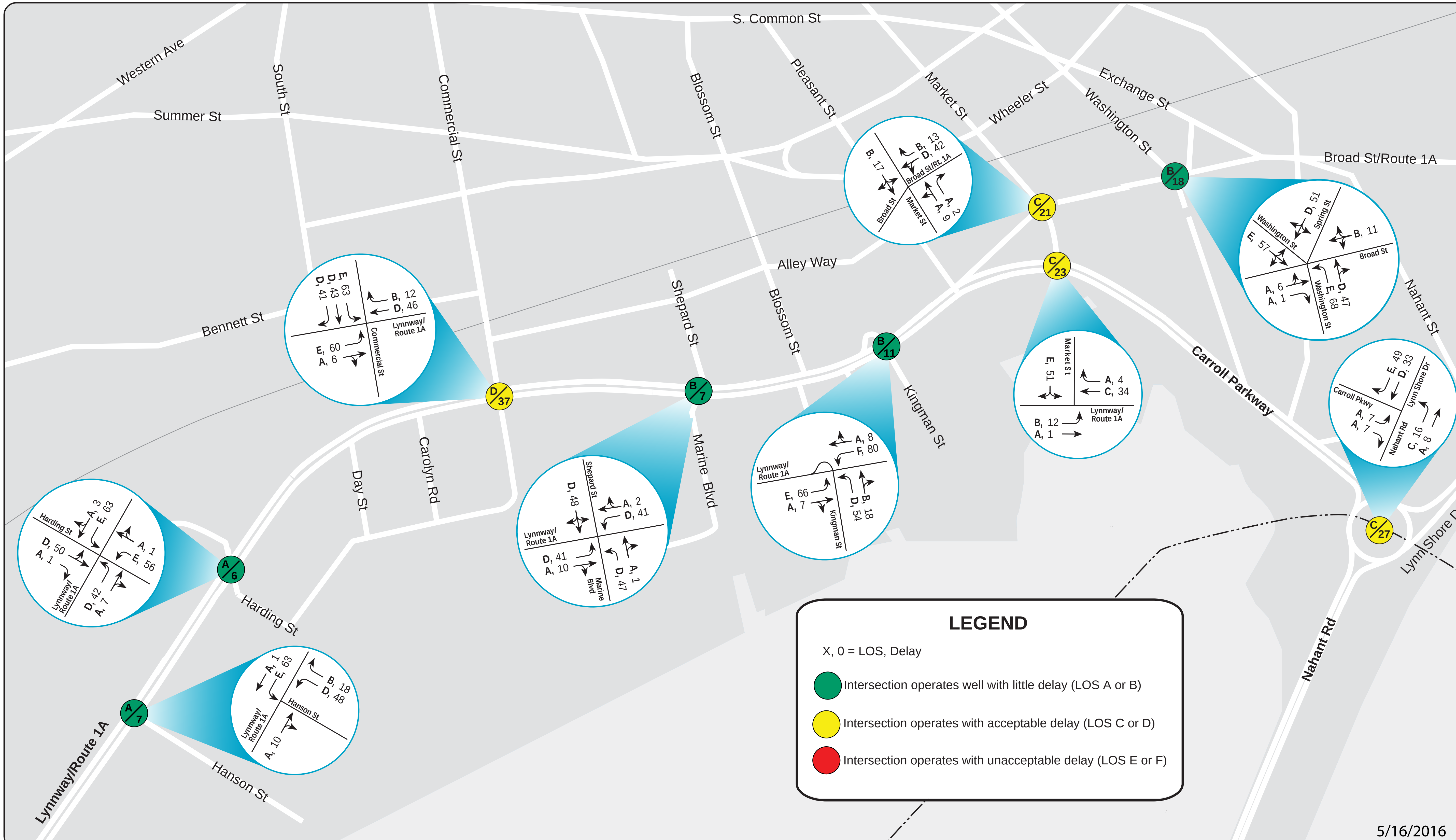

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FIGURE 14
Existing Conditions
Weekday AM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

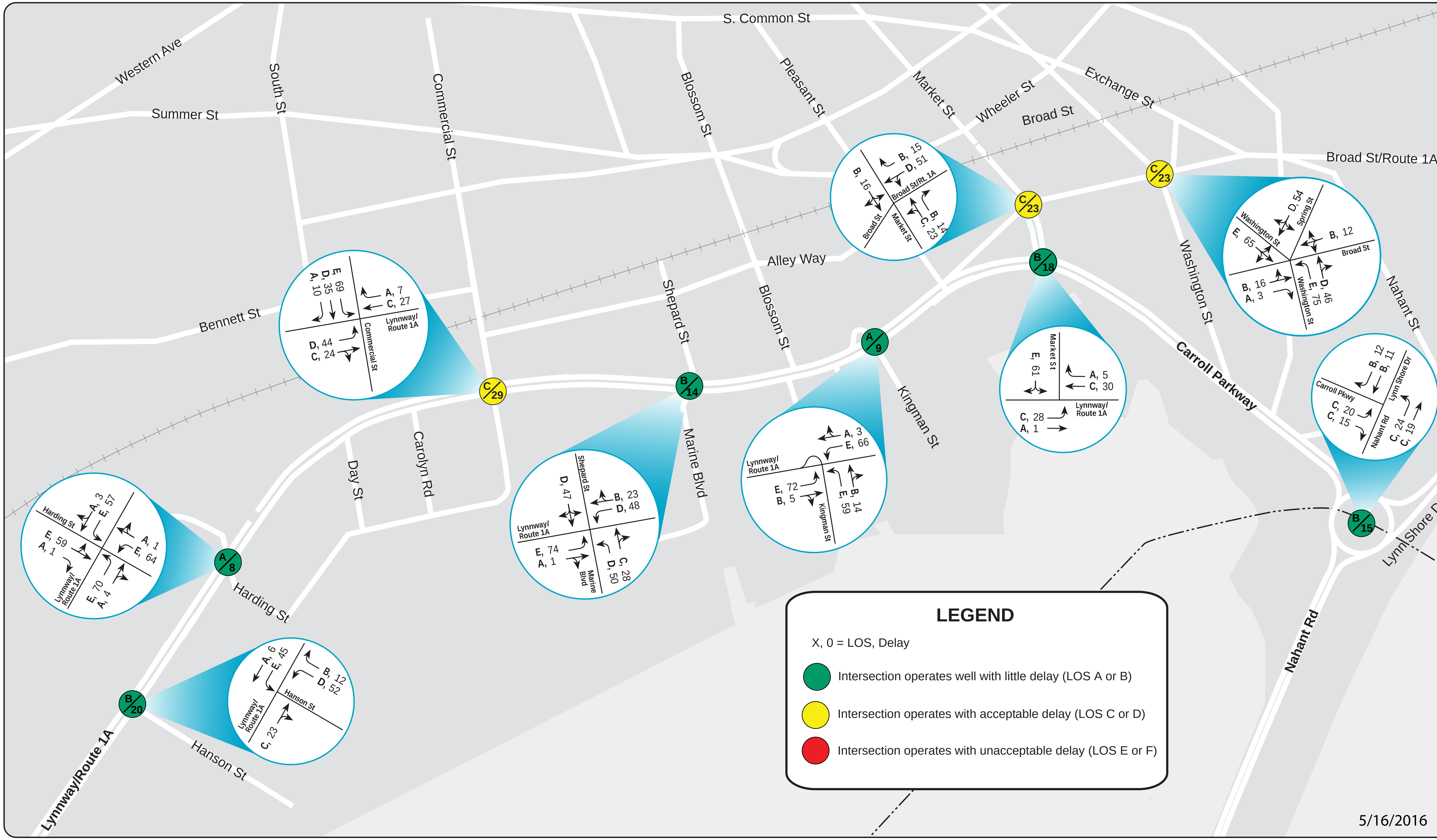

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FIGURE 15
Existing Conditions
Weekday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

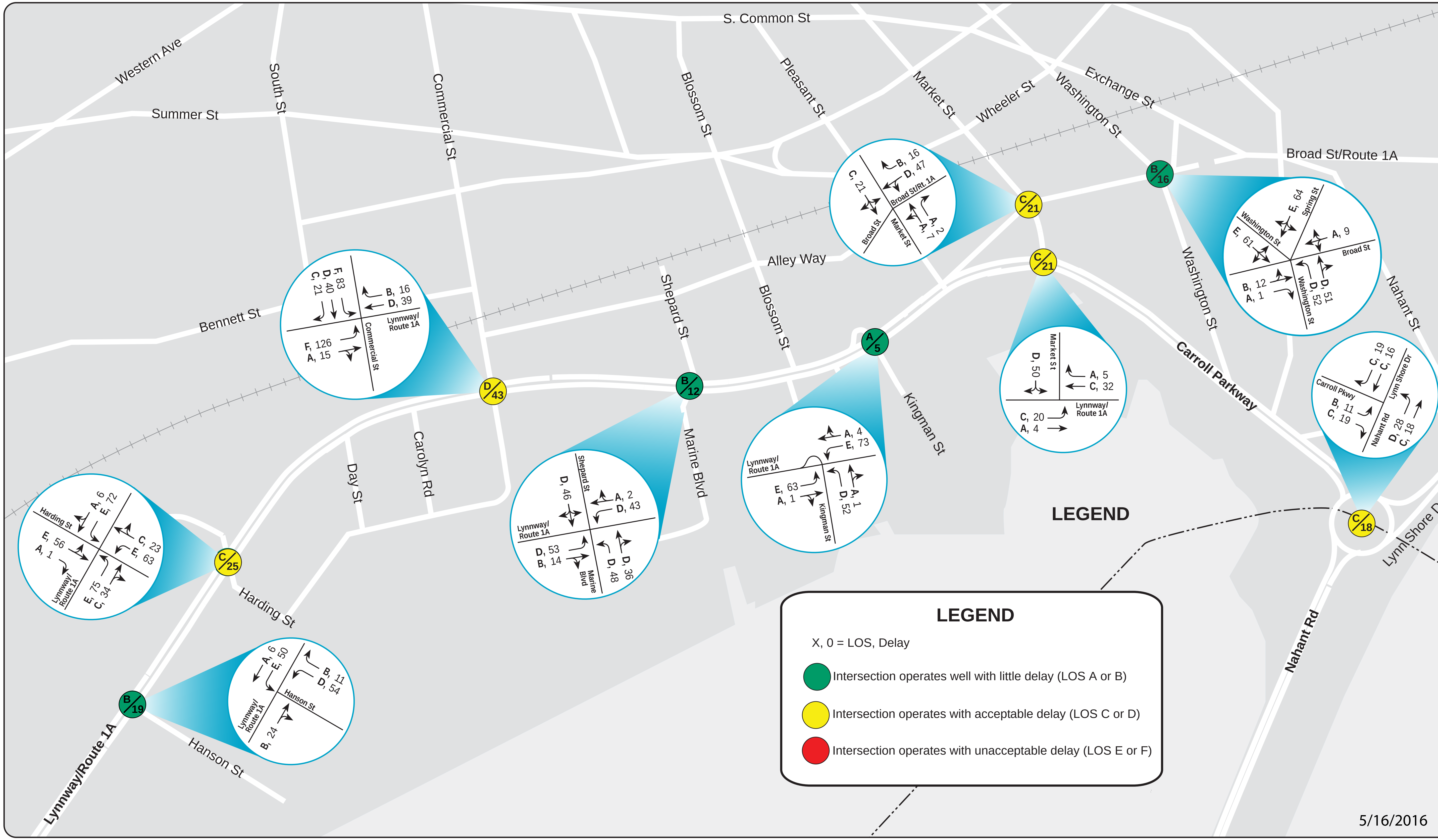

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FIGURE 16
Existing Conditions
Saturday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

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FIGURE 17
Pedestrian Issues

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

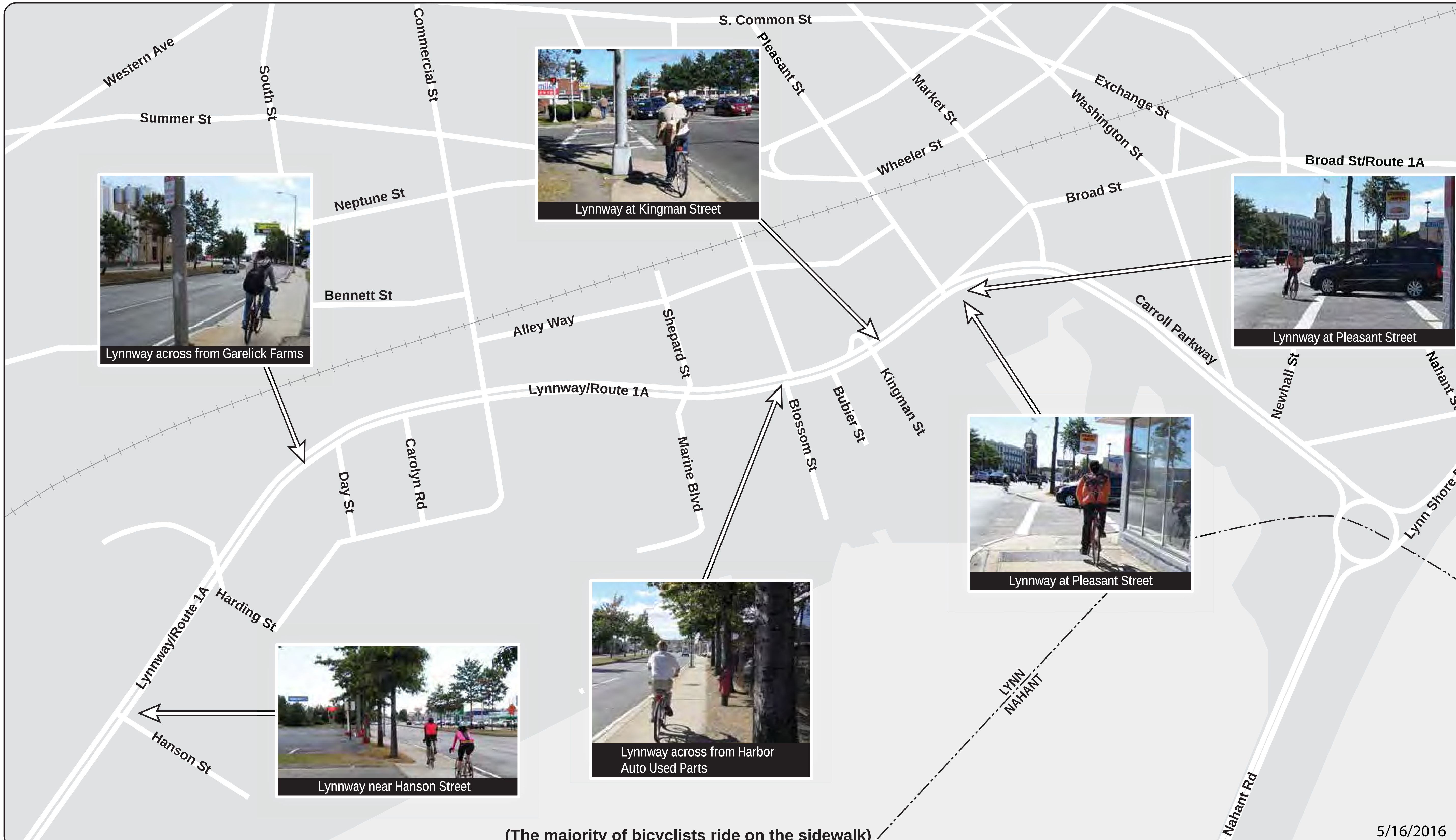

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FIGURE 18
Bicyclist Issues

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

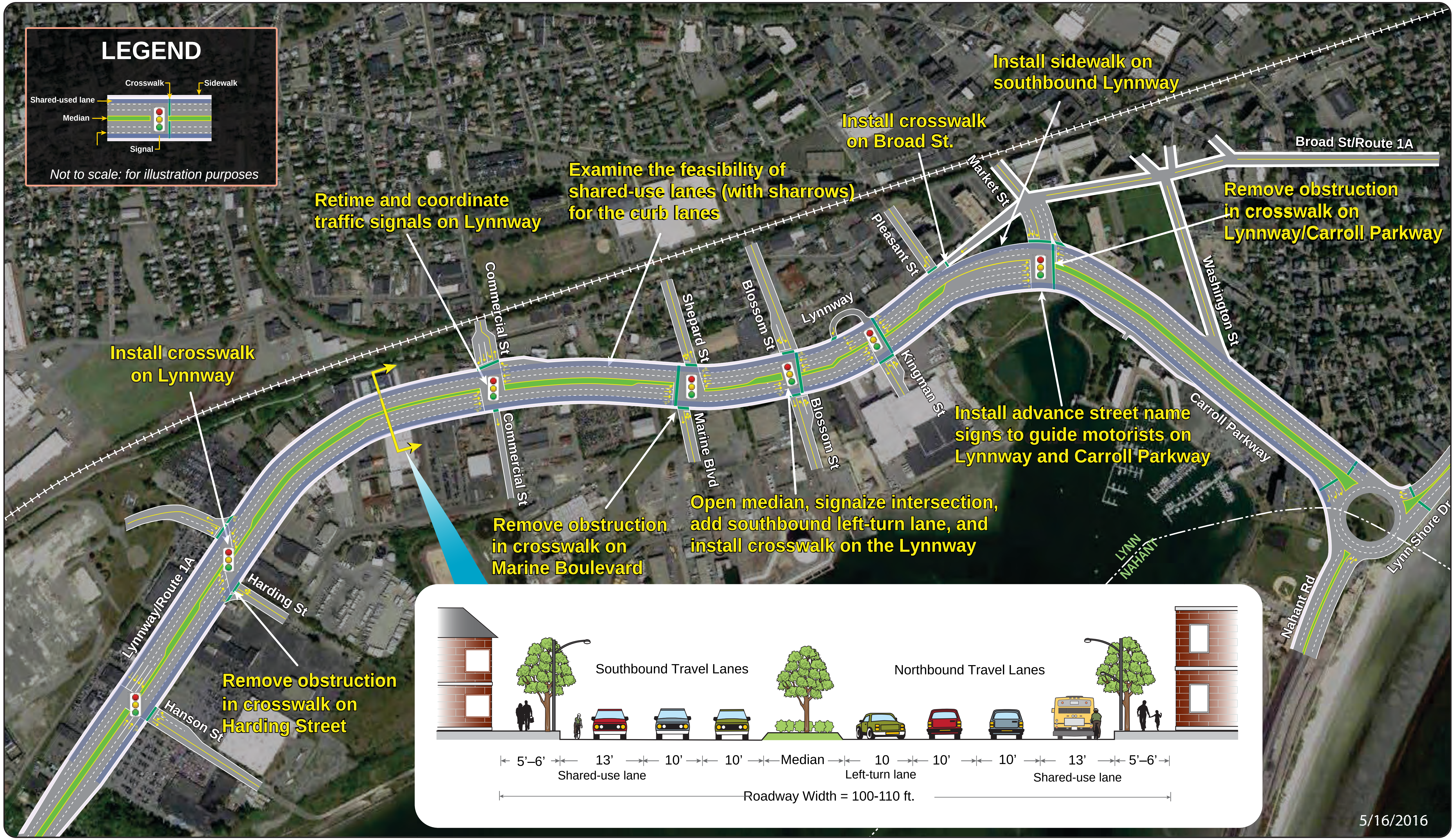

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FIGURE 19
Alternative 1: Short-Term Improvements

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

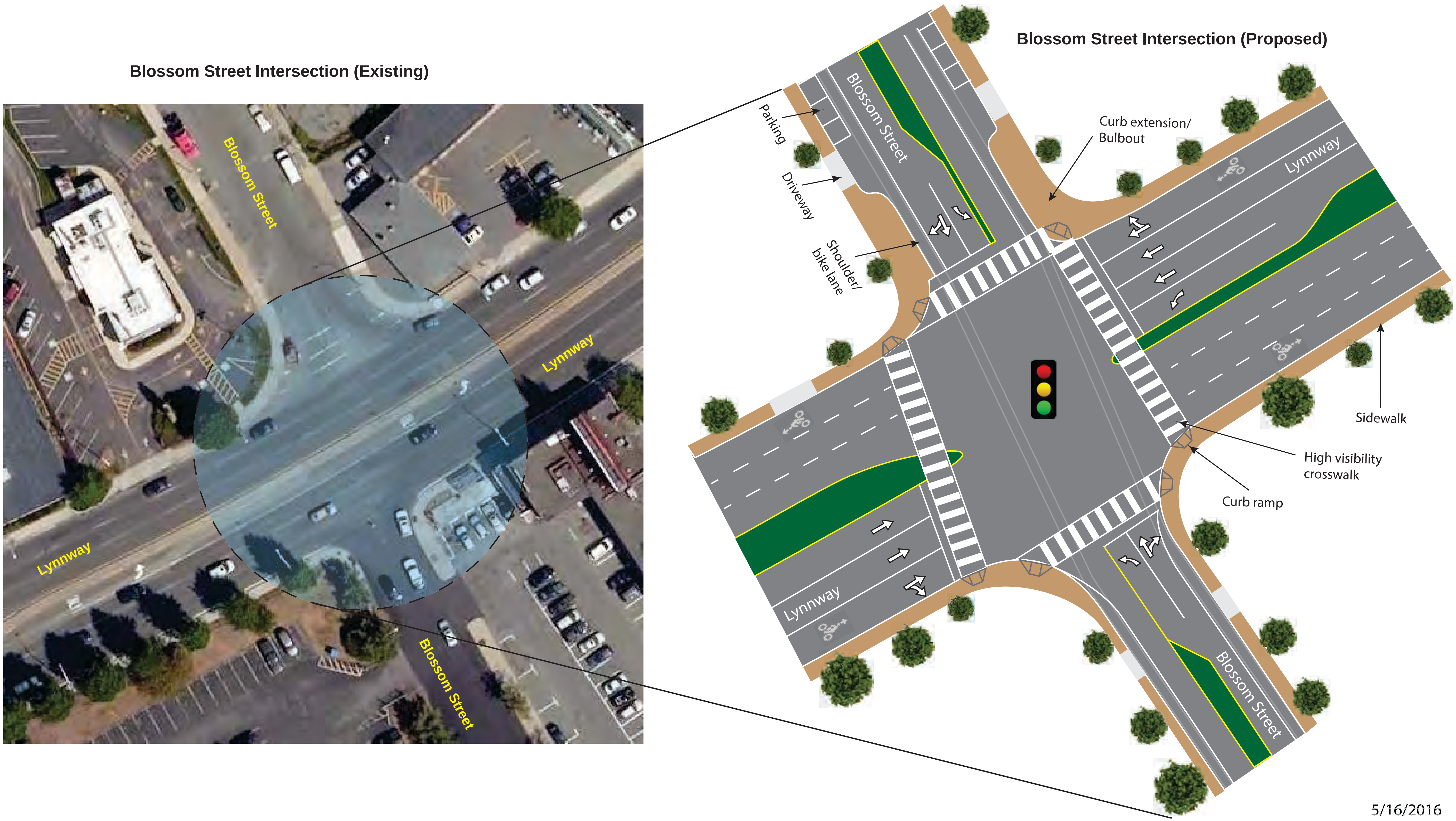

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FIGURE 20
Proposed Blossom Street Intersection

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

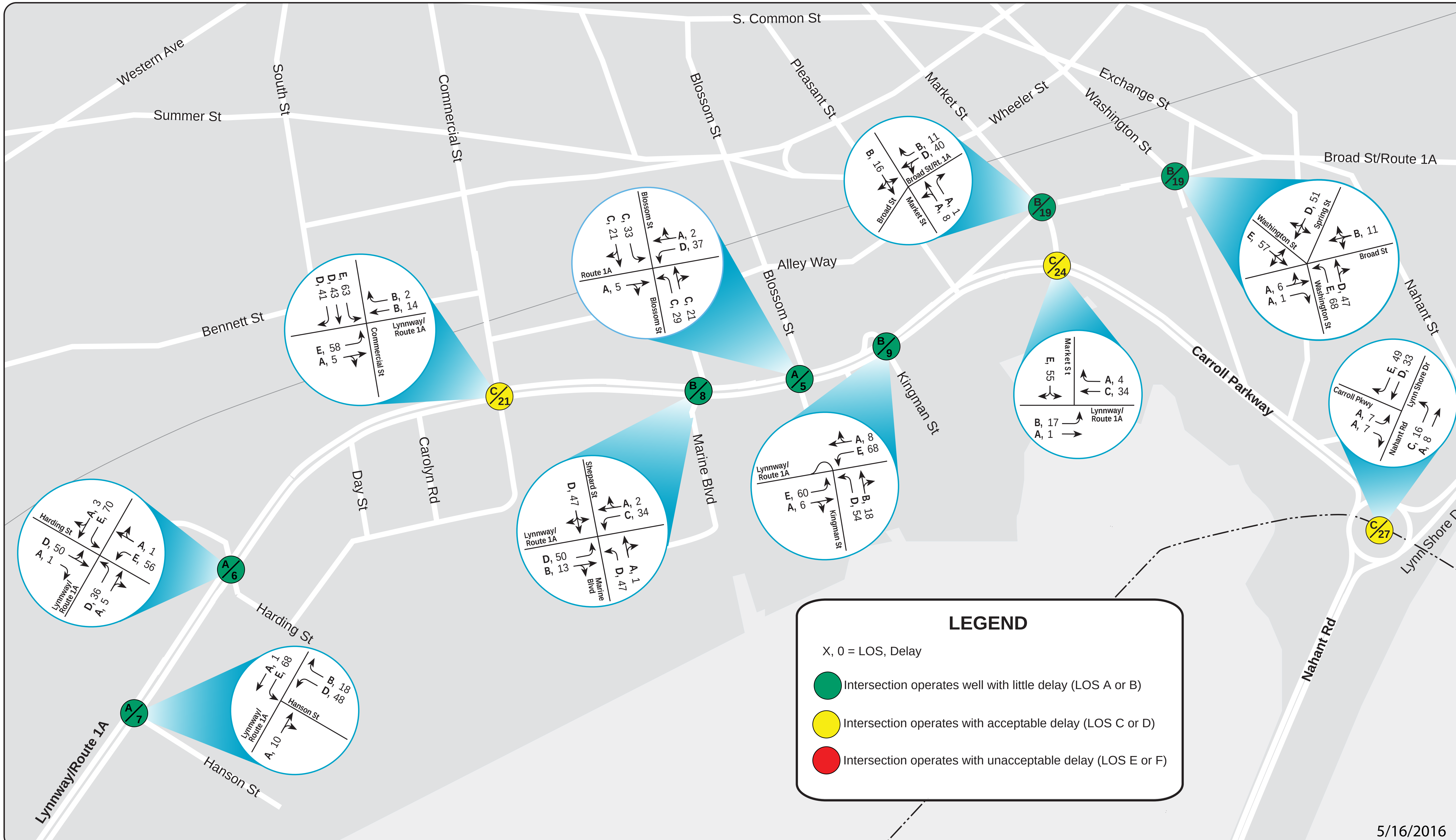

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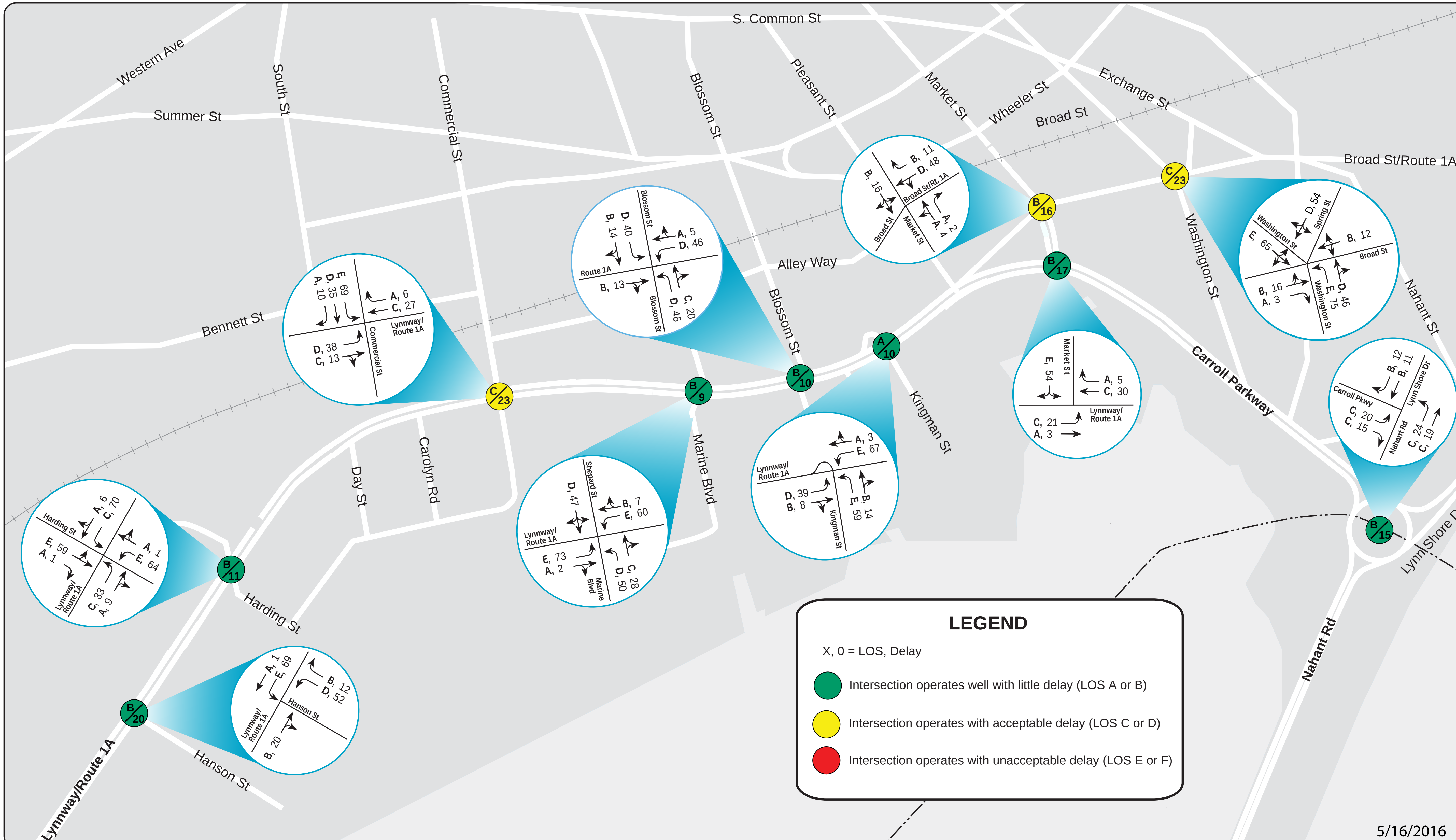
FIGURE 21
Alternative 1: Weekday AM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn



LEGEND

X, 0 = LOS, Delay

- Intersection operates well with little delay (LOS A or B)
- Intersection operates with acceptable delay (LOS C or D)
- Intersection operates with unacceptable delay (LOS E or F)

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FIGURE 22
Alternative 1: Weekday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

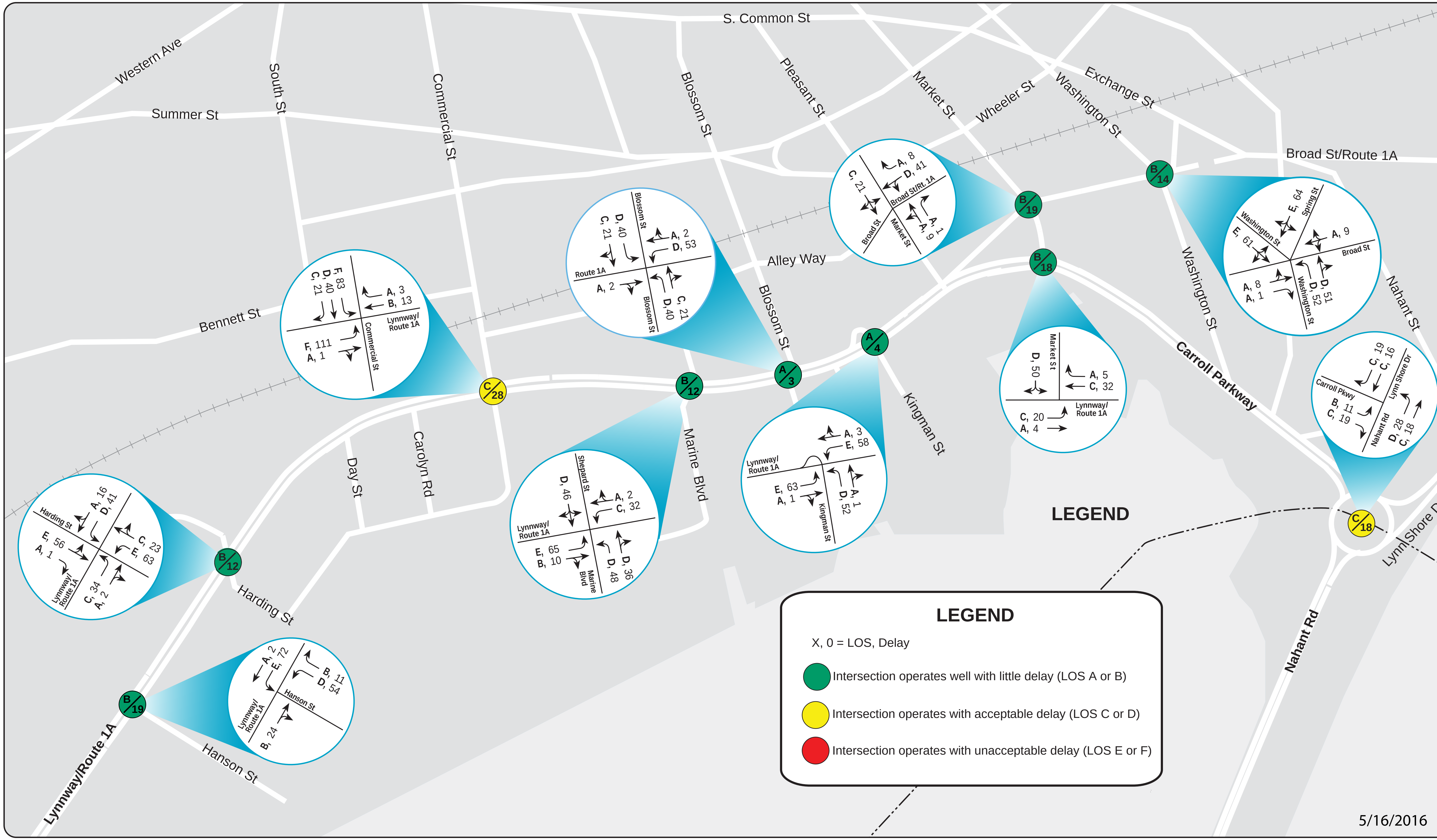

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FIGURE 23
Alternative 1: Saturday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

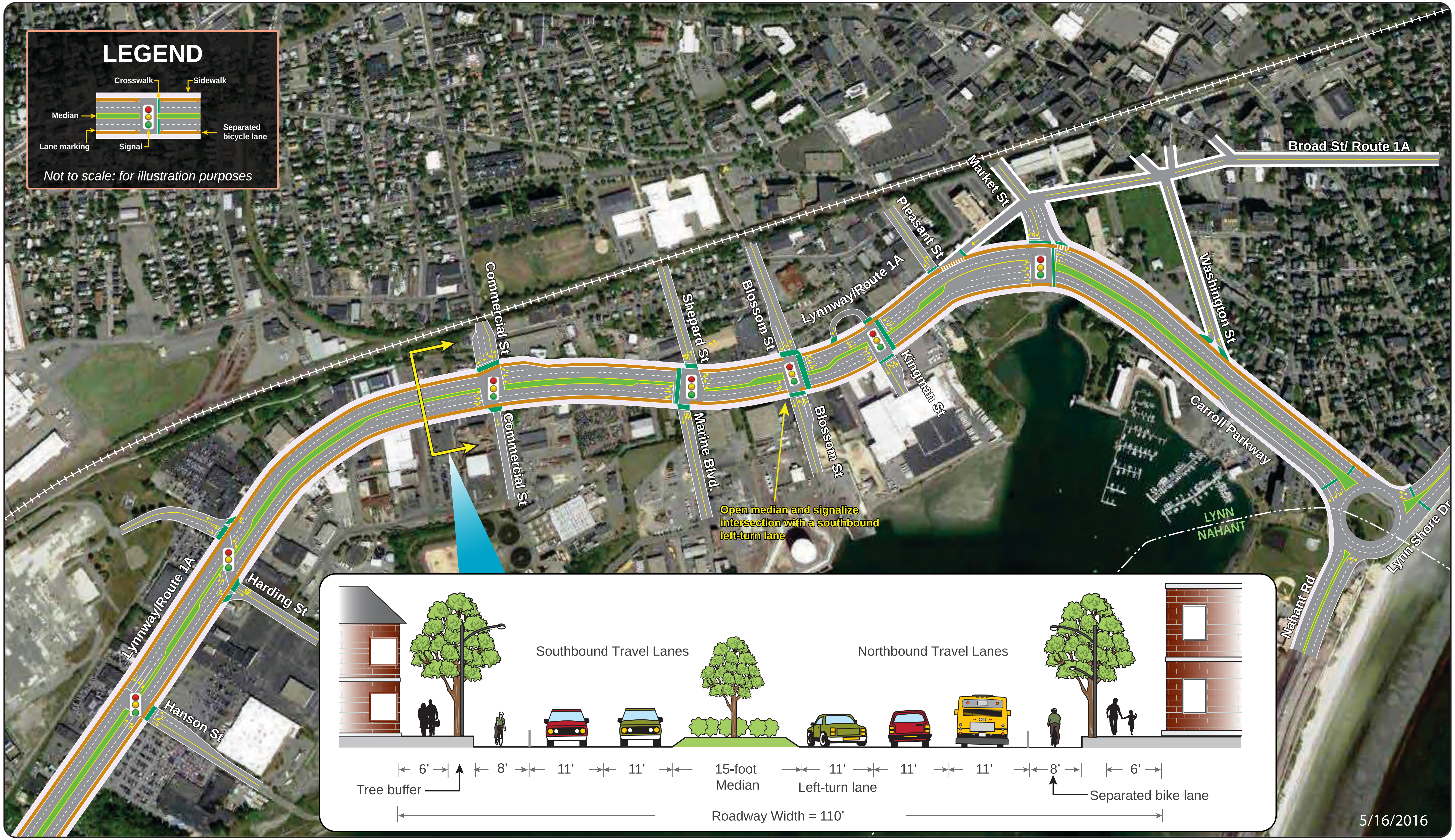

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FIGURE 24
Alternative 2: Road Diet and Complete Street

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

Veterans of Foreign Wars (VFW) Parkway in West Roxbury

Two-Way Separated Bike Lane in Vancouver, Canada

Two-Way Separated Bike Lane in New York City

Blue Hills Parkway in Milton

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FIGURE 25
Examples for Alternative 2

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

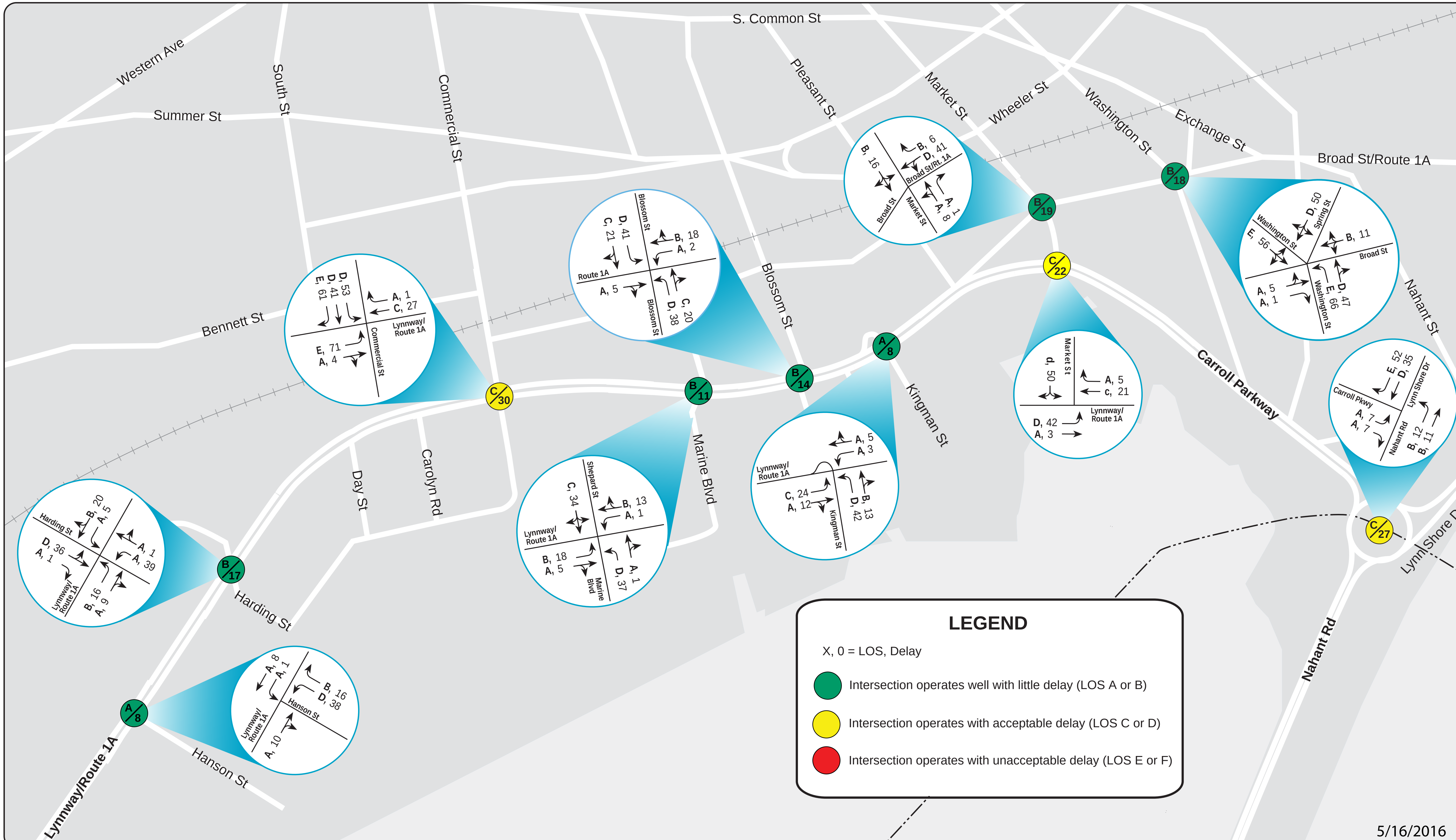

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FIGURE 26
Alternative 2: Weekday AM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

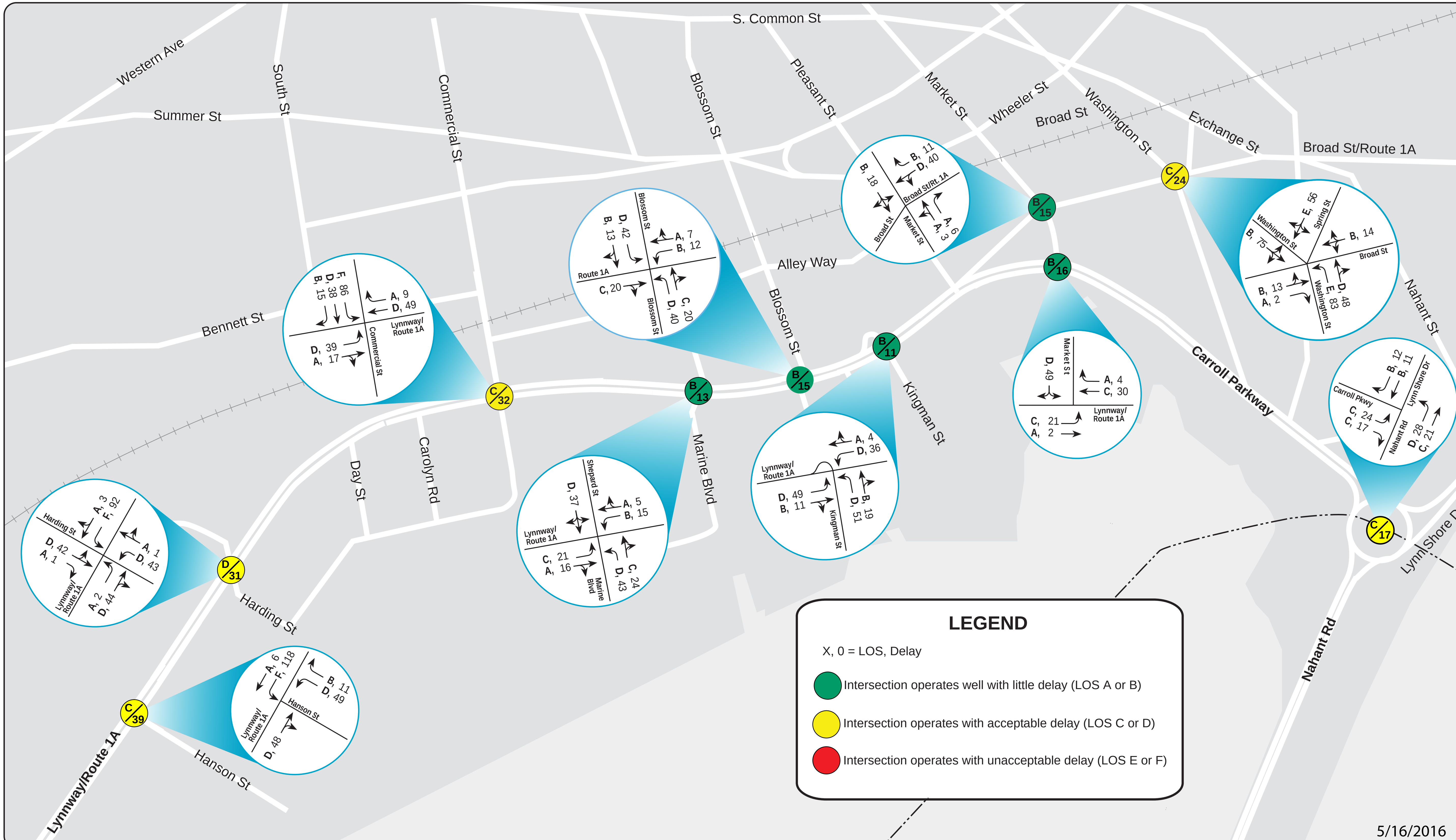

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FIGURE 27
Alternative 2: Weekday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

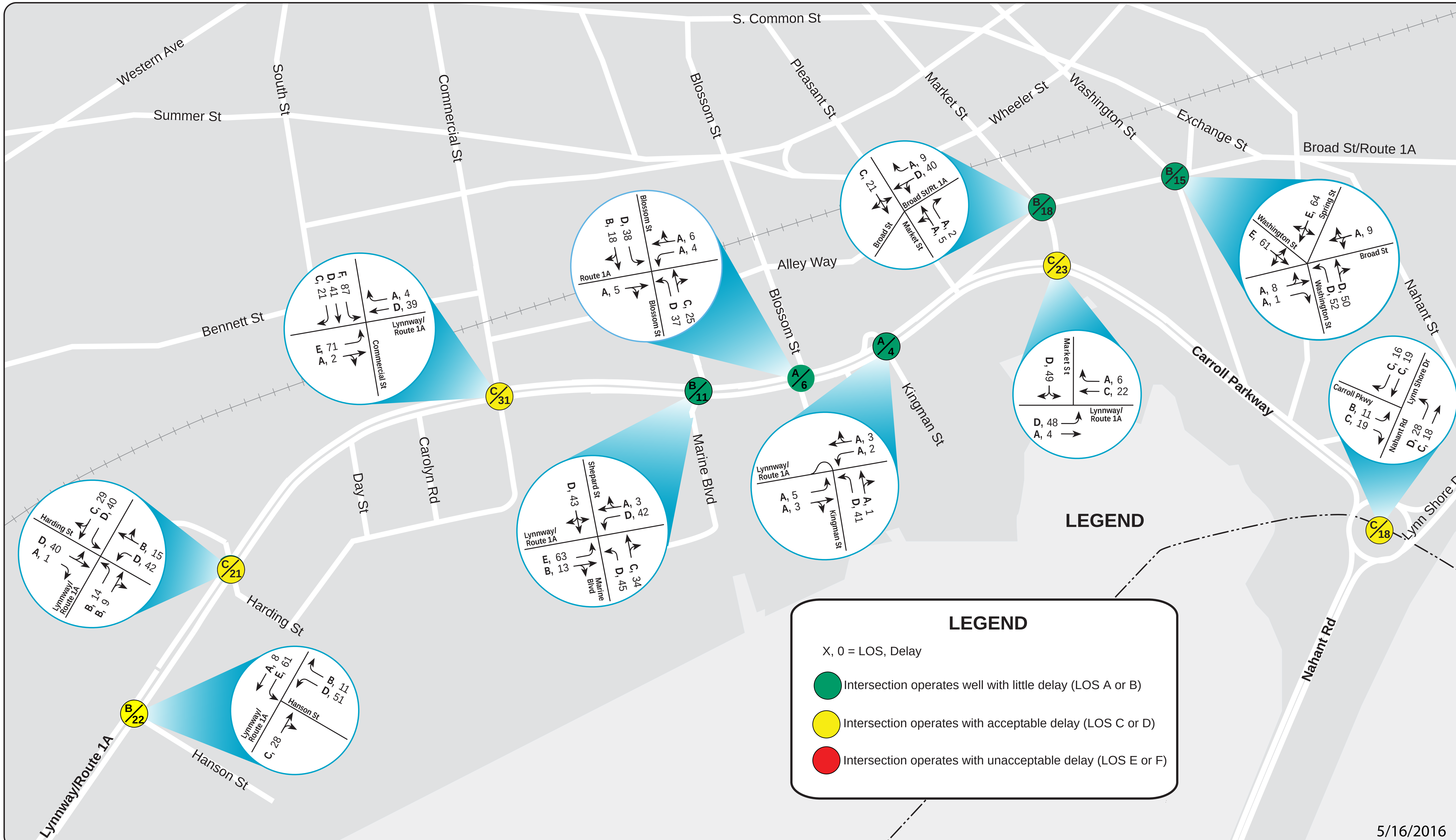

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FIGURE 28

Alternative 2: Saturday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

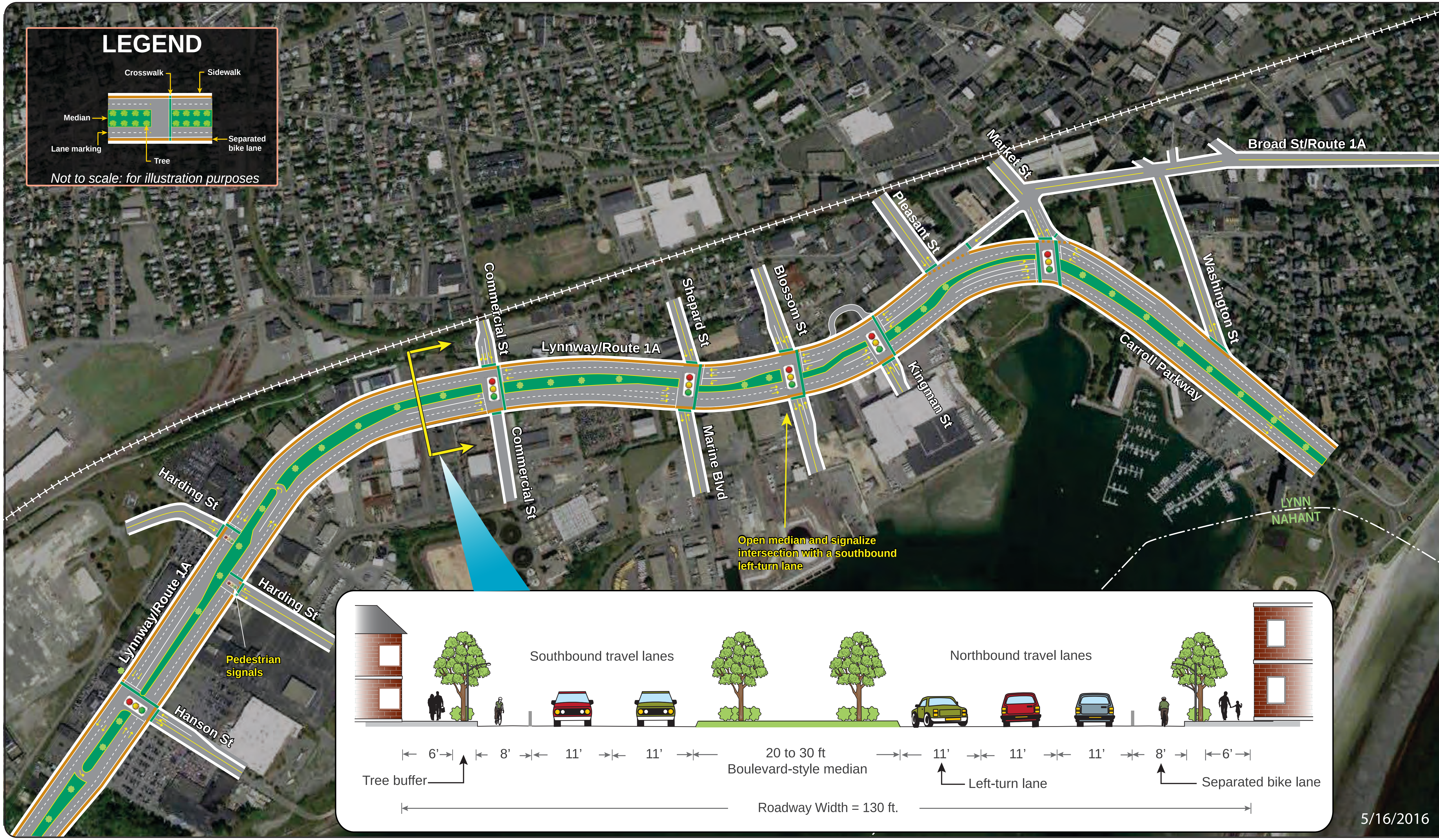

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FIGURE 29
Alternative 3: Boulevard Style Roadway

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn


North Common Street and South Common Street in Lynn


Commonwealth Avenue in Boston


North Common Street and South Common Street in Lynn

John F Fitzgerald Surface Road in Boston

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FIGURE 30
Examples for Alternative 3

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

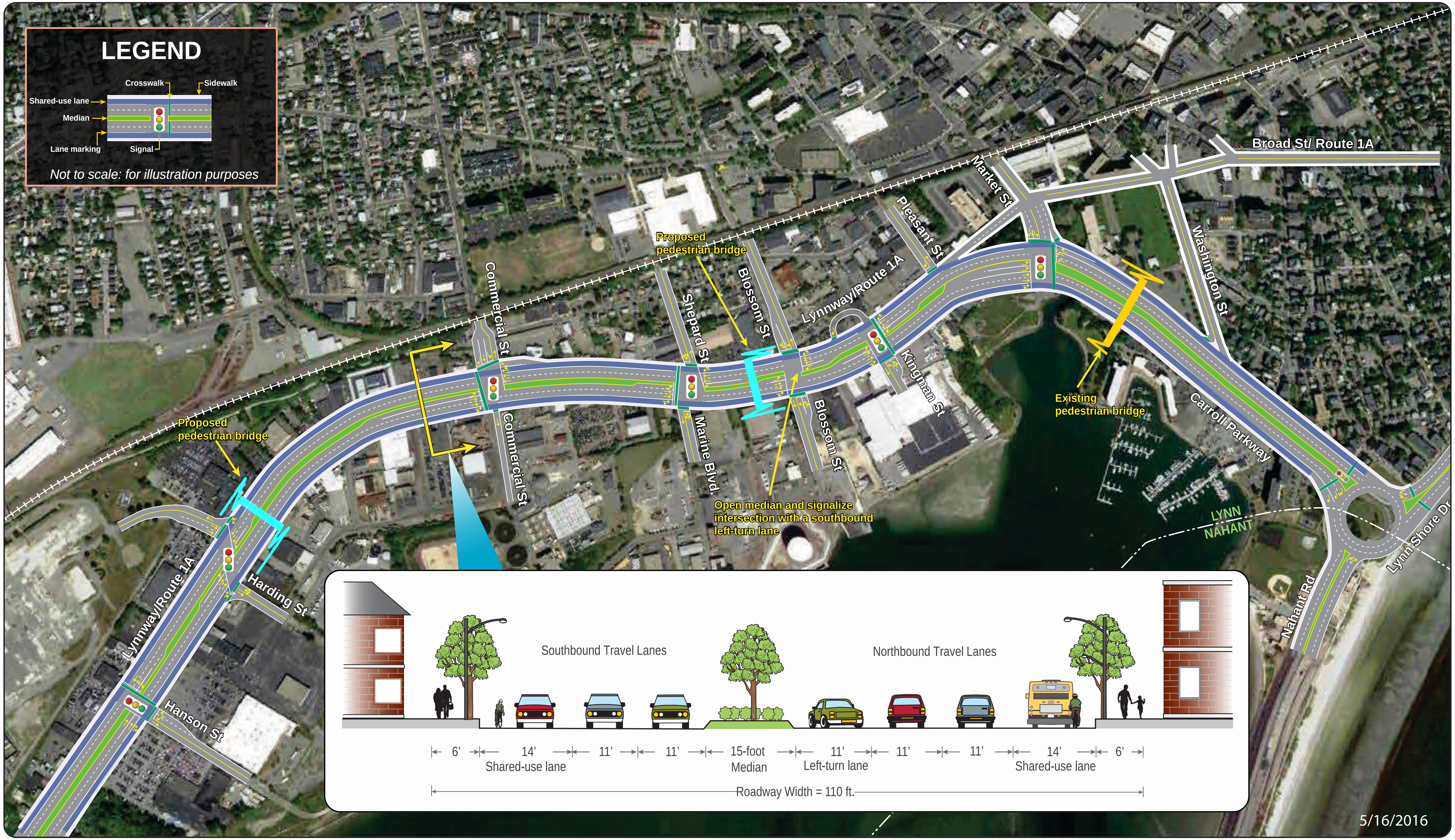

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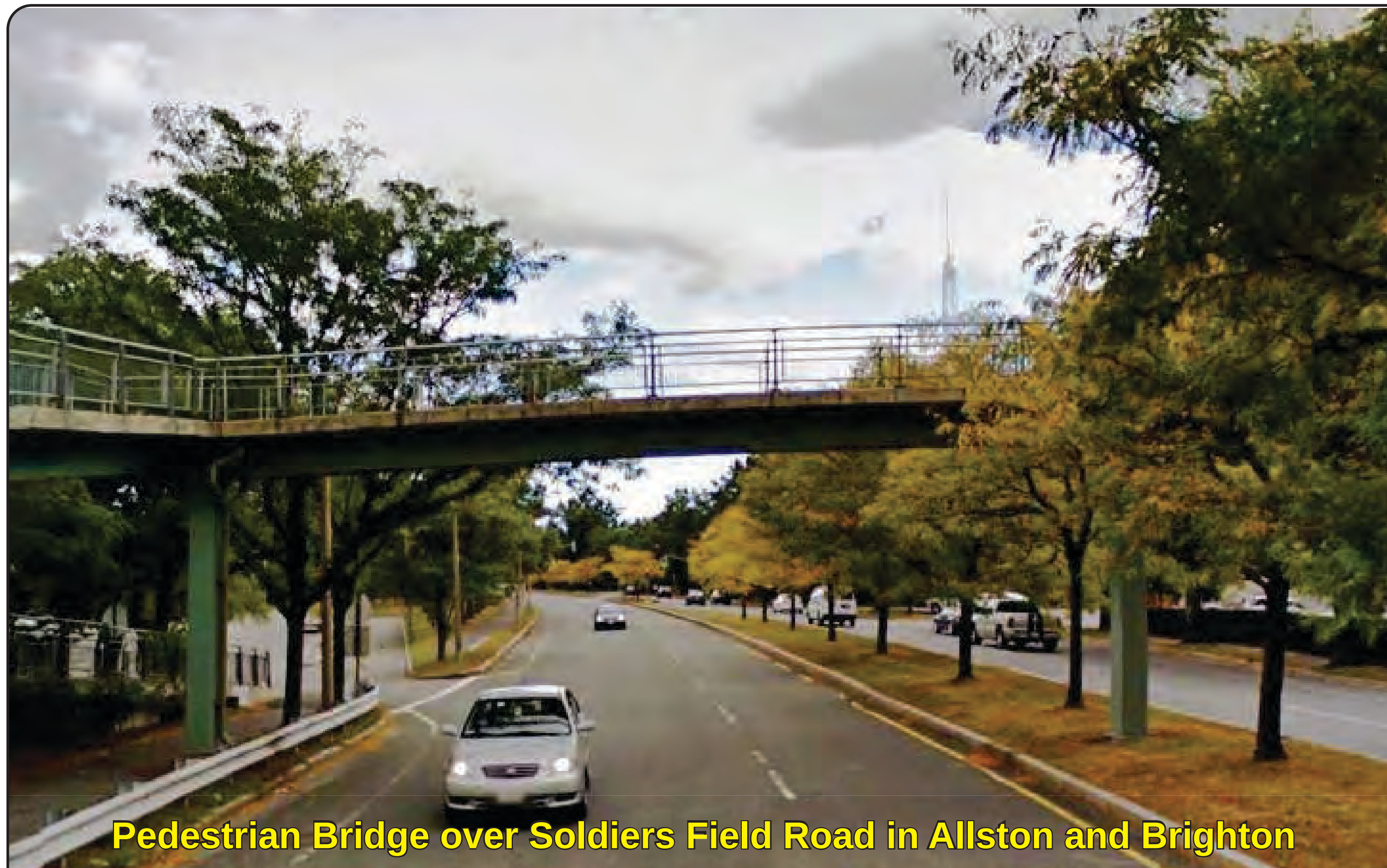
FIGURE 31
Alternative 4: Pedestrian Bridges

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn



Pedestrian Bridge over Soldiers Field Road in Allston and Brighton

Pedestrian Bridge over Storrow Drive in Boston

Two-Way Seperated Bike Lane in Vancouver

Pedestrian Bridge over Carroll Parkway in Lynn 5/16/2016

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FIGURE 32
Examples for Alternative 4

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

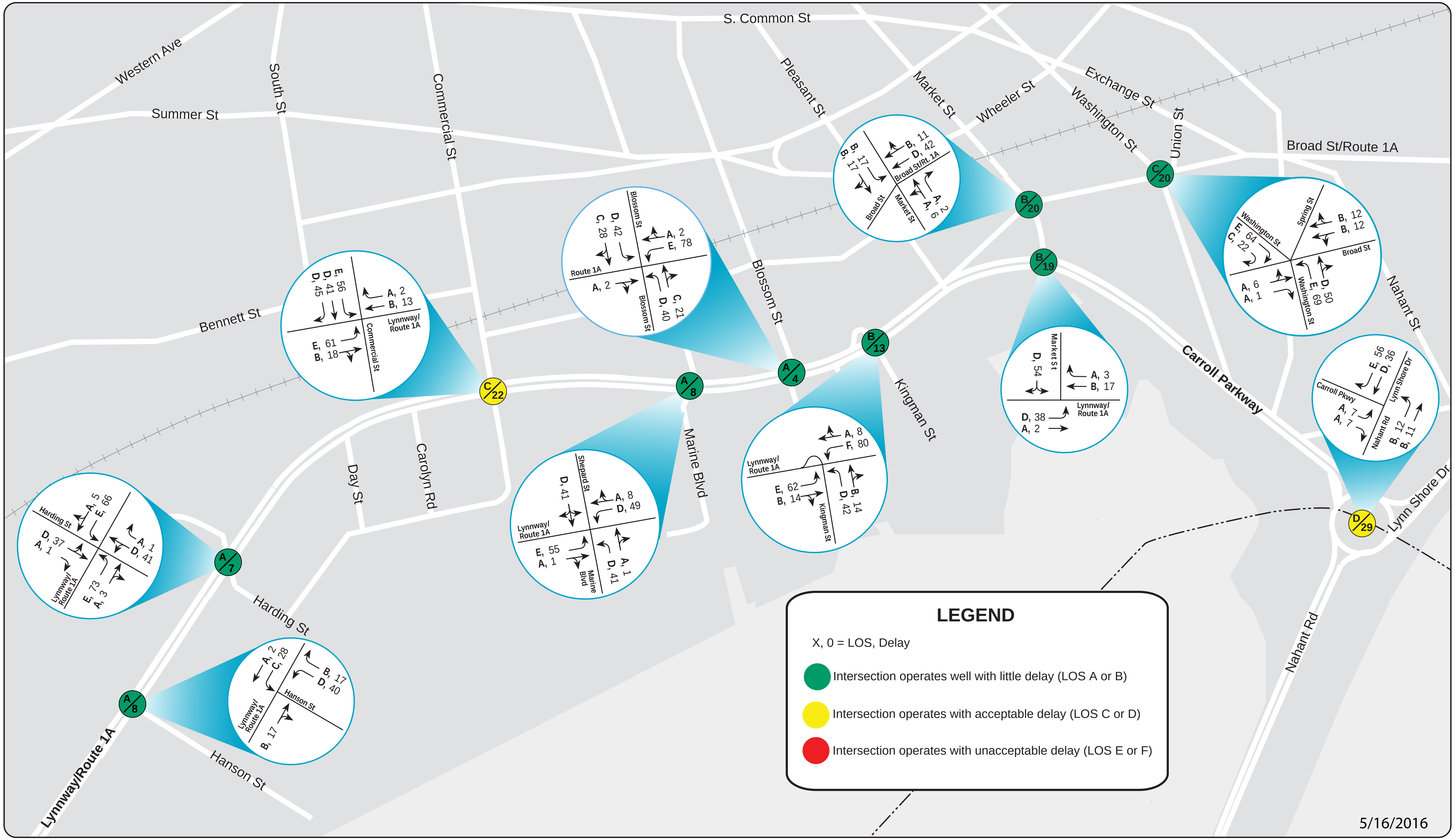

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FIGURE 33

Alternative 4: Weekday AM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

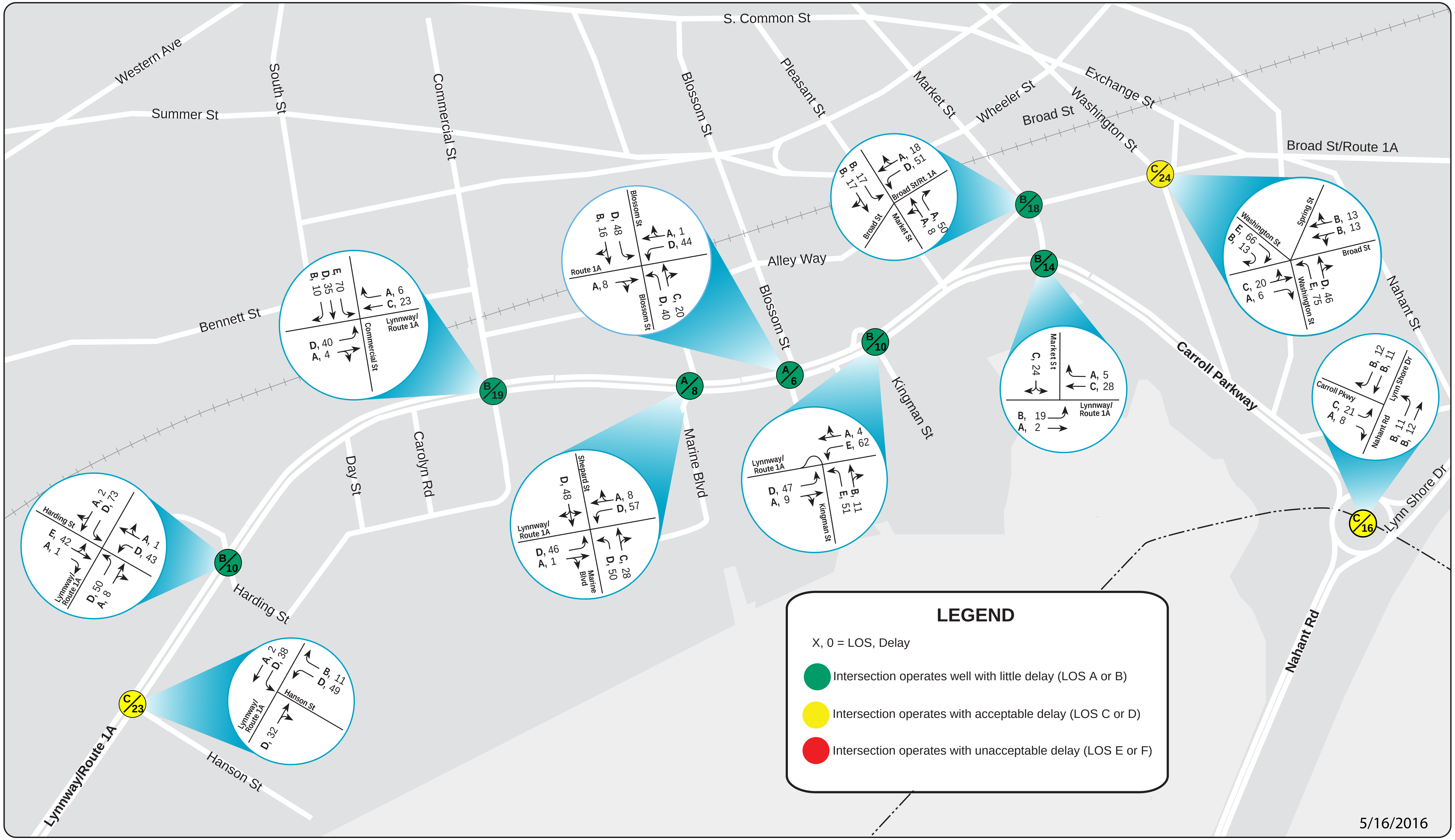

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FIGURE 34
Alternative 4: Weekday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

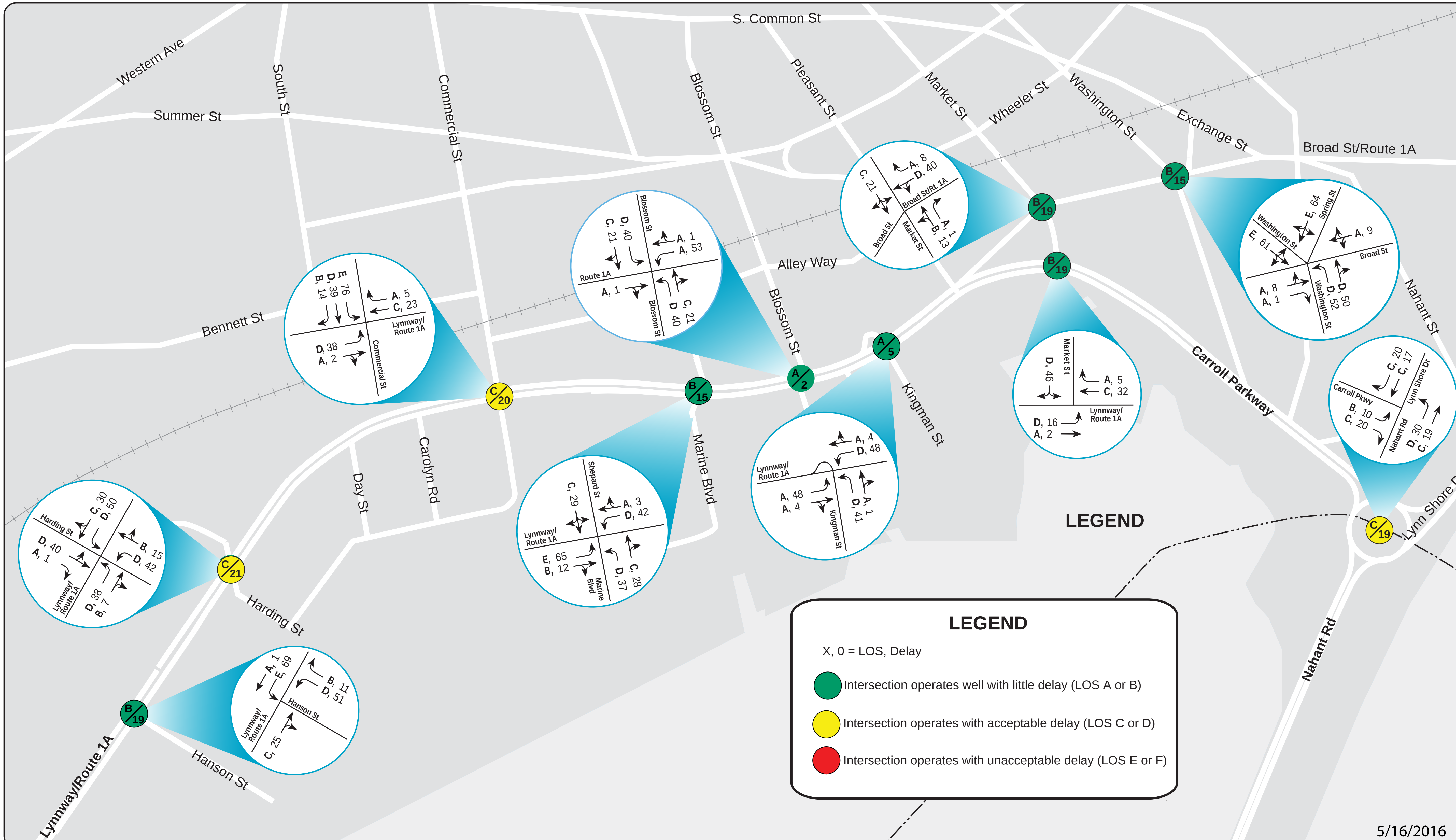

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FIGURE 35
Alternative 4: Saturday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

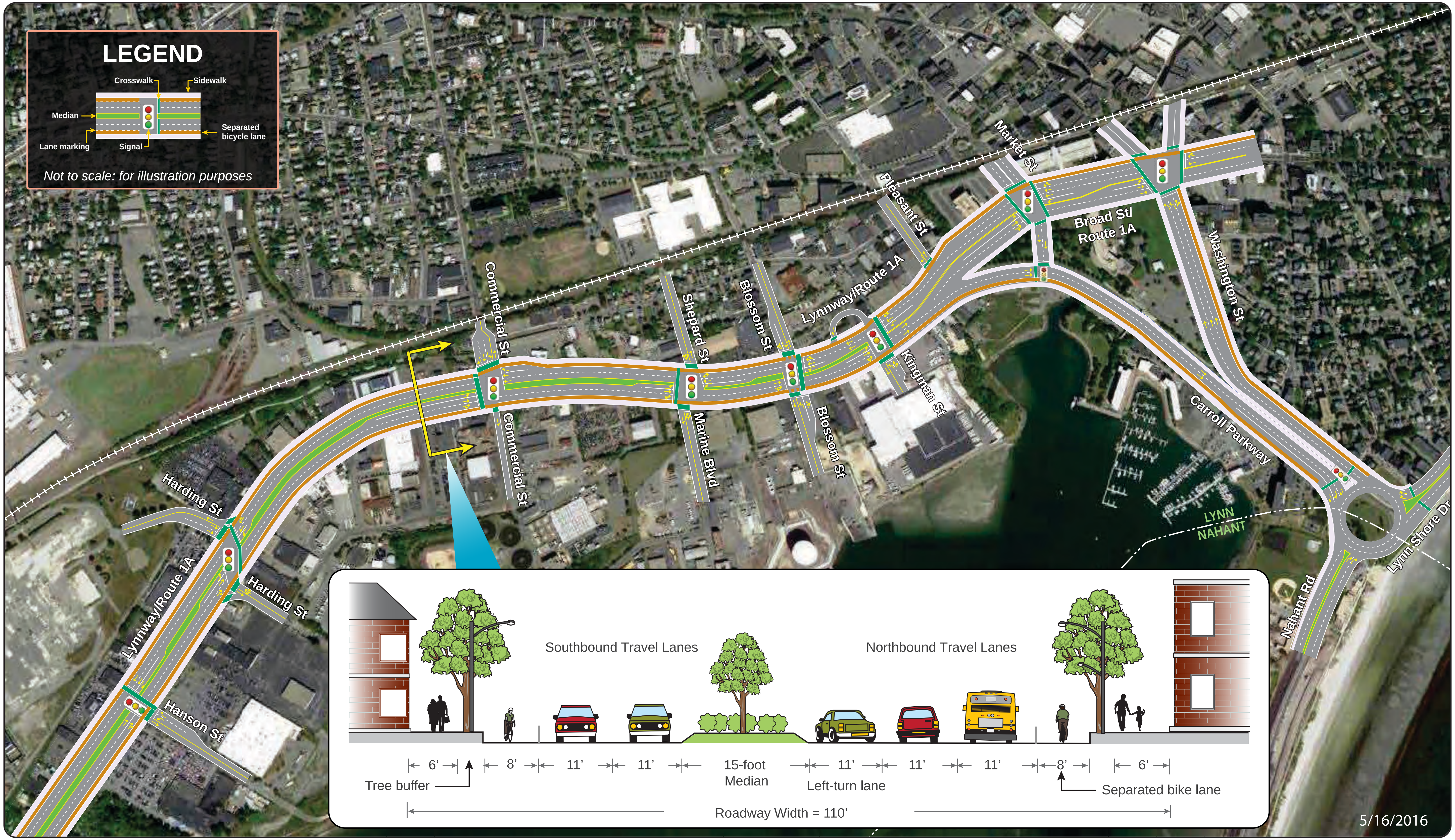

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FIGURE 36
Alternative 5: Altered Traffic Circulation Pattern

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

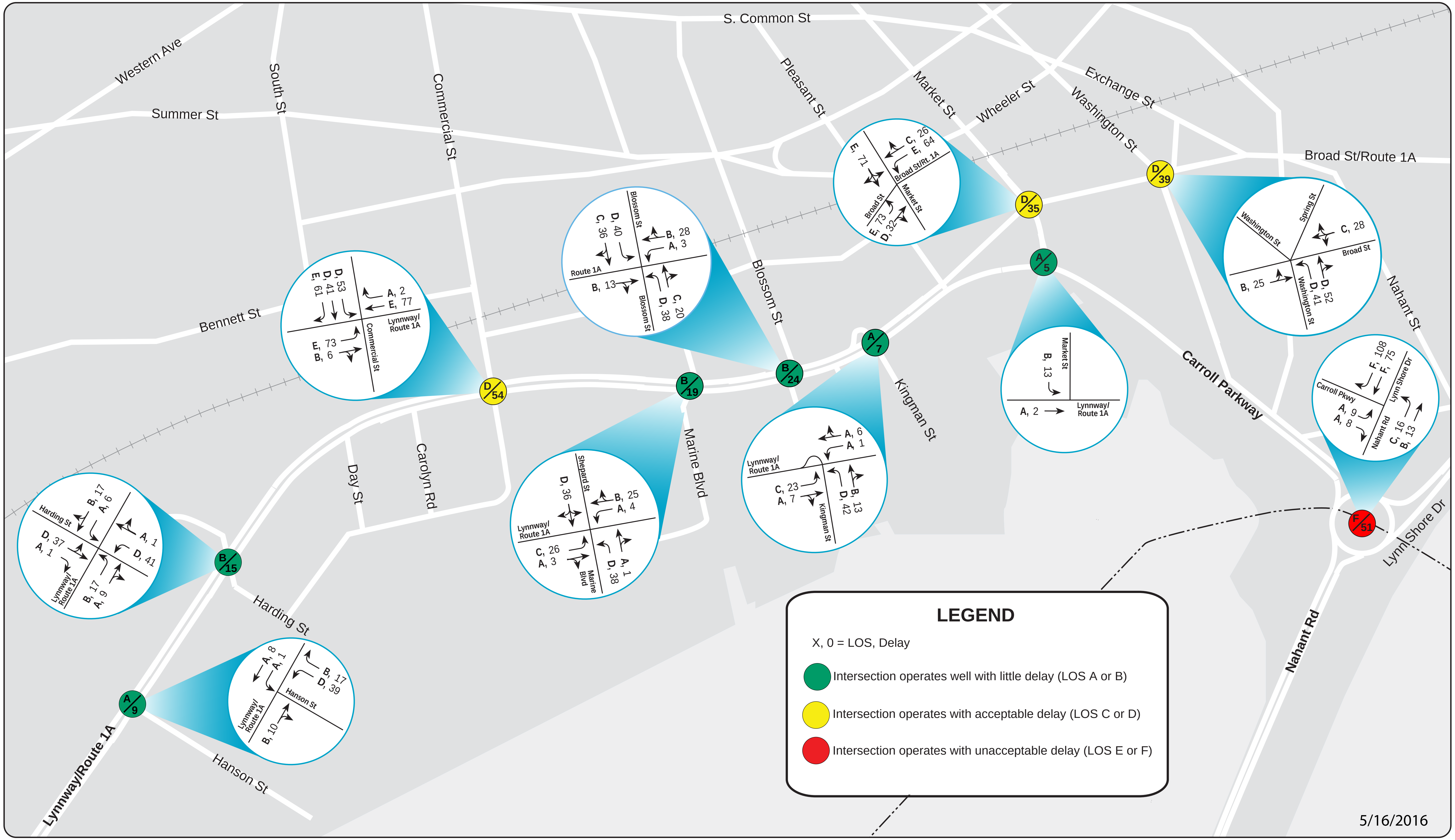

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FIGURE 37
Alternative 5: Weekday AM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

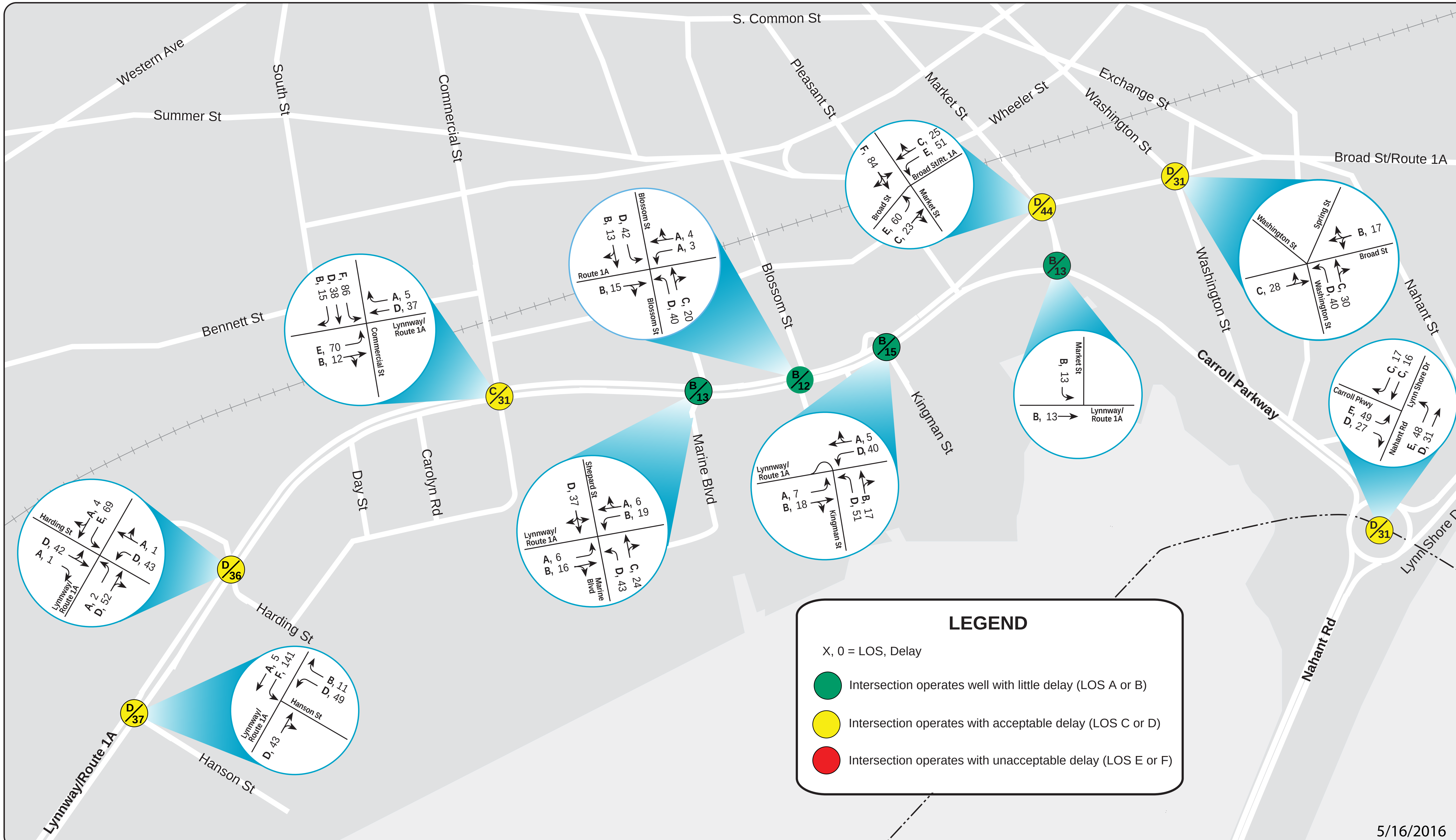

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FIGURE 38
Alternative 5: Weekday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

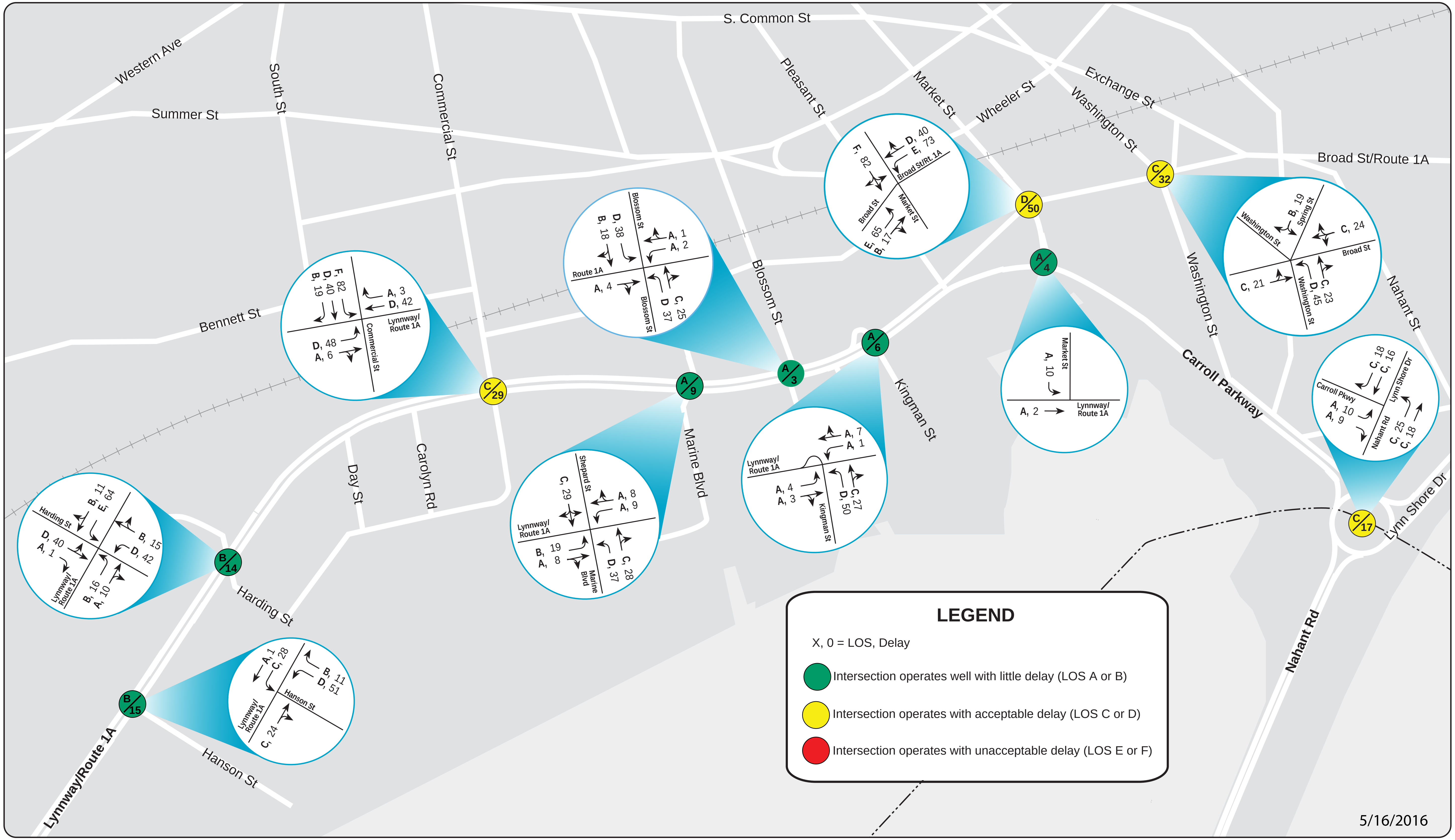

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FIGURE 39
Alternative 5: Saturday PM Peak Hour Level of Service and Delays

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

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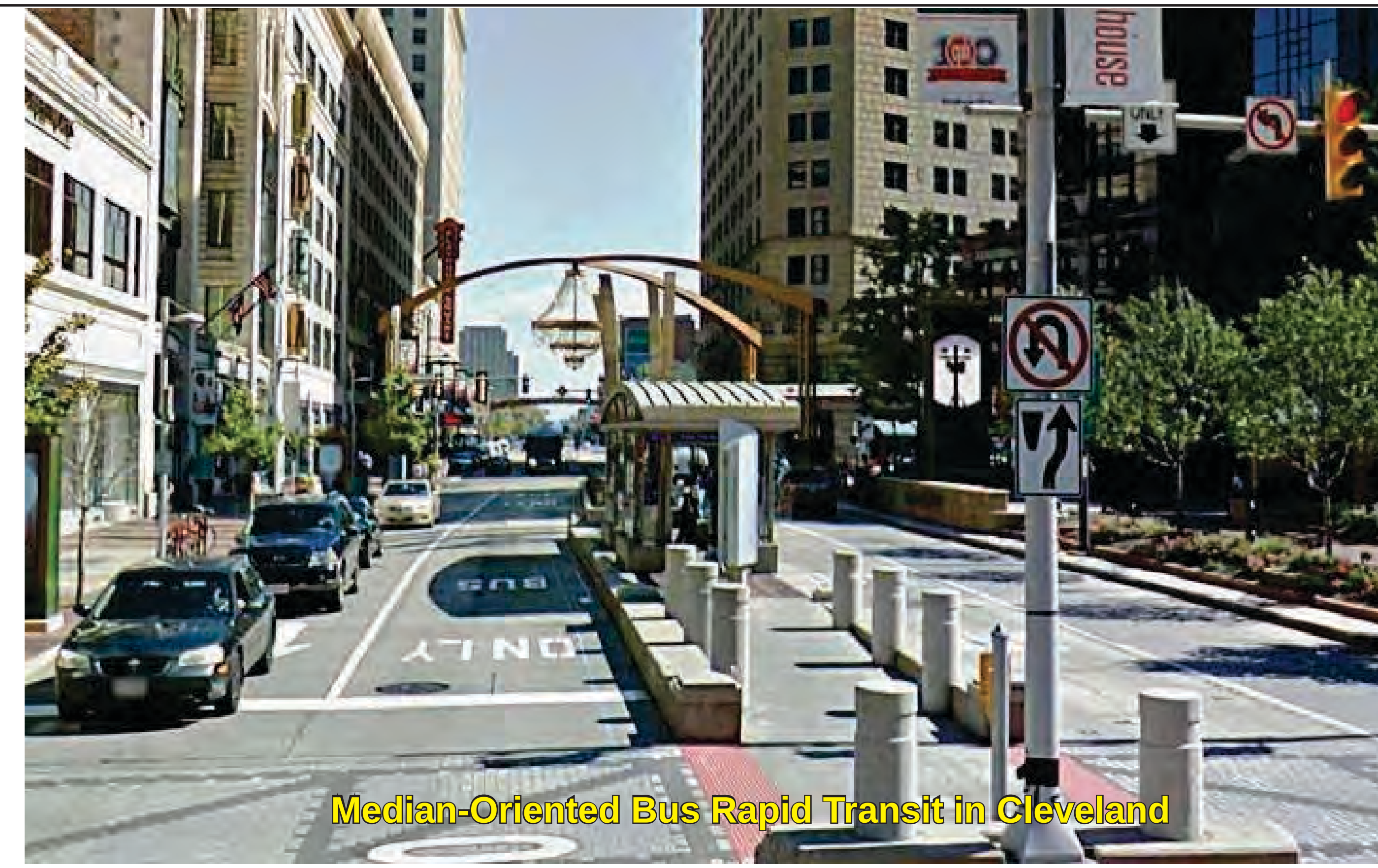
FIGURE 40
Alternative 6: Bus Rapid Transit Lanes

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

Median-Oriented Bus Rapid Transit in Oregon



Median-Oriented Bus Rapid Transit in Cleveland

Median-Oriented Bus Rapid Transit in San Bernadino

Median-Oriented Bus Rapid Transit in Oregon

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FIGURE 41
Examples for Alternative 6

Route 1A/Lynnway/Carroll Parkway
Priority Corridor Study in Lynn

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FIGURE 42
Create Connections amongst Lynn's Waterfront, Downtown, and Surrounding Neighborhoods

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

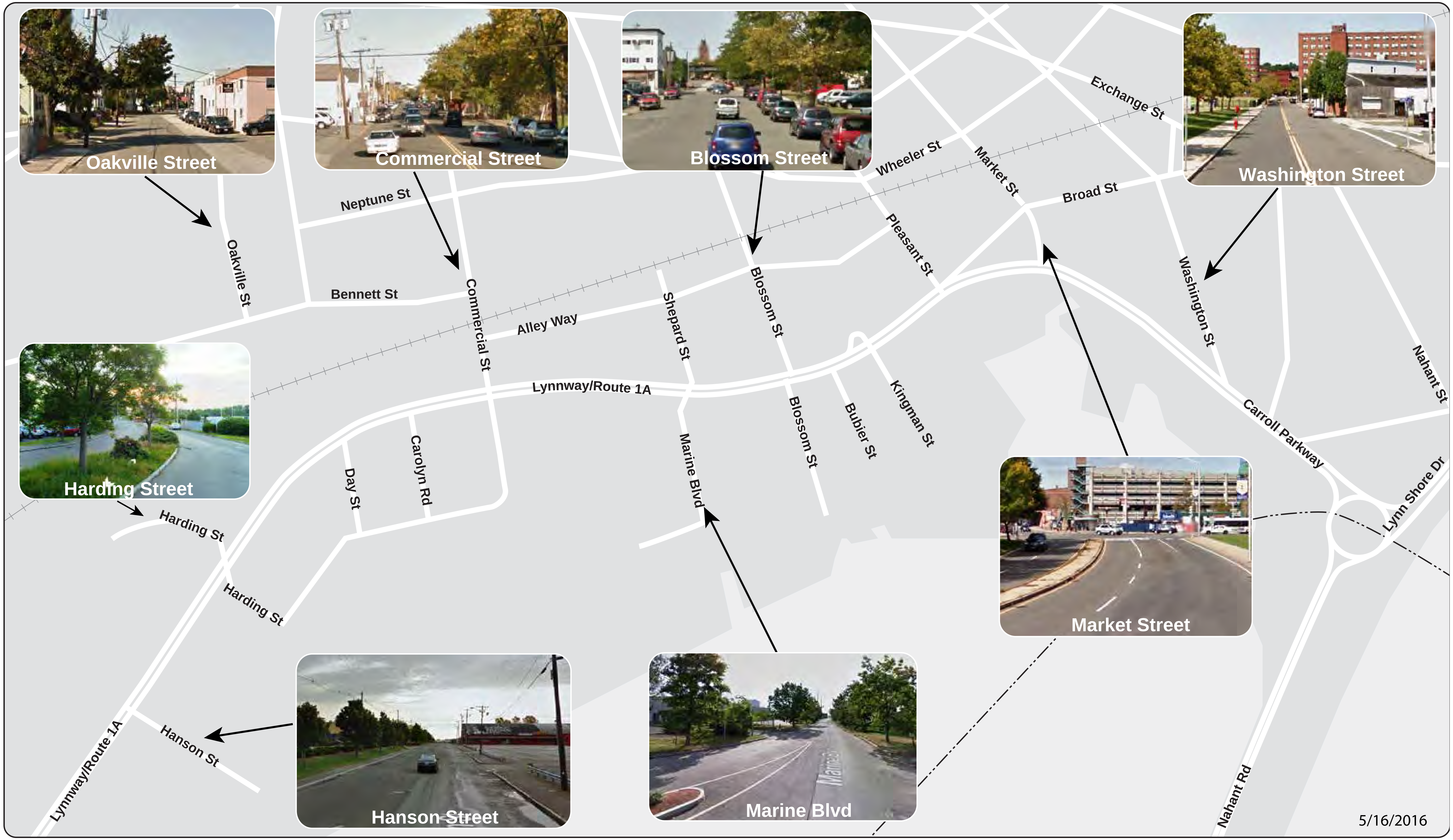

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FIGURE 43
Roadway Characteristics of the Local Streets that are Candidates for Improvements to Help Create Connectivity Amongst the Study Area's Land Uses

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study in Lynn

Appendices

APPENDIX A

Advisory Task Force

Initial Scoping Meeting Summary
Route 1A/Lynnway/Carroll Parkway Study in Lynn
City Hall, Room 302
April 17, 2015

Meeting started at 10:00 A.M.

Participants from Lynn, MassDOT Office of Transportation Planning (OTP), MassDOT Highway Division's District 4 Office, and Central Transportation Planning Staff (CTPS) introduced themselves (see attached meeting roster).

Study Background

Mark Abbott of CTPS introduced the Boston Region MPO and the study background.

- The study is supported by funding from the Boston Region Metropolitan Planning Organization (MPO). The MPO is responsible for conducting federally required metropolitan transportation planning process. The work of the MPO is conducted by CTPS, staff to the MPO.
- The Boston Region MPO's Long-Range Transportation Plan (LRTP), *Charting Progress to 2040,* identified needs for all modes of transportation in the MPO region. The LRTP identified arterial segments where roadways need improvements and modernization.
- The objectives of this study are to identify safety, mobility, access, and other transportation-related problems in the corridor and to develop multimodal solutions to the problems, including increasing the quantity and quality of walking and biking.
- CTPS went through an extensive and comprehensive process and selected this corridor from over 50 arterial segments in the MPO region for study.

Corridor Overview

Seth Asante provided an overview of the corridor based on available transportation data. The major roadway characteristics are summarized as below:

- Functional class: Principal Urban Arterial (Lynnway, Carroll Parkway, and Route 1A)
- Jurisdiction: Department of Conservation and Recreation (DCR)
- Six-lane divided roadway: three travel lanes in each direction with a median and left-turn lanes at selected intersections.
- About 44,000 average daily traffic on the Lynnway and 33,000 on Carroll Parkway
- Seven signalized intersections, one traffic rotary, and several unsignalized intersections and driveways

- Speed limit: 35 mph throughout the corridor
- Sidewalks on mainly both sides of the roadway
- Crosswalks only at some signalized intersections
- Very long crosswalks
- No dedicated bike lanes
- Generally no shoulders (one foot or less in width)
- Adjacent land uses: mainly commercial, industrial, and recreational.

Vision for the Lynn Waterfront

- Connect the City with the waterfront
- Create open spaces along the waterfront
- Design mixed use neighborhood
- Transform the Lynnway into a pedestrian friendly boulevard
- Upgrade the traffic system to be more pedestrian-friendly
- Create a walkable, livable community that promotes human interaction

Study Tasks

Seth Asante presented the limits of the study corridor as the General Edwards Bridge to the Nahant Rotary including Broad Street and Washington Street. Seth Asante provided an overview of each of the tasks that will be performed in this study, which are described below:

- Collect data: The data to be collected include traffic volumes, pedestrian and bicyclist volumes, vehicle speeds, crashes, traffic signal timings and sequence, and transit service data. MassDOT Highway Division will collect all the traffic volume and speed data. DCR will provide the signal timings and intersection layout information. The Massachusetts Bay Transportation Authority will provide transit service data.
- Existing conditions analyses: the analyses would include inventory of the corridor land uses, pedestrians and bicyclists needs, safety conditions (crashes involving vehicles, pedestrians and bicyclists), traffic signal equipment essentials, peak hour traffic operations analyses, and spot speed survey.
- Forecast future traffic: Use the regional travel demand model set to forecast 2040 traffic. The model was calibrated for 101 cities and towns in the Boston Region MPO area and adopted for the Long-Range Transportation Plan.
- Develop and analyze alternatives: Work in conjunction with the study task force to develop as many as 3 alternatives including road diet concepts (reconfiguring roadway to improve safety and operations), complete street concepts (safe, convenient, and comfortable access for all users), and traffic circulation (efficient traffic operations)
- Document study: Present products of the tasks to the study task force for comments and feedback. Prepare draft document for review and finalize report

Seth Asante said the study is expected to be completed in 12 month.

Comments and Feedback

Jamie Marsh, Director of Community Planning, distributed copies of the Lynn Waterfront Masterplan, which documents the vision and plans for the waterfront. Jamie Marsh said that he likes the scope of the study and it aligns with the vision for the Waterfront. Michael Clark of MassDOT OTP said that the existing land use needs to be changed to be compatible with improvements that would make the Lynnway and Carroll Parkway pedestrian-and-bicyclist friendly.

CTPS thanked the study advisory members' participations and welcomed any suggestions or comments after the meeting via e-mails or phone calls.

Meeting was adjourned at 11:00 A.M.

Attachments

SA/sa

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study
Initial Scoping Meeting
City of Lynn
Room 302

April 17, 2015

Name	Affiliation	Email
Mark Abbott	CTPS	mabbott@ctps.org
Sara Timoner	MassDOT D4 Traffic	sara.timoner@state.ma.us
Michael Clark	MassDOT Planning	Michael.Clark@dot.state.ma.us
James Marsh	City of Lynn	Jmarsh@Lynnma.gov
Jim Cowdell	EDIC/Lynn	JCowdell@EDICLynn.org
Seth Asante	CTPS	Sasante@ctps.org

Presentation and Discussion of Existing Conditions and Alternatives
Meeting Summary
Route 1A/Lynnway/Carroll Parkway Study in Lynn
City Hall, Room 302
October 15, 2015

Meeting started at 10:20 A.M.

Participants from Lynn, Department of Conservation and Recreation (DCR), MassDOT Office of Transportation Planning (OTP), MassDOT Highway Division's District 4 Office, Senator McGee's Office, Metropolitan Planning Area Council, and Central Transportation Planning Staff (CTPS) introduced themselves (see attached meeting roster).

Existing Conditions

Seth Asante of CTPS introduced the study background. He said that the following tasks have been completed: data collection, existing conditions analyses, and forecast of future traffic volumes. He went on to present the existing conditions summarized below:

- The Lynnway carries about 42,000 vehicles daily on a weekday; the Carroll Parkway carries about 33,000 vehicles daily; and Broad Street/Route 1A carries about 16,000 vehicles daily.
- The turning movement volumes at the intersection indicate that the majority of the traffic (80 percent) on the Lynnway and Carroll Parkway during peak periods is passing through the corridor (with destinations outside of the study area).
- The peak period in each direction of the roadway lasts for about 2 hours, with the morning peak traffic heading southbound and afternoon peak traffic northbound.
- The Lynnway and Carroll Parkway experience moderate pedestrian and bicycle volumes, even with the obstacles and unfriendly pedestrian and bicyclist setting.
- The crosswalks are too long (as long as 100 feet); no median refuge area for pedestrians; obstructions in some of the crosswalks; and no sidewalks at certain locations with strong pedestrian desire lines.
- Lack of shoulders and accommodations for bicyclists' present safety problems, which forces bicyclists to ride on the sidewalks. Lack of detection for bicycles at the signalized intersections.
- Curb cuts and ramps lack detection-warning plates and are not compliant with Americans with Disabilities Act (ADA), which poses problems for people with disabilities.
- Outdated signal-timing plan needs to be updated to make traffic flow efficient.
- Substandard signal equipment: needs signal heads lack back plates, which allow for improved visibility.

- Signal controllers may need upgrades to be adaptive, or responsive complex timing plans, or changing traffic flow patterns.
- Lack of Opticom system to handle emergency vehicle preemption and lack of transit signal priority to improve on-time performance for buses.
- Turn prohibitions at some intersections lead to circuitous circulation and U-turns, such as at Blossom Street, which forces drivers to proceed to Shepard Street/Marine Boulevard intersection or Kingman Street intersection to turn left; this affects riders of the Lynn Ferry boat service.
- High volume of traffic turning left from the Lynnway creates queue storage problems on northbound Market Street for the high volume traffic turning right onto Broad Street.
- On the Lynnway and Carroll Parkway, there were 240 crashes involving 453 vehicles; 61 nonfatal injury crashes (84 persons); and 2 fatal injury crashes (2 persons.
- On Broad Street/Route 1A, there were 166 crashes involving 331 vehicles; 28 nonfatal injury crashes (32 persons); and 1 fatal injury crash (1 person).

Future Traffic Forecast

Seth Asante provided an overview of the 2040 traffic projections. The Lynnway and Carroll Parkway would grow by the following rates between 2015 and 2040:

- Total daily traffic – four percent
- AM peak-period traffic – two percent
- PM peak-period traffic – two percent
- Midday 9:00 AM-3:00 PM – five percent
- Night time (6:00 PM-6:00 AM) – five percent

Improvement Alternatives

Seth Asante said that CTPS staff will work with the task force to develop short- and long-term strategies to address safety, operations, and multimodal transportation problems, which were identified in the corridor. Seth Asante presented one short-term alternative and three long-term for feedback.

- The short-term improvements maintain the existing roadway cross-section and makes improvements to address some of the pedestrian and bicycle safety issues and make traffic flow more efficient.
- Because Lynn is planning to change the land uses and redevelop the Waterfront area, the strategy for the long-term improvements for Lynnway and Carroll Parkway was to evaluate different roadway cross-sections to improve safety, operations, and access for all users, and to make it more accommodating for pedestrians and bicyclists.

- The long-term improvements include road-diet, complete streets, changes in traffic circulating patterns, and transit priority lanes.
- Some of the alternatives have improvements that are mostly within the existing roadway's right-of-way and take into account the needs of abutters and users, such as Alternatives 1 and 2. Other alternatives have improvements that would require more space to build such as Alternatives 3 and 4. In addition, Alternatives 2, 3, 4 would need land use changes at the Waterfront area to make them successful—for example, land uses that attract pedestrians and bicyclists, such as recreation areas, parks, residential developments, and other mixed land uses.

Comments and Feedback

There was a discussion on adding pedestrian bridges to the Lynnway. The task force talked about the some of the benefits of pedestrian bridges such as making it easier and safer to connect the Waterfront to West Lynn and Lynn downtown. The task force also discussed the disadvantages of pedestrian bridges such as long and complex ramps and fencing to prevent pedestrians from crossing at-grade at locations where drivers are not expecting pedestrians. Jamie Marsh, Director of Community Planning, said that CTPS should consider a pedestrian-friendly boulevard such as Commonwealth Avenue and Rose Kennedy Greenway in Boston as one of the alternatives. Michael Clark of MassDOT OTP said the study should take into consideration state policies such as MassDOT Healthy Transportation Compact and Complete Streets. Seth Asante informed the task force that he will add two more alternatives: one with boulevard-style roadway and one with pedestrian bridges on the Lynnway.

Seth Asante thanked the study advisory members for their participation in the study and welcomed any suggestions or comments after the meeting via e-mails or phone calls.

Meeting was adjourned at 12:00 PM.

Attachments

SA/sa

Route 1A/Lynnway/Carroll Parkway Priority Corridor Study
City of Lynn
Room 302

October 15, 2015

Name	**Affiliation**
Jamie Cerulli	Mayor Kennedy's Office (Mag Fountain)
James Marsh	Community Development Department, Lynn
James Cowdell (EDIC)	Lynn Economic Development and Industrial Corporation (Bill Deckish)
Patrice Kish	Department of Conservation and Recreation
Sean Pierce	Department of Conservation and Recreation
Ken Kirwin	Department of Conservation and Recreation
Val.Soroka @state.ma.us	Department of Conservation and Recreation
Connie Raphael	MassDOT Highway Division District 4
Sara Timoner	MassDOT Highway Division District 4
Ethan Britland	MassDOT Office of Transportation Planning
Michael Clark	MassDOT Office of Transportation Planning
Eric Bourassa	Metropolitan Area Planning Council
Sara Kurpiel Lee	Metropolitan Area Planning Council
Sheri Warrington	Office of Senator McGee
Meagan Hamil	Office of Senator McGee
Donald H. Wong	State Representative
Lori A. Ehrlich	State Representative
Joseph Gravellese	Office of Representative Lori A. Ehrlich
Robert F. Fennell	State Representative
Brendan P. Crighton	State Representative
ANDREW HALL	LYNN DPW ahall@lynnma.gov

Review Comments

Seth Asante

From: Clark, Michael (DOT)
Sent: Thursday, May 19, 2016 4:44 PM
To: Seth Asante
Cc: Pounds, Bryan (DOT)
Subject: RE: CTPS Lynnway study

Hi Seth,

Thank you for the opportunity to review the revised report, as well as for your hard work on this study.

We request that for Alternative 4 (Pedestrian Bridge), under disadvantages, that the language requiring ramps to be ADA-accessible may also require real estate takings to accommodate this infrastructure. We would also note that the addition of fencing to the roadway would reduce access for all motorists and bicyclists, in addition to pedestrians, and may not be feasible with the number of curb cuts present.

We also request that Table 7 on p. 55 include some type of indicator, such as an asterisk, for the associated construction costs for those alternatives which require an expansion of the ROW, as land takings will add to the total cost but are not accounted for in the study.

Thanks,
Michael

-----Original Message-----
From: Seth Asante [mailto:sasante@ctps.org]
Sent: Monday, May 16, 2016 10:12 AM
To: Clark, Michael (DOT)
Subject: FW: CTPS Lynnway study

Hi Michael,

I am preparing the final draft of the Lynnway study, so please send me your comments on the updated version by Friday, May 20.

Thank you,
Seth

-----Original Message-----
From: Seth Asante [mailto:sasante@ctps.org]
Sent: Wednesday, May 04, 2016 10:14 AM
To: 'Clark, Michael (DOT)'
Subject: RE: CTPS Lynnway study

Did you receive the documents I sent to you?

-----Original Message-----
From: Clark, Michael (DOT) [mailto:michael.clark@state.ma.us]
Sent: Wednesday, May 04, 2016 9:20 AM
To: Seth Asante

Subject: CTPS Lynnway study

Hi Seth,

You mentioned a few weeks ago that your team would have an updated version of the Lynnway study in advance of tomorrow's LEAD meeting. Could you send that along to us? I plan on attending tomorrow morning.

Thanks,
Michael

Michael Clark
Corridor Planning Unit - Office of Transportation Planning Massachusetts Department of Transportation
10 Park Plaza, Suite #4150, Boston, MA 02116
Phone: 857-368-8867
Email: Michael.Clark@state.ma.us

Economic Development Industrial Corp. of Lynn

Lynn City Hall
3 City Hall Square, Room 307
Lynn, MA 01901

T 781-581-9399
F 781-581-9731

www.ediclynn.org

May 5, 2016

To Whom It May Concern,

I am writing with comments regarding the recent Route 1A/Lynnway/Carroll Parkway Study of Lynn. This work was completed by the Boston Region Metropolitan Planning Organization.

The report concluded with six recommendations. I am writing to you with my feedback on these recommendations.

Plan 1. The recommendation of adding a signal light at the Blossom Street intersection is looked at favorably. This will make it easier for Commuter Ferry riders to be able to take a direct left hand turn onto Blossom Street Extension, as well as, allow for pedestrian access.

Plan 2. It is not feasible to remove two lanes of heavily traversed roadway to make two bicycle lanes. This would have a negative impact on traffic and future development in this area.

Plan 3. Same opinion as Plan 2.

Plan 4. The idea of constructing pedestrian bridges is sound and will assist in connecting Lynn's Waterfront to the rest of the City.

Plan 5. This was originally proposed in the Sasaki Master Waterfront Plan. This was not well received at that time by a variety of stakeholders. I believe this rerouting would cause many disruptions that make this plan not viable.

Plan 6. I am opposed to this plan as a viable option.

To summarize, I support the additional light and direct turn into Blossom Street as well as the creation of pedestrian bridges.

Sincerely,

James M. Cowdell, MBA
Executive Director
EDIC

The Commonwealth of Massachusetts
MASSACHUSETTS SENATE

SENATOR THOMAS M. MCGEE
Third Essex District

STATE HOUSE, ROOM 109C
BOSTON, MA 02133-1053
TEL. (617) 722-1350
FAX (617) 722-1005
THOMAS.MCGEE@MASENATE.GOV
WWW.MASENATE.GOV

Chairman
JOINT COMMITTEE ON TRANSPORTATION

WAYS AND MEANS
GLOBAL WARMING AND CLIMATE CHANGE
ECONOMIC DEVELOPMENT AND EMERGING TECHNOLOGIES
ENVIRONMENT, NATURAL RESOURCES AND AGRICULTURE

February 16, 2016

Seth Asante, Boston MPO Staff
State Transportation Building
Ten Park Plaza, Suite 2150
Boston, MA 02116-3968

Dear Mr. Asante:

Thank you for the opportunity to comment on the Boston Metropolitan Planning Organization's Route 1A/Lynnway/Carroll Parkway Study in Lynn. This corridor is a vital route in and out of the Gateway City of Lynn and, as acknowledged by the Boston MPO in initiating this study, is in critical need of improvements for enhancing public safety, reducing road congestion and connecting the waterfront to the downtown and surrounding neighborhoods. I commend the MPO staff for their efforts to work with the City to conduct the study. Any of the alternatives presented would certainly represent an improvement; however, I suggest that the implementation of any changes must be undertaken in the context of many other exciting developments underway for revitalization in the City of Lynn.

One of the four stated objectives of the study is "Supporting Lynn's vision for the Waterfront". Yet, I am concerned that there are no specific issues mentioned with regard to improved bike, pedestrian and vehicle connections from the downtown to the Commuter Ferry Terminal on Blossom Street. In the section that describes the Blossom Street Intersection, the Ferry terminal is not even listed as a land use for that roadway, when in fact, access to the waterfront at that intersection is a primary reason for the City seeking improvements across Route 1A. In the description of transit services on the corridor, on page 12 of the Technical Memorandum, there is a brief explanation of the ferry service, but no details on the public safety challenges for drivers, pedestrians and cyclists to access the terminal under current conditions. I would request that any alternative pursued by the Boston MPO include a detailed plan for accessing the Blossom Street Ferry for drivers, cyclists and pedestrians.

Addressing the long or absent crosswalks, non-compliant curb cuts, signal timing, and lack of bicycle accommodations, would undoubtedly enhance the utilization of the parkway for all, and would improve access between the waterfront and downtown to spur economic growth and neighborhood connections. With expansion of the North Shore Community College campus underway, and efforts to redevelop some major parcels of land along Lynn's waterfront for both commercial and residential projects, I would challenge the Boston MPO to look beyond the traditional roadway improvements and adjustments. Instead, I urge you to consider a more visionary approach to connecting the waterfront with the downtown and surrounding neighborhoods, to meet the needs of the residents and businesses who will rely on this roadway in years to come. Greenville, South Carolina is an excellent example of a transformative pedestrian connection for a once blighted downtown area that has undergone a major revitalization.

Before selecting a preferred alternative for improvements on this corridor, I would also like to invite members of the Boston MPO to attend a Lynn Economic Advancement and Development (LEAD) team meeting to better understand the efforts of federal, state and local officials in coordinating all facets of development, revitalization and transportation improvements for Lynn and residents of the North Shore. I sincerely hope that a joint effort by the Boston MPO, the Department of Conservation and Recreation, and the LEAD Team members, will result in both short- and long-term improvements to this corridor.

Again, thank you for the opportunity to comment on the study. Please do not hesitate to contact me directly should you have any questions. Please contact Meaghen Hamill, my Chief of Staff, to coordinate a meeting between the LEAD Team and staff and/or members of the Boston MPO.

Sincerely,

Thomas M McGee

Thomas M. McGee
State Senator
Third Essex District

Office of Economic & Community Development
City of Lynn, Massachusetts
3 City Hall Square - Room 311 - Lynn, MA 01901

James M. Marsh
Director

Judith Flanagan Kennedy
Mayor

March 10, 2016

Seth Asante
State Transportation Building
Ten Park Plaza, Suite 2150
Boston, MA 02116-3968

Dear Mr. Asante:

Over the past ten years, during some of the most trying economic times, the City of Lynn has made major progress completing the necessary physical and legal changes to develop 305 acres of the most underutilized waterfront land along the entire U.S. Eastern Seaboard.

Specifically, in June of 2006, the City partnered with Sasaki Associates, one of the leading architectural and design firms in the world, and implemented a comprehensive Waterfront Master Plan and Municipal Harbor Plan that will guide development on these waterfront parcels. These plans detail the potential for over 4 million square feet of residential development and close to 2 million square feet of commercial/retail, hotel, office and light industrial space. They also include 45 acres for a port designated area, a boardwalk, marinas and ample open public space. A fully implemented plan and built out waterfront would provide almost 10,000 construction jobs, 5,000 permanent jobs and an estimated $18 million in annual property tax revenue.

In conjunction with these plans, the City of Lynn implemented a comprehensive set of turnkey zoning regulations for this area. This action transformed our waterfront plans into easily understandable city ordinances, streamlining the permitting process by which development can occur.

The City, through the Economic Development Industrial Corporation (EDIC) finished and implemented a MBTA ferry terminal / ferry service designed to supplement the existing MBTA commuter rail and bus service within 100 yards of the waterfront. The area has also been classified a Commonwealth of Massachusetts Growth District, an important designation for older urban cities in need of increased tax bases and commercial and residential development.

Perhaps one of the most important accomplishments to date, the City partnered with National Grid, General Electric, and a host of private entities to relocate two large 115 kV power lines that have been inhibiting waterfront development for over 40 years. Together, these actions have resulted in the sale of two major parcels of land. Specifically, the so-called Beacon Chevrolet site and the GE Gear plant are under agreement and are now primed for development.

In tandem with the redevelopment of these and many other parcels of land, the next major step essential to full implementation of our vision, is the creation of public access, transforming the waterfront into a vibrant destination point with direct linkage to Lynn's downtown and surrounding neighborhoods. Much like the power lines inhibited development, the current configuration and size of the Lynnway inhibits access to the waterfront. All along this stretch of roadway four to six lanes of traffic act as a barrier, cutting off the waterfront from our residents and tourists.

With all this in mind, I urge you to continue to be forward thinking in the creation of this plan/study. Please balance the needs of vehicular commuters with the need for pedestrian access the waterfront. Bear in mind the proposed future use of the GE commuter rail stop and how waterside residents could only utilize this stop with access across the Lynnway. Much like Storrow Drive and the Charles, envision a boardwalk along the full length of our waterfront and how access is essential to its full use. Create this plan knowing that small retail businesses will continue to sprout up on the waterside of the Lynnway and that access will be essential to their sustainability. Remember that the Ferry is utilized by thousands and could be utilized by thousands more if access was more readily available via bicyclists or pedestrians. Lastly, the need for safe havens in addition to overpasses is essential to the safety of those crossing the Lynnway.

In all, we believe that access to the waterfront from our neighborhoods and downtown is a vital lynchpin to the future of the City. Please ensue the study and its alternatives are forward thinking, bearing in mind the development and use changes that will occur in the very near future.

Thank you for your time in creating this study.

Regards,

James M. Marsh

Seth Asante

From: Clark, Michael (DOT)
Sent: Monday, February 01, 2016 4:00 PM
To: Seth Asante
Cc: Pounds, Bryan (DOT)
Subject: RE: Route 1A/Lynnway/Carroll Parkway Study in Lynn

Hi Seth,

OTP has the following comments on the Lynnway study.

General Comments

- In need of a proofread for misspelling and incorrect grammar
- Section 2.3 needs citations to the Lynn Waterfront Masterplan (Master Plan?)
- On p. 4 the Lynnway is reflected as connecting to Saugus, Revere, and Everett to the south. Revere, Boston, Chelsea, and Everett sounds more accurate.
- Section 4.4, Bicycle Traffic Volumes, should expand on the unfriendly nature of the roadway discouraging bicycle activity. No mention of high-speed nature of traffic or high number of heavy vehicles.
- Section 4.8 – map of transit services needed. Recommend bringing in characteristics like hourly range of services and peak frequency from the appendix into the body of report for informational purposes.
- On p. 12 is the utilization rate of CR parking very low according to an MBTA standard?
- Section 6 – no mention that all LOS falls at D or better and is therefore considered acceptable. It's fine to point out problem areas but none of the intersections are considered to be failing, which should be emphasized.
- Only one mention of ADA non-compliance in identified problems (p. 17-19). Could use a general mention of the non-compliant nature of most of the pedestrian and bicyclist issues.
- As with Section 4.4 comment point out why the roadway would be considered unfriendly for pedestrians and bicyclists (last bike/ped bullet on p. 18) (high speeds, heavy truck traffic, etc.)

Improvement Alternatives and Recommendations

- Where possible please provide pictures of what different alternatives or components of different alternatives would look like
- In general, there should be a clearer distinction between the alternatives and what the scopes are that is driving the cost differentials. For instance, the differences between Alternatives 1 and 2 are not spelled out enough in the report. There is an additional signal, yes, but what else? Rehaul of the median space? A full depth reconstruction instead of a milling/overlay? Could it be that Alternative 1 should cost more for things like repairing the broken sidewalks along the length of the ~2 mile corridor? What exactly does 1 not do that 2 does that would be problematic from a long-term perspective?
- Consider adding language to Alternative 2 which promotes a DCR-like aesthetic. Almost like the Carroll Parkway portion of the corridor, or something like VFW in West Roxbury. Beautification of the corridor, with bike/ped/transit amenities, easier pedestrian movements across the road, and a welcoming sidewalk experience (to the extent possible, might not be enough space for tree plantings), which wouldn't be a Greenway-like transformation but will better support the type of high-rise, residential development the City wants out of the Waterfront.
- The impacts of Alternative 3 need to be hashed out much more strongly than they are. No need to put a specific cost to land takings but language needs to be devoted to what a heavy lift that would be from a cost and legal standpoint. It renders the $20-25 million cost estimate to be quite unrealistic. Even excepting the takings a 50-100 foot median space would necessitate an entire roadway reconstruction. Access to side streets would also be impacted (e.g. multiple lanes at the Commercial Street intersection in current configuration – keeping that and pushing it back would require additional land takings, intersection reconstruction, potential impact to rail

bridge). Discussion on connecting with the Nahant Roundabout is missing (would roundabout be reconstructed? Where would pedestrian trail in median go?)

- Ensure the Alternative 4 discussion emphasizes the loss of pedestrian access that comes with erecting fences, that it might assist safety but the idea as a whole reduces mobility and connectivity.
- The concerns raised about Alternative 6, the BRT, can be addressed through the right service characteristics for the routes. This should be emphasized. If not done properly, yes, the space would be underutilized and the right buses need to be used. But this would be more of the MBTA's problem, not a problem with the design. It reads a bit like the idea has its problems when it's the execution of the service that would dictate whether it works or not. If frequent service at BRT standards is not going to be achieved then this alternative should not move forward (and this should be stated), but that's conditional and we don't think it's this study's purpose to judge whether that will happen or not. Although the Lynnway represents a small portion of the routes for the local bus services, future developments along the Lynnway would greatly benefit from a BRT service to connect with Wonderland. In that case the Lynnway is a decent stretch of the trip.

Let me know if you have any questions or want to talk further.

Thanks,
Michael

From: Seth Asante [mailto:sasante@ctps.org]
Sent: Thursday, January 21, 2016 3:03 PM
To: James Marsh; James Cowdell; Ken Kirwin (DCR); Kurpiel, Sarah; Bourassa, Eric; Clark, Michael (DOT); Raphael, Connie (DOT); Timoner, Sara (DOT); Sheri Warrington (SEN); Soroka, Val (DCR); Jamie Cerulli; Patrice Kish (DCR); Gravellese, Joseph (HOU); Hamill, Meaghen (SEN); Andrew Hall; Pounds, Bryan (DOT)
Cc: Mark Abbott
Subject: Route 1A/Lynnway/Carroll Parkway Study in Lynn

Good Afternoon:

I am pleased to inform you that the "Route 1A/Lynnway/Carroll Parkway Study in Lynn" is available for review and comment. The attached documents are the technical memorandum and appendices. The study was funded by the Boston Region Metropolitan Planning Organization (MPO) and conducted by the staff to the MPO—also known as the Central Transportation Planning Staff (CTPS). I would appreciate it if you could provide me with your comments by **February 4, 2016**.

MPO staff, working in conjunction with the study's advisory task force, identified, developed, and evaluated improvements for Lynnway and Carroll Parkway. The study provides City of Lynn, the Department of Conservation and Recreation, the Massachusetts Department of Transportation, and other stakeholders with an opportunity to begin researching the needs of the Lynnway and Carroll Parkway—in light of the City's vision for the Waterfront—and to start planning, design and engineering efforts. The study aligns with the MPO goals of modernizing roadways to reduce congestion, increasing safety on the region's highway system, expanding the quantity and quality of walking and bicycling, and making transit service more efficient and modern.

The focus of the study was to evaluate different roadway cross-sections to accommodate all road users safely and fulfill Lynn's vision for the Waterfront. As discussed in the memorandum, MPO staff developed six alternatives (one short-term and five long-term alternatives) for consideration. The improvements would increase traffic safety, make traffic operations more efficient, and modernize the roadway to accommodate all users, including bicyclists and pedestrians.

Please do not hesitate to call me at 857-702-3644 or send me email at sasante@ctps.org if you would like further information.

Seth Asante

From: Lee, Sarah Kurpiel
Sent: Friday, February 12, 2016 2:39 PM
To: 'Seth Asante'
Cc: Bourassa, Eric
Subject: RE: Route 1A/Lynnway/Carroll Parkway Study in Lynn

Hi Seth,

Thank you for your work on this report. Here are my comments:

- I don't think the Alternative 1 (short-term) recommendation is nearly strong enough, given that there are no facilities provided for cyclists. CTPS is recommending "further study" to see if sharrows are appropriate for the outside lanes. CTPS has determined there is a considerable amount of excess capacity, so the outside lanes should be removed to create a bicycle lane. DCR could do this is in the short term with jersey barriers or flex posts and it wouldn't be very expensive.
- Figure for Alternative 1 should show physically separated bicycle lanes as discussed above.
- Mention the possibility of doing Alternative 1 as a month-long pilot in the Summer if DCR/Lynn is hesitant to remove the lane.
- The Level of Service forecasts for the alternatives are nearly all A's, B's, and C's. It seems like the vehicular mode is still being prioritized over others.
- It's hard to believe the alternative with pedestrian bridges (alternative 4) would be equal in cost to other alternatives? How could bridge costs not be considerably higher?
- Its unlikely that the preferred alternative (#3) will happen in the foreseeable future, due to the cost. Recommend alternative 1 as a "short-term" solution (only if above improvements are included) while funds are raised for the preferred alternative.
- Any mention of impact to the many business driveways along Rt 1?
- A big reason people don't want to walk along the Lynnway is the absence of trees and greenery. The road is ugly and uncomfortable. I'd like to see more focus on landscaping in these recommendations. Even with considerable roadway "improvements", without greenery it will not be an attractive place to walk/ride.
- Alternative 6 is listed in the text as $15-20 million but shown in Table 7 as a "High" cost, which is given to the alternatives in the $20-25million range. Please adjust price in text (if actually the $20-25 range), or change "High" to "Moderate" in Table 2.

Please let me know if you have any questions on this. Thank you for the opportunity to comment.

Sarah

Sarah Kurpiel Lee
TRANSPORTATION ENGINEER & PLANNER
Metropolitan Area Planning Council
(617) 933-0744

From: Seth Asante [mailto:sasante@ctps.org]
Sent: Thursday, January 21, 2016 3:03 PM
To: James Marsh; James Cowdell; Ken Kirwin (DCR); Lee, Sarah Kurpiel; Bourassa, Eric; Clark, Michael (DOT); Connie Raphael (DOT); Sara Timoner (DOT); Sheri Warrington (SEN); Soroka, Val (DCR); Jamie Cerulli; Patrice Kish (DCR); Gravellese, Joseph (HOU); Hamill, Meaghen (SEN); Andrew Hall; Pounds, Bryan (DOT)
Cc: Mark Abbott
Subject: Route 1A/Lynnway/Carroll Parkway Study in Lynn

APPENDIX B

Traffic Data

Automatic Traffic Recorder Counts

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE
Starting: 6/1/2015

STA. 1 NB

Site Reference: 150140000402
Site ID: 110000000101
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-101.prn
City: LYNN
County: SPEED LN-1&2 NB

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	242	257	255	312		266			266	1066
02:00	164	141	131	178		153			153	614
03:00	114	100	94	115		105			105	423
04:00	82	68	72	82		76			76	304
05:00	123	129	98	120		117			117	470
06:00	295	286	312	326		304			304	1219
07:00	622	570	638	637		616			616	2467
08:00	856	877	902	995		907			907	3630
09:00	868	931	938	912		912			912	3649
10:00	788	769	849	831		809			809	3237
11:00	881	863	912	960		904			904	3616
12:00	901	926	964	912		925			925	3703
13:00	937	965	1042	1108		1013			1013	4052
14:00	1099	1157	1073	1155		1121			1121	4484
15:00	1222	1205	1260	1303		1247			1247	4990
16:00	1573	1612	1663	1667		1628			1628	6515
17:00	1720	1761	1805	1633		1729			1729	6919
18:00	1675	1985	2052			1904			1904	5712
19:00	1784	1897	1878			1853			1853	5559
20:00	1399	1264	1445			1369			1369	4108
21:00	811	895	1023			909			909	2729
22:00	672	776	947			798			798	2395
23:00	499	661	709			623			623	1869
24:00	380	432	520			444			444	1332
TOTALS	19707	20527	21582	13246	0	20732	0	0	20732	75062
% AVG WKDY	95	99	104	63.8						
% AVG WEEK	95	99	104	63.8						
AM Times	12:00	09:00	12:00	08:00		12:00			12:00	
AM Peaks	901	931	964	995		925			925	
PM Times	19:00	18:00	18:00	16:00		18:00			18:00	
PM Peaks	1784	1985	2052	1667		1904			1904	
D%	55	55	55	55						
K%	9	10	10	13						

u2

NB 20732
SB 20708
COMB AWD 41440
FAC .91
COMB ADT 37,700

STA. 1 SB

Site Reference: 150140000766
Site ID: 110000000102
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-102.prn
City: LYNN
County: SPEED LN-1&2 SB

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	152	119	129	152		138			138	552
02:00	122	90	93	92		99			99	397
03:00	89	80	98	102		92			92	369
04:00	132	143	121	113		127			127	509
05:00	292	303	283	313		297			297	1191
06:00	907	928	897	881		903			903	3613
07:00	1830	1918	1692	1626		1766			1766	7066
08:00	1932	1955	1810	1895		1898			1898	7592
09:00	1758	1892	1644	1618		1728			1728	6912
10:00	1191	1337	1228	1348		1276			1276	5104
11:00	1048	1017	1082	1082		1057			1057	4229
12:00	1053	1074	1142	1120		1097			1097	4389
13:00	1059	1080	1079	1113		1082			1082	4331
14:00	1054	1060	1071	1125		1077			1077	4310
15:00	1085	1039	1074	1159		1089			1089	4357
16:00	1075	1035	1101	1189		1100			1100	4400
17:00	1054	1060	1171	1225		1127			1127	4510
18:00	1080	1113	1178	1188		1139			1139	4559
19:00	795	903	954			884			884	2652
20:00	727	765	840			777			777	2332
21:00	660	649	759			689			689	2068
22:00	543	572	692			602			602	1807
23:00	393	421	477			430			430	1291
24:00	229	222	253			234			234	704
TOTALS	20260	20775	20868	17341	0	20708	0	0	20708	79244
% AVG WKDY	97.8	100.3	100.7	83.7						
% AVG WEEK	97.8	100.3	100.7	83.7						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	1932	1955	1810	1895		1898			1898	
PM Times	15:00	18:00	18:00	17:00		18:00			18:00	
PM Peaks	1085	1113	1178	1225		1139			1139	
D%	50	50	50	50						
K%	10	9	9	11						

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 1
Starting: 6/1/2015

STA. 2 NB

Site Reference: 150140000444
Site ID: 000000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: NORTH

File: 201.prn
City: LYNN
County: VOL NB

TIME	MON 1	TUE 2	WED 3	THU	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	228	250	234			237			237	712
02:00	159	156	128			147			147	443
03:00	120	103	90			104			104	313
04:00	104	105	103			104			104	312
05:00	182	183	148			171			171	513
06:00	296	345	289			310			310	930
07:00	578	579	561			572			572	1718
08:00	908	953	954			938			938	2815
09:00	996	1082	1042			1040			1040	3120
10:00	861	931	927			906			906	2719
11:00	932	942	929			934			934	2803
12:00	961	966	1017			981			981	2944
13:00	1047	1069	1137			1084			1084	3253
14:00	1126	1225	1169			1173			1173	3520
15:00	1290	1351	1366			1335			1335	4007
16:00	1741	1769	1762			1757			1757	5272
17:00	1968	1959	2050			1992			1992	5977
18:00	2189	2303				2246			2246	4492
19:00	2062	2043				2052			2052	4105
20:00	1402	1340				1371			1371	2742
21:00	811	882				846			846	1693
22:00	657	730				693			693	1387
23:00	476	606				541			541	1082
24:00	366	421				393			393	787
TOTALS	21460	22293	13906	0	0	21927	0	0	21927	57659
% AVG WKDY	97.8	101.6	63.4							
% AVG WEEK	97.8	101.6	63.4							
AM Times	09:00	09:00	09:00			09:00			09:00	
AM Peaks	996	1082	1042			1040			1040	
PM Times	18:00	18:00	17:00			18:00			18:00	
PM Peaks	2189	2303	2050			2246			2246	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE
Starting: 6/1/2015

STA. 3 TOTAL

Site Reference: 150140000595
Site ID: 000000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: 30102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	201	190	213	247		212			212	851
02:00	140	125	132	145		135			135	542
03:00	80	72	94	87		83			83	333
04:00	101	91	106	103		100			100	401
05:00	268	222	254	264		252			252	1008
06:00	866	891	865	832		863			863	3454
07:00	1930	1972	1977	2040		1979			1979	7919
08:00	2401	2402	2561	2560		2481			2481	9924
09:00	2164	2218	2159	2354		2223			2223	8895
10:00	1622	1663	1740	1761		1696			1696	6786
11:00	1438	1438	1544	1632		1513			1513	6052
12:00	1477	1522	1532	1595		1531			1531	6126
13:00	1537	1603	1635	1788		1640			1640	6563
14:00	1616	1639	1729	1880		1716			1716	6864
15:00	1774	1905	1944	2021		1911			1911	7644
16:00	2075	2094	2238	2310		2179			2179	8717
17:00	2225	2247	2418	2394		2321			2321	9284
18:00	2363	2393	2433	2579		2442			2442	9768
19:00	2168	2158	2134			2153			2153	6460
20:00	1529	1544	1662			1578			1578	4735
21:00	998	1106	1342			1148			1148	3446
22:00	845	914	1115			958			958	2874
23:00	555	694	807			685			685	2056
24:00	354	435	488			425			425	1277
TOTALS	30727	31538	33122	26592	0	32224	0	0	32224	121979
% AVG WKDY	95.3	97.8	102.7	82.5						
% AVG WEEK	95.3	97.8	102.7	82.5						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	2401	2402	2561	2560		2481			2481	
PM Times	18:00	18:00	18:00	18:00		18:00			18:00	
PM Peaks	2363	2393	2433	2579		2442			2442	
D%	75	75	75	65						
K%	8	8	8	10						

U2

COMB AWD 32224
FAC .91
COMB ADT 29,300

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 1
Starting: 6/1/2015

Page: 1

STA. 3 NB

Site Reference: 150140000595
Site ID: 000000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: NORTH

File: 30102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	138	139	149	177		150			150	603
02:00	95	88	94	107		96			96	384
03:00	48	43	47	43		45			45	181
04:00	40	31	46	38		38			38	155
05:00	64	50	63	65		60			60	242
06:00	153	162	157	163		158			158	635
07:00	332	338	334	391		348			348	1395
08:00	615	646	697	709		666			666	2667
09:00	628	599	633	744		651			651	2604
10:00	544	533	608	594		569			569	2279
11:00	544	598	652	706		625			625	2500
12:00	660	687	713	716		694			694	2776
13:00	718	761	806	898		795			795	3183
14:00	828	839	873	957		874			874	3497
15:00	949	1048	1096	1068		1040			1040	4161
16:00	1264	1295	1353	1359		1317			1317	5271
17:00	1478	1466	1548	1484		1494			1494	5976
18:00	1638	1669	1631	1732		1667			1667	6670
19:00	1604	1567	1502			1557			1557	4673
20:00	1112	1067	1123			1100			1100	3302
21:00	630	734	859			741			741	2223
22:00	545	576	704			608			608	1825
23:00	351	465	533			449			449	1349
24:00	230	294	342			288			288	866
TOTALS	15208	15695	16563	11951	0	16030	0	0	16030	59417
% AVG WKDY	94.8	97.9	103.3	74.5						
% AVG WEEK	94.8	97.9	103.3	74.5						
AM Times	12:00	12:00	12:00	09:00		12:00			12:00	
AM Peaks	660	687	713	744		694			694	
PM Times	18:00	18:00	18:00	18:00		18:00			18:00	
PM Peaks	1638	1669	1631	1732		1667			1667	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 2
Starting: 6/1/2015

STA. 35B

Site Reference: 150140000595
Site ID: 000000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: SOUTH

File: 30102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	63	51	64	70		62			62	248
02:00	45	37	38	38		39			39	158
03:00	32	29	47	44		38			38	152
04:00	61	60	60	65		61			61	246
05:00	204	172	191	199		191			191	766
06:00	713	729	708	669		704			704	2819
07:00	1598	1634	1643	1649		1631			1631	6524
08:00	1786	1756	1864	1851		1814			1814	7257
09:00	1536	1619	1526	1610		1572			1572	6291
10:00	1078	1130	1132	1167		1126			1126	4507
11:00	894	840	892	926		888			888	3552
12:00	817	835	819	879		837			837	3350
13:00	819	842	829	890		845			845	3380
14:00	788	800	856	923		841			841	3367
15:00	825	857	848	953		870			870	3483
16:00	811	799	885	951		861			861	3446
17:00	747	781	870	910		827			827	3308
18:00	725	724	802	847		774			774	3098
19:00	564	591	632			595			595	1787
20:00	417	477	539			477			477	1433
21:00	368	372	483			407			407	1223
22:00	300	338	411			349			349	1049
23:00	204	229	274			235			235	707
24:00	124	141	146			137			137	411
TOTALS	15519	15843	16559	14641	0	16181	0	0	16181	62562
% AVG WKDY	95.9	97.9	102.3	90.4						
% AVG WEEK	95.9	97.9	102.3	90.4						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	1786	1756	1864	1851		1814			1814	
PM Times	15:00	15:00	16:00	15:00		15:00			15:00	
PM Peaks	825	857	885	953		870			870	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE
Starting: 6/1/2015

STA 4 TOTAL

Site Reference: 150140000513
Site ID: 000000000401
Location: NAHANT RD., SOUTH OF NAHANT ROTARY
Direction: ROAD TOTAL

File: 40102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	46	37	65	45		48			48	193
02:00	38	37	36	25		34			34	136
03:00	11	9	12	18		12			12	50
04:00	19	19	24	26		22			22	88
05:00	48	40	68	48		51			51	204
06:00	156	210	200	203		192			192	769
07:00	414	411	420	502		436			436	1747
08:00	643	648	738	785		703			703	2814
09:00	616	595	612	645		617			617	2468
10:00	535	513	586	615		562			562	2249
11:00	504	505	645	578		558			558	2232
12:00	580	596	591	581		587			587	2348
13:00	552	602	646	660		615			615	2460
14:00	611	653	655	731		662			662	2650
15:00	628	682	695	743		687			687	2748
16:00	658	760	735	862		753			753	3015
17:00	655	685	849	922		777			777	3111
18:00	714	680	892	906		798			798	3192
19:00	630	675	756			687			687	2061
20:00	429	497	663			529			529	1589
21:00	352	364	517			411			411	1233
22:00	216	283	373			290			290	872
23:00	139	183	239			187			187	561
24:00	99	108	138			115			115	345
TOTALS	9293	9792	11155	8895	0	10333	0	0	10333	39135
% AVG WKDY	89.9	94.7	107.9	86						
% AVG WEEK	89.9	94.7	107.9	86						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	643	648	738	785		703			703	
PM Times	18:00	16:00	18:00	17:00		18:00			18:00	
PM Peaks	714	760	892	922		798			798	
D%	65	55	65	55						
K%	8	8	8	10						

U5

COMB AWD 10333
FAC .87 (.97)
COMB ADT 8,700

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 1
Starting: 6/1/2015

Page: 1

STA · 4NB

Site Reference: 150140000513
Site ID: 000000000401
Location: NAHANT RD., SOUTH OF NAHANT ROTARY
Direction: NORTH

File: 40102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	16	10	23	14		15			15	63
02:00	16	14	11	6		11			11	47
03:00	5	4	7	8		6			6	24
04:00	12	11	8	14		11			11	45
05:00	34	27	41	25		31			31	127
06:00	128	163	161	141		148			148	593
07:00	328	327	319	379		338			338	1353
08:00	492	502	545	578		529			529	2117
09:00	403	411	404	397		403			403	1615
10:00	312	308	319	354		323			323	1293
11:00	290	280	360	314		311			311	1244
12:00	301	302	287	301		297			297	1191
13:00	270	282	312	320		296			296	1184
14:00	286	321	345	385		334			334	1337
15:00	302	316	309	356		320			320	1283
16:00	293	347	317	451		352			352	1408
17:00	237	296	337	430		325			325	1300
18:00	250	244	329	353		294			294	1176
19:00	214	208	309			243			243	731
20:00	129	164	293			195			195	586
21:00	134	117	215			155			155	466
22:00	76	112	137			108			108	325
23:00	56	55	90			67			67	201
24:00	40	48	56			48			48	144
TOTALS	4624	4869	5534	4826	0	5160	0	0	5160	19853
% AVG WKDY	89.6	94.3	107.2	93.5						
% AVG WEEK	89.6	94.3	107.2	93.5						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	492	502	545	578		529			529	
PM Times	15:00	16:00	14:00	16:00		16:00			16:00	
PM Peaks	302	347	345	451		352			352	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 2
Starting: 6/1/2015

STA · 4 SB

Site Reference: 150140000513
Site ID: 000000000401
Location: NAHANT RD., SOUTH OF NAHANT ROTARY
Direction: SOUTH

File: 40102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	30	27	42	31		32			32	130
02:00	22	23	25	19		22			22	89
03:00	6	5	5	10		6			6	26
04:00	7	8	16	12		10			10	43
05:00	14	13	27	23		19			19	77
06:00	28	47	39	62		44			44	176
07:00	86	84	101	123		98			98	394
08:00	151	146	193	207		174			174	697
09:00	213	184	208	248		213			213	853
10:00	223	205	267	261		239			239	956
11:00	214	225	285	264		247			247	988
12:00	279	294	304	280		289			289	1157
13:00	282	320	334	340		319			319	1276
14:00	325	332	310	346		328			328	1313
15:00	326	366	386	387		366			366	1465
16:00	365	413	418	411		401			401	1607
17:00	418	389	512	492		452			452	1811
18:00	464	436	563	553		504			504	2016
19:00	416	467	447			443			443	1330
20:00	300	333	370			334			334	1003
21:00	218	247	302			255			255	767
22:00	140	171	236			182			182	547
23:00	83	128	149			120			120	360
24:00	59	60	82			67			67	201
TOTALS	4669	4923	5621	4069	0	5164	0	0	5164	19282
% AVG WKDY	90.4	95.3	108.8	78.7						
% AVG WEEK	90.4	95.3	108.8	78.7						
AM Times	12:00	12:00	12:00	12:00		12:00			12:00	
AM Peaks	279	294	304	280		289			289	
PM Times	18:00	19:00	18:00	18:00		18:00			18:00	
PM Peaks	464	467	563	553		504			504	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE
Starting: 6/1/2015

STA. 5 TOTAL

Site Reference: 150140000645
Site ID: 000000000501
Location: LYNN SHORE DR., NORTH OF NAHANT ROTARY
Direction: ROAD TOTAL

File: 50102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	178	172	208	223		195			195	781
02:00	114	112	122	137		121			121	485
03:00	69	61	80	78		72			72	288
04:00	75	73	83	87		79			79	318
05:00	235	193	208	226		215			215	862
06:00	756	820	785	736		774			774	3097
07:00	1648	1714	1770	1793		1731			1731	6925
08:00	2093	2205	2236	2184		2179			2179	8718
09:00	1890	2029	1949	2105		1993			1993	7973
10:00	1414	1501	1617	1638		1542			1542	6170
11:00	1302	1359	1429	1455		1386			1386	5545
12:00	1333	1399	1426	1570		1432			1432	5728
13:00	1342	1449	1531	1643		1491			1491	5965
14:00	1434	1638	1629	1748		1612			1612	6449
15:00	1677	1938	1935	1947		1874			1874	7497
16:00	1917	2204	2275	2306		2175			2175	8702
17:00	2109	2458	2584	2382		2383			2383	9533
18:00	2209	2503	2523	2552		2446			2446	9787
19:00	2079	2371	2362			2270			2270	6812
20:00	1392	1542	1850			1594			1594	4784
21:00	965	1089	1352			1135			1135	3406
22:00	749	899	1095			914			914	2743
23:00	492	621	744			619			619	1857
24:00	323	392	481			398			398	1196
TOTALS	27795	30742	32274	24810	0	30630	0	0	30630	115621
% AVG WKDY	90.7	100.3	105.3	80.9						
% AVG WEEK	90.7	100.3	105.3	80.9						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	2093	2205	2236	2184		2179			2179	
PM Times	18:00	18:00	17:00	18:00		18:00			18:00	
PM Peaks	2209	2503	2584	2552		2446			2446	
D%	70	70	65	65						
K%	8	8	8	10						

U2

COMB AWD 30630
FAC .91 (.96)
COMB ADT 26,800

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 1
Starting: 6/1/2015

STA 5 NB

Site Reference: 150140000645
Site ID: 000000000501
Location: LYNN SHORE DR., NORTH OF NAHANT ROTARY
Direction: NORTH

File: 50102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	122	126	148	163		139			139	559
02:00	81	78	86	97		85			85	342
03:00	45	39	42	44		42			42	170
04:00	29	24	33	35		30			30	121
05:00	64	44	52	47		51			51	207
06:00	156	182	163	143		161			161	644
07:00	320	347	367	390		356			356	1424
08:00	698	807	778	757		760			760	3040
09:00	638	664	709	783		698			698	2794
10:00	504	537	595	606		560			560	2242
11:00	549	620	639	659		616			616	2467
12:00	608	688	679	772		686			686	2747
13:00	647	721	755	825		737			737	2948
14:00	730	913	871	926		860			860	3440
15:00	928	1142	1111	1080		1065			1065	4261
16:00	1169	1438	1439	1424		1367			1367	5470
17:00	1399	1690	1676	1530		1573			1573	6295
18:00	1498	1772	1677	1681		1657			1657	6628
19:00	1523	1731	1699			1651			1651	4953
20:00	966	1080	1292			1112			1112	3338
21:00	638	707	889			744			744	2234
22:00	475	560	683			572			572	1718
23:00	329	417	492			412			412	1238
24:00	217	270	338			275			275	825
TOTALS	14333	16597	17213	11962	0	16209	0	0	16209	60105
% AVG WKDY	88.4	102.3	106.1	73.7						
% AVG WEEK	88.4	102.3	106.1	73.7						
AM Times	08:00	08:00	08:00	09:00		08:00			08:00	
AM Peaks	698	807	778	783		760			760	
PM Times	19:00	18:00	19:00	18:00		18:00			18:00	
PM Peaks	1523	1772	1699	1681		1657			1657	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE. 2
Starting: 6/1/2015

STA. SSB

Site Reference: 150140000645
Site ID: 000000000501
Location: LYNN SHORE DR., NORTH OF NAHANT ROTARY
Direction: SOUTH

File: 50102.prn
City: LYNN
County: VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	56	46	60	60		55			55	222
02:00	33	34	36	40		35			35	143
03:00	24	22	38	34		29			29	118
04:00	46	49	50	52		49			49	197
05:00	171	149	156	179		163			163	655
06:00	600	638	622	593		613			613	2453
07:00	1328	1367	1403	1403		1375			1375	5501
08:00	1395	1398	1458	1427		1419			1419	5678
09:00	1252	1365	1240	1322		1294			1294	5179
10:00	910	964	1022	1032		982			982	3928
11:00	753	739	790	796		769			769	3078
12:00	725	711	747	798		745			745	2981
13:00	695	728	776	818		754			754	3017
14:00	704	725	758	822		752			752	3009
15:00	749	796	824	867		809			809	3236
16:00	748	766	836	882		808			808	3232
17:00	710	768	908	852		809			809	3238
18:00	711	731	846	871		789			789	3159
19:00	556	640	663			619			619	1859
20:00	426	462	558			482			482	1446
21:00	327	382	463			390			390	1172
22:00	274	339	412			341			341	1025
23:00	163	204	252			206			206	619
24:00	106	122	143			123			123	371
TOTALS	13462	14145	15061	12848	0	14410	0	0	14410	55516
% AVG WKDY	93.4	98.1	104.5	89.1						
% AVG WEEK	93.4	98.1	104.5	89.1						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	1395	1398	1458	1427		1419			1419	
PM Times	15:00	15:00	17:00	16:00		15:00			15:00	
PM Peaks	749	796	908	882		809			809	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE
Starting: 6/1/2015

STA 6 TOTAL

Site Reference: 150140000714
Site ID: 000000060102
Location: WASHINGTON ST., NORTH OF AMITY ST.
Direction: ROAD TOTAL

File: 60102.prn
City: LYNN
County: DIR VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	12	14	19	24		17			17	69
02:00	20	12	14	13		14			14	59
03:00	10	5	10	15		10			10	40
04:00	8	11	9	12		10			10	40
05:00	11	13	11	12		11			11	47
06:00	31	40	35	34		35			35	140
07:00	106	119	117	114		114			114	456
08:00	165	176	195	169		176			176	705
09:00	169	145	202	140		164			164	656
10:00	113	105	157	126		125			125	501
11:00	101	116	122	110		112			112	449
12:00	114	140	125	129		127			127	508
13:00	138	128	160	137		140			140	563
14:00	140	115	149	136		135			135	540
15:00	138	142	148	143		142			142	571
16:00	133	161	151	165		152			152	610
17:00	145	173	166	167		162			162	651
18:00	164	144	178	157		160			160	643
19:00	130	116	144			130			130	390
20:00	93	107	95			98			98	295
21:00	73	89	108			90			90	270
22:00	80	65	95			80			80	240
23:00	38	44	46			42			42	128
24:00	27	35	29			30			30	91
TOTALS	2159	2215	2485	1803	0	2276	0	0	2276	8662
% AVG WKDY	94.8	97.3	109.1	79.2						
% AVG WEEK	94.8	97.3	109.1	79.2						
AM Times	09:00	08:00	09:00	08:00		08:00			08:00	
AM Peaks	169	176	202	169		176			176	
PM Times	18:00	17:00	18:00	17:00		17:00			17:00	
PM Peaks	164	173	178	167		162			162	
D%	60	65	60	60						
K%	8	8	8	9						

u5

COMB AWD 2276
FAC .87(.97)
COMB ADT 1,900

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 1
Starting: 6/1/2015

Page: 1

STA 6 NB

Site Reference: 150140000714
Site ID: 000000060102
Location: WASHINGTON ST., NORTH OF AMITY ST.
Direction: NORTH

File: 60102.prn
City: LYNN
County: DIR VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	3	10	9	13		8			8	35
02:00	13	6	9	7		8			8	35
03:00	7	4	4	10		6			6	25
04:00	6	7	8	8		7			7	29
05:00	8	8	8	9		8			8	33
06:00	16	21	16	19		18			18	72
07:00	72	77	77	78		76			76	304
08:00	105	118	127	104		113			113	454
09:00	101	77	119	73		92			92	370
10:00	40	55	74	44		53			53	213
11:00	40	47	56	45		47			47	188
12:00	51	82	56	57		61			61	246
13:00	71	63	84	58		69			69	276
14:00	60	49	72	56		59			59	237
15:00	70	76	71	67		71			71	284
16:00	61	74	66	82		70			70	283
17:00	75	92	78	81		81			81	326
18:00	78	73	88	76		78			78	315
19:00	66	46	49			53			53	161
20:00	49	51	39			46			46	139
21:00	31	52	62			48			48	145
22:00	47	40	56			47			47	143
23:00	13	19	26			19			19	58
24:00	10	14	12			12			12	36
TOTALS	1093	1161	1266	887	0	1150	0	0	1150	4407
% AVG WKDY	95	100.9	110	77.1						
% AVG WEEK	95	100.9	110	77.1						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	105	118	127	104		113			113	
PM Times	18:00	17:00	18:00	16:00		17:00			17:00	
PM Peaks	78	92	88	82		81			81	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 2
Starting: 6/1/2015

STA. 6 SB

Site Reference: 150140000714
Site ID: 000000060102
Location: WASHINGTON ST., NORTH OF AMITY ST.
Direction: SOUTH

File: 60102.prn
City: LYNN
County: DIR VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	9	4	10	11		8			8	34
02:00	7	6	5	6		6			6	24
03:00	3	1	6	5		3			3	15
04:00	2	4	1	4		2			2	11
05:00	3	5	3	3		3			3	14
06:00	15	19	19	15		17			17	68
07:00	34	42	40	36		38			38	152
08:00	60	58	68	65		62			62	251
09:00	68	68	83	67		71			71	286
10:00	73	50	83	82		72			72	288
11:00	61	69	66	65		65			65	261
12:00	63	58	69	72		65			65	262
13:00	67	65	76	79		71			71	287
14:00	80	66	77	80		75			75	303
15:00	68	66	77	76		71			71	287
16:00	72	87	85	83		81			81	327
17:00	70	81	88	86		81			81	325
18:00	86	71	90	81		82			82	328
19:00	64	70	95			76			76	229
20:00	44	56	56			52			52	156
21:00	42	37	46			41			41	125
22:00	33	25	39			32			32	97
23:00	25	25	20			23			23	70
24:00	17	21	17			18			18	55
TOTALS	1066	1054	1219	916	0	1115	0	0	1115	4255
% AVG WKDY	95.6	94.5	109.3	82.1						
% AVG WEEK	95.6	94.5	109.3	82.1						
AM Times	10:00	11:00	09:00	10:00		10:00			10:00	
AM Peaks	73	69	83	82		72			72	
PM Times	18:00	16:00	19:00	17:00		18:00			18:00	
PM Peaks	86	87	95	86		82			82	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE
Starting: 6/1/2015

STA. 7 TOTAL

Site Reference: 150140000426
Site ID: 000000070102
Location: BROAD ST., WEST OF WASHINGTON ST.
Direction: ROAD TOTAL

File: 70102.prn
City: LYNN
County: DIR VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	150	145	165	154		153			153	614
02:00	116	98	81	99		98			98	394
03:00	73	53	83	73		70			70	282
04:00	69	67	76	67		69			69	279
05:00	97	98	100	85		95			95	380
06:00	253	266	250	247		254			254	1016
07:00	741	744	756	749		747			747	2990
08:00	1013	1111	1027	1094		1061			1061	4245
09:00	985	1049	1029	984		1011			1011	4047
10:00	788	843	812	873		829			829	3316
11:00	813	822	802	816		813			813	3253
12:00	850	889	870	858		866			866	3467
13:00	962	967	946	921		949			949	3796
14:00	972	977	994	979		980			980	3922
15:00	1015	1036	1034	1061		1036			1036	4146
16:00	1157	1110	1055	1177		1124			1124	4499
17:00	1133	1161	1181	1233		1177			1177	4708
18:00	1320	1330	1327	1359		1334			1334	5336
19:00	1045	1117	1176			1112			1112	3338
20:00	811	781	837			809			809	2429
21:00	636	599	680			638			638	1915
22:00	534	509	574			539			539	1617
23:00	333	358	419			370			370	1110
24:00	199	213	245			219			219	657
TOTALS	16065	16343	16519	12829	0	16353	0	0	16353	61756
% AVG WKDY	98.2	99.9	101	78.4						
% AVG WEEK	98.2	99.9	101	78.4						
AM Times	08:00	08:00	09:00	08:00		08:00			08:00	
AM Peaks	1013	1111	1029	1094		1061			1061	
PM Times	18:00	18:00	18:00	18:00		18:00			18:00	
PM Peaks	1320	1330	1327	1359		1334			1334	
D%	50	55	55	55						
K%	8	8	8	11						

U5

COMB AWD 16353
FAC .87(.97)
COMB ADT 13,800

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 1
Starting: 6/1/2015

STA. 7 NB

Site Reference: 150140000426
Site ID: 000000070102
Location: BROAD ST., WEST OF WASHINGTON ST.
Direction: NORTH

File: 70102.prn
City: LYNN
County: DIR VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	70	85	88	79		80			80	322
02:00	63	47	44	56		52			52	210
03:00	35	23	33	30		30			30	121
04:00	32	22	33	30		29			29	117
05:00	34	36	33	27		32			32	130
06:00	75	86	75	63		74			74	299
07:00	143	169	165	152		157			157	629
08:00	274	269	281	324		287			287	1148
09:00	332	329	336	302		324			324	1299
10:00	284	293	314	308		299			299	1199
11:00	328	320	314	346		327			327	1308
12:00	338	339	340	332		337			337	1349
13:00	422	409	395	386		403			403	1612
14:00	443	423	442	435		435			435	1743
15:00	419	467	425	444		438			438	1755
16:00	558	511	525	541		533			533	2135
17:00	570	587	578	593		582			582	2328
18:00	686	731	744	753		728			728	2914
19:00	586	580	642			602			602	1808
20:00	432	380	415			409			409	1227
21:00	295	297	311			301			301	903
22:00	224	222	273			239			239	719
23:00	167	199	210			192			192	576
24:00	87	122	128			112			112	337
TOTALS	6897	6946	7144	5201	0	7002	0	0	7002	26188
% AVG WKDY	98.5	99.2	102	74.2						
% AVG WEEK	98.5	99.2	102	74.2						
AM Times	12:00	12:00	12:00	11:00		12:00			12:00	
AM Peaks	338	339	340	346		337			337	
PM Times	18:00	18:00	18:00	18:00		18:00			18:00	
PM Peaks	686	731	744	753		728			728	

MassDOT Highway Division
WEEKLY SUMMARY FOR LANE 2
Starting: 6/1/2015

STA. 7 SB

Site Reference: 150140000426
Site ID: 000000070102
Location: BROAD ST., WEST OF WASHINGTON ST.
Direction: SOUTH

File: 70102.prn
City: LYNN
County: DIR VOL N&S

TIME	MON 1	TUE 2	WED 3	THU 4	FRI	WKDAY AVG	SAT	SUN	WEEK AVG	TOTAL
01:00	80	60	77	75		73			73	292
02:00	53	51	37	43		46			46	184
03:00	38	30	50	43		40			40	161
04:00	37	45	43	37		40			40	162
05:00	63	62	67	58		62			62	250
06:00	178	180	175	184		179			179	717
07:00	598	575	591	597		590			590	2361
08:00	739	842	746	770		774			774	3097
09:00	653	720	693	682		687			687	2748
10:00	504	550	498	565		529			529	2117
11:00	485	502	488	470		486			486	1945
12:00	512	550	530	526		529			529	2118
13:00	540	558	551	535		546			546	2184
14:00	529	554	552	544		544			544	2179
15:00	596	569	609	617		597			597	2391
16:00	599	599	530	636		591			591	2364
17:00	563	574	603	640		595			595	2380
18:00	634	599	583	606		605			605	2422
19:00	459	537	534			510			510	1530
20:00	379	401	422			400			400	1202
21:00	341	302	369			337			337	1012
22:00	310	287	301			299			299	898
23:00	166	159	209			178			178	534
24:00	112	91	117			106			106	320
TOTALS	9168	9397	9375	7628	0	9343	0	0	9343	35568
% AVG WKDY	98.1	100.5	100.3	81.6						
% AVG WEEK	98.1	100.5	100.3	81.6						
AM Times	08:00	08:00	08:00	08:00		08:00			08:00	
AM Peaks	739	842	746	770		774			774	
PM Times	18:00	16:00	15:00	17:00		18:00			18:00	
PM Peaks	634	599	609	640		605			605	

Turning Movement Volumes

Study Name Lynn - Route 1A/Lynnway at Harding Street and Dealership Driveway TM1 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound						Northbound						Eastbound								Crosswalk	
Time Period	**Class.**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**Total**		**Pedestrians**	**Total**
Peak 1	Motorcycles	0	3	0	0	3	3	0	0	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	0	6	N	0	0
Specified Period	%	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%		0%	
7:00 AM - 9:00 AM	Cars	13	2330	11	50	2404	819	2	0	19	0	21	21	10	764	6	14	794	2363	0	0	3	0	3	19	3222	E	2	2
One Hour Peak	%	93%	91%	85%	93%	91%	85%	100%	0%	73%	0%	75%	64%	50%	85%	86%	100%	84%	91%	0%	0%	75%	0%	75%	90%	89%		100%	
7:00 AM - 8:00 AM	Light Goods Vehicles	0	173	1	4	178	90	0	0	0	0	0	5	4	86	1	0	91	173	0	0	0	0	0	1	269	S	0	0
	%	0%	7%	8%	7%	7%	9%	0%	0%	0%	0%	0%	15%	20%	10%	14%	0%	10%	7%	0%	0%	0%	0%	0%	5%	7%		0%	
	Buses	0	22	0	0	22	16	0	0	0	0	0	0	0	16	0	0	16	22	0	0	0	0	0	0	38	W	6	6
	%	0%	1%	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%	1%		100%	
	Single-Unit Trucks	1	29	1	0	31	29	0	0	5	0	5	7	6	28	0	0	34	34	0	0	1	0	1	1	71		**8**	**8**
	%	7%	1%	8%	0%	1%	3%	0%	0%	19%	0%	18%	21%	30%	3%	0%	0%	4%	1%	0%	0%	25%	0%	25%	5%	2%			
	Articulated Trucks	0	6	0	0	6	3	0	0	2	0	2	0	0	3	0	0	3	8	0	0	0	0	0	0	11			
	%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**14**	**2563**	**13**	**54**	**2644**	**960**	**2**	**0**	**26**	**0**	**28**	**33**	**20**	**900**	**7**	**14**	**941**	**2603**	**0**	**0**	**4**	**0**	**4**	**21**	**3617**			
	PHF	0.44	0.88	0.65	0.79	0.89	0.86	0.5	0	0.65	0	0.64	0.82	0.71	0.84	0.58	0.5	0.84	0.88	0	0	0.5	0	0.5	0.48	0.91			
	Approach %					73%	27%					1%	1%					26%	72%					0%	1%				
Peak 2	Motorcycles	0	4	0	4	8	12	1	0	0	0	1	0	0	7	0	0	7	4	0	0	0	0	0	0	16	N	4	4
Specified Period	%	0%	0%	0%	4%	1%	0%	3%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
4:00 PM - 6:00 PM	Cars	12	1132	55	97	1296	2237	27	0	36	0	63	109	54	2088	0	41	2183	1210	1	0	25	0	26	12	3568	E	8	8
One Hour Peak	%	80%	92%	86%	93%	91%	91%	69%	0%	88%	0%	79%	87%	87%	91%	0%	98%	91%	91%	33%	0%	86%	0%	81%	71%	91%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	0	80	4	3	87	161	2	0	3	0	5	5	1	154	1	1	157	84	0	0	2	0	2	1	251	S	2	2
	%	0%	6%	6%	3%	6%	7%	5%	0%	7%	0%	6%	4%	2%	7%	50%	2%	7%	6%	0%	0%	7%	0%	6%	6%	6%		100%	
	Buses	0	9	0	0	9	17	0	0	0	0	0	0	0	17	0	0	17	9	0	0	0	0	0	0	26	W	20	20
	%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%		100%	
	Single-Unit Trucks	3	11	4	0	18	23	6	0	1	0	7	11	7	15	1	0	23	14	2	0	2	0	4	4	52		**34**	**34**
	%	20%	1%	6%	0%	1%	1%	15%	0%	2%	0%	9%	9%	11%	1%	50%	0%	1%	1%	67%	0%	7%	0%	13%	24%	1%			
	Articulated Trucks	0	0	1	0	1	5	3	0	1	0	4	1	0	2	0	0	2	1	0	0	0	0	0	0	7			
	%	0%	0%	2%	0%	0%	0%	8%	0%	2%	0%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1			
	%	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%			
	Total	**15**	**1237**	**64**	**104**	**1420**	**2455**	**39**	**0**	**41**	**0**	**80**	**126**	**62**	**2283**	**2**	**42**	**2389**	**1323**	**3**	**0**	**29**	**0**	**32**	**17**	**3921**			
	PHF	0.75	0.9	0.55	0.84	0.95	0.96	0.75	0	0.79	0	0.83	0.79	0.82	0.96	0.5	0.75	0.97	0.91	0.25	0	0.91	0	0.73	0.71	0.99			
	Approach %					36%	63%					2%	3%					61%	34%					1%	0%				

Study Name Lynn - Route 1A/Lynnway at Harding Street and Dealership Driveway TM1 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound						Northbound						Eastbound								Crosswalk	
Time Period	**Class.**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**R**	**T**	**L**	**U**	**I**	**O**	**Total**		**Pedestrians**	**Total**
Peak 1	Motorcycles	0	19	1	1	21	21	0	0	0	0	0	4	3	20	0	0	23	19	0	0	0	0	0	0	44	N	0	0
Specified Period	%	0%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	2%	4%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%		0%	
12:00 PM - 2:00 PM	Cars	6	1482	86	102	1676	1562	35	1	31	0	67	155	67	1415	2	77	1561	1593	3	2	10	0	15	9	3319	E	14	14
One Hour Peak	%	43%	91%	91%	97%	91%	91%	85%	100%	89%	0%	87%	91%	92%	91%	100%	96%	91%	91%	60%	100%	71%	0%	71%	53%	91%		100%	
12:45 PM - 1:45 PM	Light Goods Vehicles	4	91	4	2	101	97	2	0	1	0	3	5	1	91	0	2	94	94	0	0	2	0	2	4	200	S	0	0
	%	29%	6%	4%	2%	5%	6%	5%	0%	3%	0%	4%	3%	1%	6%	0%	3%	6%	5%	0%	0%	14%	0%	10%	24%	5%		0%	
	Buses	0	12	0	0	12	10	0	0	0	0	0	0	0	10	0	0	10	12	0	0	0	0	0	0	22	W	15	15
	%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%		100%	
	Single-Unit Trucks	2	22	3	0	27	13	0	0	1	0	1	4	1	12	0	1	14	25	1	0	1	0	2	2	44		**29**	**29**
	%	14%	1%	3%	0%	1%	1%	0%	0%	3%	0%	1%	2%	1%	1%	0%	1%	1%	1%	20%	0%	7%	0%	10%	12%	1%			
	Articulated Trucks	2	2	1	0	5	8	4	0	2	0	6	2	1	3	0	0	4	5	1	0	1	0	2	2	17			
	%	14%	0%	1%	0%	0%	0%	10%	0%	6%	0%	8%	1%	1%	0%	0%	0%	0%	0%	20%	0%	7%	0%	10%	12%	0%			
	Bicycles on Road	0	3	0	0	3	3	0	0	0	0	0	0	0	3	0	0	3	3	0	0	0	0	0	0	6			
	%	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%			
	Total	**14**	**1631**	**95**	**105**	**1845**	**1714**	**41**	**1**	**35**	**0**	**77**	**170**	**73**	**1554**	**2**	**80**	**1709**	**1751**	**5**	**2**	**14**	**0**	**21**	**17**	**3652**			
	PHF	0.58	0.96	0.85	0.82	0.95	0.95	0.68	0.25	0.8	0	0.71	0.82	0.7	0.91	0.5	0.77	0.94	0.95	0.42	0.25	0.5	0	0.58	0.61	0.98			
	Approach %					51%	47%					2%	5%					47%	48%					1%	0%				

Study Name Lynn - Route 1A/Lynnway and Commercial Street TM2 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound		Northbound						Eastbound								Crosswalk	
Time Period	Class.	R	T	L	U	I	O	I	O	R	T	L	U	I	O	R	T	L	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	1	1	0	0	2	3	0	0	0	2	0	0	2	3	2	0	1	0	3	1	7	N	2	2
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
7:00 AM - 9:00 AM	Cars	234	1913	0	0	2147	838	0	76	3	648	184	24	859	2442	505	73	190	0	768	418	3774	E	7	7
One Hour Peak	%	85%	91%	0%	0%	91%	83%	0%	75%	38%	85%	79%	89%	83%	91%	91%	78%	78%	0%	86%	82%	88%		100%	
7:00 AM - 8:00 AM	Light Goods Vehicles	24	134	0	0	158	107	0	15	1	68	25	2	96	168	32	14	39	0	85	49	339	S	4	4
	%	9%	6%	0%	0%	7%	11%	0%	15%	13%	9%	11%	7%	9%	6%	6%	15%	16%	0%	10%	10%	8%		100%	
	Buses	8	21	0	0	29	16	0	1	0	12	3	1	16	24	2	1	4	0	7	11	52	W	4	4
	%	3%	1%	0%	0%	1%	2%	0%	1%	0%	2%	1%	4%	2%	1%	0%	1%	2%	0%	1%	2%	1%		100%	
	Single-Unit Trucks	6	16	0	0	22	41	0	9	3	31	20	0	54	28	12	6	10	0	28	26	104		**17**	**17**
	%	2%	1%	0%	0%	1%	4%	0%	9%	38%	4%	9%	0%	5%	1%	2%	6%	4%	0%	3%	5%	2%			
	Articulated Trucks	1	6	0	0	7	5	0	1	1	4	1	0	6	6	0	0	1	0	1	2	14			
	%	0%	0%	0%	0%	0%	0%	0%	1%	13%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**274**	**2091**	**0**	**0**	**2365**	**1010**	**0**	**102**	**8**	**765**	**233**	**27**	**1033**	**2671**	**553**	**94**	**245**	**0**	**892**	**507**	**4290**			
	PHF	0.84	0.95	0	0	0.97	0.84	0	0.85	0.67	0.87	0.91	0.75	0.9	0.95	0.82	0.87	0.75	0	0.92	0.94	0.97			
	Approach %					55%	24%	0%	2%					24%	62%					21%	12%				
Peak 2	Motorcycles	2	3	0	0	5	1	0	1	0	1	10	2	13	7	2	1	0	0	3	12	21	N	0	0
Specified Period	%	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	2%	5%	0%	1%	1%	4%	0%	0%	0%	1%	0%		0%	
4:00 PM - 6:00 PM	Cars	249	963	0	0	1212	2192	0	22	1	1917	465	35	2418	1250	252	21	275	0	548	714	4178	E	3	3
One Hour Peak	%	85%	90%	0%	0%	89%	92%	0%	79%	33%	93%	87%	88%	92%	89%	88%	84%	83%	0%	85%	86%	90%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	31	82	0	0	113	152	0	1	0	104	45	3	152	107	22	1	48	0	71	76	336	S	13	13
	%	11%	8%	0%	0%	8%	6%	0%	4%	0%	5%	8%	8%	6%	8%	8%	4%	14%	0%	11%	9%	7%		100%	
	Buses	1	8	0	0	9	23	0	0	0	18	2	0	20	9	1	0	5	0	6	3	35	W	6	6
	%	0%	1%	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%	1%	1%	0%	0%	2%	0%	1%	0%	1%		100%	
	Single-Unit Trucks	8	13	0	0	21	15	0	4	2	11	14	0	27	21	8	2	4	0	14	22	62		**22**	**22**
	%	3%	1%	0%	0%	2%	1%	0%	14%	67%	1%	3%	0%	1%	2%	3%	8%	1%	0%	2%	3%	1%			
	Articulated Trucks	1	3	0	0	4	7	0	0	0	6	1	0	7	3	0	0	1	0	1	2	12			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**292**	**1073**	**0**	**0**	**1365**	**2390**	**0**	**28**	**3**	**2057**	**537**	**40**	**2637**	**1398**	**285**	**25**	**333**	**0**	**643**	**829**	**4645**			
	PHF	0.96	0.88	0	0	0.91	1	0	0.58	0.38	0.97	0.87	0.83	0.94	0.94	0.9	0.52	0.82	0	0.88	0.92	0.97			
	Approach %					29%	51%	0%	1%					57%	30%					14%	18%				

Study Name Lynn - Route 1A/Lynnway and Commercial Street TM2 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound		Northbound						Eastbound								Crosswalk	
Time Period	Class.	R	T	L	U	I	O	I	O	R	T	L	U	I	O	R	T	L	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	2	12	0	0	14	12	0	0	0	11	4	1	16	18	5	0	1	0	6	6	36	N	0	0
Specified Period	%	1%	1%	0%	0%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%		0%	
12:00 PM - 2:00 PM	Cars	235	1079	0	0	1314	1590	0	55	8	1303	409	62	1782	1568	427	47	287	0	761	644	3857	E	9	9
One Hour Peak	%	90%	91%	0%	0%	91%	93%	0%	64%	100%	94%	86%	86%	92%	91%	93%	60%	88%	0%	88%	87%	91%		100%	
12:15 PM - 1:15 PM	Light Goods Vehicles	17	73	0	0	90	67	0	27	0	38	55	9	102	104	22	27	29	0	78	72	270	S	5	5
	%	7%	6%	0%	0%	6%	4%	0%	31%	0%	3%	12%	13%	5%	6%	5%	35%	9%	0%	9%	10%	6%		100%	
	Buses	1	8	0	0	9	17	0	0	0	10	0	0	10	8	0	0	7	0	7	1	26	W	1	1
	%	0%	1%	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	2%	0%	1%	0%	1%		100%	
	Single-Unit Trucks	6	17	0	0	23	13	0	4	0	10	5	0	15	21	4	4	3	0	11	11	49		**15**	**15**
	%	2%	1%	0%	0%	2%	1%	0%	5%	0%	1%	1%	0%	1%	1%	1%	5%	1%	0%	1%	1%	1%			
	Articulated Trucks	0	1	0	0	1	1	0	0	0	1	3	0	4	3	2	0	0	0	2	3	7			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	0	0	0	0	10	0	0	0	9	0	0	9	0	0	0	1	0	1	0	10			
	%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**261**	**1190**	**0**	**0**	**1451**	**1710**	**0**	**86**	**8**	**1382**	**476**	**72**	**1938**	**1722**	**460**	**78**	**328**	**0**	**866**	**737**	**4255**			
	PHF	0.92	0.96	0	0	0.95	0.97	0	0.8	0.67	0.98	0.95	0.86	0.98	0.97	0.94	0.75	0.88	0	0.98	0.96	0.98			
	Approach %					34%	40%	0%	2%					46%	40%					20%	17%				

Study Name	Lynn - Route 1A/Lynnfield at Marine Boulevard and Shepard Street TM3 TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound						Westbound						Northbound						Eastbound								Crosswalk	
Time Period	Class.	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	5	0	0	5	2	0	0	0	0	0	0	0	2	0	0	2	5	0	0	0	0	0	0	7	N	0	0
Specified Period	%	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%		0%	
7:00 AM - 9:00 AM	Cars	29	2029	6	53	2117	1016	1	0	2	0	3	15	4	942	36	3	985	2049	15	5	20	0	40	65	3145	E	7	7
One Hour Peak	%	81%	91%	86%	84%	91%	86%	25%	0%	18%	0%	20%	47%	22%	87%	82%	100%	86%	91%	100%	71%	59%	0%	71%	81%	89%		100%	
7:30 AM - 8:30 AM	Light Goods Vehicles	5	124	0	9	138	98	1	0	3	0	4	4	3	76	3	0	82	127	0	1	12	0	13	8	237	S	0	0
	%	14%	6%	0%	14%	6%	8%	25%	0%	27%	0%	27%	13%	17%	7%	7%	0%	7%	6%	0%	14%	35%	0%	23%	10%	7%		0%	
	Buses	1	27	1	0	29	16	1	0	3	0	4	12	10	15	3	0	28	30	0	1	0	0	1	4	62	W	9	9
	%	3%	1%	14%	0%	1%	1%	25%	0%	27%	0%	27%	38%	56%	1%	7%	0%	2%	1%	0%	14%	0%	0%	2%	5%	2%		100%	
	Single-Unit Trucks	1	29	0	0	30	45	1	0	1	0	2	0	0	42	2	0	44	30	0	0	2	0	2	3	78		**16**	**16**
	%	3%	1%	0%	0%	1%	4%	25%	0%	9%	0%	13%	0%	0%	4%	5%	0%	4%	1%	0%	0%	6%	0%	4%	4%	2%			
	Articulated Trucks	0	12	0	0	12	5	0	0	2	0	2	1	1	5	0	0	6	14	0	0	0	0	0	0	20			
	%	0%	1%	0%	0%	1%	0%	0%	0%	18%	0%	13%	3%	6%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%			
	Bicycles on Road	0	1	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2			
	%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**36**	**2227**	**7**	**63**	**2333**	**1183**	**4**	**0**	**11**	**0**	**15**	**32**	**18**	**1082**	**44**	**3**	**1147**	**2256**	**15**	**7**	**34**	**0**	**56**	**80**	**3551**			
	PHF	0.64	0.96	0.58	0.61	0.95	0.94	0.5	0	0.92	0	0.75	0.8	0.5	0.94	0.69	0.38	0.93	0.96	0.54	0.44	0.71	0	0.82	0.67	0.95			
	Approach %					66%	33%					0%	1%					32%	64%					2%	2%				
Peak 2	Motorcycles	0	6	0	0	6	0	0	0	0	0	0	0	0	0	1	0	1	6	0	0	0	0	0	1	7	N	0	0
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%		0%	
4:00 PM - 6:00 PM	Cars	17	1139	0	29	1185	2117	9	2	16	0	27	9	8	2049	123	22	2202	1195	18	1	30	0	49	142	3463	E	2	2
One Hour Peak	%	94%	88%	0%	91%	88%	92%	90%	67%	89%	0%	87%	45%	47%	92%	81%	96%	91%	88%	78%	50%	81%	0%	79%	83%	90%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	0	110	0	3	113	151	1	0	1	0	2	2	2	140	21	1	164	117	5	0	7	0	12	21	291	S	4	4
	%	0%	9%	0%	9%	8%	7%	10%	0%	6%	0%	6%	10%	12%	6%	14%	4%	7%	9%	22%	0%	19%	0%	19%	12%	8%		100%	
	Buses	1	10	0	0	11	19	0	1	0	0	1	5	4	19	4	0	27	10	0	1	0	0	1	6	40	W	10	10
	%	6%	1%	0%	0%	1%	1%	0%	33%	0%	0%	3%	25%	24%	1%	3%	0%	1%	1%	0%	50%	0%	0%	2%	3%	1%		100%	
	Single-Unit Trucks	0	19	1	0	20	19	0	0	1	0	1	3	2	19	2	0	23	20	0	0	0	0	0	2	44		**16**	**16**
	%	0%	1%	100%	0%	1%	1%	0%	0%	6%	0%	3%	15%	12%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	1%	1%			
	Articulated Trucks	0	4	0	0	4	6	0	0	0	0	0	1	1	6	0	0	7	4	0	0	0	0	0	0	11			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	2			
	%	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%			
	Total	**18**	**1289**	**1**	**32**	**1340**	**2313**	**10**	**3**	**18**	**0**	**31**	**20**	**17**	**2234**	**151**	**23**	**2425**	**1353**	**23**	**2**	**37**	**0**	**62**	**172**	**3858**			
	PHF	0.5	0.95	0.25	0.73	0.97	0.97	0.62	0.38	0.56	0	0.65	0.71	0.85	0.97	0.82	0.72	0.96	0.96	0.52	0.5	0.84	0	0.74	0.8	0.96			
	Approach %					35%	60%					1%	1%					63%	35%					2%	4%				

Study Name Lynn - Route 1A/Lynnfield at Marine Boulevard and Shepard Street TM3 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound						Northbound						Eastbound								Crosswalk	
Time Period	Class.	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	15	0	0	15	12	0	0	0	0	0	0	0	12	1	0	13	15	0	0	0	0	0	1	28	N	0	0
Specified Period	%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	1%	1%		0%	
12:00 PM - 2:00 PM	Cars	45	1264	0	54	1363	1500	1	6	2	0	9	4	4	1409	98	20	1531	1315	29	0	36	1	66	150	2969	E	2	2
One Hour Peak	%	92%	90%	0%	100%	91%	91%	33%	100%	67%	0%	75%	100%	100%	90%	84%	95%	90%	90%	94%	0%	100%	100%	97%	87%	90%		100%	
12:15 PM - 1:15 PM	Light Goods Vehicles	3	97	0	0	100	97	1	0	0	0	1	0	0	96	16	1	113	100	2	0	0	0	2	19	216	S	1	1
	%	6%	7%	0%	0%	7%	6%	33%	0%	0%	0%	8%	0%	0%	6%	14%	5%	7%	7%	6%	0%	0%	0%	3%	11%	7%		100%	
	Buses	0	7	0	0	7	18	0	0	0	0	0	0	0	18	0	0	18	7	0	0	0	0	0	0	25	W	4	4
	%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%		100%	
	Single-Unit Trucks	1	19	0	0	20	13	0	0	1	0	1	0	0	13	1	0	14	20	0	0	0	0	0	2	35		**7**	**7**
	%	2%	1%	0%	0%	1%	1%	0%	0%	33%	0%	8%	0%	0%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	1%	1%			
	Articulated Trucks	0	1	0	0	1	3	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	0	0	0	4			
	%	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%			
	Bicycles on Road	0	0	0	0	0	10	1	0	0	0	1	0	0	9	0	0	9	0	0	0	0	0	0	0	10			
	%	0%	0%	0%	0%	0%	1%	33%	0%	0%	0%	8%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**49**	**1403**	**0**	**54**	**1506**	**1653**	**3**	**6**	**3**	**0**	**12**	**4**	**4**	**1560**	**116**	**21**	**1701**	**1458**	**31**	**0**	**36**	**1**	**68**	**172**	**3287**			
	PHF	0.88	0.94	0	0.79	0.95	0.97	0.75	0.5	0.75	0	0.6	0.5	0.5	0.98	0.81	0.66	0.97	0.94	0.6	0	0.64	0.25	0.85	0.86	0.97			
	Approach %					46%	50%					0%	0%					52%	44%					2%	5%				

Study Name Lynn - Route 1A/Lynnway at Kingman Street and Small Smiles Dental Driveway TM4 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound						Northbound						Eastbound				Crosswalk	
Time Period	Class.	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	4	0	0	4	2	0	0	0	0	0	0	0	2	0	1	3	5	0	0	7	N	6	6
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%		100%	
7:00 AM - 9:00 AM	Cars	136	2060	71	13	2280	830	12	0	23	0	35	107	36	805	27	20	888	2103	0	163	3203	E	4	4
One Hour Peak	%	92%	93%	95%	76%	93%	83%	40%	0%	55%	0%	47%	92%	88%	84%	87%	83%	84%	92%	0%	90%	89%		100%	
7:30 AM - 8:30 AM	Light Goods Vehicles	11	104	3	3	121	98	0	0	3	0	3	5	2	95	2	3	102	110	0	13	226	S	1	1
	%	7%	5%	4%	18%	5%	10%	0%	0%	7%	0%	4%	4%	5%	10%	6%	13%	10%	5%	0%	7%	6%		100%	
	Buses	0	23	1	0	24	28	16	2	11	0	29	1	0	12	0	0	12	34	0	2	65	W	15	15
	%	0%	1%	1%	0%	1%	3%	53%	100%	26%	0%	39%	1%	0%	1%	0%	0%	1%	1%	0%	1%	2%		100%	
	Single-Unit Trucks	1	19	0	1	21	46	1	0	2	0	3	3	3	44	0	0	47	21	0	1	71		**26**	**26**
	%	1%	1%	0%	6%	1%	5%	3%	0%	5%	0%	4%	3%	7%	5%	0%	0%	4%	1%	0%	1%	2%			
	Articulated Trucks	0	10	0	0	10	2	1	0	3	0	4	0	0	1	2	0	3	13	0	2	17			
	%	0%	0%	0%	0%	0%	0%	3%	0%	7%	0%	5%	0%	0%	0%	6%	0%	0%	1%	0%	1%	0%			
	Bicycles on Road	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**148**	**2223**	**75**	**17**	**2463**	**1006**	**30**	**2**	**42**	**0**	**74**	**116**	**41**	**959**	**31**	**24**	**1055**	**2289**	**0**	**181**	**3592**			
	PHF	0.9	0.95	0.78	0.71	0.95	0.97	0.75	0.25	0.75	0	0.88	0.83	0.85	0.94	0.6	0.75	0.95	0.95	0	0.84	0.96			
	Approach %					69%	28%					2%	3%					29%	64%	0%	5%				
Peak 2	Motorcycles	0	6	0	0	6	1	1	0	0	0	1	0	0	0	0	0	0	6	0	0	7	N	10	10
Specified Period	%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
4:00 PM - 6:00 PM	Cars	33	1094	29	22	1178	2115	108	0	94	0	202	44	15	1985	14	39	2053	1227	0	47	3433	E	4	4
One Hour Peak	%	85%	89%	60%	79%	88%	91%	94%	0%	93%	0%	93%	66%	79%	91%	64%	95%	90%	90%	0%	75%	90%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	4	96	2	6	108	183	6	0	4	0	10	2	0	171	4	2	177	102	0	8	295	S	3	3
	%	10%	8%	4%	21%	8%	8%	5%	0%	4%	0%	5%	3%	0%	8%	18%	5%	8%	7%	0%	13%	8%		100%	
	Buses	0	14	16	0	30	13	0	1	2	0	3	16	0	13	0	0	13	16	0	1	46	W	20	20
	%	0%	1%	33%	0%	2%	1%	0%	50%	2%	0%	1%	24%	0%	1%	0%	0%	1%	1%	0%	2%	1%		100%	
	Single-Unit Trucks	2	13	0	0	15	22	0	0	0	0	0	1	1	22	3	0	26	13	0	5	41		**37**	**37**
	%	5%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	1%	5%	1%	14%	0%	1%	1%	0%	8%	1%			
	Articulated Trucks	0	2	1	0	3	2	0	1	1	0	2	4	3	2	1	0	6	3	0	2	11			
	%	0%	0%	2%	0%	0%	0%	0%	50%	1%	0%	1%	6%	16%	0%	5%	0%	0%	0%	0%	3%	0%			
	Bicycles on Road	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**39**	**1226**	**48**	**28**	**1341**	**2336**	**115**	**2**	**101**	**0**	**218**	**67**	**19**	**2193**	**22**	**41**	**2275**	**1368**	**0**	**63**	**3834**			
	PHF	0.7	0.96	0.8	0.78	0.97	0.97	0.61	0.5	0.74	0	0.67	0.8	0.79	0.96	0.69	0.68	0.95	0.97	0	0.79	0.97			
	Approach %					35%	61%					6%	2%					59%	36%	0%	2%				

Study Name Lynn - Route 1A/Lynnway at Kingman Street and Small Smiles Dental Driveway TM4 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound						Westbound						Northbound						Eastbound				Crosswalk	
Time Period	Class.	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	18	0	0	18	18	0	0	0	0	0	0	0	18	0	1	19	19	0	0	37	N	0	0
Specified Period	%	0%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%	1%	0%	0%	1%		0%	
12:00 PM - 2:00 PM	Cars	33	1386	11	52	1482	1448	21	0	19	0	40	20	9	1375	11	43	1438	1448	0	44	2960	E	7	7
One Hour Peak	%	89%	92%	79%	95%	92%	90%	81%	0%	70%	0%	75%	80%	82%	90%	85%	84%	90%	92%	0%	88%	91%		100%	
1:00 PM - 2:00 PM	Light Goods Vehicles	2	71	0	3	76	112	1	0	3	0	4	0	0	108	1	7	116	81	0	3	196	S	4	4
	%	5%	5%	0%	5%	5%	7%	4%	0%	11%	0%	8%	0%	0%	7%	8%	14%	7%	5%	0%	6%	6%		100%	
	Buses	0	13	3	0	16	11	4	0	3	0	7	3	0	7	0	0	7	16	0	0	30	W	32	32
	%	0%	1%	21%	0%	1%	1%	15%	0%	11%	0%	13%	12%	0%	0%	0%	0%	0%	1%	0%	0%	1%		100%	
	Single-Unit Trucks	2	14	0	0	16	17	0	0	1	0	1	0	0	17	0	0	17	15	0	2	34		**43**	**43**
	%	5%	1%	0%	0%	1%	1%	0%	0%	4%	0%	2%	0%	0%	1%	0%	0%	1%	1%	0%	4%	1%			
	Articulated Trucks	0	1	0	0	1	1	0	0	1	0	1	2	2	1	1	0	4	2	0	1	6			
	%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	2%	8%	18%	0%	8%	0%	0%	0%	0%	2%	0%			
	Bicycles on Road	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**37**	**1503**	**14**	**55**	**1609**	**1608**	**26**	**0**	**27**	**0**	**53**	**25**	**11**	**1527**	**13**	**51**	**1602**	**1581**	**0**	**50**	**3264**			
	PHF	0.77	0.96	0.88	0.76	0.98	0.95	0.65	0	0.75	0	0.83	0.69	0.55	0.95	0.54	0.67	0.96	0.95	0	0.69	0.97			
	Approach %					49%	49%					2%	1%					49%	48%	0%	2%				

Study Name	Lynn - Route 1A at Pleasant Street and Broad Street TM5 TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound					Northbound					Eastbound					Southeastbound							Crosswalk	
Time Period	Class.	R	T	U	I	O	T	L	U	I	O	R	L	U	I	O	HR	BR	HL	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	3	0	3	4	4	0	0	4	3	0	0	0	0	0	0	0	0	0	0	7	N	1	1
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
7:00 AM - 9:00 AM	Cars	2	1642	0	1644	814	814	0	0	814	2296	103	0	0	103	33	31	551	0	582	0	3143	S	0	0
One Hour Peak	%	100%	94%	0%	94%	80%	80%	0%	0%	80%	92%	90%	0%	0%	90%	79%	78%	85%	0%	85%	0%	88%		0%	
7:15 AM - 8:15 AM	Light Goods Vehicles	0	83	0	83	120	120	0	0	120	146	8	0	0	8	5	5	55	0	60	0	271	W	22	22
	%	0%	5%	0%	5%	12%	12%	0%	0%	12%	6%	7%	0%	0%	7%	12%	13%	8%	0%	9%	0%	8%		100%	
	Buses	0	7	0	7	29	29	0	0	29	23	0	0	0	0	1	1	16	0	17	0	53	NW	0	0
	%	0%	0%	0%	0%	3%	3%	0%	0%	3%	1%	0%	0%	0%	0%	2%	3%	2%	0%	2%	0%	1%		0%	
	Single-Unit Trucks	0	4	0	4	46	46	0	0	46	28	3	0	0	3	2	2	21	0	23	0	76		**23**	**23**
	%	0%	0%	0%	0%	5%	5%	0%	0%	5%	1%	3%	0%	0%	3%	5%	5%	3%	0%	3%	0%	2%			
	Articulated Trucks	0	3	0	3	3	3	0	0	3	6	0	0	0	0	0	0	3	0	3	0	9			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	2	0	3	0	3			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	3%	0%	0%	0%	0%	0%			
	Total	**2**	**1742**	**0**	**1744**	**1016**	**1016**	**0**	**0**	**1016**	**2504**	**114**	**0**	**0**	**114**	**42**	**40**	**648**	**0**	**688**	**0**	**3562**			
	PHF	0.5	0.94	0	0.94	0.95	0.95	0	0	0.95	0.95	0.89	0	0	0.89	0.7	0.71	0.96	0	0.96	0	0.95			
	Approach %				49%	29%				29%	70%				3%	1%				19%	0%				
Peak 2	Motorcycles	0	5	0	5	1	1	0	0	1	7	0	0	0	0	0	0	2	0	2	0	8	N	0	0
Specified Period	%	0%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	
4:00 PM - 6:00 PM	Cars	0	678	0	678	2115	2115	0	0	2115	1177	98	0	0	98	27	27	401	0	428	0	3319	S	1	1
One Hour Peak	%	0%	89%	0%	89%	91%	91%	0%	0%	91%	87%	87%	0%	0%	87%	87%	87%	84%	0%	84%	0%	89%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	0	67	0	67	177	177	0	0	177	116	7	0	0	7	4	4	42	0	46	0	297	W	21	21
	%	0%	9%	0%	9%	8%	8%	0%	0%	8%	9%	6%	0%	0%	6%	13%	13%	9%	0%	9%	0%	8%		100%	
	Buses	0	10	0	10	11	11	0	0	11	32	5	0	0	5	0	0	17	0	17	0	43	NW	0	0
	%	0%	1%	0%	1%	0%	0%	0%	0%	0%	2%	4%	0%	0%	4%	0%	0%	4%	0%	3%	0%	1%		0%	
	Single-Unit Trucks	0	5	0	5	18	18	0	0	18	20	1	0	0	1	0	0	14	0	14	0	38		**22**	**22**
	%	0%	1%	0%	1%	1%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%	0%	3%	0%	3%	0%	1%			
	Articulated Trucks	0	0	0	0	2	2	0	0	2	3	0	0	0	0	0	0	3	0	3	0	5			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%			
	Bicycles on Road	0	0	0	0	0	0	0	0	0	3	2	0	0	2	0	0	1	0	1	0	3			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%			
	Total	**0**	**765**	**0**	**765**	**2324**	**2324**	**0**	**0**	**2324**	**1358**	**113**	**0**	**0**	**113**	**31**	**31**	**480**	**0**	**511**	**0**	**3713**			
	PHF	0	0.9	0	0.9	0.95	0.95	0	0	0.95	0.94	0.69	0	0	0.69	0.6	0.6	0.92	0	0.92	0	0.95			
	Approach %				21%	63%				63%	37%				3%	1%				14%	0%				

Study Name Lynn - Route 1A at Pleasant Street and Broad Street TM5 TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound					Northbound					Eastbound					Southeastbound							Crosswalk	
Time Period	Class.	R	T	U	I	O	T	L	U	I	O	R	L	U	I	O	HR	BR	HL	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	11	0	11	17	17	0	0	17	20	1	0	0	1	0	0	8	0	8	0	37	N	0	0
Specified Period	%	0%	1%	0%	1%	1%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%	0%	2%	0%	2%	0%	1%		0%	
12:00 PM - 2:00 PM	Cars	2	914	0	916	1465	1465	0	0	1465	1455	102	0	0	102	28	26	439	0	465	0	2948	S	0	0
One Hour Peak	%	67%	92%	0%	92%	91%	91%	0%	0%	91%	91%	94%	0%	0%	94%	90%	93%	88%	0%	88%	0%	91%		0%	
1:00 PM - 2:00 PM	Light Goods Vehicles	1	59	0	60	101	101	0	0	101	96	6	0	0	6	3	2	31	0	33	0	200	W	34	34
	%	33%	6%	0%	6%	6%	6%	0%	0%	6%	6%	6%	0%	0%	6%	10%	7%	6%	0%	6%	0%	6%		100%	
	Buses	0	3	0	3	11	11	0	0	11	15	0	0	0	0	0	0	12	0	12	0	26	NW	0	0
	%	0%	0%	0%	0%	1%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	2%	0%	2%	0%	1%		0%	
	Single-Unit Trucks	0	9	0	9	11	11	0	0	11	18	0	0	0	0	0	0	9	0	9	0	29		**34**	**34**
	%	0%	1%	0%	1%	1%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	2%	0%	2%	0%	1%			
	Articulated Trucks	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	1	0	2			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	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%	0%	0%	0%	0%			
	Total	**3**	**996**	**0**	**999**	**1606**	**1606**	**0**	**0**	**1606**	**1605**	**109**	**0**	**0**	**109**	**31**	**28**	**500**	**0**	**528**	**0**	**3242**			
	PHF	0.38	0.91	0	0.91	0.96	0.96	0	0	0.96	0.96	0.83	0	0	0.83	0.86	0.78	0.84	0	0.86	0	0.98			
	Approach %				31%	50%				50%	50%				3%	1%				16%	0%				

Study Name	Lynn - Route 1A/Lynnway at Route 1A/Market Street and Lynnway TM6 TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound					Westbound					Northeastbound							Crosswalk	
Time Period	**Class.**	**BR**	**L**	**U**	**I**	**O**	**R**	**BL**	**U**	**I**	**O**	**BR**	**BL**	**U**	**I**	**O**	**Total**		**Pedestrians**	**Total**
Peak 1	Motorcycles	0	0	0	0	1	0	5	0	5	1	1	1	0	2	5	7	N	2	2
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
7:00 AM - 9:00 AM	Cars	24	132	0	156	515	169	1593	0	1762	631	499	346	1	846	1618	2764	E	2	2
One Hour Peak	%	96%	84%	0%	86%	84%	94%	93%	0%	93%	83%	83%	80%	100%	82%	93%	89%		100%	
7:30 AM - 8:30 AM	Light Goods Vehicles	1	21	0	22	37	7	99	0	106	90	69	30	0	99	100	227	SW	0	0
	%	4%	13%	0%	12%	6%	4%	6%	0%	6%	12%	11%	7%	0%	10%	6%	7%		0%	
	Buses	0	0	0	0	22	1	9	0	10	6	6	21	0	27	9	37		**4**	**4**
	%	0%	0%	0%	0%	4%	1%	1%	0%	1%	1%	1%	5%	0%	3%	1%	1%			
	Single-Unit Trucks	0	3	0	3	36	2	3	0	5	29	26	34	0	60	3	68			
	%	0%	2%	0%	2%	6%	1%	0%	0%	0%	4%	4%	8%	0%	6%	0%	2%			
	Articulated Trucks	0	1	0	1	3	0	1	0	1	1	0	3	0	3	1	5			
	%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%			
	Bicycles on Road	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%	0%	0%	0%	0%	0%	0%	0%			
	Total	**25**	**157**	**0**	**182**	**614**	**179**	**1710**	**0**	**1889**	**758**	**601**	**435**	**1**	**1037**	**1736**	**3108**			
	PHF	0.78	0.96	0	0.97	0.88	0.88	0.93	0	0.92	0.93	0.9	0.86	0.25	0.96	0.93	0.96			
	Approach %				6%	20%				61%	24%				33%	56%				
Peak 2	Motorcycles	0	0	0	0	1	0	5	0	5	0	0	1	0	1	5	6	N	9	9
Specified Period	%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%		100%	
4:00 PM - 6:00 PM	Cars	9	193	0	202	882	147	665	2	814	1569	1374	735	2	2111	676	3127	E	6	6
One Hour Peak	%	75%	90%	0%	89%	91%	91%	89%	100%	89%	91%	91%	91%	100%	91%	88%	90%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	1	19	0	20	69	13	68	0	81	147	128	56	0	184	69	285	SW	0	0
	%	8%	9%	0%	9%	7%	8%	9%	0%	9%	9%	8%	7%	0%	8%	9%	8%		0%	
	Buses	2	1	0	3	12	0	7	0	7	2	1	12	0	13	9	23		**15**	**15**
	%	17%	0%	0%	1%	1%	0%	1%	0%	1%	0%	0%	1%	0%	1%	1%	1%			
	Single-Unit Trucks	0	1	0	1	9	2	4	0	6	4	3	7	0	10	4	17			
	%	0%	0%	0%	0%	1%	1%	1%	0%	1%	0%	0%	1%	0%	0%	1%	0%			
	Articulated Trucks	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	1			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	1	0	1	0	0	1	0	1	1	0	0	0	0	1	2			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**12**	**215**	**0**	**227**	**974**	**162**	**750**	**2**	**914**	**1723**	**1506**	**812**	**2**	**2320**	**764**	**3461**			
	PHF	0.5	0.91	0	0.93	0.9	0.78	0.89	0.5	0.87	0.98	0.98	0.88	0.5	0.94	0.9	0.95			
	Approach %				7%	28%				26%	50%				67%	22%				

Study Name	Lynn - Route 1A/Lynnway at Route 1A/Market Street and Lynnway TM6 TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound					Westbound					Northeastbound							Crosswalk	
Time Period	Class.	BR	L	U	I	O	R	BL	U	I	O	BR	BL	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	3	0	3	7	2	9	0	11	12	9	5	0	14	9	28	N	0	0
Specified Period	%	0%	1%	0%	1%	1%	1%	1%	0%	1%	1%	1%	1%	0%	1%	1%	1%		0%	
12:00 PM - 2:00 PM	Cars	8	281	2	291	751	212	893	2	1107	1197	914	537	7	1458	908	2856	E	9	9
One Hour Peak	%	80%	94%	100%	94%	91%	95%	92%	100%	93%	93%	93%	89%	88%	91%	92%	92%		100%	
1:00 PM - 2:00 PM	Light Goods Vehicles	1	13	0	14	53	9	60	0	69	67	54	44	0	98	61	181	SW	0	0
	%	10%	4%	0%	5%	6%	4%	6%	0%	6%	5%	5%	7%	0%	6%	6%	6%		0%	
	Buses	1	0	0	1	10	0	2	0	2	1	1	10	0	11	3	14		**9**	**9**
	%	10%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%	0%	1%	0%	0%			
	Single-Unit Trucks	0	1	0	1	8	0	6	0	6	5	4	8	1	13	7	20			
	%	0%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	13%	1%	1%	1%			
	Articulated Trucks	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%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**10**	**299**	**2**	**311**	**829**	**223**	**970**	**2**	**1195**	**1283**	**982**	**604**	**8**	**1594**	**988**	**3100**			
	PHF	0.42	0.87	0.5	0.84	0.92	0.88	0.93	0.5	0.93	0.95	0.98	0.91	0.5	0.96	0.94	0.97			
	Approach %				10%	27%				39%	41%				51%	32%				

Study Name	Lynn - Route 1A/Market Street at Route 1A/Broad Street, Market Street and Broad Street TM7 TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound						Westbound						Northbound		Southeastbound								Crosswalk	
Time Period	Class.	HR	T	L	U	I	O	R	BR	L	U	I	O	I	O	BR	BL	HL	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	1	0	0	0	1	3	1	1	0	0	2	1	0	1	1	1	2	0	4	2	7	N	7	7
Specified Period	%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	1%	0%	0%		100%	
7:00 AM - 9:00 AM	Cars	151	433	44	0	628	386	256	268	7	1	532	157	0	583	143	112	130	0	385	419	1545	E	3	3
One Hour Peak	%	84%	87%	83%	0%	86%	84%	83%	88%	70%	100%	85%	83%	0%	88%	91%	83%	85%	0%	87%	86%	86%		100%	
7:45 AM - 8:45 AM	Light Goods Vehicles	7	38	7	0	52	31	21	12	1	0	34	26	0	48	9	19	10	0	38	19	124	S	2	2
	%	4%	8%	13%	0%	7%	7%	7%	4%	10%	0%	5%	14%	0%	7%	6%	14%	7%	0%	9%	4%	7%		100%	
	Buses	19	11	0	0	30	10	7	14	0	0	21	0	0	13	2	0	3	0	5	33	56	NW	28	28
	%	11%	2%	0%	0%	4%	2%	2%	5%	0%	0%	3%	0%	0%	2%	1%	0%	2%	0%	1%	7%	3%		100%	
	Single-Unit Trucks	2	14	1	0	17	28	20	10	2	0	32	4	0	17	1	3	8	0	12	12	61		**40**	**40**
	%	1%	3%	2%	0%	2%	6%	7%	3%	20%	0%	5%	2%	0%	3%	1%	2%	5%	0%	3%	2%	3%			
	Articulated Trucks	0	3	1	0	4	2	2	0	0	0	2	1	0	4	1	0	0	0	1	0	7			
	%	0%	1%	2%	0%	1%	0%	1%	0%	0%	0%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**180**	**499**	**53**	**0**	**732**	**460**	**307**	**305**	**10**	**1**	**623**	**189**	**0**	**666**	**157**	**135**	**153**	**0**	**445**	**485**	**1800**			
	PHF	0.85	0.85	0.7	0	0.88	0.83	0.91	0.84	0.62	0.25	0.92	0.86	0	0.85	0.82	0.75	0.63	0	0.78	0.93	0.95			
	Approach %					41%	26%					35%	11%	0%	37%					25%	27%				
Peak 2	Motorcycles	0	1	0	0	1	3	1	0	0	0	1	1	0	2	1	1	2	0	4	0	6	N	20	20
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%	0%	0%		100%	
4:00 PM - 6:00 PM	Cars	183	282	43	0	508	768	506	346	13	2	867	194	0	427	132	149	262	0	543	529	1918	E	4	4
One Hour Peak	%	90%	85%	91%	0%	87%	91%	91%	88%	100%	67%	90%	86%	0%	85%	84%	85%	91%	0%	87%	88%	88%		100%	
4:30 PM - 5:30 PM	Light Goods Vehicles	8	25	4	0	37	52	36	30	0	1	67	23	0	43	18	18	16	0	52	38	156	S	5	5
	%	4%	8%	9%	0%	6%	6%	6%	8%	0%	33%	7%	10%	0%	9%	11%	10%	6%	0%	8%	6%	7%		100%	
	Buses	10	11	0	0	21	3	3	9	0	0	12	3	0	16	5	3	0	0	8	19	41	NW	31	31
	%	5%	3%	0%	0%	4%	0%	1%	2%	0%	0%	1%	1%	0%	3%	3%	2%	0%	0%	1%	3%	2%		100%	
	Single-Unit Trucks	2	13	0	0	15	15	7	8	0	0	15	3	0	14	1	3	8	0	12	10	42		**60**	**60**
	%	1%	4%	0%	0%	3%	2%	1%	2%	0%	0%	2%	1%	0%	3%	1%	2%	3%	0%	2%	2%	2%			
	Articulated Trucks	1	1	0	0	2	1	1	1	0	0	2	0	0	2	1	0	0	0	1	2	5			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	2	0	2			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%			
	Total	**204**	**333**	**47**	**0**	**584**	**843**	**554**	**394**	**13**	**3**	**964**	**225**	**0**	**504**	**158**	**175**	**289**	**0**	**622**	**598**	**2170**			
	PHF	0.81	0.82	0.69	0	0.85	0.89	0.92	0.93	0.81	0.38	0.93	0.95	0	0.91	0.84	0.89	0.83	0	0.93	0.93	0.92			
	Approach %					27%	39%					44%	10%	0%	23%					29%	28%				

Study Name	Lynn - Route 1A/Market Street at Route 1A/Broad Street, Market Street and Broad Street TM7 TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound						Westbound						Northbound		Southeastbound								Crosswalk	
Time Period	**Class.**	**HR**	**T**	**L**	**U**	**I**	**O**	**R**	**BR**	**L**	**U**	**I**	**O**	**I**	**O**	**BR**	**BL**	**HL**	**U**	**I**	**O**	**Total**		**Pedestrians**	**Total**
Peak 1	Motorcycles	2	2	1	0	5	5	3	5	1	1	10	3	0	7	4	1	2	0	7	7	22	N	8	8
Specified Period	%	1%	0%	1%	0%	1%	1%	1%	1%	8%	8%	1%	1%	0%	1%	3%	0%	1%	0%	1%	1%	1%		100%	
12:00 PM - 2:00 PM	Cars	150	366	68	0	584	523	335	331	9	9	684	290	0	510	135	213	188	0	536	481	1804	E	7	7
One Hour Peak	%	87%	90%	91%	0%	89%	89%	88%	89%	69%	75%	88%	91%	0%	89%	88%	92%	92%	0%	91%	88%	89%		100%	
12:30 PM - 1:30 PM	Light Goods Vehicles	9	22	5	0	36	43	32	27	1	2	62	20	0	30	7	13	11	0	31	36	129	S	1	1
	%	5%	5%	7%	0%	6%	7%	8%	7%	8%	17%	8%	6%	0%	5%	5%	6%	5%	0%	5%	7%	6%		100%	
	Buses	9	9	1	0	19	4	3	8	0	0	11	2	0	14	5	1	1	0	7	17	37	NW	16	16
	%	5%	2%	1%	0%	3%	1%	1%	2%	0%	0%	1%	1%	0%	2%	3%	0%	0%	0%	1%	3%	2%		100%	
	Single-Unit Trucks	2	6	0	0	8	9	6	1	2	0	9	2	0	10	2	2	3	0	7	3	24		**32**	**32**
	%	1%	1%	0%	0%	1%	2%	2%	0%	15%	0%	1%	1%	0%	2%	1%	1%	1%	0%	1%	1%	1%			
	Articulated Trucks	0	1	0	0	1	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	2			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	1	0	0	1	0	0	2	0	0	2	1	0	1	0	1	0	0	1	2	4			
	%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**172**	**407**	**75**	**0**	**654**	**585**	**380**	**374**	**13**	**12**	**779**	**318**	**0**	**573**	**153**	**231**	**205**	**0**	**589**	**546**	**2022**			
	PHF	0.77	0.81	0.78	0	0.82	0.91	0.96	0.88	0.54	0.5	0.91	0.85	0	0.88	0.81	0.76	0.84	0	0.8	0.9	0.97			
	Approach %					32%	29%					39%	16%	0%	28%					29%	27%				

Study Name	Lynnway Roundabout - North side TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Southbound					Westbound					Northbound		Eastbound							Crosswalk	
Time Period	Class.	R	T	U	I	O	R	T	L	I	O	I	O	R	L	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	3	0	0	3	3	3	0	0	3	0	0	2	2	0	0	2	3	8	N	8	8
Specified Period	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
7:00 AM - 9:00 AM	Cars	1324	44	0	1368	638	638	312	1	951	0	0	614	569	0	0	569	1636	2888	E	0	0
One Hour Peak	%	94%	65%	0%	93%	83%	83%	87%	50%	84%	0%	0%	79%	80%	0%	0%	80%	93%	87%		0%	
7:00 AM - 8:00 AM	Light Goods Vehicles	65	16	0	81	100	100	39	1	140	0	0	126	109	0	0	109	104	330	S	0	0
	%	5%	24%	0%	6%	13%	13%	11%	50%	12%	0%	0%	16%	15%	0%	0%	15%	6%	10%		0%	
	Buses	2	1	0	3	12	12	2	0	14	0	0	11	10	0	0	10	4	27	W	0	0
	%	0%	1%	0%	0%	2%	2%	1%	0%	1%	0%	0%	1%	1%	0%	0%	1%	0%	1%		0%	
	Single-Unit Trucks	2	5	0	7	12	12	7	0	19	0	0	26	21	0	0	21	9	47		**8**	**8**
	%	0%	7%	0%	0%	2%	2%	2%	0%	2%	0%	0%	3%	3%	0%	0%	3%	1%	1%			
	Articulated Trucks	3	0	0	3	1	1	0	0	1	0	0	1	1	0	0	1	3	5			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	3	2	0	5	1	1	0	0	1	0	0	2	0	0	0	0	3	6			
	%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**1402**	**68**	**0**	**1470**	**767**	**767**	**360**	**2**	**1129**	**0**	**0**	**782**	**712**	**0**	**0**	**712**	**1762**	**3311**			
	PHF	0.98	0.89	0	0.99	0.9	0.9	0.94	0.5	0.93	0	0	0.93	0.91	0	0	0.91	0.98	0.96			
	Approach %				44%	23%				34%	0%	0%	24%				22%	53%				
Peak 2	Motorcycles	3	4	0	7	1	1	2	0	3	0	0	5	1	0	0	1	5	11	N	29	29
Specified Period	%	1%	2%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%		100%	
4:00 PM - 6:00 PM	Cars	522	171	0	693	1197	1197	311	6	1514	0	0	1622	1445	0	0	1445	833	3652	E	0	0
One Hour Peak	%	87%	85%	0%	87%	92%	92%	84%	86%	90%	0%	0%	89%	90%	0%	0%	90%	86%	89%		0%	
4:15 PM - 5:15 PM	Light Goods Vehicles	62	25	0	87	90	90	43	1	134	0	0	169	143	0	0	143	105	364	S	0	0
	%	10%	12%	0%	11%	7%	7%	12%	14%	8%	0%	0%	9%	9%	0%	0%	9%	11%	9%		0%	
	Buses	1	0	0	1	3	3	1	0	4	0	0	4	4	0	0	4	2	9	W	8	8
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
	Single-Unit Trucks	8	2	0	10	9	9	12	0	21	0	0	14	12	0	0	12	20	43		**37**	**37**
	%	1%	1%	0%	1%	1%	1%	3%	0%	1%	0%	0%	1%	1%	0%	0%	1%	2%	1%			
	Articulated Trucks	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**598**	**202**	**0**	**800**	**1300**	**1300**	**369**	**7**	**1676**	**0**	**0**	**1814**	**1605**	**0**	**0**	**1605**	**967**	**4081**			
	PHF	0.87	0.86	0	0.95	0.95	0.95	0.9	0.58	0.97	0	0	0.93	0.93	0	0	0.93	0.89	0.96			
	Approach %				20%	32%				41%	0%	0%	44%				39%	24%				

Study Name Lynnway Roundabout - North side TMC
Start Date Thursday, May 28, 2015 7:00 AM
End Date Saturday, May 30, 2015 2:00 PM
Site Code

Report Summary

		Southbound					Westbound					Northbound		Eastbound							Crosswalk	
Time Period	Class.	R	T	U	I	O	R	T	L	I	O	I	O	R	L	U	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	9	4	0	13	13	13	7	1	21	0	0	16	11	0	0	11	16	45	N	65	65
Specified Period	%	2%	1%	0%	2%	1%	1%	2%	1%	1%	0%	0%	1%	1%	0%	0%	1%	2%	1%		100%	
12:00 PM - 2:00 PM	Cars	459	259	0	718	904	904	418	68	1390	0	0	1574	1247	0	0	1247	877	3355	E	0	0
One Hour Peak	%	90%	91%	0%	90%	91%	91%	94%	94%	92%	0%	0%	92%	92%	0%	0%	92%	92%	92%		0%	
12:15 PM - 1:15 PM	Light Goods Vehicles	36	20	0	56	56	56	16	3	75	0	0	102	79	0	0	79	52	210	S	0	0
	%	7%	7%	0%	7%	6%	6%	4%	4%	5%	0%	0%	6%	6%	0%	0%	6%	5%	6%		0%	
	Buses	1	0	0	1	0	0	1	0	1	0	0	1	1	0	0	1	2	3	W	18	18
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		100%	
	Single-Unit Trucks	3	0	0	3	7	7	4	0	11	0	0	11	11	0	0	11	7	25		**83**	**83**
	%	1%	0%	0%	0%	1%	1%	1%	0%	1%	0%	0%	1%	1%	0%	0%	1%	1%	1%			
	Articulated Trucks	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	1	1	2			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	3	2	0	5	10	10	0	0	10	0	0	6	4	0	0	4	3	19			
	%	1%	1%	0%	1%	1%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%			
	Total	**511**	**285**	**0**	**796**	**990**	**990**	**447**	**72**	**1509**	**0**	**0**	**1711**	**1354**	**0**	**0**	**1354**	**958**	**3659**			
	PHF	0.77	0.87	0	0.84	0.86	0.86	0.89	0.46	0.89	0	0	0.94	0.99	0	0	0.99	0.85	0.97			
	Approach %				22%	27%				41%	0%	0%	47%				37%	26%				

Study Name	Lynnway Roundabout - South side TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Westbound		Northbound				Eastbound						Crosswalk	
Time Period	Class.	I	O	R	U	I	O	R	T	I	O	Total		Pedestrians	Total
Peak 1	Motorcycles	0	1	1	0	1	1	1	0	1	0	2	E	0	0
Specified Period	%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%		0%	
7:00 AM - 9:00 AM	Cars	0	1038	450	0	450	132	132	588	720	0	1170	S	1	1
One Hour Peak	%	0%	89%	90%	0%	90%	68%	68%	89%	84%	0%	86%		100%	
7:30 AM - 8:30 AM	Light Goods Vehicles	0	96	35	0	35	40	40	61	101	0	136	W	0	0
	%	0%	8%	7%	0%	7%	21%	21%	9%	12%	0%	10%		0%	
	Buses	0	8	2	0	2	1	1	6	7	0	9		**1**	**1**
	%	0%	1%	0%	0%	0%	1%	1%	1%	1%	0%	1%			
	Single-Unit Trucks	0	15	9	0	9	16	16	6	22	0	31			
	%	0%	1%	2%	0%	2%	8%	8%	1%	3%	0%	2%			
	Articulated Trucks	0	0	0	0	0	2	2	0	2	0	2			
	%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%			
	Bicycles on Road	0	2	2	0	2	2	2	0	2	0	4			
	%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%			
	Total	**0**	**1160**	**499**	**0**	**499**	**194**	**194**	**661**	**855**	**0**	**1354**			
	PHF	0	0.94	0.85	0	0.85	0.85	0.85	0.95	0.98	0	0.96			
	Approach %	0%	86%			37%	14%			63%	0%				
Peak 2	Motorcycles	0	4	2	0	2	5	5	2	7	0	9	E	2	2
Specified Period	%	0%	0%	1%	0%	1%	1%	1%	0%	0%	0%	0%		100%	
4:00 PM - 6:00 PM	Cars	0	1558	352	0	352	425	425	1206	1631	0	1983	S	4	4
One Hour Peak	%	0%	94%	91%	0%	91%	83%	83%	95%	91%	0%	91%		100%	
5:00 PM - 6:00 PM	Light Goods Vehicles	0	90	27	0	27	73	73	63	136	0	163	W	0	0
	%	0%	5%	7%	0%	7%	14%	14%	5%	8%	0%	8%		0%	
	Buses	0	0	0	0	0	1	1	0	1	0	1		**6**	**6**
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Single-Unit Trucks	0	8	6	0	6	6	6	2	8	0	14			
	%	0%	0%	2%	0%	2%	1%	1%	0%	0%	0%	1%			
	Articulated Trucks	0	3	0	0	0	0	0	3	3	0	3			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Total	**0**	**1663**	**387**	**0**	**387**	**510**	**510**	**1276**	**1786**	**0**	**2173**			
	PHF	0	0.91	0.86	0	0.86	0.98	0.98	0.92	0.95	0	0.93			
	Approach %	0%	77%			18%	23%			82%	0%				

Study Name	Lynnway Roundabout - South side TMC
Start Date	Thursday, May 28, 2015 7:00 AM
End Date	Saturday, May 30, 2015 2:00 PM
Site Code	

Report Summary

		Westbound		Northbound				Eastbound						Crosswalk	
Time Period	**Class.**	**I**	**O**	**R**	**U**	**I**	**O**	**R**	**T**	**I**	**O**	**Total**		**Pedestrians**	**Total**
Peak 1	Motorcycles	0	20	14	0	14	10	10	6	16	0	30	E	0	0
Specified Period	%	0%	1%	2%	0%	2%	1%	1%	1%	1%	0%	1%		0%	
12:00 PM - 2:00 PM	Cars	0	1532	750	0	750	829	829	782	1611	0	2361	S	6	6
One Hour Peak	%	0%	93%	91%	0%	91%	91%	91%	95%	93%	0%	92%		100%	
12:00 PM - 1:00 PM	Light Goods Vehicles	0	72	50	0	50	71	71	22	93	0	143	W	0	0
	%	0%	4%	6%	0%	6%	8%	8%	3%	5%	0%	6%		0%	
	Buses	0	2	0	0	0	0	0	2	2	0	2		**6**	**6**
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Single-Unit Trucks	0	15	5	0	5	3	3	10	13	0	18			
	%	0%	1%	1%	0%	1%	0%	0%	1%	1%	0%	1%			
	Articulated Trucks	0	1	0	0	0	0	0	1	1	0	1			
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
	Bicycles on Road	0	7	7	0	7	3	3	0	3	0	10			
	%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%			
	Total	**0**	**1649**	**826**	**0**	**826**	**916**	**916**	**823**	**1739**	**0**	**2565**			
	PHF	0	0.91	0.84	0	0.84	0.91	0.91	0.94	0.96	0	0.94			
	Approach %	0%	64%			32%	36%			68%	0%				

Spot Speed Data

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA. 1 NB

Site Reference: 150140000402
Site ID: 110000000101
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-101.prn
City: LYNN
County: SPEED LN-1&2 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	1	0	1	0	5	30	67	81	40	17	0	0	0	0	242
02:00	1	0	1	0	6	24	60	40	17	13	2	0	0	0	164
03:00	0	0	0	1	4	19	34	37	15	3	0	1	0	0	114
04:00	0	0	0	1	1	17	28	23	6	4	2	0	0	0	82
05:00	0	0	0	0	2	20	32	32	28	9	0	0	0	0	123
06:00	0	0	0	1	7	25	78	88	68	23	5	0	0	0	295
07:00	3	0	0	0	9	104	194	194	82	28	8	0	0	0	622
08:00	4	2	0	3	33	178	334	199	82	17	3	1	0	0	856
09:00	2	1	8	7	75	208	332	152	71	10	1	0	1	0	868
10:00	2	0	3	17	54	190	267	158	81	8	6	1	1	0	788
11:00	1	0	0	7	71	223	303	194	72	9	1	0	0	0	881
12:00	0	2	2	30	135	321	264	114	27	6	0	0	0	0	901
13:00	110	50	55	79	125	241	173	77	23	2	2	0	0	0	937
14:00	18	0	12	30	97	244	398	209	67	22	2	0	0	0	1099
15:00	3	0	4	10	77	356	477	223	56	15	1	0	0	0	1222
16:00	19	9	19	34	158	484	515	245	73	15	2	0	0	0	1573
17:00	69	40	101	143	223	521	440	146	31	3	0	2	0	1	1720
18:00	193	129	317	340	238	284	132	29	9	2	0	0	0	2	1675
19:00	100	89	237	245	282	395	309	107	16	3	1	0	0	0	1784
20:00	6	0	4	13	142	503	464	192	56	14	2	0	1	2	1399
21:00	0	0	0	0	62	225	310	164	41	9	0	0	0	0	811
22:00	0	0	0	1	40	163	254	158	50	5	1	0	0	0	672
23:00	1	0	1	5	23	125	183	104	48	7	2	0	0	0	499
24:00	1	0	0	1	7	66	138	116	40	9	1	0	0	1	380
DAY TOTAL	534	322	765	968	1876	4966	5786	3082	1099	253	42	5	3	6	19707
PERCENTS	2.8%	1.7%	3.9%	5.0%	9.6%	25.2%	29.3%	15.6%	5.5%	1.2%	0.2%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
26.0 mph

85th Percentile Speed
42.5 mph

Median Speed
35.4 mph

Average Speed
34.1 mph

10 MPH Pace Speed
30 mph to 40 mph
10752 vehicles in pace
Representing 54.5% of the total vehicles

Vehicles > 65 MPH
9
0.0%

MassDOT Highway Division
SPEED SUMMARY
Tue 6/2/2015

Site Reference: 150140000402
Site ID: 110000000101
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-101.prn
City: LYNN
County: SPEED LN-1&2 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	2	12	46	97	66	24	10	0	0	0	0	257
02:00	0	0	0	0	4	22	54	42	17	2	0	0	0	0	141
03:00	2	0	0	4	4	18	35	27	7	3	0	0	0	0	100
04:00	0	0	0	0	3	11	22	20	6	4	2	0	0	0	68
05:00	2	0	0	0	2	22	48	30	18	6	1	0	0	0	129
06:00	2	2	1	2	5	34	80	88	48	19	4	1	0	0	286
07:00	0	1	0	1	7	67	183	171	95	39	6	0	0	0	570
08:00	5	1	5	13	37	161	350	213	79	9	3	1	0	0	877
09:00	6	1	2	2	40	228	313	229	84	22	4	0	0	0	931
10:00	4	0	1	10	38	139	275	193	80	23	4	2	0	0	769
11:00	8	2	6	2	36	189	325	200	77	14	4	0	0	0	863
12:00	8	4	2	4	62	235	309	211	80	10	1	0	0	0	926
13:00	3	3	3	14	76	238	346	192	72	17	1	0	0	0	965
14:00	3	0	6	21	57	308	430	229	86	13	2	0	0	2	1157
15:00	8	1	5	21	81	292	442	244	90	18	2	1	0	0	1205
16:00	5	2	22	76	238	432	484	227	92	28	5	0	0	1	1612
17:00	20	13	27	87	289	528	510	222	59	5	1	0	0	0	1761
18:00	53	29	69	153	311	553	577	195	38	7	0	0	0	0	1985
19:00	32	13	84	166	352	536	429	204	70	11	0	0	0	0	1897
20:00	6	0	4	6	43	241	443	346	135	36	4	0	0	0	1264
21:00	4	2	3	0	19	126	331	262	125	19	2	2	0	0	895
22:00	1	0	2	4	12	119	296	205	108	24	4	0	0	1	776
23:00	1	0	1	1	13	88	207	208	107	32	3	0	0	0	661
24:00	0	0	0	0	7	45	126	131	82	30	11	0	0	0	432
DAY TOTAL	173	74	243	589	1748	4678	6712	4155	1679	401	64	7	0	4	20527
PERCENTS	0.9%	0.4%	1.2%	2.9%	8.6%	22.8%	32.7%	20.2%	8.1%	1.9%	0.3%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
30.3 mph

85th Percentile Speed
43.9 mph

Median Speed
37.1 mph

Average Speed
36.7 mph

10 MPH Pace Speed
30 mph to 40 mph
11390 vehicles in pace
Representing 55.4% of the total vehicles

Vehicles > 65 MPH
4
0.0%

Site Reference: 150140000402
Site ID: 110000000101
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-101.prn
City: LYNN
County: SPEED LN-1&2 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	5	30	67	90	44	15	3	1	0	0	255
02:00	0	1	0	0	3	15	38	37	25	11	1	0	0	0	131
03:00	0	0	0	0	6	12	26	30	13	6	1	0	0	0	94
04:00	0	0	0	0	1	8	28	18	14	3	0	0	0	0	72
05:00	0	0	0	1	5	13	19	34	17	5	3	1	0	0	98
06:00	0	1	0	1	0	17	61	79	68	59	22	4	0	0	312
07:00	3	1	0	5	7	40	158	178	145	76	22	3	0	0	638
08:00	4	2	11	13	37	116	286	255	122	46	9	1	0	0	902
09:00	5	1	9	4	23	183	306	232	125	35	11	2	0	2	938
10:00	7	0	5	10	26	125	277	221	133	40	3	1	0	1	849
11:00	5	1	4	14	55	218	269	199	113	25	5	2	0	2	912
12:00	11	1	5	16	72	216	297	239	84	19	3	1	0	0	964
13:00	8	0	6	15	27	214	380	260	98	29	5	0	0	0	1042
14:00	3	1	5	10	49	221	424	241	88	25	3	1	0	2	1073
15:00	18	2	14	22	52	228	457	288	137	37	5	0	0	0	1260
16:00	21	8	37	55	160	465	514	279	97	18	4	0	0	5	1663
17:00	33	28	89	122	262	512	459	231	60	6	1	0	0	2	1805
18:00	48	15	78	163	402	669	464	168	39	4	0	0	0	2	2052
19:00	30	16	60	100	259	550	514	258	78	8	2	1	0	2	1878
20:00	17	1	7	30	65	304	550	310	124	31	6	0	0	0	1445
21:00	4	2	4	13	44	205	388	248	86	20	8	1	0	0	1023
22:00	6	0	2	2	22	173	320	310	94	18	0	0	0	0	947
23:00	7	0	2	5	12	99	268	197	97	17	3	2	0	0	709
24:00	1	0	1	0	7	29	178	184	85	29	4	0	0	2	520
DAY TOTAL	231	81	339	601	1601	4662	6748	4586	1986	582	124	21	0	20	21582
PERCENTS	1.1%	0.4%	1.6%	2.8%	7.5%	21.7%	31.3%	21.3%	9.2%	2.6%	0.5%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
30.4 mph

85th Percentile Speed
44.5 mph

Median Speed
37.4 mph

Average Speed
37.0 mph

10 MPH Pace Speed
30 mph to 40 mph
11410 vehicles in pace
Representing 52.8% of the total vehicles

Vehicles > 65 MPH
20
0.1%

MassDOT Highway Division
SPEED SUMMARY
Thu 6/4/2015

Site Reference: 150140000402
Site ID: 110000000101
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-101.prn
City: LYNN
County: SPEED LN-1&2 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	1	1	4	5	36	89	94	55	18	6	1	0	2	312
02:00	0	0	0	1	2	19	45	61	24	20	5	0	0	1	178
03:00	0	0	0	0	5	9	37	34	20	7	1	2	0	0	115
04:00	0	0	1	2	2	11	20	26	11	7	2	0	0	0	82
05:00	0	0	0	2	2	12	34	39	18	12	1	0	0	0	120
06:00	0	0	2	3	2	17	71	86	85	38	15	6	1	0	326
07:00	4	0	0	5	5	40	128	212	148	72	23	0	0	0	637
08:00	9	2	2	6	19	116	266	302	186	67	16	0	1	3	995
09:00	8	0	10	6	20	132	309	243	134	39	10	1	0	0	912
10:00	7	2	8	9	39	169	243	211	107	31	3	2	0	0	831
11:00	5	1	12	6	38	213	343	181	127	28	4	2	0	0	960
12:00	7	0	12	7	42	204	291	208	113	25	2	1	0	0	912
13:00	18	3	15	24	58	240	389	223	106	19	5	1	1	6	1108
14:00	26	3	21	11	38	271	446	219	88	21	5	2	0	4	1155
15:00	21	5	26	12	56	273	472	267	119	40	2	0	2	8	1303
16:00	34	5	41	43	174	488	512	236	103	22	4	0	0	5	1667
17:00	143	136	252	250	167	242	261	129	41	4	0	0	0	8	1633
DAY TOTAL	282	158	403	391	674	2492	3956	2771	1485	470	104	18	5	37	13246
PERCENTS	2.2%	1.2%	3.1%	3.0%	5.1%	18.9%	29.9%	20.9%	11.2%	3.5%	0.7%	0.1%	0.0%	0.2%	100%

Statistical Information...

15th Percentile Speed
30.2 mph

85th Percentile Speed
45.5 mph

Median Speed
37.8 mph

Average Speed
36.9 mph

10 MPH Pace Speed
35 mph to 45 mph
6727 vehicles in pace
Representing 50.7% of the total vehicles

Vehicles > 65 MPH
42
0.3%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA. 1 SB

Site Reference: 150140000766
Site ID: 110000000102
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-102.prn
City: LYNN
County: SPEED LN-1&2 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	1	3	17	25	25	13	28	26	7	7	0	0	0	0	152
02:00	3	5	6	17	11	22	24	19	9	5	1	0	0	0	122
03:00	0	1	11	12	19	10	12	15	5	3	1	0	0	0	89
04:00	1	1	12	20	20	20	19	26	8	5	0	0	0	0	132
05:00	4	7	11	48	45	44	43	49	32	8	0	1	0	0	292
06:00	16	3	47	109	186	111	167	144	75	36	8	5	0	0	907
07:00	53	47	181	363	236	265	394	188	73	24	5	1	0	0	1830
08:00	101	116	302	351	190	261	417	162	26	5	1	0	0	0	1932
09:00	57	52	260	357	229	246	338	158	52	7	1	1	0	0	1758
10:00	21	6	83	227	182	124	274	195	53	20	6	0	0	0	1191
11:00	16	12	71	148	151	144	264	166	50	17	7	1	0	1	1048
12:00	3	10	98	189	138	137	261	172	34	10	1	0	0	0	1053
13:00	8	5	100	172	135	132	292	153	49	12	0	1	0	0	1059
14:00	23	4	75	173	146	127	250	179	62	11	3	1	0	0	1054
15:00	14	7	68	170	183	132	244	191	63	11	2	0	0	0	1085
16:00	12	10	94	169	117	135	267	186	65	16	4	0	0	0	1075
17:00	6	5	58	162	173	122	258	173	67	24	4	2	0	0	1054
18:00	3	11	84	163	171	142	239	166	74	25	1	1	0	0	1080
19:00	11	8	44	115	126	93	198	125	53	19	1	2	0	0	795
20:00	4	6	52	96	99	107	178	127	48	9	0	1	0	0	727
21:00	9	17	76	93	82	104	177	70	23	6	1	0	0	2	660
22:00	5	20	62	71	60	101	124	66	25	6	3	0	0	0	543
23:00	5	14	45	61	43	51	82	58	23	8	3	0	0	0	393
24:00	3	5	22	32	31	16	48	51	15	6	0	0	0	0	229
DAY TOTAL	379	375	1879	3343	2798	2659	4598	2865	991	300	53	17	0	3	20260
PERCENTS	1.9%	1.9%	9.3%	16.6%	13.9%	13.2%	22.7%	14.1%	4.8%	1.4%	0.2%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
20.6 mph

85th Percentile Speed
42.1 mph

Median Speed
32.6 mph

Average Speed
31.6 mph

10 MPH Pace Speed
35 mph to 45 mph
7463 vehicles in pace
Representing 36.8% of the total vehicles

Vehicles > 65 MPH
3
0.0%

Site Reference: 150140000766
Site ID: 110000000102
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-102.prn
City: LYNN
County: SPEED LN-1&2 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	3	8	21	16	14	24	22	9	1	1	0	0	0	119
02:00	2	7	18	9	7	14	21	10	2	0	0	0	0	0	90
03:00	2	5	9	12	9	10	17	12	3	1	0	0	0	0	80
04:00	3	3	10	28	18	7	30	22	15	3	2	0	0	2	143
05:00	7	5	22	39	56	30	50	38	39	17	0	0	0	0	303
06:00	9	4	30	151	193	76	124	172	125	33	8	1	0	2	928
07:00	32	30	204	383	253	210	380	271	108	36	8	0	1	2	1918
08:00	91	72	361	325	185	234	398	206	61	16	5	0	0	1	1955
09:00	68	43	264	303	250	278	390	204	75	15	1	0	0	1	1892
10:00	16	2	87	224	240	171	314	208	56	14	4	0	0	1	1337
11:00	12	5	33	169	180	118	218	191	65	20	5	1	0	0	1017
12:00	15	8	63	154	180	151	272	152	63	13	3	0	0	0	1074
13:00	20	15	67	160	169	146	276	160	50	14	2	1	0	0	1080
14:00	14	9	54	148	185	179	243	162	42	18	5	1	0	0	1060
15:00	9	3	31	112	186	170	228	195	74	25	4	0	0	2	1039
16:00	17	5	44	141	170	134	246	170	69	31	5	0	1	2	1035
17:00	11	5	59	134	185	144	245	173	86	15	2	1	0	0	1060
18:00	10	3	35	157	196	120	225	233	93	27	10	2	0	2	1113
19:00	10	3	27	109	156	119	203	191	63	13	8	0	1	0	903
20:00	5	6	22	99	149	89	151	164	57	14	5	1	2	1	765
21:00	3	9	30	75	113	81	149	125	43	11	6	2	0	2	649
22:00	0	9	33	85	103	64	152	84	31	6	4	0	0	1	572
23:00	0	2	23	84	47	52	95	67	32	14	3	2	0	0	421
24:00	0	1	10	31	32	30	53	45	17	1	2	0	0	0	222
DAY TOTAL	356	257	1544	3153	3278	2641	4504	3277	1278	358	93	12	5	19	20775
PERCENTS	1.8%	1.3%	7.5%	15.2%	15.8%	12.8%	21.7%	15.7%	6.1%	1.7%	0.4%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
21.5 mph

85th Percentile Speed
42.9 mph

Median Speed
33.4 mph

Average Speed
32.4 mph

10 MPH Pace Speed
35 mph to 45 mph
7781 vehicles in pace
Representing 37.4% of the total vehicles

Vehicles > 65 MPH
24
0.1%

Site Reference: 150140000766
Site ID: 110000000102
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-102.prn
City: LYNN
County: SPEED LN-1&2 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	2	9	18	22	15	29	19	11	3	1	0	0	0	129
02:00	1	2	7	11	8	13	27	8	11	2	0	0	0	3	93
03:00	0	3	9	13	13	15	20	8	11	5	0	1	0	0	98
04:00	0	5	5	17	19	18	17	17	14	7	2	0	0	0	121
05:00	2	2	18	25	40	51	37	45	36	21	4	1	1	0	283
06:00	21	1	10	65	202	140	139	134	118	49	15	2	0	1	897
07:00	70	24	95	297	306	242	323	212	85	30	6	0	0	2	1692
08:00	90	38	218	332	249	271	358	164	65	19	4	0	0	2	1810
09:00	55	33	148	314	230	187	339	231	86	9	10	2	0	0	1644
10:00	24	6	33	184	221	170	239	243	87	16	3	0	0	2	1228
11:00	16	2	41	132	203	127	273	189	82	11	4	2	0	0	1082
12:00	6	10	44	140	226	160	271	212	59	11	2	1	0	0	1142
13:00	7	6	70	136	181	141	285	174	61	15	0	1	0	2	1079
14:00	10	1	37	130	201	145	236	224	73	9	1	3	0	1	1071
15:00	18	2	42	146	179	156	266	156	85	17	5	1	0	1	1074
16:00	18	5	47	137	168	148	243	232	80	17	3	0	1	2	1101
17:00	14	6	58	185	168	150	267	205	84	21	3	0	1	9	1171
18:00	26	5	49	158	196	168	265	192	84	14	11	1	0	9	1178
19:00	19	4	30	112	159	153	189	178	75	26	4	1	0	4	954
20:00	5	5	29	125	114	132	202	148	54	18	4	3	0	1	840
21:00	4	9	33	119	104	123	202	120	33	9	2	1	0	0	759
22:00	6	11	59	118	87	112	150	97	40	12	0	0	0	0	692
23:00	1	6	27	72	83	75	95	78	33	5	1	0	0	1	477
24:00	3	1	15	38	48	33	42	44	21	5	2	0	0	1	253
DAY TOTAL	416	189	1133	3024	3427	2945	4514	3330	1388	351	87	20	3	41	20868
PERCENTS	2.0%	1.0%	5.5%	14.5%	16.5%	14.2%	21.7%	15.9%	6.6%	1.6%	0.4%	0.0%	0.0%	0.1%	100%

Statistical Information...

15th Percentile Speed
22.3 mph

85th Percentile Speed
43.1 mph

Median Speed
33.8 mph

Average Speed
32.9 mph

10 MPH Pace Speed
35 mph to 45 mph
7844 vehicles in pace
Representing 37.5% of the total vehicles

Vehicles > 65 MPH
44
0.2%

MassDOT Highway Division
SPEED SUMMARY
Thu 6/4/2015

Site Reference: 150140000766
Site ID: 110000000102
Location: RTE. 1A/LYNNWAY, SOUTH OF HANSON ST.
Direction: ROAD TOTAL

File: SPDC-102.prn
City: LYNN
County: SPEED LN-1&2 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	1	1	7	24	27	19	32	25	8	6	0	0	0	2	152
02:00	1	3	11	10	16	12	17	13	6	2	1	0	0	0	92
03:00	1	2	7	13	19	10	27	15	7	1	0	0	0	0	102
04:00	3	2	7	12	17	17	19	18	14	3	1	0	0	0	113
05:00	6	1	13	30	67	42	46	46	39	19	3	1	0	0	313
06:00	33	4	11	79	192	146	126	121	105	42	19	3	0	0	881
07:00	87	25	136	258	294	195	293	202	94	28	5	5	0	4	1626
08:00	88	9	145	373	283	246	433	207	80	25	4	2	0	0	1895
09:00	151	4	73	264	193	158	402	263	86	18	3	0	0	3	1618
10:00	43	8	46	189	285	157	319	192	80	22	5	1	0	1	1348
11:00	30	7	38	129	184	158	212	216	85	17	3	3	0	0	1082
12:00	17	7	45	141	193	160	231	228	70	23	3	2	0	0	1120
13:00	28	13	45	157	195	133	260	194	62	21	4	0	0	1	1113
14:00	13	11	54	159	188	155	248	209	63	16	3	1	0	5	1125
15:00	37	12	39	140	172	172	281	172	82	21	7	0	0	24	1159
16:00	73	6	38	150	168	151	256	225	72	19	4	1	0	26	1189
17:00	74	5	54	122	183	159	291	207	87	17	2	3	0	21	1225
18:00	99	2	73	130	171	153	254	173	78	31	4	2	3	15	1188
DAY TOTAL	785	122	842	2380	2847	2243	3747	2726	1118	331	71	24	3	102	17341
PERCENTS	4.6%	0.8%	4.9%	13.8%	16.4%	12.9%	21.6%	15.7%	6.4%	1.9%	0.4%	0.1%	0.0%	0.5%	100%

Statistical Information...

15th Percentile Speed
21.8 mph

85th Percentile Speed
43.3 mph

Median Speed
33.8 mph

Average Speed
32.4 mph

10 MPH Pace Speed
35 mph to 45 mph
6473 vehicles in pace
Representing 37.3% of the total vehicles

Vehicles > 65 MPH
105
0.6%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA. 2 NB-LN. 1

Site Reference: 150140000640
Site ID: 110000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: ROAD TOTAL

File: SPD-201-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	7	5	3	2	1	0	1	0	0	0	19
02:00	0	0	0	1	8	5	4	0	0	0	0	0	0	0	18
03:00	0	0	0	0	16	6	11	0	1	0	0	0	0	0	34
04:00	0	0	0	0	11	11	5	1	0	0	0	0	0	0	28
05:00	0	0	1	5	13	24	13	2	2	1	0	0	0	0	61
06:00	0	0	1	5	11	25	12	10	3	0	0	0	0	2	69
07:00	1	0	1	7	24	44	19	7	5	0	0	0	0	2	110
08:00	0	1	1	9	39	52	30	7	3	0	0	0	0	0	142
09:00	1	0	2	4	48	65	47	14	2	0	0	0	0	3	186
10:00	3	2	4	3	29	34	23	5	0	1	0	0	0	2	106
11:00	0	1	4	11	32	58	32	9	2	0	0	0	0	0	149
12:00	1	0	4	10	36	57	32	9	3	0	0	0	0	0	152
13:00	0	1	5	4	44	72	43	13	2	1	0	0	0	0	185
14:00	0	2	3	4	35	66	50	18	5	0	0	0	0	0	183
15:00	0	0	2	16	49	113	64	15	3	0	0	0	0	0	262
16:00	1	1	3	7	83	128	106	32	4	0	0	0	0	0	365
17:00	0	0	8	22	93	217	115	23	5	0	0	0	0	0	483
18:00	0	2	0	31	170	236	99	29	3	0	0	0	0	0	570
19:00	0	1	4	39	109	200	111	23	7	0	0	0	0	0	494
20:00	0	0	0	8	63	111	77	10	1	0	0	0	0	0	270
21:00	0	0	1	6	28	38	28	10	2	0	0	0	0	4	117
22:00	1	0	1	1	19	26	26	10	2	0	1	0	0	1	88
23:00	0	0	0	4	8	37	26	8	1	0	0	0	0	0	84
24:00	0	0	1	6	6	16	12	6	1	0	0	0	0	2	50
DAY TOTAL	8	11	46	203	981	1646	988	263	58	3	2	0	0	16	4225
PERCENTS	0.2%	0.3%	1.1%	4.9%	23.3%	39.0%	23.4%	6.2%	1.3%	0.0%	0.0%	0.0%	0.0%	0.3%	100%

Statistical Information...

15th Percentile Speed
26.9 mph

Median Speed
32.6 mph

10 MPH Pace Speed
30 mph to 40 mph
2634 vehicles in pace
Representing 62.3% of the total vehicles

85th Percentile Speed
38.5 mph

Average Speed
32.6 mph

Vehicles > 65 MPH
16
0.4%

MassDOT Highway Division
SPEED SUMMARY
Tue 6/2/2015

Site Reference: 150140000640
Site ID: 110000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: ROAD TOTAL

File: SPD-201-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	1	7	7	12	2	3	0	0	0	0	0	32
02:00	0	0	0	3	5	4	3	1	0	0	0	0	0	2	18
03:00	0	0	0	1	7	6	2	3	0	0	0	0	0	2	21
04:00	0	0	0	1	6	9	4	0	0	0	0	0	0	0	20
05:00	0	0	1	6	12	9	9	1	1	2	0	0	0	0	41
06:00	2	1	2	4	13	20	13	4	1	0	0	0	0	0	60
07:00	0	1	2	4	24	34	21	6	2	0	0	0	0	0	94
08:00	0	1	3	6	30	50	37	14	2	0	0	0	0	2	145
09:00	0	0	5	12	52	74	33	14	3	0	0	0	0	0	193
10:00	1	0	0	7	30	55	26	13	1	0	0	0	0	2	135
11:00	1	0	4	11	41	57	36	14	2	0	0	0	0	0	166
12:00	0	0	2	13	32	67	39	7	1	0	0	0	0	0	161
13:00	0	0	1	9	45	49	46	14	1	0	0	0	0	0	165
14:00	0	0	3	17	58	88	36	9	2	0	0	0	0	0	213
15:00	0	1	2	9	44	92	57	16	0	0	0	0	0	4	225
16:00	1	0	3	21	90	140	71	14	1	0	0	0	0	0	341
17:00	1	2	7	26	119	162	90	16	5	1	0	0	0	0	429
18:00	0	3	6	19	99	212	129	47	7	1	0	0	0	0	523
19:00	3	0	2	16	74	205	153	44	6	0	0	0	0	0	503
20:00	0	0	0	2	31	98	73	26	7	1	0	0	0	0	238
21:00	3	0	1	2	10	41	46	30	9	0	0	0	0	2	144
22:00	0	0	1	1	12	30	38	18	4	0	0	0	0	0	104
23:00	0	0	2	0	11	18	33	12	6	0	0	0	0	0	82
24:00	0	0	0	4	6	10	17	4	4	0	0	0	0	0	45
DAY TOTAL	12	9	47	195	858	1537	1024	329	68	5	0	0	0	14	4098
PERCENTS	0.3%	0.3%	1.2%	4.8%	21.0%	37.5%	24.9%	8.0%	1.6%	0.1%	0.0%	0.0%	0.0%	0.3%	100%

Statistical Information...

15th Percentile Speed
27.1 mph

Median Speed
33.0 mph

10 MPH Pace Speed
30 mph to 40 mph
2561 vehicles in pace
Representing 62.4% of the total vehicles

85th Percentile Speed
39.0 mph

Average Speed
33.0 mph

Vehicles > 65 MPH
14
0.3%

MassDOT Highway Division
SPEED SUMMARY
Wed 6/3/2015

Site Reference: 150140000640
Site ID: 110000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: ROAD TOTAL

File: SPD-201-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	3	6	2	6	4	6	0	0	0	0	0	27
02:00	0	0	0	0	2	6	7	1	1	0	0	0	0	0	17
03:00	0	0	0	1	9	2	2	1	0	0	0	0	0	0	15
04:00	0	0	1	3	7	9	3	3	0	0	0	0	0	0	26
05:00	0	0	3	1	14	15	5	4	1	0	0	0	0	0	43
06:00	0	0	0	2	9	25	13	13	7	2	0	0	0	0	71
07:00	0	0	1	2	15	37	41	18	7	0	0	0	0	0	121
08:00	0	2	0	3	30	62	58	18	5	3	1	0	0	0	182
09:00	0	0	4	9	34	67	67	21	4	1	0	0	0	0	207
10:00	2	1	0	15	35	63	38	7	0	0	0	0	0	4	165
11:00	0	0	2	13	46	82	40	19	0	0	0	0	0	0	202
12:00	1	0	3	5	39	61	22	8	1	0	0	0	0	0	140
13:00	0	0	2	19	53	95	48	14	3	0	0	0	0	0	234
14:00	3	1	2	12	47	94	57	12	5	0	0	0	0	0	233
15:00	0	0	1	12	47	96	75	29	6	2	0	0	0	0	268
16:00	1	0	2	9	79	178	108	40	4	0	0	0	0	0	421
17:00	0	1	5	25	82	225	159	41	7	0	0	0	0	0	545
18:00	5	3	1	13	114	255	181	39	7	1	0	0	0	0	619
19:00	0	1	4	12	105	171	147	40	10	1	1	1	0	0	493
20:00	0	0	2	11	36	123	103	33	13	0	0	0	0	0	321
21:00	0	0	1	6	22	61	70	25	8	1	0	0	1	0	195
22:00	2	1	3	6	22	49	43	19	0	0	0	0	0	0	145
23:00	1	0	1	1	8	31	38	14	5	0	0	0	0	1	100
24:00	0	0	1	4	7	11	19	20	5	0	0	0	0	0	67
DAY TOTAL	15	10	39	187	868	1820	1350	443	105	11	2	1	1	5	4857
PERCENTS	0.4%	0.3%	0.9%	3.9%	17.9%	37.4%	27.7%	9.1%	2.1%	0.2%	0.0%	0.0%	0.0%	0.1%	100%

Statistical Information...

15th Percentile Speed
27.8 mph

Median Speed
33.6 mph

10 MPH Pace Speed
30 mph to 40 mph
3170 vehicles in pace
Representing 65.2% of the total vehicles

85th Percentile Speed
39.4 mph

Average Speed
33.7 mph

Vehicles > 65 MPH
6
0.1%

Site Reference: 150140000640
Site ID: 110000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: ROAD TOTAL

File: SPD-201-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	3	7	12	8	3	2	0	0	0	0	0	35
02:00	0	0	0	0	2	6	3	3	1	0	0	0	0	0	15
03:00	0	0	1	2	4	8	2	1	2	0	0	0	0	0	20
04:00	0	0	1	2	7	7	6	4	1	0	0	0	0	0	28
05:00	0	0	1	4	18	23	5	3	0	0	0	0	0	0	54
06:00	0	0	0	7	11	30	17	3	3	0	0	0	0	0	71
07:00	0	0	2	4	18	48	41	14	8	2	0	0	0	0	137
08:00	0	1	2	9	28	72	57	34	5	0	0	0	0	0	208
09:00	0	0	2	12	42	87	39	15	8	0	0	0	0	0	205
10:00	0	0	3	13	43	58	50	14	1	0	0	0	0	0	182
11:00	0	0	1	14	46	74	42	16	0	0	0	0	0	0	193
12:00	0	0	7	8	44	86	38	15	2	0	0	0	0	0	200
13:00	1	0	1	14	60	87	70	12	4	1	0	0	0	0	250
14:00	0	0	2	12	52	114	65	32	4	1	0	0	0	0	282
15:00	1	0	3	4	49	120	86	26	8	1	1	0	0	1	300
16:00	2	1	4	10	87	185	126	21	2	1	0	0	0	0	439
17:00	0	0	4	17	92	186	135	49	8	2	0	0	0	0	493
18:00	3	4	5	20	125	248	171	37	2	1	0	0	0	0	616
DAY TOTAL	7	6	39	155	735	1451	961	302	61	9	1	0	0	1	3728
PERCENTS	0.2%	0.2%	1.1%	4.2%	19.8%	38.9%	25.7%	8.1%	1.6%	0.2%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
27.4 mph

85th Percentile Speed
39.0 mph

Median Speed
33.2 mph

Average Speed
33.3 mph

10 MPH Pace Speed
30 mph to 40 mph
2412 vehicles in pace
Representing 64.6% of the total vehicles

Vehicles > 65 MPH
1
0.0%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Wed 6/3/2015

STA. 2NB - LN.3

Site Reference: 150140000603
Site ID: 330000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: ROAD TOTAL

File: SPD-201-L3.prn
City: LYNN
County: SPEED LN-3 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
11:00	0	0	0	1	26	138	124	41	17	0	0	0	0	0	347
12:00	0	1	0	7	38	163	158	43	12	2	0	0	0	0	424
13:00	0	1	5	21	47	165	160	56	13	3	0	0	0	0	471
14:00	3	0	1	5	42	176	169	49	15	4	0	1	0	0	465
15:00	0	0	1	6	27	151	224	75	21	3	0	0	0	0	508
16:00	4	3	2	15	78	199	218	92	16	1	0	1	0	0	629
17:00	4	3	4	15	89	249	245	86	22	0	0	0	0	0	717
18:00	7	1	6	25	98	294	268	101	27	2	0	0	0	0	829
19:00	1	7	4	16	84	219	252	97	17	1	2	0	0	0	700
20:00	1	0	3	5	32	131	214	96	19	3	2	0	0	0	506
21:00	1	0	1	0	15	101	162	78	22	6	0	0	0	3	389
22:00	0	1	0	0	15	95	168	55	8	2	0	0	0	0	344
23:00	0	0	0	2	17	63	93	67	15	3	0	0	0	0	260
24:00	0	0	0	0	0	30	90	45	12	1	0	0	0	0	178
DAY TOTAL	21	17	27	118	608	2174	2545	981	236	31	4	2	0	3	6767
PERCENTS	0.4%	0.3%	0.4%	1.8%	9.0%	32.2%	37.7%	14.4%	3.4%	0.4%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
30.5 mph

85th Percentile Speed
41.2 mph

Median Speed
35.8 mph

Average Speed
35.7 mph

10 MPH Pace Speed
30 mph to 40 mph
4719 vehicles in pace
Representing 69.7% of the total vehicles

Vehicles > 65 MPH
3
0.0%

MassDOT Highway Division
SPEED SUMMARY
Thu 6/4/2015

Site Reference: 150140000603
Site ID: 330000000201
Location: RTE. 1A/LYNNWAY, NORTH OF COMMERCIAL ST.
Direction: ROAD TOTAL

File: SPD-201-L3.prn
City: LYNN
County: SPEED LN-3 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	3	12	45	29	7	2	0	0	0	0	98
02:00	0	0	0	0	4	9	26	15	5	0	1	0	0	0	60
03:00	0	0	0	0	0	10	15	8	3	0	2	0	0	0	38
04:00	0	0	0	1	1	3	11	4	4	1	1	0	0	0	26
05:00	0	0	0	1	0	7	12	9	6	3	0	0	0	0	38
06:00	0	0	0	0	2	10	38	29	11	6	0	0	0	0	96
07:00	0	0	0	0	4	21	78	64	23	4	1	0	0	0	195
08:00	0	0	0	5	17	91	140	93	29	8	0	0	0	0	383
09:00	0	0	0	3	25	104	164	93	17	6	2	0	0	0	414
10:00	0	0	1	2	17	108	147	67	17	1	1	0	0	0	361
11:00	0	0	0	2	28	132	139	46	12	1	0	0	0	0	360
12:00	2	0	0	1	27	116	149	53	7	2	1	1	0	0	359
13:00	0	1	2	5	32	159	186	52	16	1	0	0	0	0	454
14:00	0	0	0	10	41	162	180	70	17	3	1	0	0	0	484
15:00	1	0	0	1	38	149	198	79	17	5	0	0	0	0	488
16:00	1	1	8	19	68	221	262	79	15	4	0	0	0	0	678
17:00	3	2	7	9	56	204	264	113	23	1	0	1	0	0	683
18:00	7	5	13	32	87	301	270	88	18	4	0	0	0	0	825
DAY TOTAL	14	9	31	91	450	1819	2324	991	247	52	10	2	0	0	6040
PERCENTS	0.3%	0.2%	0.6%	1.6%	7.5%	30.1%	38.4%	16.4%	4.0%	0.8%	0.1%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
30.9 mph

85th Percentile Speed
42.0 mph

Median Speed
36.3 mph

Average Speed
36.2 mph

10 MPH Pace Speed
30 mph to 40 mph
4143 vehicles in pace
Representing 68.5% of the total vehicles

Vehicles > 65 MPH
0
0.0%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA.3 NB- LN.1

Site Reference: 150140000485
Site ID: 110000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	6	6	2	0	0	0	0	0	0	14
02:00	0	0	0	0	1	2	1	0	0	0	0	0	0	0	4
03:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	3
04:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
05:00	0	0	0	1	1	2	0	0	0	0	0	0	0	0	4
06:00	0	0	0	0	4	3	3	0	0	0	0	0	0	0	10
07:00	0	0	0	2	6	12	5	5	1	0	0	0	0	0	31
08:00	1	0	2	4	9	30	12	5	0	1	0	0	0	0	64
09:00	0	0	1	1	25	48	26	2	0	1	0	0	0	0	104
10:00	0	0	2	10	32	49	16	8	1	1	0	0	0	0	119
11:00	0	1	5	11	22	34	24	4	1	0	0	0	0	0	102
12:00	0	2	7	9	17	44	42	5	2	0	0	0	0	0	128
13:00	0	1	3	11	27	51	43	12	2	0	0	0	0	0	150
14:00	1	2	4	14	39	57	38	4	2	0	0	0	0	0	161
15:00	0	1	13	10	42	49	49	9	5	0	0	0	0	0	178
16:00	0	1	9	10	29	76	57	11	0	0	0	0	0	0	193
17:00	0	0	6	11	67	119	60	20	4	1	0	0	0	0	288
18:00	0	0	8	31	76	123	62	13	1	0	0	0	0	0	314
19:00	0	11	18	14	65	115	59	20	1	1	0	0	0	0	304
20:00	0	1	8	14	43	79	43	10	4	0	0	0	0	0	202
21:00	0	0	2	10	22	52	23	6	0	0	0	0	0	0	115
22:00	0	0	3	3	21	32	17	4	1	0	0	0	0	0	81
23:00	0	0	0	3	6	21	10	2	0	0	0	0	0	0	42
24:00	0	0	0	2	3	9	9	2	0	0	0	0	0	0	25
DAY TOTAL	2	20	92	171	558	1014	606	145	25	5	0	0	0	0	2638
PERCENTS	0.1%	0.8%	3.5%	6.5%	21.2%	38.5%	23.0%	5.4%	0.9%	0.1%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
26.0 mph

85th Percentile Speed
38.2 mph

Median Speed
32.4 mph

Average Speed
32.0 mph

10 MPH Pace Speed
30 mph to 40 mph
1620 vehicles in pace
Representing 61.4% of the total vehicles

Vehicles > 65 MPH
0
0.0%

Site Reference: 150140000485
Site ID: 110000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	6	5	3	0	0	0	0	0	0	14
02:00	0	0	0	0	0	7	4	0	0	0	0	0	0	0	11
03:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
05:00	0	0	0	1	3	2	2	0	0	0	0	0	0	0	8
06:00	0	0	1	0	1	5	1	0	0	0	0	0	0	0	8
07:00	2	1	0	2	10	9	6	3	0	0	0	0	0	0	33
08:00	1	0	0	4	15	29	14	4	0	0	0	0	0	0	67
09:00	0	1	1	3	25	35	21	4	1	1	0	0	0	0	92
10:00	0	1	2	14	22	44	16	4	4	0	0	0	0	0	107
11:00	0	3	5	12	24	31	19	6	2	0	0	0	0	0	102
12:00	0	5	5	13	26	56	29	5	2	0	0	0	0	0	141
13:00	0	1	7	13	31	47	40	5	1	0	0	0	0	0	145
14:00	0	0	7	19	29	61	36	7	0	0	0	0	0	0	159
15:00	0	5	7	10	44	51	40	10	0	0	0	0	0	0	167
16:00	0	1	4	11	49	90	59	22	1	1	0	0	0	0	238
17:00	0	0	6	20	68	90	54	15	4	0	0	0	0	0	257
18:00	0	1	2	12	54	133	72	20	1	0	0	0	0	0	295
19:00	0	0	3	9	53	111	62	15	3	1	0	0	0	0	257
20:00	0	0	4	6	27	74	56	20	3	1	0	0	0	0	191
21:00	0	0	2	9	22	49	35	12	0	1	0	0	0	0	130
22:00	0	0	0	3	9	29	25	6	1	0	0	0	0	0	73
23:00	0	0	1	1	8	27	23	9	5	0	0	0	0	0	74
24:00	0	0	0	2	1	10	13	4	1	0	0	0	0	0	31
DAY TOTAL	3	19	57	165	524	997	632	174	29	5	0	0	0	0	2605
PERCENTS	0.2%	0.8%	2.2%	6.4%	20.2%	38.2%	24.2%	6.6%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
26.4 mph

Median Speed
32.7 mph

10 MPH Pace Speed
30 mph to 40 mph
1629 vehicles in pace
Representing 62.5% of the total vehicles

85th Percentile Speed
38.6 mph

Average Speed
32.5 mph

Vehicles > 65 MPH
0
0.0%

MassDOT Highway Division
SPEED SUMMARY
Wed 6/3/2015

Site Reference: 150140000485
Site ID: 110000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	1	2	4	9	2	1	0	0	0	0	0	19
02:00	0	0	0	1	1	3	0	4	0	0	0	0	0	0	9
03:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
04:00	0	0	1	1	1	4	3	1	0	0	0	0	0	0	11
05:00	0	0	0	1	3	2	1	0	0	0	0	0	0	0	7
06:00	0	0	0	0	3	7	3	4	1	0	0	0	0	0	18
07:00	0	0	4	13	2	7	8	3	1	3	0	0	0	0	41
08:00	0	0	5	8	18	35	23	9	1	0	0	0	0	0	99
09:00	1	0	1	5	22	47	30	9	1	0	0	0	0	0	116
10:00	0	1	4	13	31	55	23	15	1	0	0	0	0	0	143
11:00	2	2	4	14	30	46	21	11	5	0	0	0	0	0	135
12:00	0	0	7	9	30	65	40	7	0	0	0	0	0	0	158
13:00	1	0	6	18	34	66	42	4	1	0	0	0	0	0	172
14:00	0	2	7	16	27	53	27	7	2	0	0	0	0	0	141
15:00	3	1	8	17	44	46	21	9	1	2	0	0	0	0	152
16:00	0	0	5	21	54	92	64	23	2	1	0	0	0	0	262
17:00	0	0	10	34	58	112	81	13	3	0	1	0	0	0	312
18:00	8	9	31	56	118	115	27	8	1	0	0	0	0	0	373
19:00	3	2	24	88	85	78	25	4	0	1	0	0	0	0	310
20:00	1	0	5	16	28	68	64	15	1	1	0	0	0	0	199
21:00	0	0	1	9	31	55	35	7	2	1	0	0	0	0	141
22:00	0	0	1	5	20	52	25	5	0	0	0	0	0	0	108
23:00	0	0	3	3	11	26	24	4	2	0	0	0	0	0	73
24:00	0	0	0	2	2	25	17	4	0	0	0	0	0	0	50
DAY TOTAL	19	17	127	352	655	1064	613	168	26	9	1	0	0	0	3051
PERCENTS	0.7%	0.6%	4.2%	11.6%	21.5%	34.9%	20.0%	5.5%	0.8%	0.2%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
24.2 mph

85th Percentile Speed
37.9 mph

Median Speed
31.7 mph

Average Speed
31.1 mph

10 MPH Pace Speed
25 mph to 35 mph
1719 vehicles in pace
Representing 56.3% of the total vehicles

Vehicles > 65 MPH
0
0.0%

MassDOT Highway Division
SPEED SUMMARY
Thu 6/4/2015

Site Reference: 150140000485
Site ID: 110000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L1.prn
City: LYNN
County: SPEED LN-1 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	1	3	8	4	2	1	0	0	0	0	0	19
02:00	0	0	0	0	0	4	2	2	0	0	0	0	0	0	8
03:00	0	0	0	2	0	1	2	0	0	0	0	0	0	0	5
04:00	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
05:00	0	0	1	1	2	2	2	0	1	0	0	0	0	0	9
06:00	0	0	1	1	2	8	10	5	1	1	0	0	0	0	29
07:00	0	0	1	3	7	20	11	5	0	2	0	0	0	0	49
08:00	0	0	1	9	13	44	23	5	3	1	0	0	0	0	99
09:00	0	0	5	7	24	44	47	13	6	0	0	0	0	0	146
10:00	0	0	4	13	24	53	40	8	2	0	0	0	0	0	144
11:00	0	1	6	14	31	51	32	8	3	0	0	0	0	0	146
12:00	0	1	7	15	39	48	46	8	0	0	0	0	0	0	164
13:00	0	0	5	21	38	75	48	9	2	0	0	0	0	0	198
14:00	4	0	5	21	48	67	52	12	2	2	0	0	0	0	213
15:00	0	1	10	16	38	75	49	10	1	2	0	0	1	0	203
16:00	1	0	6	30	66	76	61	20	4	0	0	0	0	0	264
17:00	0	1	10	29	65	100	61	16	1	0	0	0	0	0	283
18:00	0	0	9	35	88	150	67	8	1	0	0	0	0	0	358
DAY TOTAL	5	4	71	218	488	826	560	131	28	8	0	0	1	0	2340
PERCENTS	0.3%	0.2%	3.1%	9.4%	20.9%	35.3%	23.9%	5.5%	1.1%	0.3%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
25.6 mph

85th Percentile Speed
38.4 mph

Median Speed
32.3 mph

Average Speed
32.0 mph

10 MPH Pace Speed
30 mph to 40 mph
1386 vehicles in pace
Representing 59.2% of the total vehicles

Vehicles > 65 MPH
1
0.0%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA. 3 NB - LN. 3

Site Reference: 150140000183
Site ID: 330000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L3.prn
City: LYNN
County: SPEED LN-3 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	1	4	11	6	5	0	0	0	0	0	27
02:00	0	0	0	0	3	0	6	1	0	3	0	0	0	0	13
03:00	0	0	0	1	0	0	0	3	1	0	0	0	0	0	5
04:00	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
05:00	0	0	0	0	0	2	4	0	1	0	0	0	0	0	7
06:00	0	0	0	0	2	2	6	9	3	1	0	0	0	0	23
07:00	0	0	0	0	1	8	13	16	8	3	0	0	0	0	49
08:00	0	0	0	3	5	17	66	29	14	1	1	0	0	0	136
09:00	0	0	0	0	3	28	52	39	19	1	1	0	0	0	143
10:00	0	0	0	2	4	29	37	37	10	3	1	0	0	0	123
11:00	0	0	0	1	8	11	50	39	14	4	0	0	0	0	127
12:00	0	0	0	3	3	18	39	39	16	2	0	0	0	0	120
13:00	0	0	0	0	3	23	49	42	15	9	1	0	0	0	142
14:00	0	0	2	6	8	24	70	46	12	5	1	0	0	0	174
15:00	0	0	0	2	9	43	75	48	20	3	2	0	0	0	202
16:00	0	0	0	2	8	43	94	99	34	7	0	1	0	0	288
17:00	0	0	0	0	5	54	145	93	49	8	1	0	0	0	355
18:00	1	0	0	6	36	115	198	95	34	9	2	0	0	0	496
19:00	0	2	2	5	18	90	189	126	41	0	0	0	0	0	473
20:00	0	0	0	0	10	41	106	73	28	7	0	0	0	0	265
21:00	0	0	0	2	9	36	42	28	9	2	1	0	0	0	129
22:00	0	0	0	1	7	19	38	24	5	1	0	0	0	0	95
23:00	0	0	0	0	2	10	32	18	4	2	0	0	0	0	68
24:00	0	0	0	0	1	5	15	11	5	1	0	0	0	0	38
DAY TOTAL	1	2	4	34	147	622	1337	923	347	72	11	1	0	0	3501
PERCENTS	0.1%	0.1%	0.2%	1.0%	4.2%	17.8%	38.1%	26.3%	9.9%	2.0%	0.3%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
32.7 mph

Median Speed
38.5 mph

10 MPH Pace Speed
35 mph to 45 mph
2260 vehicles in pace
Representing 64.5% of the total vehicles

85th Percentile Speed
44.5 mph

Average Speed
38.7 mph

Vehicles > 65 MPH
0
0.0%

MassDOT Highway Division
SPEED SUMMARY
Tue 6/2/2015

Site Reference: 150140000183
Site ID: 330000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L3.prn
City: LYNN
County: SPEED LN-3 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	3	4	7	1	1	0	0	0	0	16
02:00	0	0	0	0	0	2	4	0	3	0	0	0	0	0	9
03:00	0	0	0	1	0	3	4	0	0	0	0	0	0	0	8
04:00	0	0	0	0	0	2	2	0	0	0	0	0	0	0	4
05:00	0	0	0	1	0	2	0	1	0	0	0	0	0	0	4
06:00	0	0	0	0	1	2	5	11	6	0	0	0	0	0	25
07:00	0	0	0	1	1	14	17	11	16	4	0	0	0	0	64
08:00	0	0	0	3	2	18	65	35	9	3	1	1	0	0	137
09:00	0	0	0	0	2	26	40	36	17	3	1	0	1	0	126
10:00	0	0	3	2	7	13	30	27	16	5	0	0	0	0	103
11:00	0	0	0	0	1	28	54	42	14	1	0	0	0	0	140
12:00	0	0	0	3	2	25	67	35	13	1	1	1	0	0	148
13:00	0	0	4	2	6	31	56	48	27	4	0	0	0	0	178
14:00	0	0	0	3	6	21	65	51	24	3	0	0	0	0	173
15:00	0	0	1	1	17	40	91	77	29	3	0	0	0	0	259
16:00	0	0	2	5	9	39	102	96	42	6	0	0	0	0	301
17:00	0	0	0	10	23	68	134	97	37	2	1	0	0	0	372
18:00	1	0	0	5	15	77	195	158	54	15	0	0	0	0	520
19:00	1	0	0	8	9	65	173	125	49	10	0	1	0	0	441
20:00	0	0	0	2	8	36	96	68	34	10	2	0	0	0	256
21:00	0	0	0	1	4	26	39	55	26	7	0	0	0	0	158
22:00	0	0	1	1	3	10	41	45	27	6	1	0	0	0	135
23:00	0	0	0	0	0	13	17	37	14	11	0	0	0	0	92
24:00	0	0	0	0	2	2	21	20	10	1	1	0	0	0	57
DAY TOTAL	2	0	11	49	118	566	1322	1082	468	96	8	3	1	0	3726
PERCENTS	0.1%	0.0%	0.3%	1.4%	3.2%	15.2%	35.5%	29.1%	12.5%	2.5%	0.2%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
33.4 mph

85th Percentile Speed
45.2 mph

Median Speed
39.2 mph

Average Speed
39.3 mph

10 MPH Pace Speed
35 mph to 45 mph
2404 vehicles in pace
Representing 64.5% of the total vehicles

Vehicles > 65 MPH
1
0.0%

MassDOT Highway Division
SPEED SUMMARY
Wed 6/3/2015

Site Reference: 150140000183
Site ID: 330000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L3.prn
City: LYNN
County: SPEED LN-3 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	2	2	11	5	2	2	0	0	0	0	24
02:00	0	0	0	1	0	0	5	1	2	0	0	0	0	0	9
03:00	0	0	0	0	0	2	0	1	1	0	0	0	0	0	4
04:00	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3
05:00	0	0	0	0	0	1	3	3	3	0	0	0	0	0	10
06:00	0	0	0	0	2	4	0	9	8	4	4	0	0	0	31
07:00	0	0	0	9	6	5	9	12	14	2	1	0	0	0	58
08:00	0	0	0	13	14	11	40	44	25	8	0	0	0	0	155
09:00	0	0	0	3	8	22	40	35	24	7	1	0	0	0	140
10:00	0	0	2	4	4	12	40	30	17	3	1	0	0	0	113
11:00	0	0	0	0	5	10	51	36	20	2	0	0	0	0	124
12:00	0	0	0	0	6	17	46	48	23	3	1	0	0	0	144
13:00	0	0	2	2	8	24	60	57	25	6	0	0	0	0	184
14:00	0	0	0	3	6	25	56	44	27	4	1	0	0	0	166
15:00	0	0	1	9	39	70	84	42	15	8	1	0	0	0	269
16:00	0	0	0	4	10	38	104	88	49	12	2	0	0	0	307
17:00	0	0	2	18	40	63	130	97	60	8	2	0	0	0	420
18:00	50	13	34	63	106	156	104	29	7	3	0	0	0	0	565
19:00	51	29	22	52	121	104	92	31	13	1	1	0	0	0	517
20:00	2	1	0	5	16	28	88	83	41	9	2	0	0	0	275
21:00	0	0	0	3	14	24	77	55	27	8	3	0	0	0	211
22:00	0	0	0	3	4	20	59	29	20	7	2	1	0	0	145
23:00	0	0	0	1	1	20	42	28	13	8	2	0	0	1	116
24:00	0	0	1	1	1	7	22	24	12	4	0	0	0	1	73
DAY TOTAL	103	43	64	194	413	665	1165	832	448	109	24	1	0	2	4063
PERCENTS	2.6%	1.1%	1.6%	4.8%	10.2%	16.4%	28.7%	20.5%	11.0%	2.6%	0.5%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
27.5 mph

85th Percentile Speed
44.9 mph

Median Speed
37.4 mph

Average Speed
36.2 mph

10 MPH Pace Speed
35 mph to 45 mph
1997 vehicles in pace
Representing 49.1% of the total vehicles

Vehicles > 65 MPH
2
0.0%

Site Reference: 150140000183
Site ID: 330000000301
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-301-L3.prn
City: LYNN
County: SPEED LN-3 NB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	4	6	9	4	1	4	1	0	0	29
02:00	0	0	0	0	1	3	1	5	1	1	1	0	0	0	13
03:00	0	0	0	0	0	2	5	0	0	0	0	0	0	0	7
04:00	0	0	0	0	0	3	3	0	0	0	0	0	0	0	6
05:00	0	0	0	0	0	0	2	1	2	1	0	0	0	0	6
06:00	0	0	0	0	1	2	4	8	5	2	0	0	0	0	22
07:00	0	0	0	2	4	13	18	14	9	3	2	1	0	0	66
08:00	0	0	0	2	0	7	36	58	29	6	0	0	0	0	138
09:00	0	0	0	6	5	16	34	60	26	7	5	0	0	0	159
10:00	0	0	0	5	6	15	39	45	13	4	0	0	0	0	127
11:00	0	0	0	7	2	19	43	41	13	4	0	0	0	0	129
12:00	0	0	0	1	10	18	40	48	13	6	1	0	0	0	137
13:00	0	0	1	3	13	24	54	61	37	7	2	0	0	0	202
14:00	1	0	1	5	5	26	54	62	27	10	1	0	0	0	192
15:00	1	0	0	6	7	27	94	78	32	9	0	1	0	0	255
16:00	0	0	1	9	25	43	110	95	53	10	1	0	0	0	347
17:00	0	1	1	10	13	71	120	116	47	6	2	1	0	0	388
18:00	0	0	0	12	30	79	191	143	62	5	3	1	0	0	526
DAY TOTAL	2	1	4	68	122	372	854	844	373	82	22	5	0	0	2749
PERCENTS	0.1%	0.1%	0.2%	2.5%	4.5%	13.6%	31.0%	30.7%	13.5%	2.9%	0.8%	0.1%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
32.9 mph

85th Percentile Speed
45.9 mph

Median Speed
39.7 mph

Average Speed
39.5 mph

10 MPH Pace Speed
35 mph to 45 mph
1698 vehicles in pace
Representing 61.7% of the total vehicles

Vehicles > 65 MPH
0
0.0%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA. 3 SB - LN. 1

Site Reference: 150140000818
Site ID: 110000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L1.prn
City: LYNN
County: SPEED LN-1 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	3	0	2	0	1	0	0	0	0	0	6
02:00	0	0	0	1	0	3	0	1	0	0	0	0	0	0	5
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	1	1	0	0	1	0	0	0	0	0	3
05:00	0	1	0	2	0	1	1	1	0	0	0	0	0	0	6
06:00	0	0	0	3	0	7	10	11	6	1	0	0	0	0	38
07:00	2	0	0	1	10	24	24	28	14	0	0	0	0	0	103
08:00	8	0	1	0	8	52	63	27	3	0	0	0	0	2	164
09:00	11	0	0	2	3	59	75	24	1	0	0	0	0	0	175
10:00	10	0	1	0	5	27	34	17	2	0	0	0	0	0	96
11:00	3	0	0	1	10	36	28	1	0	0	0	0	0	0	79
12:00	0	0	0	0	16	29	12	7	0	0	0	0	0	0	64
13:00	0	0	0	6	11	46	17	3	0	0	0	0	0	2	85
14:00	0	0	0	0	13	34	22	4	1	0	0	0	0	2	76
15:00	5	0	0	0	12	48	19	4	0	0	0	0	0	0	88
16:00	2	0	0	0	15	22	28	2	0	0	0	0	0	2	71
17:00	0	0	0	0	5	27	19	4	1	0	0	0	0	0	56
18:00	3	1	0	0	8	22	16	1	0	0	0	0	0	0	51
19:00	2	0	0	0	6	17	22	4	0	0	0	0	0	0	51
20:00	0	0	0	1	3	19	15	2	1	0	0	0	0	6	47
21:00	0	0	0	0	3	14	7	4	0	0	0	0	0	2	30
22:00	0	0	0	0	1	17	7	5	0	0	0	0	0	2	32
23:00	0	0	0	0	7	3	3	0	0	0	0	0	0	0	13
24:00	0	0	0	0	3	11	2	0	0	0	0	0	0	0	16
DAY TOTAL	46	2	2	17	143	519	426	150	31	1	0	0	0	18	1355
PERCENTS	3.4%	0.2%	0.2%	1.3%	10.6%	38.4%	31.4%	11.0%	2.2%	0.0%	0.0%	0.0%	0.0%	1.3%	100%

Statistical Information...

15th Percentile Speed
29.8 mph

85th Percentile Speed
40.0 mph

Median Speed
34.5 mph

Average Speed
34.0 mph

10 MPH Pace Speed
30 mph to 40 mph
945 vehicles in pace
Representing 69.7% of the total vehicles

Vehicles > 65 MPH
18
1.3%

MassDOT Highway Division
SPEED SUMMARY
Tue 6/2/2015

Site Reference: 150140000818
Site ID: 110000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L1.prn
City: LYNN
County: SPEED LN-1 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
02:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
05:00	0	0	1	2	1	1	3	3	0	1	0	0	0	0	12
06:00	1	0	0	2	0	5	17	6	3	5	0	0	0	0	39
07:00	2	0	0	1	4	16	34	18	10	1	0	0	0	0	86
08:00	8	0	0	0	11	55	81	23	7	0	0	0	0	0	185
09:00	0	0	0	4	5	49	63	15	7	3	1	0	0	0	147
10:00	0	0	0	3	12	44	35	7	1	0	0	0	0	0	102
11:00	1	0	0	0	7	37	17	3	0	0	4	0	0	0	69
12:00	1	0	1	1	9	42	21	5	2	0	0	0	0	2	84
13:00	4	1	6	1	16	28	27	1	0	0	0	0	0	0	84
14:00	0	0	0	3	12	36	18	3	0	2	0	0	0	2	76
15:00	10	0	0	0	5	36	23	3	4	0	0	0	0	0	81
16:00	0	0	0	3	5	39	19	7	3	0	0	0	0	0	76
17:00	1	0	0	2	5	27	29	5	0	0	0	0	0	6	75
18:00	0	0	0	2	10	28	17	5	0	0	1	0	0	3	66
19:00	0	0	0	1	4	16	16	2	0	0	0	0	0	6	45
20:00	0	0	0	0	7	22	9	1	1	0	0	0	0	2	42
21:00	0	0	0	0	2	18	3	1	0	0	0	0	0	0	24
22:00	0	0	0	3	5	4	2	0	0	0	0	0	0	0	14
23:00	0	0	0	0	2	1	7	1	0	0	0	0	0	0	11
24:00	0	0	0	0	2	6	0	0	0	0	0	0	0	0	8
DAY TOTAL	28	1	10	28	124	515	441	109	39	12	6	0	0	21	1334
PERCENTS	2.1%	0.1%	0.8%	2.1%	9.3%	38.7%	33.1%	8.2%	2.9%	0.8%	0.4%	0.0%	0.0%	1.5%	100%

Statistical Information...

15th Percentile Speed
30.1 mph

85th Percentile Speed
39.9 mph

Median Speed
34.6 mph

Average Speed
34.4 mph

10 MPH Pace Speed
30 mph to 40 mph
956 vehicles in pace
Representing 71.6% of the total vehicles

Vehicles > 65 MPH
21
1.6%

MassDOT Highway Division
SPEED SUMMARY
Wed 6/3/2015

Site Reference: 150140000818
Site ID: 110000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L1.prn
City: LYNN
County: SPEED LN-1 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	1	0	0	1	1	1	0	0	0	0	0	0	4
02:00	0	0	0	0	3	0	1	1	0	0	0	0	0	0	5
03:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
05:00	0	0	0	2	1	3	1	0	0	0	0	0	0	0	7
06:00	0	0	1	0	9	7	3	0	0	1	0	0	0	2	23
07:00	7	3	0	2	4	26	34	28	6	0	0	0	0	2	112
08:00	4	2	0	0	22	72	61	18	1	0	0	0	0	0	180
09:00	5	0	0	4	5	26	22	8	1	0	0	0	0	0	71
10:00	2	0	0	0	5	45	31	12	5	0	0	0	0	2	102
11:00	1	0	0	3	9	27	25	5	5	0	0	0	0	0	75
12:00	0	0	1	4	16	25	19	2	1	0	0	0	0	0	68
13:00	1	0	0	1	4	25	20	7	0	7	0	0	0	0	65
14:00	1	0	0	3	4	29	22	11	3	0	0	0	0	0	73
15:00	3	0	1	3	10	28	20	5	1	3	0	0	0	0	74
16:00	0	0	4	0	22	37	21	3	0	0	0	0	0	0	87
17:00	5	0	0	0	12	41	31	6	4	0	0	0	0	0	99
18:00	0	1	0	0	19	24	31	9	3	0	0	0	0	0	87
19:00	1	0	0	1	6	22	29	7	0	0	0	0	0	0	66
20:00	0	0	0	1	7	10	15	1	0	0	0	0	0	0	34
21:00	0	0	1	1	11	13	7	0	0	1	0	0	0	0	34
22:00	0	1	0	1	0	9	10	1	1	0	0	0	0	0	23
23:00	0	0	0	0	1	2	7	1	0	0	0	0	0	0	11
24:00	0	0	0	0	0	4	5	2	0	1	0	0	0	0	12
DAY TOTAL	30	7	9	26	171	477	416	128	32	13	0	0	0	6	1315
PERCENTS	2.3%	0.6%	0.7%	2.0%	13.1%	36.3%	31.6%	9.7%	2.4%	0.9%	0.0%	0.0%	0.0%	0.4%	100%

Statistical Information...

15th Percentile Speed
28.7 mph

85th Percentile Speed
39.8 mph

Median Speed
34.4 mph

Average Speed
34.0 mph

10 MPH Pace Speed
30 mph to 40 mph
893 vehicles in pace
Representing 67.9% of the total vehicles

Vehicles > 65 MPH
6
0.5%

MassDOT Highway Division
SPEED SUMMARY
Thu 6/4/2015

Site Reference: 150140000818
Site ID: 110000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L1.prn
City: LYNN
County: SPEED LN-1 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
05:00	0	0	0	1	0	0	0	4	0	0	0	0	0	0	5
06:00	1	0	0	0	0	7	12	4	2	0	1	0	0	2	29
07:00	3	0	0	3	1	16	36	22	8	1	0	0	0	2	92
08:00	2	0	0	1	8	33	70	33	10	2	0	0	0	6	165
09:00	7	0	0	0	8	53	44	29	10	1	0	0	0	6	158
10:00	0	0	0	1	5	53	37	12	0	1	0	0	0	0	109
11:00	2	0	0	3	16	32	32	11	1	1	0	0	0	0	98
12:00	0	0	0	2	6	41	31	6	2	0	0	0	0	8	96
13:00	10	0	1	0	4	23	23	11	0	0	0	0	0	0	72
14:00	3	0	0	0	8	32	39	2	1	2	0	0	0	2	89
15:00	8	0	2	1	16	34	52	13	3	2	0	0	0	0	131
16:00	4	0	0	1	17	53	39	17	0	1	1	0	0	0	133
17:00	3	0	3	0	7	34	36	4	0	0	0	0	0	0	87
18:00	1	0	1	3	14	32	18	7	2	1	0	0	0	0	79
DAY TOTAL	44	0	7	16	111	444	470	175	40	12	2	0	0	26	1347
PERCENTS	3.3%	0.0%	0.6%	1.2%	8.3%	33.0%	34.9%	13.0%	2.9%	0.8%	0.1%	0.0%	0.0%	1.9%	100%

Statistical Information...

15th Percentile Speed
30.3 mph

85th Percentile Speed
41.5 mph

Median Speed
35.6 mph

Average Speed
34.8 mph

10 MPH Pace Speed
30 mph to 40 mph
914 vehicles in pace
Representing 67.8% of the total vehicles

Vehicles > 65 MPH
26
1.9%

SPEED

MassDOT Highway Division
SPEED SUMMARY
Mon 6/1/2015

STA. 3 SB - LN. 3

Site Reference: 150140000747
Site ID: 330000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L3.prn
City: LYNN
County: SPEED LN-3 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	3	8	1	2	2	0	0	0	0	16
02:00	0	0	0	0	0	1	3	3	0	0	0	0	0	0	7
03:00	0	0	0	0	0	0	2	3	2	2	0	0	0	0	9
04:00	0	0	0	0	0	3	2	3	3	1	0	0	0	0	12
05:00	0	0	0	0	0	1	13	28	17	7	1	0	0	0	67
06:00	0	0	0	0	0	8	47	144	91	17	3	0	0	0	310
07:00	0	0	0	0	0	21	268	353	141	9	1	0	0	0	793
08:00	0	0	0	0	9	106	342	274	66	10	1	0	0	0	808
09:00	0	0	0	0	10	64	288	264	47	5	0	0	0	0	678
10:00	0	0	0	0	6	44	192	153	57	4	5	0	0	0	461
11:00	0	0	0	0	6	37	118	126	38	8	0	0	0	0	333
12:00	1	0	0	0	1	42	109	107	45	5	0	0	0	0	310
13:00	0	0	0	0	1	39	113	103	38	3	0	0	0	0	297
14:00	0	0	0	1	4	23	100	103	40	3	0	0	0	0	274
15:00	0	0	0	0	3	33	90	92	50	8	0	0	0	0	276
16:00	0	0	0	1	1	24	87	117	41	11	5	0	0	0	287
17:00	1	0	0	0	1	38	94	88	32	5	0	0	0	0	259
18:00	0	0	0	0	5	31	118	92	30	4	0	0	0	0	280
19:00	0	0	0	0	1	13	75	78	24	7	1	0	0	0	199
20:00	0	0	0	0	0	16	56	38	23	0	0	1	1	0	135
21:00	0	0	0	0	2	15	62	31	9	2	0	0	0	0	121
22:00	0	0	0	0	4	10	38	27	7	2	0	0	0	0	88
23:00	0	0	0	0	1	13	23	20	6	1	0	0	0	0	64
24:00	0	0	0	0	0	5	17	7	3	0	0	0	0	0	32
DAY TOTAL	2	0	0	2	55	590	2265	2255	812	116	17	1	1	0	6116
PERCENTS	0.1%	0.0%	0.0%	0.1%	0.9%	9.7%	37.1%	36.9%	13.2%	1.8%	0.2%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
35.6 mph

85th Percentile Speed
45.2 mph

Median Speed
40.3 mph

Average Speed
40.4 mph

10 MPH Pace Speed
35 mph to 45 mph
4520 vehicles in pace
Representing 73.9% of the total vehicles

Vehicles > 65 MPH
1
0.0%

MassDOT Highway Division
SPEED SUMMARY
Tue 6/2/2015

Site Reference: 150140000747
Site ID: 330000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L3.prn
City: LYNN
County: SPEED LN-3 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	2	6	1	1	0	0	0	0	0	10
02:00	0	0	0	0	0	1	4	0	1	0	0	0	0	0	6
03:00	0	0	0	0	0	1	2	2	1	0	0	0	0	0	6
04:00	0	0	0	0	0	4	1	4	2	0	1	0	0	0	12
05:00	0	0	0	0	0	2	10	19	11	3	1	0	0	0	46
06:00	0	0	0	0	0	16	79	133	57	11	4	0	0	0	300
07:00	0	0	0	0	0	33	277	349	106	14	1	0	0	0	780
08:00	0	0	0	0	1	53	328	328	68	6	1	0	0	0	785
09:00	1	0	0	0	0	43	329	304	70	5	0	0	0	0	752
10:00	0	0	0	0	4	66	178	173	39	2	1	0	0	0	463
11:00	0	0	0	0	2	34	135	104	44	10	3	0	0	0	332
12:00	0	0	0	1	2	27	90	112	33	4	0	1	0	0	270
13:00	0	0	0	2	5	47	125	103	21	7	0	0	0	1	311
14:00	0	0	0	0	2	27	82	120	31	4	2	0	0	0	268
15:00	0	0	0	0	2	40	125	107	29	6	0	0	0	0	309
16:00	0	0	0	0	5	29	96	101	35	10	2	0	0	0	278
17:00	0	0	0	0	3	46	101	133	31	5	0	0	0	0	319
18:00	1	0	0	1	2	13	95	117	31	10	1	1	0	0	272
19:00	0	0	0	0	5	24	74	66	23	6	1	1	0	0	200
20:00	0	0	0	0	0	20	49	60	19	10	0	1	0	0	159
21:00	0	0	0	0	1	15	42	44	10	6	0	0	1	0	119
22:00	0	0	0	0	1	10	42	30	16	4	0	1	0	0	104
23:00	0	0	0	0	0	6	24	33	7	1	1	0	0	0	72
24:00	0	0	0	0	1	1	16	13	6	0	0	1	0	0	38
DAY TOTAL	2	0	0	4	36	560	2310	2456	692	124	19	6	1	1	6211
PERCENTS	0.1%	0.0%	0.0%	0.1%	0.6%	9.1%	37.2%	39.6%	11.1%	1.9%	0.3%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
35.7 mph

85th Percentile Speed
44.8 mph

Median Speed
40.4 mph

Average Speed
40.5 mph

10 MPH Pace Speed
35 mph to 45 mph
4766 vehicles in pace
Representing 76.7% of the total vehicles

Vehicles > 65 MPH
2
0.0%

Site Reference: 150140000747
Site ID: 330000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L3.prn
City: LYNN
County: SPEED LN-3 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	0	8	5	3	0	0	0	0	0	16
02:00	0	0	0	0	0	1	3	1	5	0	0	0	0	0	10
03:00	0	0	0	0	0	1	0	3	1	0	0	0	0	0	5
04:00	0	0	0	0	0	1	0	2	2	2	1	0	0	0	8
05:00	0	0	0	1	0	1	9	19	18	9	3	0	0	0	60
06:00	0	0	0	0	1	0	19	112	128	37	7	0	1	0	305
07:00	1	0	0	0	4	121	327	215	84	10	0	1	0	0	763
08:00	3	0	0	1	18	256	386	151	24	0	0	1	0	0	840
09:00	12	14	8	18	27	145	298	184	32	1	0	0	0	0	739
10:00	0	0	0	0	8	64	247	179	47	3	0	0	0	0	548
11:00	1	0	0	0	5	52	204	128	38	3	1	0	0	0	432
12:00	0	0	0	0	4	41	125	123	45	3	2	1	0	0	344
13:00	0	0	0	0	3	45	104	100	45	8	2	1	0	0	308
14:00	0	0	0	0	2	21	104	129	49	8	0	0	0	0	313
15:00	0	0	0	2	5	41	140	87	31	6	0	0	0	0	312
16:00	0	0	0	0	3	39	120	118	53	11	1	0	0	0	345
17:00	0	0	0	0	7	28	101	121	48	13	1	0	0	0	319
18:00	0	0	0	0	2	30	121	112	58	7	0	0	0	0	330
19:00	0	0	0	2	6	43	101	80	23	5	1	0	1	0	262
20:00	0	0	0	1	4	38	87	60	19	5	0	0	0	0	214
21:00	0	0	0	0	5	25	66	48	16	5	0	1	0	0	166
22:00	0	0	0	1	1	19	49	50	17	1	0	0	0	1	139
23:00	0	0	0	1	3	5	31	23	19	5	1	0	0	0	88
24:00	0	0	0	0	0	5	15	16	7	1	0	0	0	0	44
DAY TOTAL	17	14	8	27	108	1022	2665	2066	812	143	20	5	2	1	6910
PERCENTS	0.3%	0.3%	0.2%	0.4%	1.6%	14.8%	38.6%	29.9%	11.7%	2.0%	0.2%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
34.2 mph

85th Percentile Speed
44.9 mph

Median Speed
39.2 mph

Average Speed
39.5 mph

10 MPH Pace Speed
35 mph to 45 mph
4731 vehicles in pace
Representing 68.4% of the total vehicles

Vehicles > 65 MPH
3
0.0%

Site Reference: 150140000747
Site ID: 330000000302
Location: RTE. 1A/LYNNWAY, BTWN NEWELL&WASHINGTON
Direction: ROAD TOTAL

File: SPD-302-L3.prn
City: LYNN
County: SPEED LN-3 SB

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
01:00	0	0	0	0	0	3	5	3	3	0	0	0	0	0	14
02:00	0	0	0	0	1	2	0	3	0	0	0	0	0	0	6
03:00	0	0	0	1	1	4	4	5	1	0	0	0	0	0	16
04:00	0	0	0	0	0	0	4	2	5	1	1	0	0	0	13
05:00	0	0	0	0	0	1	14	24	15	11	0	0	0	0	65
06:00	0	0	0	0	0	2	18	109	121	33	6	0	0	0	289
07:00	1	0	0	0	0	46	180	330	191	28	1	0	0	0	777
08:00	0	0	0	0	1	59	264	347	129	14	0	0	0	0	814
09:00	0	0	0	0	2	48	257	331	101	15	4	1	0	0	759
10:00	0	0	0	0	3	37	165	201	77	15	1	0	0	0	499
11:00	0	0	0	0	8	45	145	130	46	11	0	0	0	0	385
12:00	1	0	0	0	4	37	122	144	52	7	1	0	0	0	368
13:00	0	0	0	0	2	28	123	126	57	7	3	2	0	0	348
14:00	0	0	0	0	7	40	114	114	47	11	0	0	0	0	333
15:00	1	0	0	1	2	31	104	135	45	11	1	0	0	0	331
16:00	0	0	0	0	3	28	117	135	53	9	1	1	0	0	347
17:00	0	0	1	0	2	52	126	120	40	5	1	0	0	0	347
18:00	0	0	0	0	3	47	125	106	44	11	1	0	0	0	337
DAY TOTAL	3	0	1	2	39	510	1887	2365	1027	189	21	4	0	0	6048
PERCENTS	0.1%	0.0%	0.1%	0.1%	0.7%	8.4%	31.2%	39.1%	16.9%	3.1%	0.3%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
35.9 mph

85th Percentile Speed
46.6 mph

Median Speed
41.2 mph

Average Speed
41.2 mph

10 MPH Pace Speed
35 mph to 45 mph
4252 vehicles in pace
Representing 70.3% of the total vehicles

Vehicles > 65 MPH
0
0.0%

APPENDIX C

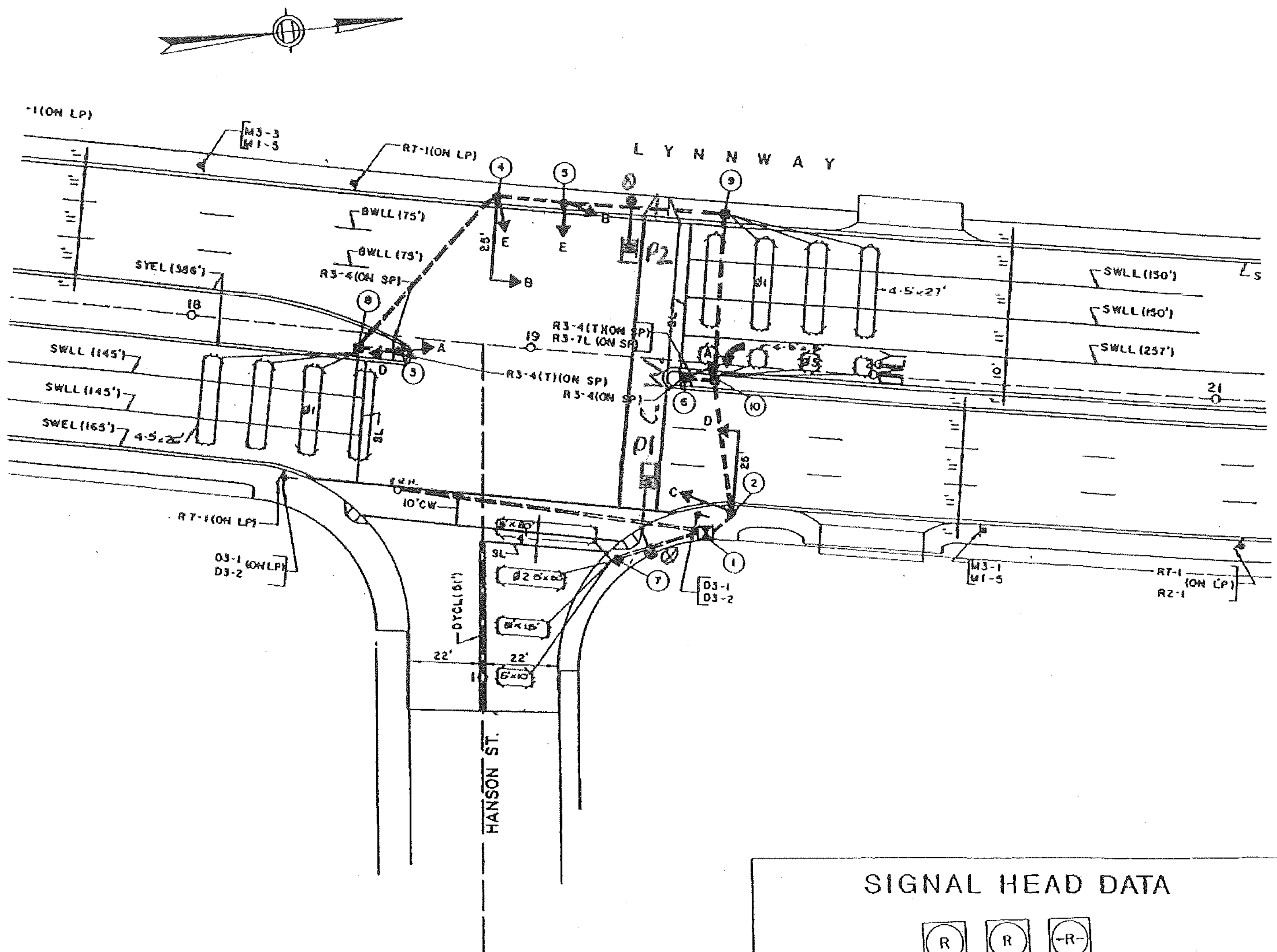
Traffic Signal Timing and Layout Information

COMMONWEALTH OF MASSACHUSETTS

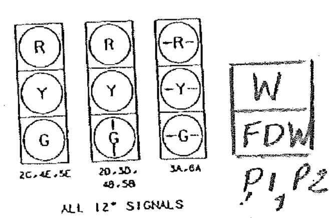
DEPARTMENT OF CONSERVATION AND RECREATION

TRAFFIC SIGNAL LAYOUT
LYNNWAY AT HANSON ST - LYNN

SCALE: 1" = 50' TRAFFIC CONTROL DEVICE NO. 234 DATE: May 8 2012



SIGNAL HEAD DATA



LEGEND

VEHICLE SIGNAL		WOODEN POLE	
PEDESTRIAN SIGNAL		SIGNAL POST	
CONTROL CABINET		MAST ARM	
LOOP DETECTOR		PULL BOX	
MAGNETIC DETECTOR	M	CONDUIT	
PED. PUSH BUTTON		OVERHEAD CABLE	
TRAFFIC SIGN		ELECTRIC MANHOLE	E.M.H.

NOTES

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION

TRAFFIC SIGNAL SEQUENCE AND TIMING

LYNNWAY AT HANSON STREET, LYNN

DATE: 5/8/2012

TRAFFIC CONTROL DEVICE NO. 234	SIGNAL NUMBER	1			2			3			4			FLASHING OPERATION
		1	2	3	4	5	6	7	8	9	10	11	12	
LYNNWAY (N.B.)	2D,3D	GVA	Y	R	R	R	R	R	R	R				FY
LYNNWAY (S.B.)	2C	G	Y	R	R	R	R	R	R	R				FY
LYNNWAY (S.B.)	3A,6A	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA				FR (LA)
LYNNWAY (S.B.)	4B,5,B	GVA	Y*	R*	R	R	R	GVA	Y*	R*				FY
HANSON ST. (W.B.)	4E, 5E	R	R	R	G	Y	R	R	R	R				FR
PEDESTRIAN	P1, P2	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW				OUT

LEGEND

R=RED
Y=YELLOW
G=GREEN
W=WALK
DW=DON'T WALK
FDW= FLASHING DON'T WALK
FY=FLASHING YELLOW
FR=FLASHING RED
VA=VERTICAL ARROW
LA=LEFT ARROW
RA=RIGHT ARROW

SUPERCEDES SEQUENCE AND TIMING DATED: 3-Jan-91

	1	2	3	4	5	6	7	8	9	10	11	12
SECONDS PER ACTUATION												
TIME BEFORE REDUCTION												
TIME TO REDUCE												
MINIMUM GAP												
MINIMUM GREEN	7			7			7					
PASSAGE	2			2			2					
MAXIMUM GREEN 1	90			40			40					
MAXIMUM GREEN 2	1			40			40					
CLEARANCE		3	2		3	2		3	1			
WALK				7								
PED. CLEARANCE				23								
RECALL	OFF			OFF			OFF					
DETECTION	NON-LOCK			NON-LOCK			NON-LOCK					

NOTES

Controller shall rests in RED in the absence of servicable call

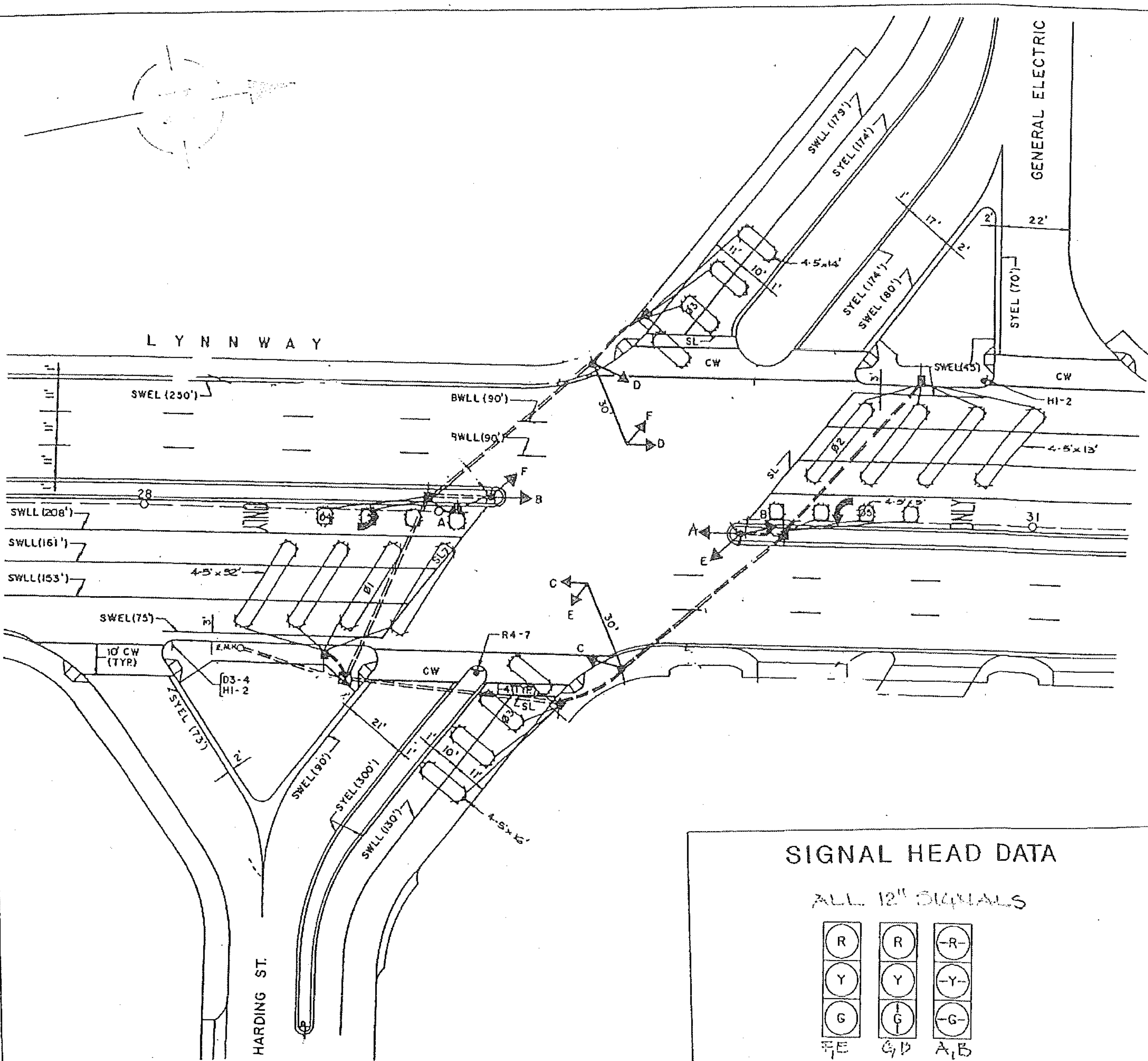
* If assigned right of way is to remain in effect during the next phase the signal indication for that traffic movement will not change during the clearance interval

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

LYNNWAY @ HARDING ST. & G.E. DRIVE, LYNN

SCALE: 1" = 50' TRAFFIC CONTROL DEVICE NO. 205 DATE: JAN 8, 1991



SIGNAL HEAD DATA

ALL 12" SIGNALS

R Y G — F,E
R Y G — G,D
R Y G — A,B

LEGEND

VEHICLE SIGNAL	WOODEN POLE
PEDESTRIAN SIGNAL	SIGNAL POST
CONTROL CABINET	MAST ARM
LOOP DETECTOR	PULL BOX
MAGNETIC DETECTOR	CONDUIT
PED. PUSH BUTTON	OVERHEAD CABLE
TRAFFIC SIGN	ELECTRIC MANHOLE

NOTES

COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

LYNNWAY AT HARDING ST. G.E. DRIVEWAY - LYNN

DATE: OCTOBER 5, 2001

TRAFFIC CONTROL	SIG.	1			2			3			4			5			6									FLASH
DEVICE NO.205	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	OPER
LYNNWAY (NB)	A	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA	RLA	RLA	RLA										FR(LA)
LYNNWAY (NB)	C	GVA	Y	R	R	R	R	R	R	R	R	R	RLA	R	R	R										FY
LYNNWAY (SB)	B	RLA	RLA	R	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA										FR(LA)
LYNNWAY (SB)	D	R	R	R	GVA	Y	R	R	R	R	R	R	RLA	R	R	R										FY
HARDING STREET (WB)	E	R	R	R	R	R	R	G	Y	R	R	R	RLA	R	R	R										FR
G.E. DRIVEWAY (EB)	F	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R										FR
SECONDS PER ACTUATION																										
TIME BEFORE REDUCTION																										
TIME TO REDUCE																										
MINIMUM GAP																										
MINIMUM GREEN		7			7			5			7			7												
PASSAGE		2			2			2			2			2												
Max. GREEN 1 (Free Operation)		90			90			30			20			20												
Max. GREEN 2 (Coordination)		1			1			30			20			20												
CLEARANCE			3	2		3	2		3	2		4	2		4	2										
WALK																										
PEDESTRIAN CLEARENCE																										
RECALL		OFF			OFF			OFF						OFF												
DETECTION		NON-LOCK						NON-LOCK						NON-LOCK												

LEGEND

R=RED
Y=YELLOW
G=GREEN
DW=DONT WALK
FDW=FLASHING DON'T WALK
FY=FLASHING YELLOW
FR=FLASHING RED
VA=VERTICAL ARROW
LA=LEFT ARROW
RA=RIGHT ARROW

SUPERCEDES SEQUENCE AND TIMING DATED:
JANUARY 3,1991

NOTES

1. CONTROLLER SHALL REST IN RED IN THE ABSENCE OF SERVICEABLE CALLS.

COORDINATION DATA SHEET

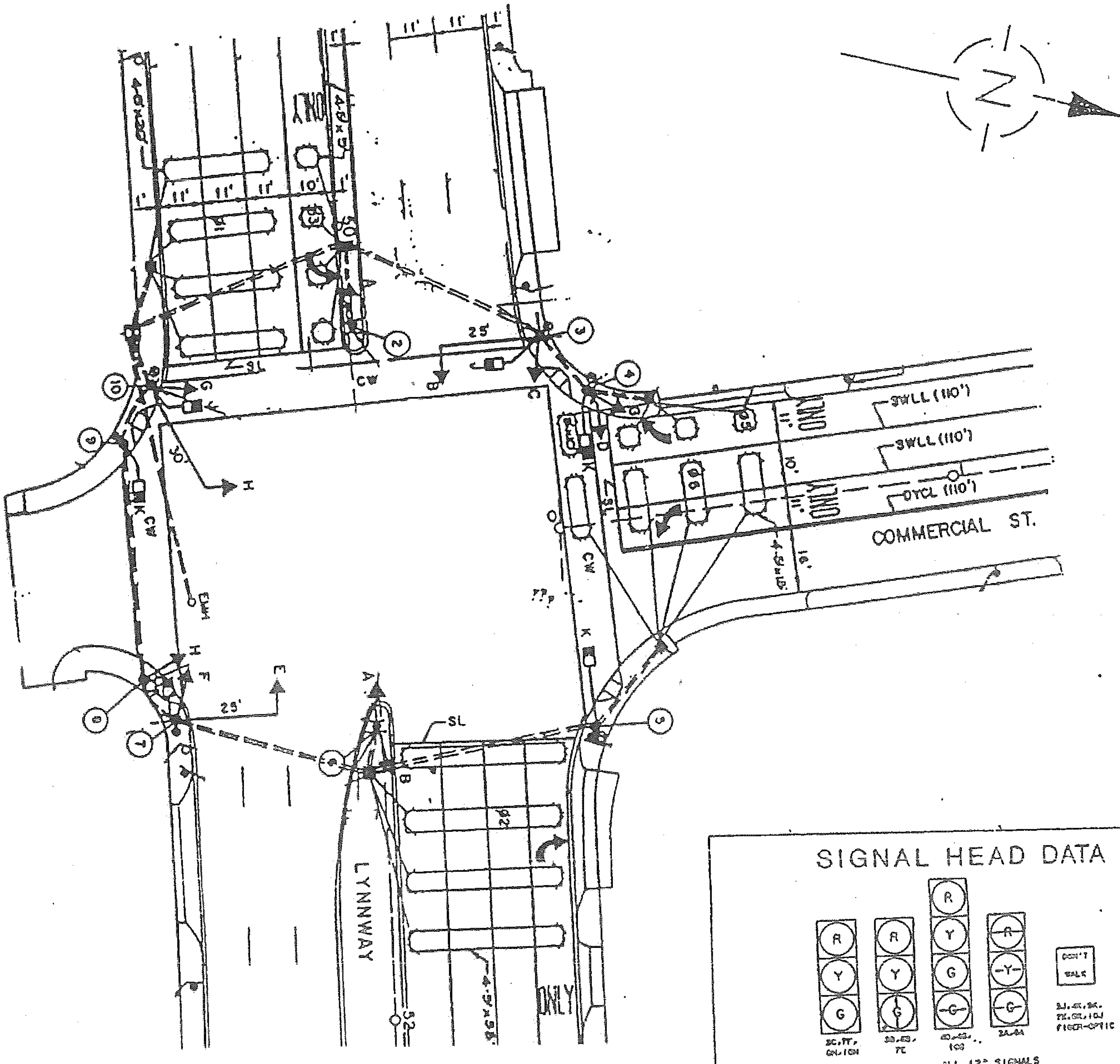
	DIAL 1	DIAL 2	DIAL 3	DIAL 4
CYCLE LENGTH	120	120	90	FREE OPERATION
OFFSET	81	28	31	
YIELD POINT	73	65	40	
FORCE - OFF O3	81	79	71	
FORCE - OFF O4 & 5	95	95	93	
	6:00-10:00AM	4:00-8:00PM	10:00AM-4:00PM	8:00PM-6:00AM

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

LYNNWAY AT COMMERCIAL STREET, LYNN

SCALE: 1" = 40'   TRAFFIC CONTROL DEVICE NO. 202   DATE: ______



LEGEND

VEHICLE SIGNAL		WOODEN POLE	
PEDESTRIAN SIGNAL		SIGNAL POST	
CONTROL CABINET		MAST ARM	
LOOP DETECTOR		PULL BOX	
MAGNETIC DETECTOR	M	CONDUIT	
PED. PUSH BUTTON		OVERHEAD CABLE	
TRAFFIC SIGN		ELECTRIC MANHOLE	E.M.H.

NOTES

COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

LYNNWAY AT COMMERCIAL STREET, LYNN

DATE: April 4, 1988

TRAFFIC CONTROL DEVICE NO. NO. 202	SIG. NO.	1			2			3			4			5			6			7			8			FLASH OPER.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LYNNWAY (EB)	2A,6A	RLA	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA				RLA	RLA	RLA										FR(LA)
LYNNWAY (EB)	7E	GVA	Y	R	R	R	R	R	R	R				R	R	R										FY
LYNNWAY (EB)	7F	G	Y	R	R	R	R	R	R	R				R	R	R										FY
LYNNWAY (WB)	3B,6B	R	R	R	GVA	Y	R	R	R	R				R	R	R										FY
LYNNWAY (WB)	3C	R	R	R	G	Y	R	R	R	R				R	R	R										FY
LYNNWAY (WB)	4D	R	R	R	G(1)	Y	R	R	R	R				R	R	R										FY
COMMERCIAL STREET (SB)	10H,8H	R	R	R	R	R	R	R	R	R				G	Y	R										FR
COMMERCIAL STREET (SB)	4G,10G	R	R	R	R	R	R	GRA	Y	R				G(1)	Y	R										FR
PEDESTRIANS (N-S)	3J,10J	DW	DW	DW	DW	DW	DW	DW	DW	DW				W(2) FDW(2)	DW	DW										OUT
PEDESTRIANS (E-W)	7K,9K	W(2) FDW(2)	DW	DW	DW	DW	DW	DW	DW	DW				DW	DW	DW										OUT
PEDESTRIANS (E-W)	4K,5K	DW	DW	DW	W(2) FDW(2)	DW	DW	DW	DW	DW				DW	DW	DW										OUT
SECONDS PER ACTUATION																										
TIME BEFORE REDUCTION																										
TIME TO REDUCE																										
MINIMUM GAP																										
MINIMUM GREEN		7			7			7						7												
PASSAGE		2			2			2						2												
MAXIMUM GREEN 1 (Free Operation)		80			80			50						30												
MAXIMUM GREEN 2 (Coordination mode)		1			1			50						30												
CLEARANCE			3	1		3	1		3	1					3	1										
WALK		7			7									7												
PED. CLEARANCE		16			16									17												
RECALL		OFF			OFF			OFF						OFF												
DETECTION		NON-LOCK			NON-LOCK			NON-LOCK						NON-LOCK												

LEGEND

R = RED
Y = YELLOW
G = GREEN
W = WALK
DW = DONT WALK
FDW = FLASHING DONT WALK
FY = FLASHING YELLOW
FR = FLASHING RED
VA = VERTICAL ARROW
LA = LEFT ARROW
RA = RIGHT ARROW

SUPERSEDES SEQUENCE SEPTEMBER. 17, 1981

NOTES:

(1) "GRA" IF CONFLICTING PED NOT ACTUATED.

(2) "DW" IF PED ARE NOT ACTUATED.

COORDINATION DATA SHEET ATTACHED.

LYNDWAY AT COMMERCIAL STREET, LYNN

COORDINATION DATA SHEET:

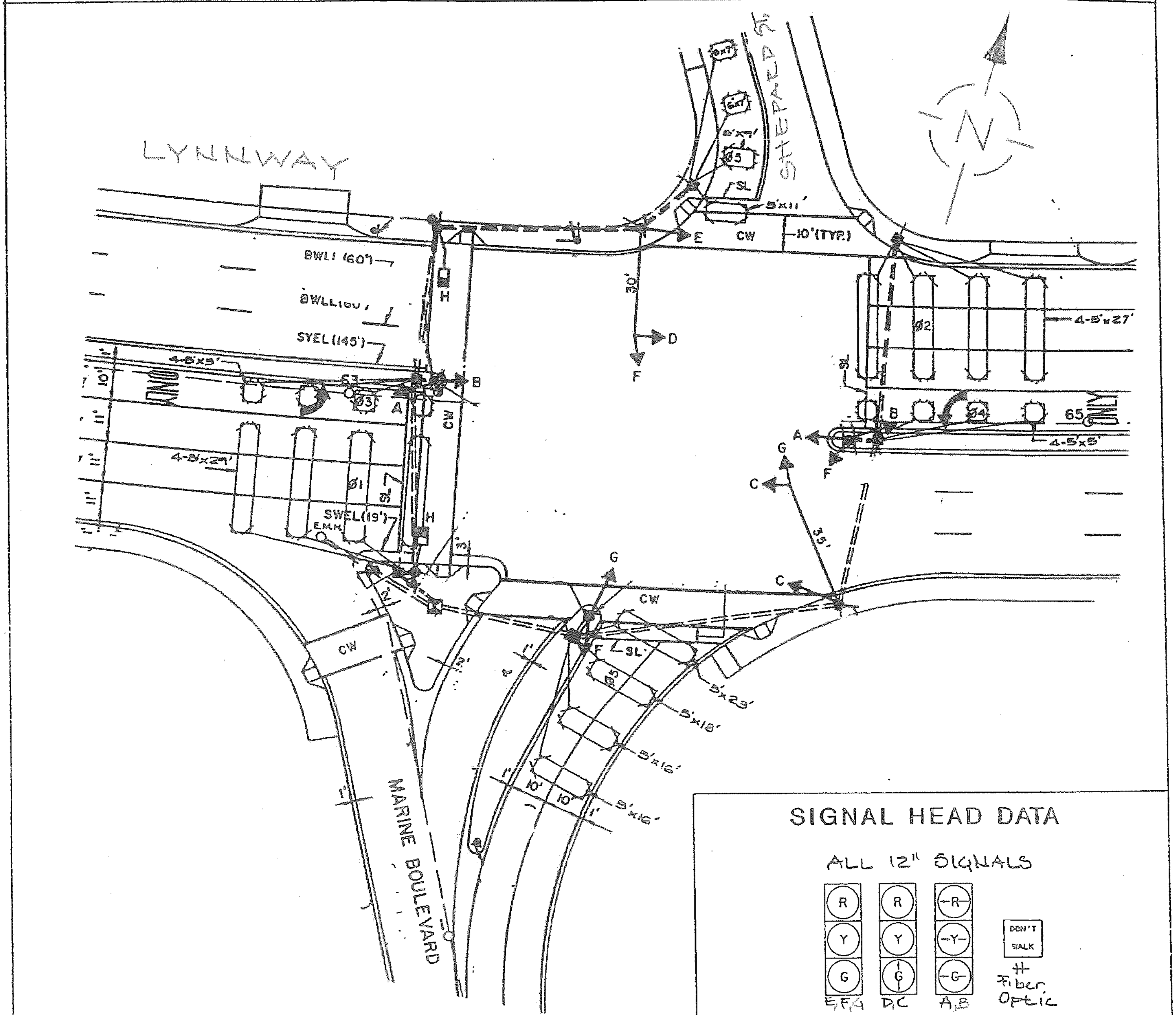
	DIAL 1	DIAL 2	PLAN 3	DIAL 4
CYCLE LENGTH	120	120	90	FREE OPERATION
OFFSET	37	23	91	
YIELD POINT	60	35	40	
FORCE - OFF ϕ1 + ϕ3	83	77	77	
FORCE - OFF ϕ 5	97	97	96	
	6:00AM - 10:00AM	4:00PM - 8:00PM	10:00AM - 4:00PM	8:00PM - 6:00AM

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

LYNNWAY AT MARINE BLVD & SHEPARD ST. - LYNN

SCALE: 1" = 40 TRAFFIC CONTROL DEVICE NO. 236 DATE: Jan 3, 1991



LEGEND

VEHICLE SIGNAL	WOODEN POLE
PEDESTRIAN SIGNAL	SIGNAL POST
CONTROL CABINET	MAST ARM
LOOP DETECTOR	PULL BOX
MAGNETIC DETECTOR	CONDUIT
PED. PUSH BUTTON	OVERHEAD CABLE
TRAFFIC SIGN	ELECTRIC MANHOLE E.M.H.

NOTES

COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

LYNNWAY AT MARINE BLVD. AND SHEPARD STREET - LYNN

DATE: JANUARY 3, 1991

TRAFFIC CONTROL DEVICE NO. 236	SIG. NO.	1			2			3			4			5			6			7			8			FLASH. OPER.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LYNNWAY (EB)	A	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA										FR(LA)
LYNNWAY (EB)	C	GVA	Y	R	R	R	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (WB)	B	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA	RLA	RLA	RLA										FR(LA)
LYNNWAY (WB)	D	R	R	R	GVA	Y	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (WB)	E	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R										FY
MARINE BLVD (NB)	F	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R										FR
SHEPARD STREET (SB)	G	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R										FR
CROSSWALK (N-S)	H	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W(1)/ FDW(1)	DW	DW										OUT
(1) "DW" IF PEDS NOT ACTUATED																										
SECONDS PER ACTUATION																										
TIME BEFORE REDUCTION																										
TIME TO REDUCE																										
MINIMUM GAP																										
MINIMUM GREEN		7			7			5			7			7												
PASSAGE		2			2			2			2			2												
MAXIMUM GREEN 1 (Free Operation)		90			90			20			20			20												
MAXIMUM GREEN 2 (Coordination mode)		1			1			20			20			20												
CLEARANCE			3	2		3	2		3	2		3	2		4	2										
WALK														7												
PED. CLEARANCE														14												
RECALL		OFF			OFF			OFF			OFF			OFF												
DETECTION		NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK												

LEGEND

R = RED
Y = YELLOW
G = GREEN
W = WALK
DW = DONT WALK
FDW = FLASH DONT WALK
FY = FLASHING YELLOW
FR = FLASHING RED
VA = VERTICAL ARROW
LA = LEFT ARROW
RA = RIGHT ARROW

SUPERSEDES SEQUENCE AND TIMING DATED: ____________

NOTES:

CONTROLLER SHALL REST IN RED IN THE ABSENCE OF SERVICEABLE CALLS.

COORDINATION DATA SHEET ATTACHED.

LYNNWAY AT MARINE BLVD. AND SHEPARD STREET - LYNN

COORDINATION DATA SHEET:

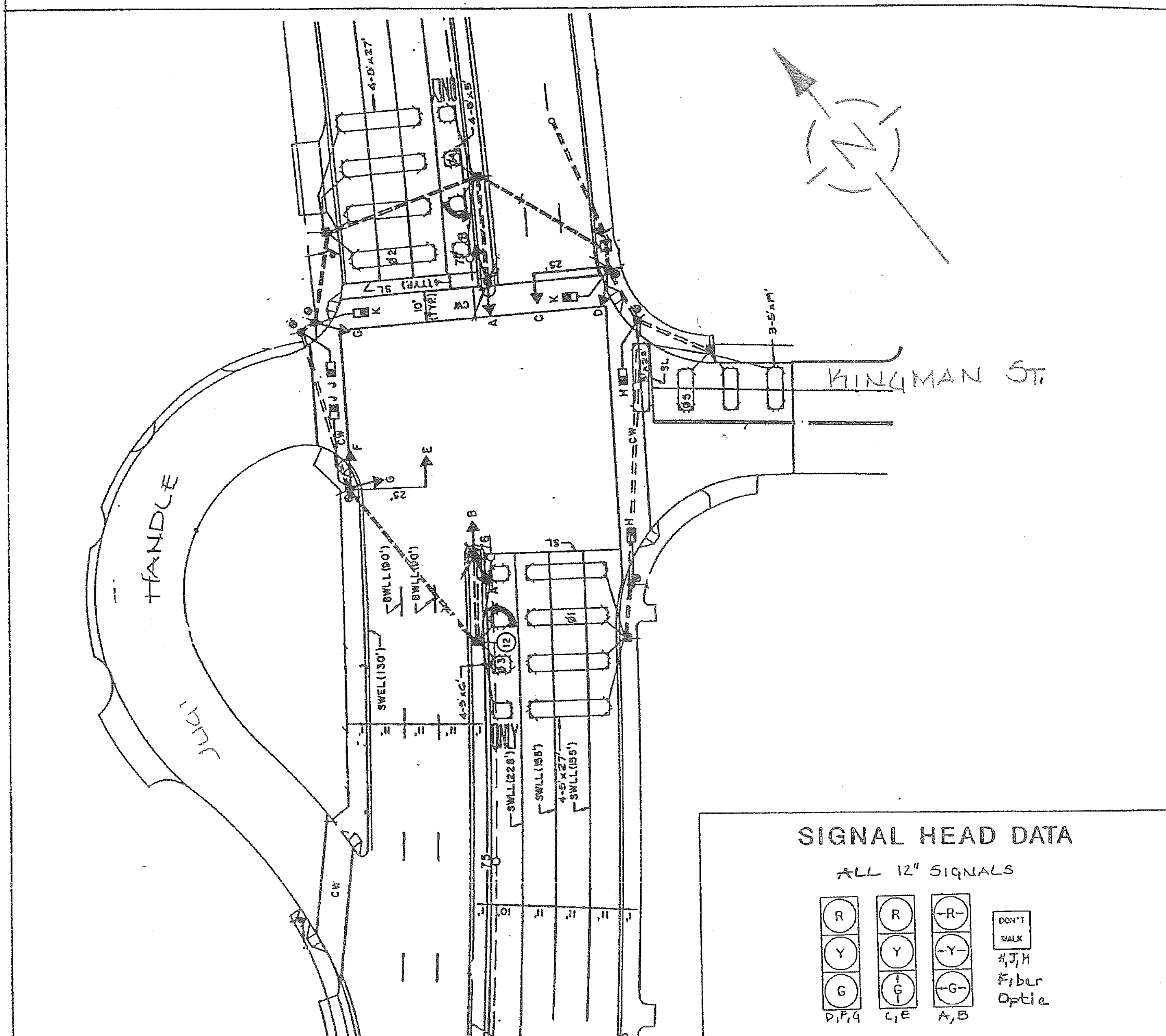
	DIAL 1	DIAL 2	PLAN 3	DIAL 4
CYCLE LENGTH(SEC)	120	120	90	FREE OPERATION
OFFSET	91	76	30	
YIELD POINT	71	69	70	
FORCE - OFF ϕ 3 + 4	81	84	82	
FORCE - OFF ϕ5	95	95	93	
	6:OOAM - 10:00AM	4:00PM - 8:00PM	10:00AM - 4:00PM	8:00PM - 6:00AM

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

LYNNWAY AT KINGMAN ST · LYNN

SCALE: 1" = 50' TRAFFIC CONTROL DEVICE NO. 235 DATE: JAN 3, 1991



SIGNAL HEAD DATA

ALL 12" SIGNALS

R Y G — D, F, G

R Y G — C, E

R Y G — A, B

DON'T WALK — H, J, K Fiber Optic

LEGEND

VEHICLE SIGNAL		WOODEN POLE	
PEDESTRIAN SIGNAL		SIGNAL POST	
CONTROL CABINET		MAST ARM	
LOOP DETECTOR		PULL BOX	
MAGNETIC DETECTOR	M	CONDUIT	
PED. PUSH BUTTON		OVERHEAD CABLE	
TRAFFIC SIGN		ELECTRIC MANHOLE	E.M.H.

NOTES

COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

LYNNWAY AT KINGMAN STREET - LYNN

DATE: JANUARY 3, 1991

TRAFFIC CONTROL	SIG.	1			2			3			4			5			6			7			8			FLASH
DEVICE NO. 235	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	OPER.
LYNNWAY (NB)	A	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA										FR(LA)
LYNNWAY (NB)	C	GVA	Y	R	R	R	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (NB)	D	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (SB)	B	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	GLA	YLA	RLA	RLA	RLA	RLA										FR(LA)
LYNNWAY (SB)	E	R	R	R	GVA	Y	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (SB)	F	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R										FY
KINGMAN ST.(WB)	G	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R										FR
CROSSWALK (N-S)	H	W(1)/ FDW(1)	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW										OUT
CROSSWALK (N-S)	J	DW	DW	DW	W(1)/ FDW(1)	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW										OUT
CROSSWALK (E-W)	K	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W(1)/ FDW(1)	DW	DW										OUT
(1) "DW" IF PEDS NOT ACTUATED																										
SECONDS PER ACTUATION																										
TIME BEFORE REDUCTION																										
TIME TO REDUCE																										
MINIMUM GAP																										
MINIMUM GREEN		7			7			7			7			7												
PASSAGE		2			2			2			2			2												
MAXIMUM GREEN 1 (Free Operation)		99			99			20			20			30												
MAXIMUM GREEN 2 (Coordination mode)		1			1			20			20			30												
CLEARANCE			3	1		3	1		3	1		3	1		3	1										
WALK		7			7									7												
PED. CLEARANCE		16			16									16												
RECALL		OFF			OFF			OFF			OFF			OFF												
DETECTION		NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK												

LEGEND

- R = RED
- Y = YELLOW
- G = GREEN
- W = WALK
- DW = DONT WALK
- FDW = FLASH DONT WALK
- FY = FLASHING YELLOW
- FR = FLASHING RED
- VA = VERTICAL ARROW
- LA = LEFT ARROW
- RA = RIGHT ARROW

SUPERSEDES SEQUENCE AND TIMING DATED: ____________

NOTES:

CONTROLLER SHALL REST IN RED IN THE ABSENCE OF SERVICEABLE CALLS.

COORDINATION DATA SHEET ATTACHED.

LYNNWAY AT KINGMAN STREET - LYNN

COORDINATION DATA SHEET:

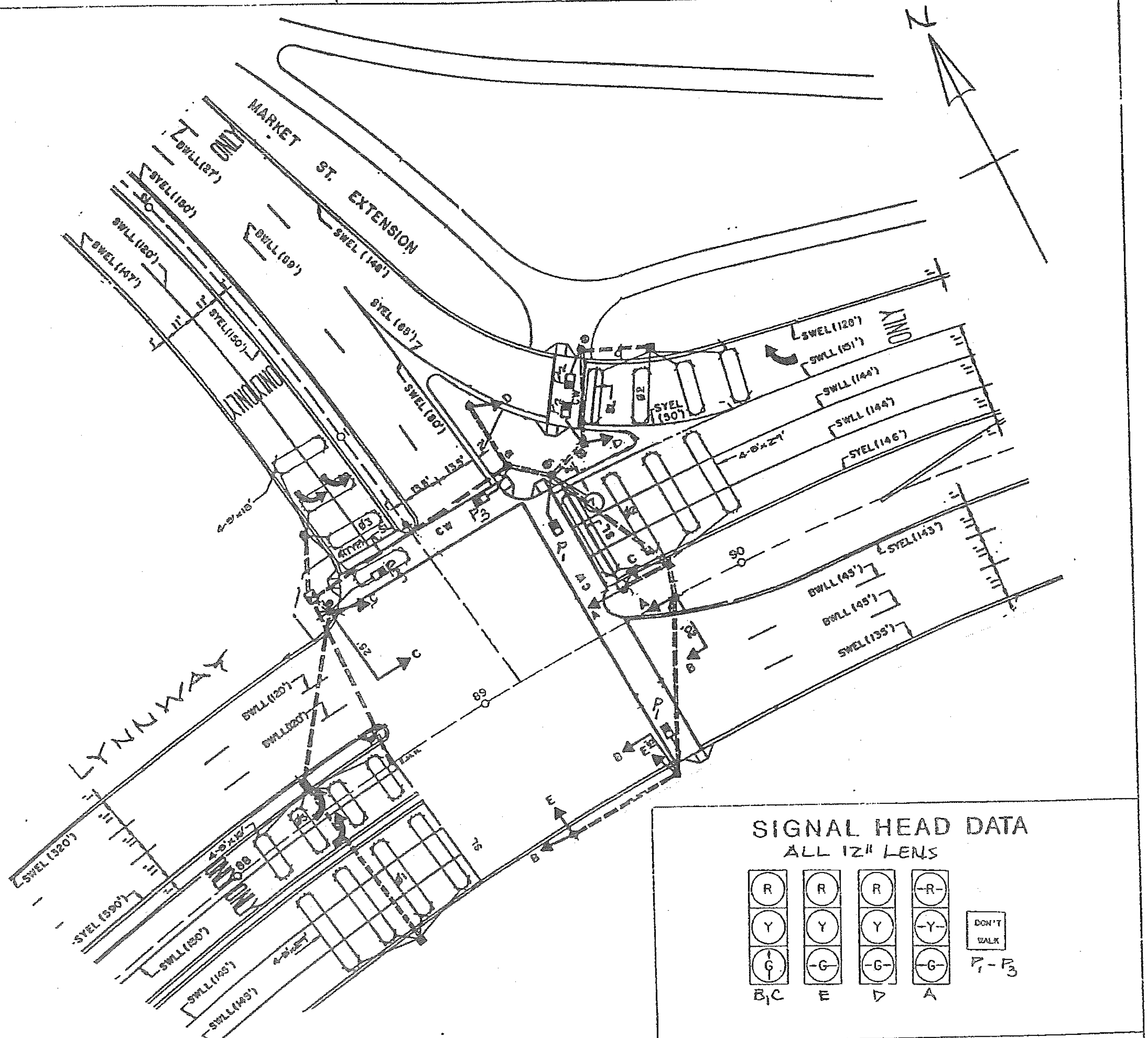
	DIAL 1	DIAL 2	PLAN 3	DIAL 4
CYCLE LENGTH(SEC)	120	120	90	FREE OPERATION
OFFSET	78	22	33	
YIELD POINT	76	76	67	
FORCE - OFF φ 3 ÷ 4	89	89	80	
FORCE - OFF φ5	97	97	96	
	6:OOAM - 10:00AM	4:00PM - 8:00PM	10:00AM - 4:00PM	8:00PM - 6:00AM

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

LYNNWAY AT MARKET STREET EXTENSION, LYNN

SCALE: 1" = 50' TRAFFIC CONTROL DEVICE NO. 203 DATE: APRIL 8, 1988



LEGEND

VEHICLE SIGNAL		WOODEN POLE	
PEDESTRIAN SIGNAL		SIGNAL POST	
CONTROL CABINET		MAST ARM	
LOOP DETECTOR		PULL BOX	
MAGNETIC DETECTOR	M	CONDUIT	
PED. PUSH BUTTON		OVERHEAD CABLE	
TRAFFIC SIGN		ELECTRIC MANHOLE	E.M.H.

NOTES

COMMONWEALTH OF MASSACHUSETTS

METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

LYNNWAY AT MARKET STREET EXTENSION - LYNN

DATE: April 4, 1988

TRAFFIC CONTROL DEVICE NO. NO. 203	SIG. NO.	1			2			3			4			5			6			7			8			FLASH OPER.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
LYNNWAY (EB)	A	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	RLA	GLA	(2)YLA	(2)RLA	GLA	YLA	RLA										FR(LA)
LYNNWAY (EB)	B	GVA	Y	R	R	R	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (WB)	C	R	R	R	GVA	Y	R	R	R	R	R	R	R	R	R	R										FY
LYNNWAY (WB)	D	R	R	R	GRA	Y	R	R	R	R	R	R	R	R	R	R										FY
MARKET ST. EXT.(SB)	E	R	R	R	R	R	R	GLA	Y	R	R	R	R	R	R	R										FR
PEDESTRIAN (N-S)	P1	DW	DW	DW	DW	DW	DW	DW	DW	DW	W(1)/ FDW(1)	DW	DW	DW	DW	DW										OUT
PEDESTRIAN (N-S)	P2	DW	DW	DW	DW	DW	DW	W(1)/ FDW(1)	DW	DW	DW	DW	DW	DW	DW	DW										OUT
PEDESTRIAN (E-W)	P3	W(1)/ FDW(1)	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW										OUT
SECONDS PER ACTUATION																										
TIME BEFORE REDUCTION																										
TIME TO REDUCE																										
MINIMUM GAP																										
MINIMUM GREEN		7			7			7						7												
PASSAGE		2			2			2						2												
MAXIMUM GREEN 1 (Free Operation)		70			70			40						50												
MAXIMUM GREEN 2 (Coordination mode)		1			1			40						50												
CLEARANCE			3	1		3	1		3	1		3	2		3	1										
WALK		7						7			7															
PED. CLEARANCE		14						6			23															
RECALL		OFF			OFF			OFF			OFF			OFF												
DETECTION		NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK												

LEGEND

R = RED
Y = YELLOW
G = GREEN
W = WALK
DW = DONT WALK
FDW = FLASH DONT WALK
FY = FLASHING YELLOW
FR = FLASHING RED
VA = VERTICAL ARROW
LA = LEFT ARROW
RA = RIGHT ARROW

SUPERCEDES SEQUENCE AND TIMING DATED:

SEPTEMBER, 17, 1981

NOTES:

(1) "DW" IF PED ARE NOT ACTUATED.

(2) If assigned right of way is to remain in effect during the next phase the signal indication for that traffic movement will not change during the clearance interval.

COORDINATION DATA SHEET ATTACHED.

LYNNWAY AT MARKET STREET EXTENSION - LYNN

COORDINATION DATA SHEET:

	DIAL 1	DIAL 2	PLAN 3	DIAL 4
CYCLE LENGTH	120	120	90	FREE OPERATION
OFFSET	68	50	2	
YIELD POINT	54	25	33	
FORCE - OFF ϕ3	66	54	57	
FORCE - OFF ϕ1 + 5	96	96	94	
	6:00AM - 10:00AM	4:00PM - 8:00PM	10:00AM - 4:00PM	8:00PM - 6:00AM

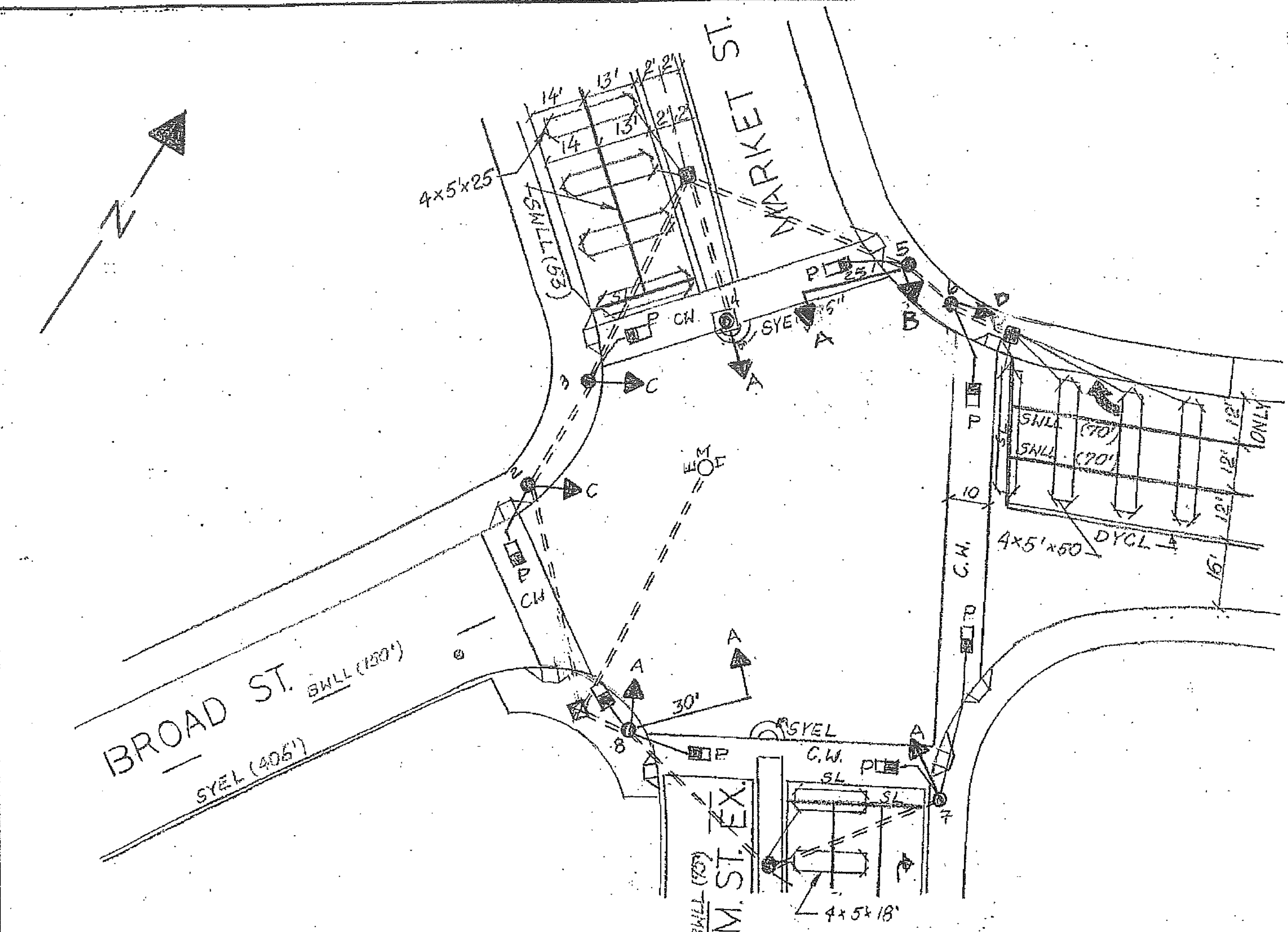
COMMONWEALTH OF MASSACHUSETTS

METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

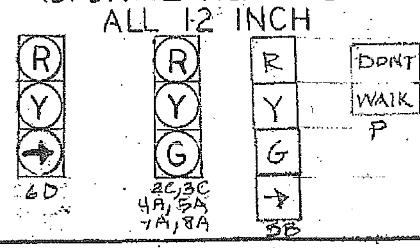
MARKET ST. AT BROAD ST. AND MARKET ST. EXTENSION, LYNN

SCALE: 1" = 40 TRAFFIC CONTROL DEVICE NO 237 DATE: JAN 3, 1991



SIGNAL HEAD DATA

ALL 12 INCH



LEGEND

VEHICLE SIGNAL		WOODEN POLE	
PEDESTRIAN SIGNAL		SIGNAL POST	
CONTROL CABINET		MAST ARM	
LOOP DETECTOR		PULL BOX	
MAGNETIC DETECTOR	M	CONDUIT	
PED. PUSH BUTTON		OVERHEAD CABLE	
TRAFFIC SIGN		ELECTRIC MANHOLE	EMH.

NOTES

COMMONWEALTH OF MASSACHUSETTS **METROPOLITAN DISTRICT COMMISSION**

TRAFFIC SIGNAL SEQUENCE AND TIMING

MARKET STREET AT BROAD STREET AND MARKET ST. EXTENSION - LYNN

DATE: JANUARY 3, 1991

TRAFFIC CONTROL	SIG.			1			2			3			4			5			6			7			8	FLASH
DEVICE NO. 237	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	OPER.
MARKET ST. EXT. (WB)	4A,5A	G	Y	R	R	R	R	R	R	R																Y
MARKET ST. EXT. (WB)	5B	G/GRA	Y*	R*	R	R	R	GRA	GRA	GRA																Y
MARKET ST. (EB)	7A,8A	G	Y	R	R	R	R	R	R	R																Y
BROAD ST. (SB)	2C,3C	R	R	R	R	R	R	G	Y	R																R
BROAD ST. (SB)	6D	R	R	R	R	R	R	GRA	Y	R																R
PEDESTRIAN(N-S,E-W)	P	DW	DW	DW	W	FDW	DW	DW	DW	DW																OUT
SECONDS PER ACTUATION																										
TIME BEFORE REDUCTION																										
TIME TO REDUCE																										
MINIMUM GAP																										
MINIMUM GREEN		7						7																		
PASSAGE		2						2																		
MAXIMUM GREEN 1 (Free Operation)		90						50																		
MAXIMUM GREEN 2 (Coordination mode)		1						50																		
CLEARANCE			3	2					3	2																
WALK					7																					
PED. CLEARANCE						20	2																			
RECALL		OFF			OFF			OFF																		
DETECTION		NON-LOCK			NON-LOCK			NON-LOCK																		

LEGEND

R = RED
Y = YELLOW
G = GREEN
W = WALK
DW = DONT WALK
FDW = FLASH DONT WALK
FY = FLASHING YELLOW
FR = FLASHING RED
VA = VERTICAL ARROW
LA = LEFT ARROW
RA = RIGHT ARROW

SUPERSEDES SEQUENCE AND TIMING DATED:

NOTES:

* IF ASSIGNED RIGHT OF WAY IS TO REMAIN IN EFFECT DURING THE NEXT PHASE THE SIGNAL INDICATION FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARENCE INTERVAL.

CONTROLLER SHALL REST IN RED IN ABSENCE OF SERVICEABLE CALLS

COORDINATION DATA SHEET ATTACHED.

TSD- 237 MARKET ST. EXT. , MARKET ST. AND BROAD ST - LYNN

COORDINATION DATA SHEET

	DIAL 1	DIAL 2	DIAL 3	DIAL 4
CYCLE LENGTH(SEC)	120	120	90	FREE OPERATION
OFFSET	90	48	13	
YIELD POINT	59	65	57	
FORCE - OFF $\phi 2$	-	-	-	
FORCE - OFF $\phi 3$	96	95	95	
	6:00AM -	4:00PM -	10:00AM -	8:00PM - 6:00AM

NOTE:

1. TIME FOR $\phi 2$ SHALL BE TAKEN FROM THE LATTER PART OF $\phi 1$

2. OFFSETS ARE MEASUREED TO BEGINNING OF $\phi 1$

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

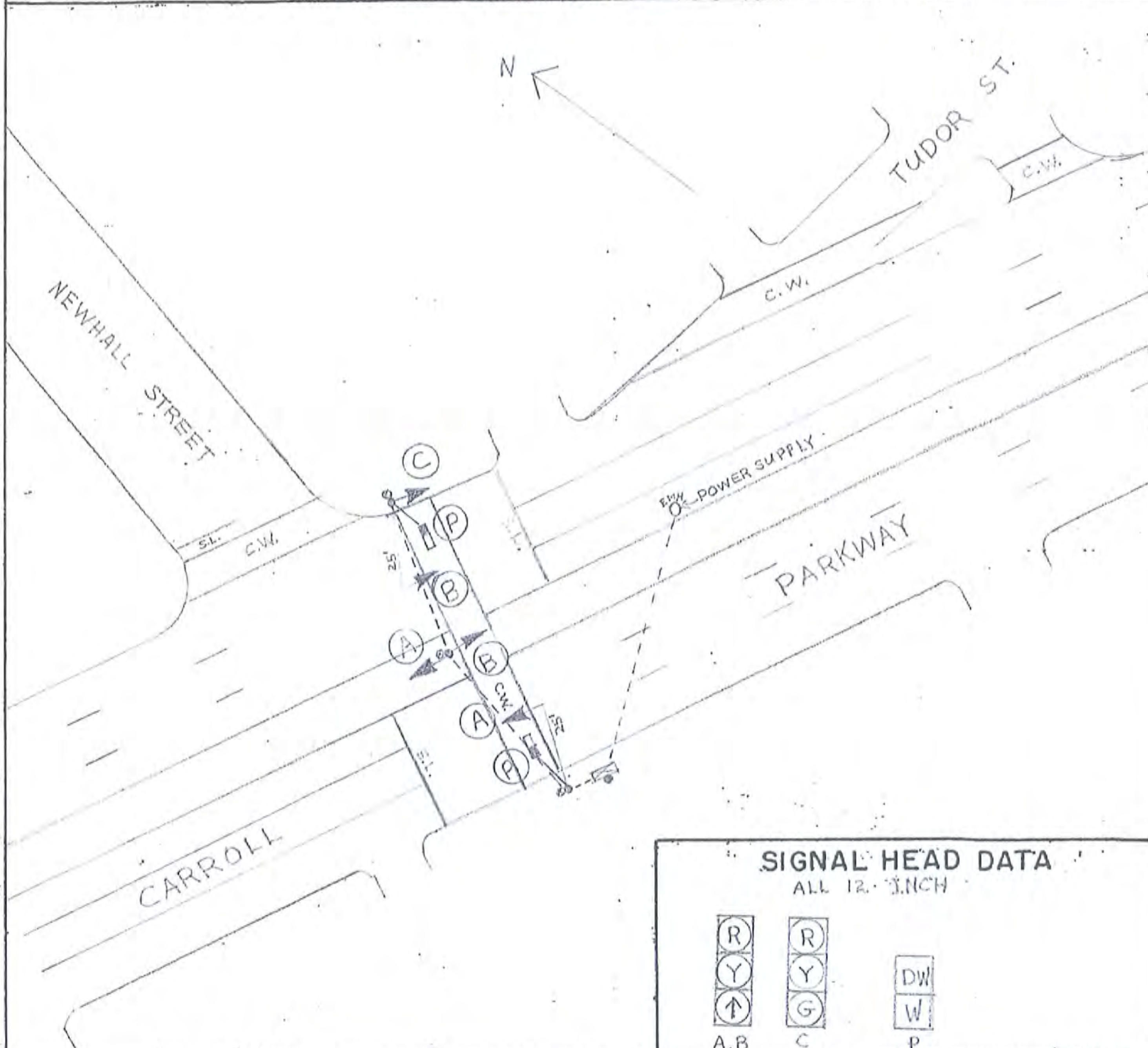
TRAFFIC SIGNAL LAYOUT

CARROLL PARKWAY AT NEWHALL STREET, LYNN

SCALE: 1" = 40'

Traffic Control Device No. 225

DATE: JAN 3, 1991



LEGEND

VEHICLE SIGNAL	WOODEN POLE
PEDESTRIAN SIGNAL	SIGNAL POST
CONTROL CABINET	MAST ARM
LOOP DETECTOR	PULL BOX
MAGNETIC DETECTOR (M)	CONDUIT
PED. PUSH BUTTON	OVERHEAD CABLE
TRAFFIC SIGN	ELECTRIC MANHOLE (E.M.H.)

NOTES

COMMOWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

CARROLL PARKWAY AT NEWHALL STREET, LYNN

Traffic Control Device No 225 — DATE: Jan. [illegible]

	SIG. NO.	1	2	3	4	5	6	7	8	9	10	11	12	FLASHING OPERATION
Carroll Pkwy. E.B.	A	VA	Y	R	R	R								FY
Carroll Pkwy. W.B.	B	VA	Y	R	R	R								FY
Carroll Pkwy. W.B.	C	G	Y	R	R	R								FY
Pedestrian	P	DW	DW	DW	W	FDW								OUT
A.M. Peak DIAL 1 120 Sec. Cycle	SEC.	87.6	3.6	2.4	7.2	19.2								
	CUM%	73	76	78	84	100								
P.M. Peak DIAL 2 90 Sec. Cycle	SEC.	58.5	3.6	1.8	7.2	18.9								
	CUM%	65	69	71	79	100								
Off Peak DIAL 3 60 Sec. Cycle	SEC.	28.2	3.6	1.8	7.2	19.2								
	CUM%	47	53	56	68	100								

R = RED
Y = YELLOW
G = GREEN
W = WALK
DW = DON'T WALK
FDW = FLASHING DON'T WALK
FY = FLASHING YELLOW
FR = " RED

VA = VER. ARR
LA = LEFT "
RA = RIGHT "

NOTES:

SUPERCEDES SEQUENCE AND TIMING DATED: 09/23/74

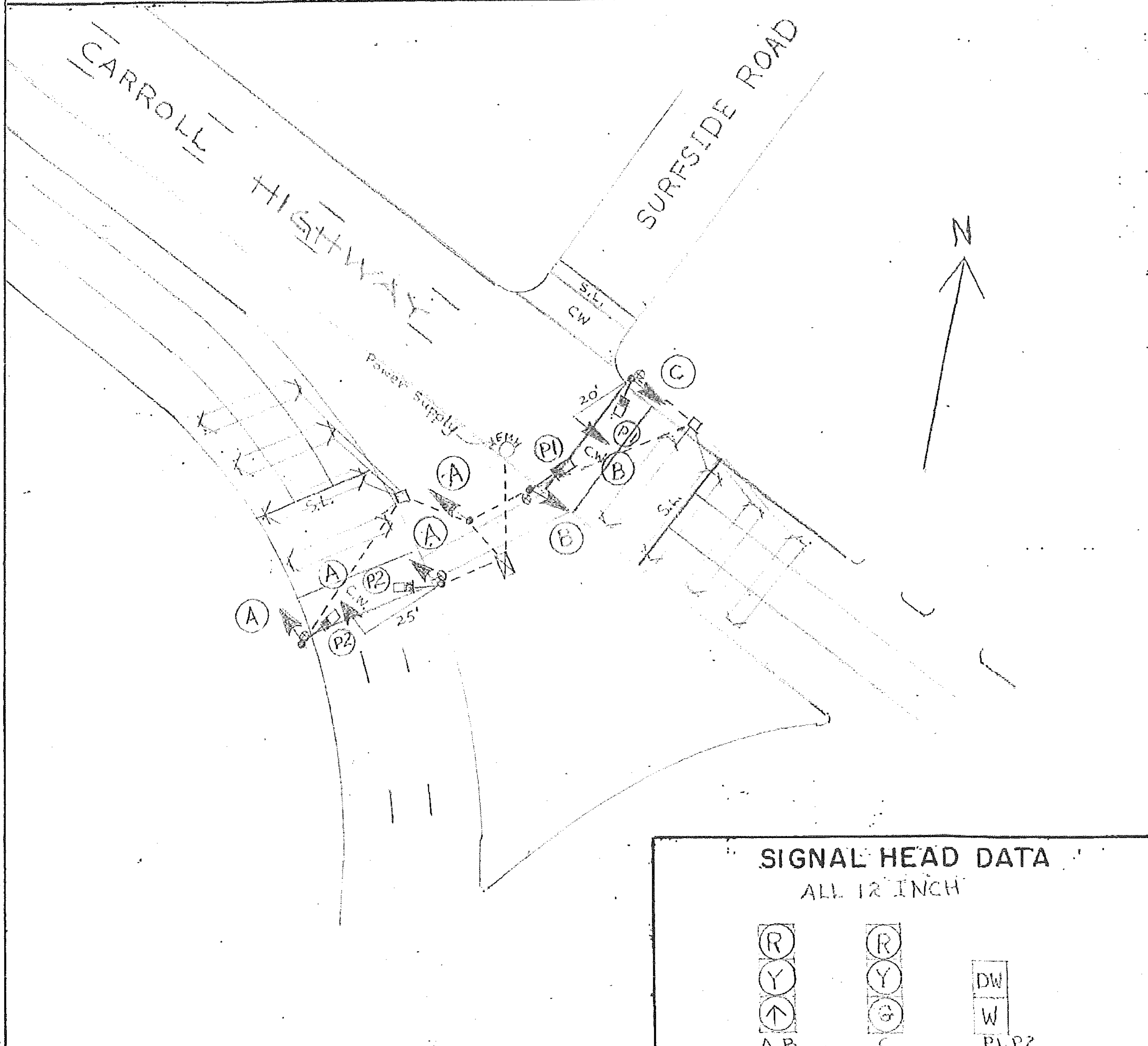
Dial Change Selected by time clock
Dial 1 6:00 A.M. to 10:00 A.M.
Dial 2 4:00 P.M. to 8:00 P.M.
Dial 3 10:00 A.M. to 4:00 P.M.
8:00 P.M. to 6:00 A.M.

COMMONWEALTH OF MASSACHUSETTS | METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL LAYOUT

CARROLL HIGHWAY AT SURFSIDE ROAD, LYNN

SCALE: 1" = 40' Traffic Control Device No. 226 DATE: Jan 3, 1995



NOTES

LEGEND

VEHICLE SIGNAL	⇥	WOODEN POLE	⚲
PEDESTRIAN SIGNAL	⊟	SIGNAL POST	●
CONTROL CABINET	⊠	MAST ARM	●—
LOOP DETECTOR	⬭	PULL BOX	□
MAGNETIC DETECTOR	M	CONDUIT	— — —
PED. PUSH BUTTON	⊗	OVERHEAD CABLE	—·—
TRAFFIC SIGN	⊢	ELECTRIC MANHOLE	O E.M.H.

COMMONWEALTH OF MASSACHUSETTS — METROPOLITAN DISTRICT COMMISSION

TRAFFIC SIGNAL SEQUENCE AND TIMING

CARROLL HIGHWAY AT SURFSIDE ROAD - LYNN

DATE: JANUARY 3, 1991

TRAFFIC CONTROL	SIG.	1			2			3			4			5			6			7			8			FLASH
DEVICE NO. 226	NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	OPER.
CARROLL HIGHWAY E.B.	A	VA	Y*	R*	VA	Y*	R*	R	R	R																FY
CARROLL HIGHWAY W.B.	B	VA	Y*	R*	R	R	R	VA	Y*	R*																FY
CARROLL HIGHWAY W.B.	C	G	Y*	R*	R	R	R	G	Y*	R*																FY
PEDESTRIAN	P1	DW	DW	DW	W/FDW	DW	DW	DW	DW	DW																OUT
PEDESTRIAN	P2	DW	DW	DW	DW	DW	DW	W/FDW	DW	DW																OUT

	1	2	3	4	5	6	7	8	9
SECONDS PER ACTUATION									
TIME BEFORE REDUCTION									
TIME TO REDUCE									
MINIMUM GAP									
MINIMUM GREEN	7								
PASSAGE	2								
MAXIMUM GREEN 1	99								
MAXIMUM GREEN 2									
CLEARANCE		3	2		3	2		3	2
WALK				7			7		
PED. CLEARANCE				13			13		
RECALL	OFF			OFF			OFF		
DETECTION	NON-LOCK			___			___		

LEGEND

R = RED
Y = YELLOW
G = GREEN
W = WALK
DW = DONT WALK
FDW = FLASH DONT WALK
FY = FLASHING YELLOW
FR = FLASHING RED
VA = VERTICAL ARROW
LA = LEFT ARROW
RA = RIGHT ARROW

SUPERSEDES SEQUENCE AND TIMING DATED: SEPT. 23, 1974

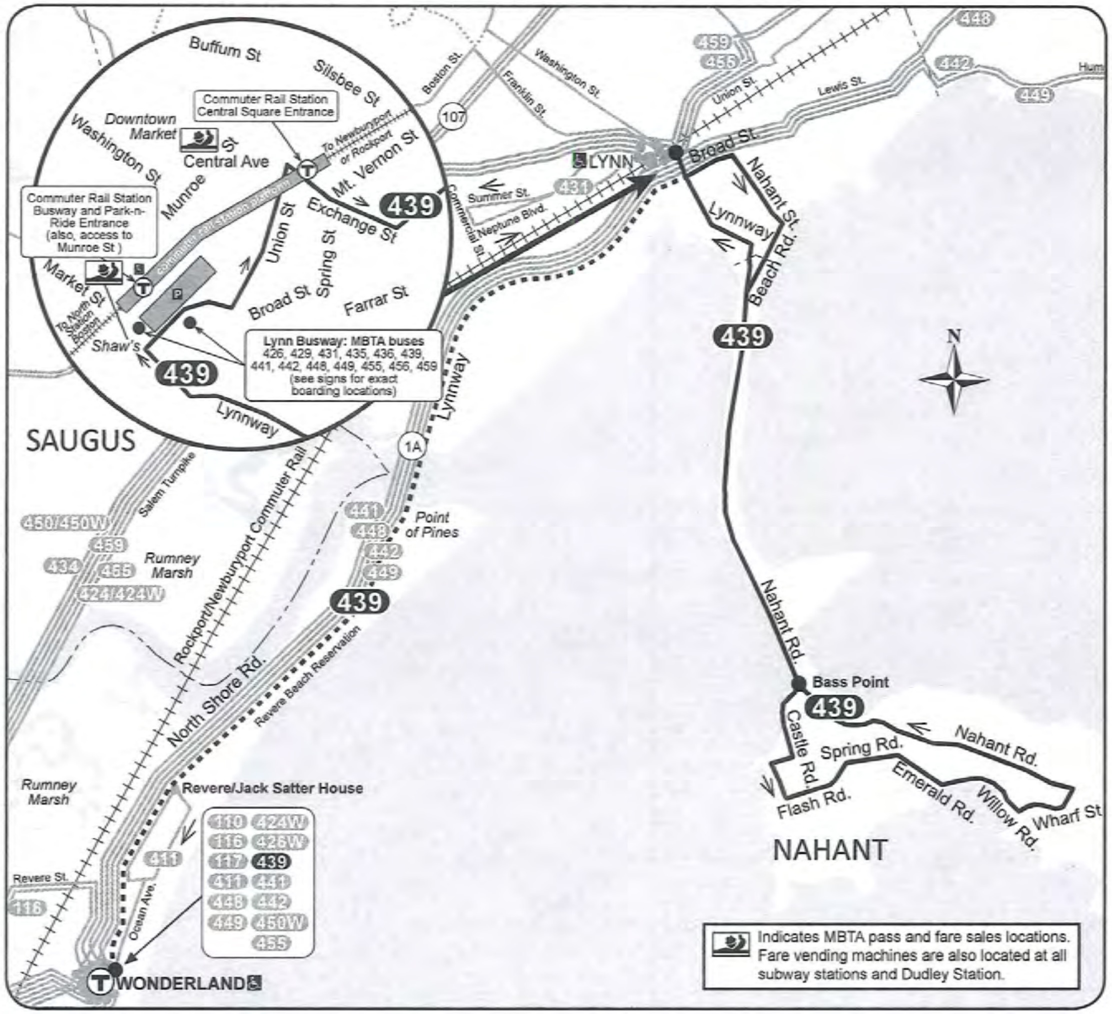
NOTES:

* IF THE ASSIGNED RIGHT OF WAY IS TO REMAIN IN EFFECT DURING THE NEXT PHASE THE SIGNAL INDICATION FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.

APPENDIX D

Bus Schedules

Route 439 Bass Point, Nahant - Central Square, Lynn or Wonderland



439

Fall September 5, 2015 - December 25, 2015

Bass Point Nahant-Central Square, Lynn or Wonderland

Serving

- Nahant Road
- Wharf Street
- Blue Line
- Newburyport/Rockport Commuter Rail

Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

439 Weekday

Inbound

Leave Bass Point	Arrive Central Square	Arrive Wonderland Station
6:30A	6:45A	.....
a 7:30	7:46	8:07A
2:25P	**2:41P**	.....
6:05	**6:22**	.....
6:52	**7:08**	.....

439 Weekday

Outbound

Leave Wonderland Station	Arrive Central Square	Arrive Bass Point
.....	6:15A	6:29A
.....	v 7:10	7:27
.....	**2:08P**	**2:20P**
a 5:30P	**5:44**	**5:57**
a 6:17	**6:32**	**6:44**

a - Via North Shore Road (route 1A) does not serve Point of Pines
v - Via Vernon & Willow Roads

All buses are accessible to persons with disabilities

Route 439
Bass Point, Nahant-Central Square, Lynn or Wonderland Station

No service on weekends

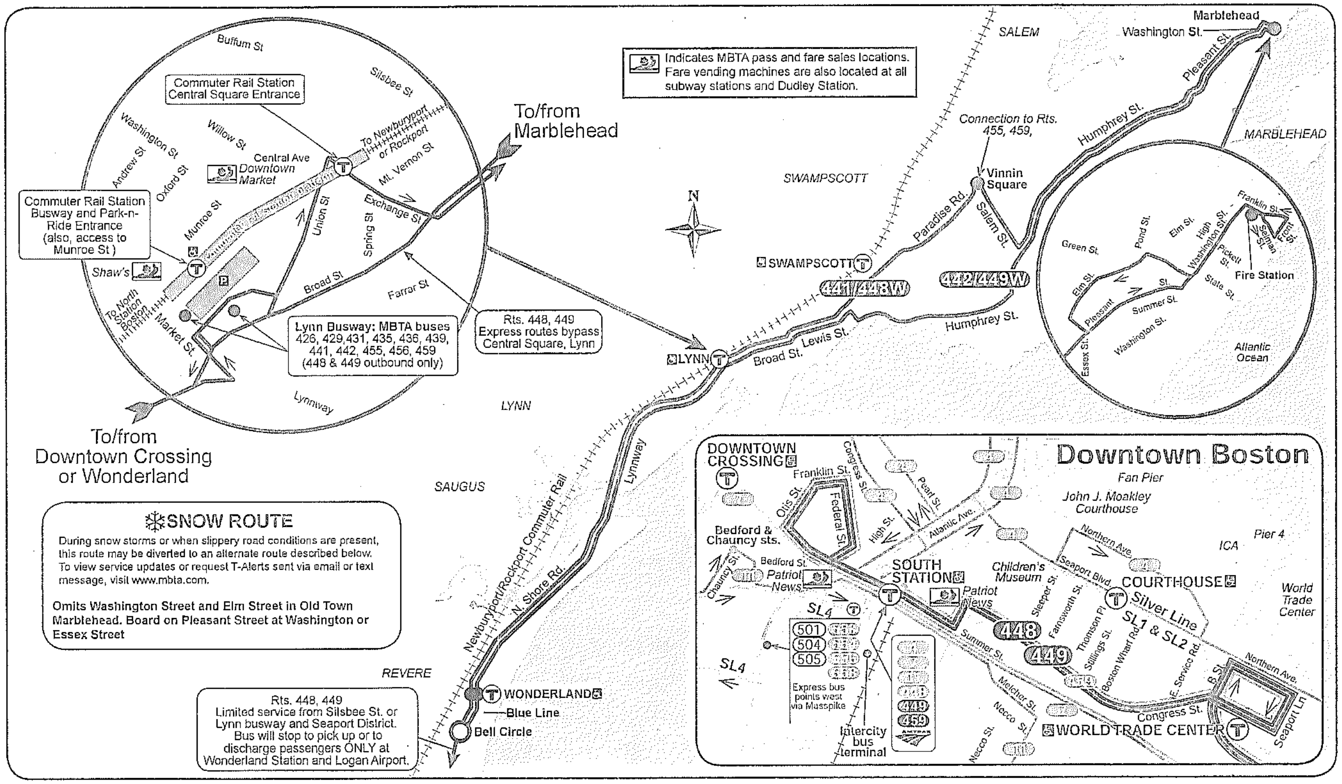
Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.60	$1.60	$2.10	$2.10
CharlieTicket	$2.10	$2.10	$2.65	$4.75
Cash-on-Board	$2.10	$4.20	$2.65	$4.75
Student CharliCard*	$0.80	$0.80	$1.05	$1.05
Senior/TAP CharliCard**	$0.80	$0.80	$1.05	$1.05

VALID PASSES: LinkPass ($75/mo.); Monthly Local Bus ($50/mo.); *StudentPass ($26.00/Month for 5-Day validity Mon-Fri or 7-Day validity on all days); **Senior/TAP Pass ($29/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

* Requires Student CharlieCard, available to students through participating middle schools and high schools.
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2015 Holidays
October 12 & November 11: see Weekday
September 7, November 26, & December 25: see Sunday

Route 441/442 Marblehead - Wonderland
Route 448/449 Marblehead - Downtown Crossing



schedule change

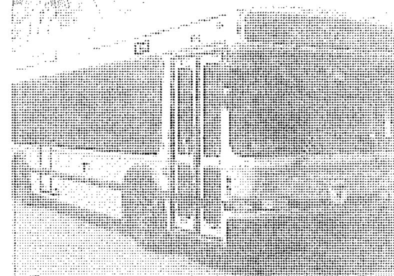
441/442•448/449

Fall September 5, 2015 - December 25, 2015

441/442 Marblehead-Wonderland
448/449 Marblehead-Downtown Crossing

Serving

- Vinnin Square
- Swampscott
- Wonderland Station
- Central Square,L ynn
- Logan Airport
- Blue Line
- Green Line
- Red Line
- Orange Line
- Newburyport/Rockport Commuter Rail



Massachusetts Bay Transportation Authority massDOT

441/442 & 448/449 Weekday

Inbound

Leave Marblehead	Lv/Arrive Phillips Beach via Paradise	Lv/Arrive Phillips Beach via Humphrey	Lv/Arrive Central Square	Arrive Wonderland Station	Arrive Logan Term. C	Arrive Otis & Summer Sts.
.....	.....	.....	5:45A	5:59A	.....	.....
5:40A	.....	5:50A	6:05	6:21	.....	.....
.....	.....	6:00	6:18	6:30	.....	.....
a 6:00	.....	6:11	.....	6:32	6:45A	7:00A
6:10	6:20A	.....	6:40	6:56	.....	.....
.....	.....	6:30	6:48	7:01	.....	.....
a 6:28	6:40	.....	.....	7:18	7:28	7:49
.....	6:45	.....	7:01	7:21	.....	.....
6:43	.....	6:54	7:13	7:34	.....	.....
.....	.....	7:00	7:16	7:36	.....	.....
a 6:58	.....	7:12	.....	7:42	8:03	8:19
.....	7:15	.....	7:35	7:58	.....	.....
.....	.....	7:30	7:46	8:05	.....	.....
7:13	7:26	.....	7:46	8:09	.....	.....
a 7:28	7:41	.....	.....	8:21	8:37	8:58
.....	7:45	.....	8:05	8:28	.....	.....
7:43	.....	7:57	8:24	8:44	.....	.....
a 7:58	.....	8:12	.....	8:42	9:03	9:19
.....	8:15	.....	8:35	8:51	.....	.....
.....	.....	8:30	8:47	9:05	.....	.....
8:13	8:26	.....	8:46	9:09	.....	.....
.....	8:45	.....	9:04	9:20	.....	.....
8:50	.....	9:04	9:31	9:51	.....	.....
9:10	9:23	.....	9:44	10:01	.....	.....
9:40	.....	9:54	10:21	10:41	.....	.....
10:10	10:22	.....	10:44	11:01	.....	.....
10:40	.....	10:54	11:19	11:36	.....	.....
11:10	11:22	.....	11:44	12:01P	.....	.....
11:40	.....	11:52	12:14P	12:31	.....	.....
12:10P	12:22P	.....	12:46P	1:04P	.....	.....
12:40	.....	12:52P	1:14	1:31	.....	.....
1:10	1:23	.....	1:47	2:06	.....	.....
1:40	.....	1:52	2:14	2:31	.....	.....
2:10	2:25	.....	2:49	3:08	.....	.....
2:40	.....	2:52	3:14	3:31	.....	.....
.....	.....	.....	3:41	3:56	.....	.....
3:10	3:23	.....	3:46	4:04	.....	.....
3:40	.....	3:52	4:10	4:29	.....	.....
.....	.....	.....	4:40	4:55	.....	.....
4:10	4:22	.....	4:45	5:01	.....	.....
.....	.....	.....	5:10	5:28	.....	.....
4:50	.....	5:05	5:25	5:42	.....	.....
5:20	5:35	.....	5:54	6:13	.....	.....
5:35	.....	5:47	6:09	6:25	.....	.....
5:50	6:03	.....	6:22	6:41	.....	.....
6:05	.....	6:17	6:35	6:49	.....	.....
w 6:34	6:44	.....	7:00	.....	.....	.....
6:35	.....	6:47	7:02	7:16	.....	.....
w 7:06	7:16	.....	7:32	.....	.....	.....
7:15	.....	7:27	7:41	7:56	.....	.....
w 7:30	7:41	.....	7:56	.....	.....	.....
8:15	.....	8:26	8:40	8:55	.....	.....
9:15	.....	9:26	9:40	9:55	.....	.....
10:15	.....	10:26	10:40	10:55	.....	.....
11:15	.....	11:26	11:40	11:55	.....	.....
w 12:10A	.....	12:20A	12:28A	.....	.....	.....

Shaded trips are Routes 448 & 449 and serve Logan Airport, the Seaport District and Downtown Crossing. Running time to Logan Airport is appoximate due to traffic conditions. Inbound trips bypass Central Square, Lynn busway. Limited service between downtown Lynn and Seaport District, stopping ONLY at Wonderland and Logan Airport.

Outbound

Leave Otis & Summer Sts.	Arrive Logan Term. C	Lv/Arrive Wonderland Station	Lv/Arrive Central Square	Arrive Phillips Beach via Humphrey	Arrive Phillips Beach via Paradise	Arrive Marblehead
.....	.....	.....	w 5:13A	5:22A	.....	5:32A
.....	.....	6:00A	6:12	.....	6:29A	.....
.....	.....	.....	w 6:15	6:24	.....	6:35
.....	.....	6:27	6:39	.....	.....	.....
.....	.....	.....	w 6:42	.....	6:55	7:06
.....	.....	6:35	6:48	7:06	.....	.....
.....	.....	6:45	6:56	7:09	.....	7:20
.....	.....	7:30	7:42	.....	7:57	8:10
.....	.....	7:35	7:48	8:06	.....	.....
.....	.....	7:40	7:52	.....	8:09	.....
7:15A	7:29A	7:47	7:59	8:14	.....	8:26
.....	.....	7:50	8:03	8:21	.....	.....
.....	.....	8:06	8:17	8:30	.....	8:41
7:45	7:59	8:18	8:30	.....	8:45	8:55
.....	.....	8:35	8:47	.....	9:01	9:13
.....	.....	8:55	9:07	.....	.....	.....
.....	.....	9:15	9:27	9:42	.....	9:54
.....	.....	9:40	9:53	.....	10:11	10:23
.....	.....	10:15	10:29	10:44	.....	10:56
.....	.....	10:45	10:58	.....	11:16	11:28
.....	.....	11:20	11:32	11:47	.....	12:00N
.....	.....	11:45	11:58	.....	12:18P	12:30P
.....	.....	12:15P	12:27P	12:42P	.....	12:55P
.....	.....	12:45	12:56	.....	1:13P	1:24
.....	.....	1:15	1:28	1:45	.....	2:01
.....	.....	1:45	2:00	.....	2:19	2:32
.....	.....	2:05	2:18	2:35	.....	2:51
.....	.....	2:30	2:44	.....	3:08	3:23
.....	.....	3:00	3:13	3:30	.....	3:43
.....	.....	3:15	3:30	.....	.....	.....
.....	.....	3:30	3:45	.....	.....	.....
.....	.....	3:35	3:49	.....	4:13	4:28
.....	.....	4:00	4:15	.....	.....	.....
.....	.....	4:05	4:21	4:40	.....	4:53
.....	.....	4:10	4:25	.....	.....	.....
.....	.....	4:20	4:34	.....	4:58	5:09
.....	.....	4:35	4:51	5:10	.....	5:23
.....	.....	4:44	4:59	.....	.....	.....
.....	.....	4:50	5:05	.....	5:29	5:40
.....	.....	5:00	5:15	.....	.....	.....
.....	.....	5:05	5:19	5:37	.....	5:50
.....	.....	5:20	5:35	.....	5:59	6:08
a 4:45	5:05	5:26	5:39	5:56	.....	6:07
.....	.....	5:35	5:49	6:04	.....	6:16
.....	.....	5:50	6:04	.....	6:26	6:36
a 5:15	5:35	5:52	6:05	.....	6:25	6:34
.....	.....	6:05	6:18	6:32	.....	6:44
a 5:45	6:04	6:25	6:38	6:55	.....	7:06
.....	.....	6:35	6:49	.....	7:05	7:16
a 6:15	6:33	6:51	7:01	.....	7:21	7:30
.....	.....	7:05	7:18	.....	.....	.....
.....	.....	7:15	7:28	7:42	.....	7:54
.....	.....	7:47	8:00	.....	.....	.....
.....	.....	8:15	8:27	8:40	.....	8:52
.....	.....	9:15	9:27	9:40	.....	9:52
.....	.....	10:15	10:27	10:40	.....	10:52
.....	.....	11:15	11:26	11:38	.....	11:47
.....	.....	12:15A	12:26A	12:38A	.....	12:47A
.....	.....	x 1:10	1:22	.....	.....	.....

All buses are accessible to persons with disabilities

441/442 Saturday

Inbound

Leave Marblehead	Arrive Central Square	Arrive Wonderland Station
p 6:30A	6:48A	7:11A
h 6:55	7:13	7:35
p 7:25	7:43	8:07
h 7:55	8:12	8:36
p 8:25	8:43	9:08
h 8:55	9:13	9:39
p 9:25	9:44	10:10
h 10:00	10:19	10:46
p 10:25	10:45	11:14
h 10:55	11:14	11:41
p 11:20	11:40	12:11P
h 11:50	12:09P	12:36
p 12:15P	12:35P	1:04P
h 12:45	1:04	1:31
p 1:10	1:30	1:59
h 1:40	1:59	2:26
p 2:05	2:25	2:54
h 2:35	2:54	3:21
p 3:00	3:20	3:49
h 3:30	3:49	4:16
p 3:55	4:14	4:39
h 4:25	4:43	5:09
p 4:50	5:09	5:34
h 5:20	5:37	6:01
p 5:45	6:03	6:26
h 6:15	6:32	6:55
p 6:40	6:57	7:20
h 7:10	7:26	7:49
h 7:35	7:51	8:14
h 8:00	8:16	8:39
h 8:25	8:41	9:04
h 9:25	9:41	10:03
h 10:25	10:39	11:00
h 11:25	11:39	12:00
h 12:25A	12:39A	1:00A

Outbound

Leave Wonderland Station	Lv/Arrive Central Square	Arrive Marblehead
.....	wp 6:05	6:28
.....	wh 6:30	6:53
p 6:45	6:57	7:21
h 7:15	7:25	7:47
p 7:45	7:57	8:21
h 8:15	8:27	8:52
p 8:45	8:58	9:24
h 9:15	9:28	9:55
p 9:40	9:54	10:22
h 10:00	10:13	10:40
p 10:25	10:39	11:09
h 10:55	11:08	11:35
p 11:20	11:34	12:01P
h 11:50	12:03P	12:30
p 12:15P	12:29P	12:56P
h 12:45	12:58	1:25
p 1:10	1:24	1:51
h 1:40	1:54	2:22
p 2:05	2:19	2:46
h 2:35	2:49	3:18
p 3:00	3:14	3:41
h 3:30	3:44	4:11
p 3:55	4:09	4:36
h 4:25	4:37	5:04
p 4:50	5:04	5:31
h 5:20	5:32	5:58
p 5:45	5:58	6:24
h 6:15	6:26	6:51
h 6:40	6:51	7:16
h 7:10	7:21	7:46
h 7:40	7:51	8:16
h 8:35	8:46	9:11
h 9:35	9:45	10:10
h 10:40	10:50	11:15
h 11:45	11:55	12:20A

a - Omits Point of Pines.
h - Via Humphrey St.
p - Via Paradise Rd.
w - To or from W. Lynn & operates via Western Ave. and does not service Wonderland Station
x - Waits for last train to arrive at station. Monday through Thursday only. Friday leaves at scheduled time.

Route 441/442 & 448/449
Marblehead-
Wonderland Station or
Downtown Crossing

441/442 Sunday

Inbound

Leave Marblehead	Arrive Central Square	Arrive Wonderland Station
h 7:55	8:14	8:37
h 8:55	9:13	9:37
p 9:25	9:45	10:07
h 10:00	10:18	10:42
p 10:40	11:00	11:22
h 11:05	11:23	11:47
p 11:35	11:55	12:22P
h 12:00N	12:20P	12:44P
p 12:30	12:49	1:16
h 12:55	1:15	1:39
p 1:25	1:44	2:11
h 1:50	2:08	2:32
p 2:20	2:39	3:06
h 2:45	3:03	3:27
p 3:15	3:34	4:01
h 3:40	3:57	4:21
p 4:10	4:28	4:51
h 4:35	4:52	5:16
p 5:05	w 5:23	.....
h 5:30	5:47	6:11
p 6:00	6:18	6:41
h 6:25	6:40	7:02
p 6:55	7:13	7:36
h 7:25	7:40	8:02
h 8:25	8:40	9:02
h 9:25	9:40	10:02
h 10:25	10:39	11:00
h 11:25	w 11:42	.....
h12:25A	12:39A	1:00A

Outbound

Leave Wonderland Station	Lv/Arrive Central Square	Arrive Marblehead
.....	wh 7:30	7:54
.....	wh 8:30	8:54
p 8:45	9:00	9:23
h 9:15	9:25	9:50
p 9:45	10:00	10:23
h 10:10	10:20	10:45
p 10:40	10:55	11:19
h 11:05	11:16	11:42
p 11:35	11:50	12:15P
h 12:00N	12:11P	12:37P
p 12:30	12:45	1:10
h 12:55	1:06	1:32
p 1:25	1:40	2:05
h 1:50	2:01	2:27
p 2:20	2:34	2:59
h 2:45	2:56	3:22
p 3:15	3:29	3:54
h 3:40	3:52	4:18
p 4:10	4:24	4:47
h 4:35	4:47	5:12
p 5:05	5:19	5:42
h 5:30	5:41	6:06
p 6:00	6:14	6:37
h 6:45	6:56	7:21
h 7:45	7:56	8:21
h 8:45	8:56	9:21
h 9:45	9:55	10:18
h 10:45	10:55	11:18
h 11:45	11:55	12:18

Fare	Inner X-Bus Trip	Inner X-Bus + Local Bus Trip	Inner X-Bus + Subway Trip
CharlieCard	$3.65	$3.65	$3.65
CharlieTicket	$4.75	$6.85	$7.40
Cash-on-Board	$4.75	$6.85	$7.40
Student CharliCard*	$2.35	$2.35	$2.35
Senior/TAP CharliCard**	$2.35	$2.35	$2.35

VALID PASSES: Inner Express Bus ($115/mo.) Outer Express Bus ($168/mo.) commuter rail, and boat passes.

FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

* Requires Student CharlieCard, available to students through participating middle schools and high schools.

** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2015 Holidays
October 12 & November 11: see Weekday
September 7, November 26, & December 25: see Sunday

NORTH SHORE TMA

Solving transportation problems & benefiting the environment

Welcome Aboard the Lynn Ferry 2015!

The Lynn Ferry is a great alternative to the commuter rail and the high cost of parking. The ferry service is a partnership between the Lynn EDIC and Boston Harbor Cruises. The ferry operates seasonally on Monday – Friday beginning May 18, 2015 between Blossom Street Landing, Lynn (just off the Lynnway – Route 1A) and Long Wharf Boston. The trip between Lynn and Boston is just 30 minutes and there's plenty of FREE parking at the Blossom Street Landing!

For your convenience, Lynn Ferry tickets can be purchased at the ferry landing in Lynn or at Long Wharf in Boston.

Lynn Ferry Fares

One way – Adult Fare: $7.00
One way – Children (3-12) and Seniors: $3.50
Children three years of age and under: FREE
The Lynn Ferry accepts MBTA Zone 2 or higher commuter rail passes

2015 Lynn Ferry Schedule

Monday through Friday

May 18 - September 25			
Departs Blossom St. Landing Lynn	**Arrives** Central Wharf Boston	**Departs** Central Wharf Boston	**Arrives** Blossom St. Landing Lynn
6:30 AM	7:05 AM	7:15 AM	7:45 AM
8:00 AM	8:35 AM	--	--
--	--	5:45 PM	6:20 PM
6:30 PM	7:05 PM	7:15 PM	7:50 PM

For more information or to view any schedule changes, please visit www.bostonharborcruises/salem.com or call 978-741-0220.
To learn more about the North Shore TMA and the Lynn Ferry services please go to: www.NorthshoreTMA.org. Questions, contact TMA Outreach Manager Al Marrone (603-702-2156 or AlMarroneTMA@yahoo.com). Make sure to "like" us on **Facebook**, and follow us on **Twitter** for the latest ferry news and pictures.

Lynn to Boston Ferry Schedule

Monday through Friday Service

May 19, 2014 through September 12, 2014

Inbound		Outbound	
Depart Lynn (Blossom Street)	Arrive Boston (Central Wharf)	Depart Boston (Central Wharf)	Arrive Lynn (Blossom Street)
6:30 am	7:05 am	7:15 am	7:45 am
8:00 am	8:35 am	5:45 pm	6:20 pm
6:30 pm	7:05 pm	7:15 pm	7:50 pm

EDIC

Economic Development
Industrial Corporation of Lynn

Rates

One way: $7.00

Children (3-12) and Seniors: $3.50

Children under three years of age and under: FREE

MBTA Zone 2 pass or higher

BHC

BOSTON HARBOR CRUISES

NEWBURYPORT/ROCKPORT LINE

Train Schedule Effective December 14, 2015

SW* - Severe weather trains

Massachusetts Bay Transportation Authority

Keolis

Monday to Friday

Inbound to Boston

AM

Zone	Station		100	150	152	102	154	104	156	158	106	52	160	54
					SW*					SW*		SW*		SW*
	Bikes Allowed		🚲	🚲										
8	Rockport	♿	5:00	-	-	6:00	-	6:44	-	-	7:22	-	-	-
7	Gloucester	♿	5:07	-	-	6:07	-	6:52	-	-	7:30	-	-	-
7	West Gloucester	♿	f 5:14	-	-	6:14	-	6:58	-	-	7:36	-	-	-
6	Manchester	♿	5:20	-	-	6:20	-	7:04	-	-	7:42	-	-	-
5	Beverly Farms	♿	5:26	-	-	6:26	-	7:10	-	-	7:49	-	-	-
5	Prides Crossing		-	-	-	f 6:29	-	7:13	-	-	7:51	-	-	-
4	Montserrat	♿	5:31	-	-	6:33	-	7:17	-	-	7:56	-	-	-
8	Newburyport	♿	-	5:22	5:50	-	6:30	-	7:00	-	-	-	7:55	-
7	Rowley	♿	-	5:29	5:57	-	6:37	-	7:07	-	-	-	8:02	-
6	Ipswich	♿	-	5:35	6:03	-	6:42	-	7:13	-	-	-	8:07	-
5	Hamilton/Wenham	♿	-	5:41	6:09	-	6:49	-	7:20	7:37	-	-	8:14	-
5	North Beverly	♿	-	5:45	6:13	-	6:53	-	7:24	7:41	-	-	8:18	-
4	Beverly	♿	5:36	5:50	6:18	6:38	6:58	7:23	7:30	7:45	8:01	8:14	8:23	9:20
3	Salem	♿	5:40	5:54	6:22	6:43	7:03	7:28	7:35	7:50	8:07	8:18	8:27	9:24
3	Swampscott	♿	5:47	6:01	6:29	6:49	7:10	-	7:41	7:57	-	8:25	8:34	9:31
2	Lynn	♿	5:50	6:04	6:32	6:53	7:13	-	7:45	8:00	-	8:28	8:37	9:34
2	River Works		f 5:53	f 6:07	f 6:35	f 6:56	f 7:16	-	-	f 8:03	-	-	f 8:40	-
1A	Chelsea		6:01	f 6:14	6:44	7:04	7:24	-	7:54	8:11	-	8:37	8:48	f 9:43
1A	North Station	♿	6:15	6:27	6:56	7:18	7:38	7:55	8:10	8:25	8:33	8:50	9:01	9:55

PM

Zone	Station		108	162	110	164	112	166	114	168	116	170	56	118	172	58	94	120	174	176	122
					SW*											SW*					
	Bikes Allowed		🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲
8	Rockport	♿	9:10	-	10:05	-	12:00	-	2:00	-	3:55	-	-	5:25	-	-	6:55	7:45	-	-	10:45
7	Gloucester	♿	9:18	-	10:13	-	12:08	-	2:08	-	4:02	-	-	5:33	-	-	f 7:03	7:53	-	-	f 10:52
7	West Gloucester	♿	f 9:23	-	10:19	-	f 12:14	-	f 2:14	-	f 4:08	-	-	f 5:38	-	-	-	f 7:58	-	-	f 10:58
6	Manchester	♿	9:30	-	10:25	-	12:20	-	2:20	-	4:14	-	-	5:44	-	-	f 7:14	8:05	-	-	f 11:04
5	Beverly Farms	♿	9:36	-	10:31	-	12:26	-	2:26	-	f 4:21	-	-	f 5:51	-	-	-	f 8:11	-	-	f 11:11
5	Prides Crossing		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Montserrat	♿	9:41	-	f 10:36	-	f 12:31	-	f 2:31	-	f 4:26	-	-	f 5:56	-	-	-	f 8:16	-	-	f 11:15
8	Newburyport	♿	-	9:30	-	11:06	-	1:06	-	2:45	-	4:35	-	-	5:45	-	-	-	9:00	10:35	-
7	Rowley	♿	-	9:37	-	11:13	-	1:13	-	2:52	-	4:42	-	-	f 5:52	-	-	-	f 9:06	-	-
6	Ipswich	♿	-	9:42	-	11:18	-	1:18	-	2:58	-	4:48	-	-	5:57	-	-	-	9:12	-	-
5	Hamilton/Wenham	♿	-	9:49	-	11:25	-	1:25	-	3:04	-	4:55	-	-	6:12	-	-	-	f 9:19	-	-
5	North Beverly	♿	-	f 9:53	-	f 11:29	-	f 1:29	-	f 3:08	-	4:59	-	-	f 6:16	-	-	-	f 9:23	-	-
4	Beverly	♿	9:46	9:58	10:41	11:35	12:36	1:34	2:36	3:13	4:30	5:04	5:40	6:01	6:21	7:00	f 7:27	8:21	9:28	10:56	11:21
3	Salem	♿	9:51	10:02	10:45	11:40	12:41	1:38	2:40	3:17	4:35	5:08	-	6:05	6:30	7:04	7:31	8:25	9:32	11:00	11:25
3	Swampscott	♿	9:57	10:09	10:52	11:47	12:47	1:45	2:47	f 3:24	4:41	5:14	-	f 6:12	-	f 7:10	-	f 8:31	f 9:38	-	f 11:32
2	Lynn	♿	10:00	10:12	10:55	11:50	12:50	1:48	2:50	3:27	f 4:45	5:18	-	f 6:15	-	f 7:14	-	f 8:34	f 9:41	-	f 11:35
2	River Works		-	-	-	-	-	-	f 2:54	f 3:30	f 4:48	f 5:21	-	f 6:18	f 6:42	-	-	-	f 9:44	-	f 11:37
1A	Chelsea		f 10:10	f 10:21	f 11:05	f 11:59	f 1:00	f 1:57	f 3:02	f 3:37	f 4:56	5:28	-	f 6:27	f 6:49	f 7:22	-	f 8:44	f 9:51	-	f 11:44
1A	North Station	♿	10:22	10:33	11:17	12:11	1:12	2:09	3:14	3:49	5:10	5:41	6:15	6:39	7:02	7:34	-	8:56	10:03	11:27	11:56

Trains in purple box indicate peak period trains.

Monday to Friday

Outbound from Boston

AM

Zone	Station		151	153	51	101	155	53	103	157	105	159	107	161	109	163
				SW*	SW*			SW*	SW*							
	Bikes Allowed		🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	
1A	North Station	♿	6:30	6:42	7:10	7:40	8:10	8:25	8:35	9:40	10:20	11:20	12:20	1:20	2:20	3:20
1A	Chelsea		-	f 6:52	7:20	7:51	f 8:20	-	f 8:48	f 9:51	f 1031	11:31	12:31	1:31	f 2:31	f 3:31
2	River Works		-	f 7:00	f 7:28	f 7:59	f 8:27	-	-	-	-	-	-	-	f 2:39	f 3:39
2	Lynn	♿	-	-	7:33	8:03	f 8:31	-	8:59	10:00	10:42	11:41	12:41	1:41	2:43	3:43
3	Swampscott	♿	-	-	7:36	f 8:06	f 8:33	-	9:02	10:04	10:45	11:44	12:44	1:44	2:46	3:46
3	Salem	♿	6:54	f 7:10	7:42	8:12	8:41	8:56	9:08	10:11	10:51	11:51	12:51	1:51	2:53	3:53
4	Beverly	♿	-	f 7:14	7:47	8:16	8:45	9:00	9:12	10:15	10:55	11:55	12:55	1:55	2:57	3:57
5	North Beverly	♿	-	7:19	-	-	f 8:50	-	-	f 10:20	-	f 11:59	-	f 2:00	-	f 4:02
5	Hamilton/Wenham	♿	-	7:26	-	-	f 8:54	-	-	f 10:24	-	f 12:02	-	f 2:03	-	4:06
6	Ipswich	♿	7:17	-	-	-	9:02	-	-	10:30	-	12:10	-	2:10	-	4:12
7	Rowley	♿	7:22	-	-	-	9:07	-	-	10:37	-	12:17	-	2:17	-	4:19
8	Newburyport	♿	7:29	-	-	-	9:16	-	-	10:44	-	12:24	-	2:24	-	4:26
4	Montserrat	♿	-	-	-	8:20	-	-	f 9:16	-	10:59	-	f 12:59	-	f 3:01	-
5	Prides Crossing		-	-	-	-	-	-	-	-	-	-	-	-	f 3:05	-
5	Beverly Farms	♿	-	-	-	8:25	-	-	f 9:21	-	f 11:04	-	f 1:04	-	f 3:07	-
6	Manchester	♿	-	-	-	8:31	-	-	f 9:28	-	11:11	-	1:11	-	3:14	-
7	West Gloucester	♿	-	-	-	f 8:37	-	-	f 9:34	-	f 11:17	-	f 1:17	-	f 3:20	-
7	Gloucester	♿	-	-	-	8:44	-	-	9:40	-	11:23	-	1:23	-	3:26	-
8	Rockport	♿	-	-	-	8:53	-	-	9:49	-	11:31	-	1:31	-	3:35	-

PM / AM

Zone	Station		111	165	55	113	167	115	169	57	117	171	95	173	119	175	121	177	123
							SW*			SW*									
	Bikes Allowed													🚲	🚲	🚲	🚲	🚲	🚲
1A	North Station	♿	4:00	4:20	4:45	5:00	5:15	5:30	5:40	5:55	6:15	6:45	-	7:40	8:30	9:20	10:40	11:45	12:10
1A	Chelsea		4:11	4:31	4:56	-	5:26	-	5:51	6:06	6:26	6:56	-	-	f 8:41	9:31	f 10:51	f 11:56	f 12:21
2	River Works		f 4:20	f 4:39	-	-	-	-	f 5:59	-	f 6:34	f 7:04	-	-	-	-	f 10:59	-	-
2	Lynn	♿	4:23	4:43	5:06	-	5:36	-	6:03	6:16	6:38	7:08	-	8:00	8:51	9:41	11:03	12:06	12:30
3	Swampscott	♿	4:26	4:46	5:09	-	5:39	-	6:06	6:19	6:41	7:11	-	8:03	8:54	9:44	11:06	12:09	12:33
3	Salem	♿	4:33	4:53	5:16	5:27	5:47	6:00	6:13	6:26	6:49	7:18	7:41	8:10	9:01	9:51	11:13	12:16	12:40
4	Beverly	♿	4:37	4:57	5:20	5:33	5:52	6:05	6:18	6:30	6:54	7:23	7:45	8:14	9:05	9:55	11:17	12:20	12:44
5	North Beverly	♿	-	5:02	-	-	f 5:57	-	6:23	-	-	f 7:28	-	8:19	-	f 10:00	-	f 12:25	-
5	Hamilton/Wenham	♿	-	5:06	-	-	6:00	-	6:27	-	-	7:31	-	8:23	-	10:04	-	f 12:29	-
6	Ipswich	♿	-	5:14	-	-	6:07	-	6:34	-	-	7:38	-	8:29	-	10:10	-	12:35	-
7	Rowley	♿	-	5:19	-	-	6:13	-	6:39	-	-	7:45	-	8:36	-	10:17	-	f 12:42	-
8	Newburyport	♿	-	5:26	-	-	6:20	-	6:48	-	-	7:52	-	8:43	-	10:24	-	12:49	-
4	Montserrat	♿	4:42	-	-	5:37	-	6:09	-	-	6:58	-	f 7:48	-	f 9:08	-	11:21	-	f 12:48
5	Prides Crossing		-	-	-	5:41	-	6:14	-	-	7:02	-	f 7:53	-	-	-	-	-	-
5	Beverly Farms	♿	4:47	-	-	5:44	-	6:17	-	-	7:05	-	f 7:55	-	9:14	-	f 11:26	-	f 12:53
6	Manchester	♿	4:53	-	-	5:50	-	6:24	-	-	7:11	-	f 8:00	-	9:20	-	11:33	-	12:59
7	West Gloucester	♿	4:59	-	-	5:56	-	6:30	-	-	7:17	-	f 8:07	-	f 9:26	-	f 11:39	-	f 1:04
7	Gloucester	♿	5:05	-	-	6:02	-	6:36	-	-	7:23	-	8:12	-	9:32	-	11:45	-	1:10
8	Rockport	♿	5:14	-	-	6:11	-	6:45	-	-	7:32	-	8:21	-	9:41	-	11:54	-	1:19

Trains in purple box indicate peak period trains.

Saturday & Sunday

Inbound to Boston

AM / PM

Zone	Station	Saturday Train #	1100	1150	1102	1152	1104	1154	1106	1156	1108	1158	1110	1160	1112
		Sunday Train #	2100	2150	2102	2152	2104	2154	2106	2156	2108	2158	2110	2160	2112
	Bikes Allowed		🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲
8	Rockport	♿	7:00	-	10:00	-	12:00	-	2:00	-	5:10	-	7:30	-	10:00
7	Gloucester	♿	7:08	-	10:08	-	12:08	-	2:08	-	5:18	-	7:38	-	10:08
7	West Gloucester	♿	f 7:13	-	f 10:13	-	f 12:13	-	f 2:13	-	f 5:23	-	f 7:43	-	f 10:13
6	Manchester	♿	7:20	-	10:20	-	12:20	-	2:20	-	5:30	-	7:50	-	10:20
5	Beverly Farms	♿	f 7:26	-	f 10:26	-	f 12:26	-	f 2:26	-	f 5:36	-	f 7:56	-	f 10:26
4	Montserrat	♿	f 7:31	-	f 10:31	-	f 12:31	-	f 2:31	-	f 5:41	-	f 8:01	-	f 10:30
8	Newburyport	♿	-	8:52	-	10:52	-	12:52	-	2:52	-	5:52	-	9:00	-
7	Rowley	♿	-	8:58	-	10:58	-	12:58	-	2:58	-	5:58	-	9:06	-
6	Ipswich	♿	-	9:05	-	11:05	-	1:05	-	3:05	-	6:05	-	9:13	-
5	Hamilton/Wenham	♿	-	9:11	-	11:11	-	1:11	-	3:11	-	6:11	-	9:19	-
5	North Beverly	♿	-	f 9:15	-	f 11:15	-	f 1:15	-	f 3:15	-	f 6:15	-	f 9:23	-
4	Beverly	♿	7:36	9:20	10:36	11:20	12:36	1:20	2:36	3:20	5:46	6:20	8:06	9:28	10:35
3	Salem	♿	7:40	9:24	10:40	11:24	12:40	1:24	2:40	3:24	5:50	6:24	8:10	9:32	10:39
3	Swampscott	♿	7:47	9:30	10:47	11:30	12:47	1:30	2:47	3:30	5:57	6:30	8:17	9:38	10:46
2	Lynn	♿	7:50	9:34	10:50	11:34	12:50	1:34	2:50	3:34	6:00	6:34	8:20	9:41	10:49
1A	Chelsea		f 7:59	f 9:44	f 10:59	f 11:44	f 12:59	f 1:44	f 2:59	f 3:44	f 6:09	f 6:44	f 8:29	f 9:50	f 10:58
1A	North Station	♿	8:11	9:56	11:11	11:56	1:11	1:56	3:11	3:56	6:21	6:56	8:41	10:02	11:10

Saturday & Sunday

Outbound from Boston

AM / PM

Zone	Station	Saturday Train #	1101	1151	1103	1153	1105	1155	1107	1157	1109	1159	1111	1161	1113
		Sunday Train #	2101	2151	2103	2153	2105	2155	2107	2157	2109	2159	2111	2161	2113
	Bikes Allowed		🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲	🚲
1A	North Station	♿	8:30	9:30	10:20	11:30	12:20	1:30	2:20	4:30	5:30	7:15	8:30	10:15	11:30
1A	Chelsea		f 8:41	f 9:41	f 10:31	f 11:41	f 12:31	f 1:41	f 2:31	f 4:41	f 5:41	f 7:26	f 8:41	f 10:26	f 11:41
2	Lynn	♿	8:51	9:51	10:41	11:51	12:41	1:51	2:41	4:51	5:51	7:36	8:51	10:36	11:51
3	Swampscott	♿	8:54	9:54	10:44	11:54	12:44	1:54	2:44	4:54	5:54	7:39	8:54	10:39	11:54
3	Salem	♿	9:01	10:01	10:51	12:01	12:51	2:01	2:51	5:01	6:01	7:46	9:01	10:46	12:01
4	Beverly	♿	9:04	10:05	10:55	12:05	12:55	2:05	2:55	5:05	6:05	7:50	9:05	10:50	12:04
5	North Beverly	♿	-	f 10:09	-	f 12:09	-	f 2:09	-	f 5:09	-	f 7:55	-	f 10:55	-
5	Hamilton/Wenham	♿	-	10:13	-	12:13	-	2:13	-	5:13	-	7:58	-	10:58	-
6	Ipswich	♿	-	10:20	-	12:20	-	2:20	-	5:20	-	8:05	-	11:05	-
7	Rowley	♿	-	10:27	-	12:27	-	2:27	-	5:27	-	8:11	-	11:11	-
8	Newburyport	♿	-	10:34	-	12:34	-	2:34	-	5:34	-	8:19	-	11:19	-
4	Montserrat	♿	f 9:08	-	f 10:58	-	f 12:58	-	f 2:58	-	f 6:09	-	f 9:09	-	f 12:08
5	Beverly Farms	♿	f 9:13	-	f 11:03	-	f 1:03	-	f 3:03	-	f 6:14	-	f 9:14	-	f 12:13
6	Manchester	♿	9:20	-	11:10	-	1:10	-	3:10	-	6:20	-	9:20	-	12:19
7	West Gloucester	♿	f 9:26	-	f 11:17	-	f 1:17	-	f 3:17	-	f 6:26	-	f 9:26	-	f 12:26
7	Gloucester	♿	9:32	-	11:23	-	1:23	-	3:23	-	6:32	-	9:32	-	12:32
8	Rockport	♿	9:41	-	11:32	-	1:32	-	3:32	-	6:41	-	9:41	-	12:41

Times in purple indicate a flag stop (f stop): Passengers must tell the conductor that they wish to leave. Passengers waiting to board should be visible on the platform.

Times in blue indicate an early departure (L stop): The train may leave ahead of schedule at these stops.

Bikes: Bicycles are allowed on trains with the bicycle symbol shown below the train number.

Keep in Mind

This schedule will be effective from December 14, 2015, and will replace the schedule of December 27, 2014

Holiday Service:

Saturday service: Presidents' Day, 4th of July (train #1113 may be held for 30 minutes after the 4th of July fireworks).

Sunday service: New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day.

All other holidays: For other holiday schedules, please check MBTA.com or call 617-222-3200.

with Severe weather Information

Severe weather (SW*):

- When notified, trains marked with a "SW*" **WILL NOT** operate.
- Please expect a 15 to 25 minute additional trip time on operating trains.
- Express trains may make additional stops when directed.

Extreme weather:

- In case of "Extreme" weather events, specific schedules may be adopted. Those will be displayed on www.mbta.com, in Boston Stations and available via Twitter **@mbta_CR**.
- Listen to media reports for Commuter Rail Traffic Information prior to your trip.

Access schedules, T-Alerts & updates. Simply scan this QR code with your smartphone.

Visit MBTA.com.

Call MBTA Customer Service at 617-222-3200.

Stay connected with us on Twitter.

Make your train on time. Download the official MBTA Commuter Rail mobile app. Get schedule info, train progress, and alerts easily and conveniently.

APPENDIX E

Traffic Safety Data

Lynnway Crashes (2010 to 2012)

Count	Crash Number	Crash Year	Crash Time	Crash Date2	Crash_Severity	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Non Motorized Collision	Bicycle or Pedestrian Involved
1	2575161	2010	5:59 PM	18-Jan-2010	Non-fatal injury	Rear-end	Snow	Dark - lighted roadway	Cloudy/Snow		
2	2578866	2010	6:13 AM	11-Feb-2010	Property damage only (no	Rear-end	Wet	Dawn	Clear/Snow		
3	2569742	2010	2:19 PM	04-Jan-2010	Property damage only (no	Angle	Wet	Daylight	Cloudy		
4	2554563	2010	9:30 AM	13-Jan-2010	Property damage only (no	Rear-end	Dry	Daylight	Clear		
5	2590577	2010	7:28 PM	10-Apr-2010	Property damage only (no	Single vehicle crash	Dry	Dusk	Not Reported		
6	2578970	2010	12:40 PM	22-Mar-2010	Non-fatal injury	Head-on	Dry	Daylight	Cloudy		
7	2577953	2010	8:43 PM	15-Mar-2010	Property damage only (no	Angle	Wet	Dark - lighted roadway	Rain		
8	2577195	2010	10:45 PM	16-Mar-2010	Property damage only (no	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		
9	2577173	2010	3:21 PM	29-Jan-2010	Property damage only (no	Rear-to-rear	Other	Daylight	Clear/Clear		
10	2578821	2010	11:12 AM	09-Feb-2010	Property damage only (no	Angle	Dry	Daylight	Clear		
11	2579796	2010	1:33 PM	23-Mar-2010	Non-fatal injury	Angle	Wet	Daylight	Cloudy		
12	2577960	2010	12:30 PM	20-Mar-2010	Property damage only (no	Angle	Dry	Daylight	Not Reported		
13	2577961	2010	2:00 PM	20-Mar-2010	Property damage only (no	Rear-end	Dry	Daylight	Not Reported		
14	2592251	2010	4:40 PM	09-Apr-2010	Property damage only (no	Sideswipe, same direction	Wet	Daylight	Not Reported		
15	2586788	2010	3:30 PM	28-Mar-2010	Property damage only (no	Angle	Dry	Daylight	Clear		
16	2590566	2010	10:20 AM	02-Apr-2010	Property damage only (no	Angle	Dry	Daylight	Not Reported	P2:Pedalcyclist (b	cyc
17	2625622	2010	5:08 PM	01-Aug-2010	Property damage only (no	Angle	Dry	Daylight	Clear		
18	2625701	2010	5:49 PM	01-Aug-2010	Property damage only (no	Angle	Dry	Daylight	Clear		
19	2592258	2010	6:45 AM	19-Apr-2010	Non-fatal injury	Sideswipe, same direction	Dry	Daylight	Clear		
20	2595737	2010	12:50 PM	01-May-2010	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
21	2595348	2010	12:55 PM	04-May-2010	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Clear		
22	2597879	2010	6:40 AM	11-May-2010	Property damage only (no	Rear-end	Dry	Daylight	Not Reported		
23	2598907	2010	4:35 PM	14-May-2010	Non-fatal injury	Not reported	Not reported	Not reported	Not Reported		
24	2599300	2010	10:58 AM	19-May-2010	Property damage only (no	Angle	Wet	Daylight	Rain/Rain		
25	2629604	2010	3:25 PM	08-Aug-2010	Non-fatal injury	Rear-end	Dry	Daylight	Cloudy		
26	2600183	2010	2:05 PM	19-May-2010	Property damage only (no	Rear-end	Wet	Daylight	Not Reported		
27	2599760	2010	2:50 PM	19-May-2010	Property damage only (no	Rear-end	Wet	Daylight	Not Reported		
28	2601448	2010	7:20 AM	24-May-2010	Property damage only (no	Rear-end	Dry	Daylight	Not Reported		
29	2757099	2010	1:00 PM	24-May-2010	Not Reported	Not reported	Dry	Not reported	Clear		
30	2603998	2010	4:21 PM	25-May-2010	Property damage only (no	Angle	Dry	Daylight	Clear/Clear		
31	2750484	2010	12:10 PM	26-May-2010	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Clear		
32	2607139	2010	1:52 PM	29-May-2010	Property damage only (no	Rear-end	Dry	Daylight	Clear		
33	2610582	2010	1:10 PM	12-Jun-2010	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
34	2623109	2010	7:43 PM	18-Jun-2010	Property damage only (no	Angle	Dry	Daylight	Clear		
35	2613172	2010	3:24 PM	20-Jun-2010	Not Reported	Angle	Dry	Daylight	Not Reported		ped
36	2620589	2010	1:00 PM	23-Jun-2010	Property damage only (no	Angle	Dry	Daylight	Not Reported		
37	2617582	2010	11:15 AM	05-Jul-2010	Not Reported	Rear-end	Dry	Daylight	Clear		
38	2617583	2010	12:16 PM	05-Jul-2010	Not Reported	Rear-end	Dry	Daylight	Clear		
39	2622069	2010	2:40 AM	14-Jul-2010	Not Reported	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		
40	2624970	2010	5:55 PM	21-Jul-2010	Property damage only (no	Angle	Dry	Daylight	Clear		
41	2621605	2010	8:24 AM	24-Jul-2010	Property damage only (no	Rear-end	Dry	Daylight	Clear		
42	2622722	2010	7:21 AM	26-Jul-2010	Non-fatal injury	Single vehicle crash	Dry	Daylight	Clear	P2:Pedalcyclist (b	cyc
43	2622975	2010	8:58 AM	27-Jul-2010	Non-fatal injury	Single vehicle crash	Dry	Daylight	Clear	P2:Pedalcyclist (b	cyc
44	2630861	2010	9:32 AM	28-Jul-2010	Property damage only (no	Rear-end	Dry	Daylight	Clear		

Lynnway Crashes (2010 to 2012)

Count	Crash Number	Crash Year	Crash Time	Crash Date2	Crash_Severity	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Non Motorized Collision	Bicycle or Pedestrian Involved
45	2626781	2010	4:31 PM	30-Jul-2010	Fatal injury	Rear-end	Dry	Daylight	Clear		
46	2628181	2010	4:20 PM	06-Aug-2010	Property damage only (n	Angle	Dry	Daylight	Clear		
47	2627149	2010	8:14 PM	06-Aug-2010	Property damage only (n	Angle	Dry	Daylight	Clear		
48	2631327	2010	12:37 PM	20-Aug-2010	Property damage only (n	Sideswipe, same direction	Dry	Daylight	Clear		
49	2633028	2010	1:27 PM	22-Aug-2010	Property damage only (n	Rear-end	Wet	Daylight	Rain		
50	2633026	2010	6:42 AM	23-Aug-2010	Property damage only (n	Sideswipe, same direction	Wet	Daylight	Cloudy/Rain		
51	2632037	2010	7:38 AM	24-Aug-2010	Property damage only (n	Rear-end	Dry	Daylight	Not Reported		
52	2634265	2010	9:08 PM	25-Aug-2010	Property damage only (n	Single vehicle crash	Wet	Dark - lighted roadway	Rain		
53	2643257	2010	10:20 PM	26-Aug-2010	Property damage only (n	Angle	Dry	Dark - lighted roadway	Clear		
54	2663639	2010	9:15 AM	10-Nov-2010	Property damage only (n	Rear-end	Dry	Daylight	Clear		
55	2667084	2010	3:30 PM	11-Nov-2010	Property damage only (n	Angle	Dry	Daylight	Clear		
56	2921189	2010	6:00 AM	26-Sep-2010	Property damage only (n	Single vehicle crash	Dry	Dawn	Clear		
57	2648715	2010	11:07 AM	01-Oct-2010	Property damage only (n	Rear-end	Dry	Daylight	Clear		
58	2647241	2010	1:15 PM	01-Oct-2010	Property damage only (n	Rear-end	Wet	Daylight	Rain		
59	2647165	2010	11:20 AM	02-Oct-2010	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
60	2650100	2010	6:33 AM	12-Oct-2010	Property damage only (n	Rear-end	Wet	Dark - lighted roadway	Cloudy		
61	2651087	2010	7:29 PM	14-Oct-2010	Non-fatal injury	Rear-end	Dry	Dark - lighted roadway	Cloudy/Cloudy		
62	2653159	2010	9:50 AM	15-Oct-2010	Property damage only (n	Rear-end	Dry	Daylight	Cloudy		
63	2653051	2010	00:00 AM	19-Oct-2010	Property damage only (n	Rear-end	Dry	Dark - lighted roadway	Clear		
64	2654018	2010	6:57 AM	26-Oct-2010	Property damage only (n	Rear-end	Wet	Daylight	Clear		
65	2658383	2010	2:15 PM	29-Oct-2010	Non-fatal injury	Rear-end	Dry	Daylight	Not Reported		
66	2656727	2010	3:20 PM	02-Nov-2010	Property damage only (n	Rear-end	Dry	Daylight	Clear		
67	2657774	2010	2:45 PM	04-Nov-2010	Property damage only (n	Rear-end	Wet	Daylight	Rain		
68	2663637	2010	12:20 PM	05-Nov-2010	Property damage only (n	Angle	Dry	Daylight	Clear		
69	2663811	2010	3:20 PM	05-Nov-2010	Property damage only (n	Single vehicle crash	Dry	Daylight	Not Reported		
70	2657966	2010	5:47 PM	07-Nov-2010	Non-fatal injury	Rear-end	Dry	Dark - lighted roadway	Not Reported		
71	2659895	2010	7:43 AM	09-Nov-2010	Property damage only (n	Sideswipe, same direction	Dry	Daylight	Clear		
72	2662323	2010	10:40 AM	16-Nov-2010	Property damage only (n	Angle	Dry	Daylight	Clear		
73	2666153	2010	10:35 PM	19-Nov-2010	Non-fatal injury	Single vehicle crash	Dry	Dark - lighted roadway	Not Reported		
74	2663641	2010	8:50 AM	20-Nov-2010	Non-fatal injury	Angle	Dry	Daylight	Not Reported		
75	2665452	2010	5:57 AM	26-Nov-2010	Non-fatal injury	Rear-end	Water (standing,	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)		
76	2664787	2010	9:02 PM	28-Nov-2010	Non-fatal injury	Single vehicle crash	Dry	Dark - lighted roadway	Clear		
77	2667901	2010	7:25 PM	29-Nov-2010	Non-fatal injury	Single vehicle crash	Dry	Dark - lighted roadway	Not Reported		
78	2668610	2010	9:55 AM	01-Dec-2010	Property damage only (n	Angle	Wet	Daylight	Cloudy		
79	2669444	2010	3:44 PM	08-Dec-2010	Property damage only (n	Rear-end	Dry	Daylight	Clear		
80	2669912	2010	1:51 PM	09-Dec-2010	Non-fatal injury	Rear-end	Dry	Daylight	Not Reported		
81	2671213	2010	00:00 AM	13-Dec-2010	Not Reported	Single vehicle crash	Wet	Dark - lighted roadway	Cloudy/Rain		
82	2675113	2010	10:15 PM	18-Dec-2010	Property damage only (n	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		
83	2675182	2010	8:42 AM	23-Dec-2010	Property damage only (n	Angle	Wet	Daylight	Cloudy/Other		
84	2676736	2010	1:45 PM	28-Dec-2010	Non-fatal injury	Angle	Wet	Daylight	Not Reported		
85	2686794	2011	2:25 PM	05-Jan-2011	Property damage only (n	Angle	Dry	Daylight	Cloudy		
86	2678147	2011	11:12 AM	06-Jan-2011	Property damage only (n	Rear-end	Dry	Daylight	Clear		
87	2690159	2011	11:23 AM	11-Jan-2011	Property damage only (n	Angle	Wet	Daylight	Not Reported		
88	2685939	2011	4:10 PM	11-Jan-2011	Property damage only (n	Sideswipe, same direction	Dry	Dusk	Clear		

Lynnway Crashes (2010 to 2012)

Count	Crash Number	Crash Year	Crash Time	Crash Date2	Crash_Severity	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Non Motorized Collision	Bicycle or Pedestrian Involved
89	2680257	2011	2:41 PM	12-Jan-2011	Non-fatal injury	Single vehicle crash	Snow	Daylight	Cloudy/Snow		
90	2692059	2011	9:48 AM	14-Jan-2011	Property damage only (no	Rear-end	Slush	Daylight	Cloudy		
91	2680658	2011	9:03 AM	16-Jan-2011	Non-fatal injury	Angle	Dry	Daylight	Clear		
92	2696494	2011	11:06 AM	18-Jan-2011	Property damage only (no	Angle	Snow	Daylight	Snow/Snow		
93	2690357	2011	11:00 AM	22-Jan-2011	Non-fatal injury	Angle	Wet	Daylight	Snow		
94	2693757	2011	11:25 AM	24-Jan-2011	Property damage only (no	Angle	Dry	Daylight	Clear/Clear		
95	2690161	2011	9:30 AM	26-Jan-2011	Property damage only (no	Angle	Dry	Daylight	Not Reported		
96	2689458	2011	12:49 PM	04-Feb-2011	Property damage only (no	Angle	Dry	Daylight	Clear		
97	2689459	2011	7:20 AM	05-Feb-2011	Non-fatal injury	Single vehicle crash	Ice	Daylight	Clear	P2:Pedestrian	ped
98	2700900	2011	2:22 PM	14-Feb-2011	Property damage only (no	Angle	Dry	Daylight	Clear		
99	2701727	2011	10:10 AM	20-Feb-2011	Not Reported	Rear-end	Dry	Daylight	Clear		
100	2705773	2011	1:00 PM	22-Feb-2011	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
101	2701729	2011	7:10 AM	28-Feb-2011	Non-fatal injury	Sideswipe, same direction	Wet	Daylight	Rain/Sleet, hail (freezing rain or drizzle)		
102	2722124	2011	3:44 PM	22-Apr-2011	Property damage only (no	Not reported	Not reported	Not reported	Not Reported		
103	2725510	2011	10:59 PM	16-May-2011	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Cloudy		
104	2726956	2011	2:20 PM	20-May-2011	Non-fatal injury	Rear-end	Dry	Daylight	Not Reported		
105	2727578	2011	8:00 PM	28-May-2011	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Clear		
106	2731716	2011	1:36 PM	09-Jun-2011	Non-fatal injury	Single vehicle crash	Dry	Daylight	Clear/Clear		
107	2735176	2011	3:38 AM	21-Jun-2011	Non-fatal injury	Single vehicle crash	Wet	Dark - lighted roadway	Not Reported		
108	2737363	2011	7:50 AM	01-Jul-2011	Non-fatal injury	Not reported	Dry	Daylight	Not Reported	P2:Pedalcyclist (b	cyc
109	2741314	2011	3:16 PM	08-Jul-2011	Property damage only (no	Angle	Dry	Daylight	Clear/Clear		
110	2741206	2011	12:20 PM	09-Jul-2011	Property damage only (no	Rear-end	Dry	Daylight	Cloudy		
111	2745340	2011	5:20 PM	16-Jul-2011	Property damage only (no	Angle	Dry	Daylight	Cloudy		
112	2742769	2011	2:01 PM	18-Jul-2011	Property damage only (no	Rear-end	Wet	Daylight	Not Reported		
113	2750749	2011	8:44 PM	09-Aug-2011	Property damage only (no	Sideswipe, same direction	Wet	Dark - lighted roadway	Rain		
114	2752168	2011	10:34 AM	15-Aug-2011	Non-fatal injury	Angle	Wet	Daylight	Rain	P2:Pedalcyclist (b	cyc
115	2753912	2011	3:42 PM	21-Aug-2011	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Cloudy		
116	2754230	2011	9:13 AM	22-Aug-2011	Property damage only (no	Not reported	Dry	Daylight	Clear/Clear		
117	2757686	2011	4:24 AM	05-Sep-2011	Property damage only (no	Single vehicle crash	Dry	Dark - lighted roadway	Cloudy		
118	3373309	2011	5:50 AM	06-Sep-2011	Property damage only (no	Sideswipe, same direction	Wet	Dawn	Rain		
119	3372633	2011	11:35 AM	07-Sep-2011	Property damage only (no	Angle	Wet	Daylight	Cloudy/Rain		
120	3372601	2011	5:25 PM	12-Sep-2011	Property damage only (no	Rear-end	Dry	Daylight	Not Reported		
121	2767450	2011	8:07 PM	14-Sep-2011	Non-fatal injury	Angle	Dry	Dark - lighted roadway	Clear	P2:Pedestrian	ped
122	2765133	2011	9:35 AM	15-Sep-2011	Property damage only (no	Rear-end	Dry	Daylight	Cloudy		
123	3372643	2011	7:01 PM	11-Oct-2011	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Not Reported		
124	3372644	2011	2:35 PM	16-Oct-2011	Property damage only (no	Rear-end	Dry	Daylight	Not Reported		
125	3372651	2011	3:38 AM	29-Oct-2011	Property damage only (no	Single vehicle crash	Dry	Dark - lighted roadway	Clear		
126	2789384	2011	1:00 PM	30-Oct-2011	Property damage only (no	Angle	Dry	Daylight	Cloudy		
127	3372617	2011	1:04 PM	06-Nov-2011	Property damage only (no	Angle	Dry	Daylight	Clear		
128	2793850	2011	1:05 PM	09-Nov-2011	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Not Reported		
129	2842280	2011	5:07 PM	09-Nov-2011	Property damage only (no	Angle	Dry	Dark - lighted roadway	Clear/Clear		
130	3168415	2011	11:26 AM	19-Nov-2011	Property damage only (no	Angle	Dry	Daylight	Clear		
131	3372657	2011	8:10 PM	24-Nov-2011	Non-fatal injury	Single vehicle crash	Dry	Dark - lighted roadway	Clear		
132	2928022	2011	2:21 AM	27-Nov-2011	Property damage only (no	Single vehicle crash	Dry	Dark - lighted roadway	Clear		

Lynnway Crashes (2010 to 2012)

Count	Crash Number	Crash Year	Crash Time	Crash Date2	Crash_Severity	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Non Motorized Collision	Bicycle or Pedestrian Involved
133	2921149	2011	9:56 AM	02-Dec-2011	Non-fatal injury	Single vehicle crash	Dry	Daylight	Clear	P2:Pedestrian	ped
134	2835768	2011	11:50 AM	17-Dec-2011	Property damage only (no	Single vehicle crash	Dry	Daylight	Clear		
135	2864478	2011	10:56 AM	22-Dec-2011	Property damage only (no	Head-on	Dry	Daylight	Clear		
136	3131775	2011	5:43 PM	23-Dec-2011	Property damage only (no	Single vehicle crash	Wet	Dark - lighted roadway	Cloudy		
137	2864731	2011	5:50 PM	23-Dec-2011	Non-fatal injury	Rear-end	Dry	Dark - lighted roadway	Cloudy/Cloudy		
138	2849868	2011	7:24 PM	23-Dec-2011	Non-fatal injury	Angle	Dry	Dark - roadway not lighted	Clear		
139	2898288	2012	9:35 AM	27-Jan-2012	Property damage only (no	Angle	Wet	Daylight	Rain		
140	3015418	2012	2:47 PM	01-Feb-2012	Property damage only (no	Rear-end	Dry	Daylight	Cloudy/Clear		
141	2997440	2012	1:40 PM	03-Feb-2012	Property damage only (no	Rear-end	Dry	Daylight	Clear		
142	2997430	2012	7:40 PM	03-Feb-2012	Property damage only (no	Angle	Dry	Daylight	Clear		
143	3038754	2012	12:59 PM	09-Feb-2012	Property damage only (no	Angle	Dry	Daylight	Clear		
144	2998036	2012	7:45 PM	09-Feb-2012	Property damage only (no	Rear-end	Dry	Daylight	Clear		
145	3376963	2012	4:45 PM	16-Dec-2012	Property damage only (no	Rear-end	Wet	Dusk	Not Reported		
146	3321830	2012	5:10 PM	18-Dec-2012	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Not Reported		
147	3039533	2012	3:21 PM	18-Feb-2012	Property damage only (no	Single vehicle crash	Dry	Daylight	Clear/Clear		
148	2960341	2012	9:34 PM	18-Feb-2012	Non-fatal injury	Single vehicle crash	Dry	Dark - lighted roadway	Clear		
149	2958525	2012	12:50 PM	24-Feb-2012	Non-fatal injury	Single vehicle crash	Dry	Daylight	Not Reported	P2:Pedestrian	ped
150	3162957	2012	4:40 PM	24-Feb-2012	Property damage only (no	Rear-end	Wet	Dusk	Rain		
151	2967341	2012	5:51 PM	24-Feb-2012	Property damage only (no	Single vehicle crash	Wet	Other	Rain/Rain	P2:Pedestrian	ped
152	3168281	2012	4:45 PM	16-Mar-2012	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Cloudy		
153	3168287	2012	4:35 PM	21-Mar-2012	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
154	3017825	2012	6:44 PM	23-Mar-2012	Property damage only (no	Angle	Dry	Dusk	Clear		
155	3038149	2012	7:46 PM	04-Apr-2012	Property damage only (no	Angle	Wet	Dark - lighted roadway	Rain		
156	3022045	2012	12:35 PM	05-Apr-2012	Non-fatal injury	Angle	Dry	Daylight	Clear	P2:Pedalcyclist (b	cyc
157	3035631	2012	7:53 PM	13-Apr-2012	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Clear/Clear		
158	3109854	2012	11:05 AM	14-Apr-2012	Fatal injury	Single vehicle crash	Dry	Daylight	Clear	P1:Pedestrian / P	ped
159	3376886	2012	5:10 PM	20-Apr-2012	Property damage only (no	Single vehicle crash	Dry	Daylight	Not Reported	P2:Pedestrian / P	ped
160	3376896	2012	11:45 AM	29-Apr-2012	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
161	3159349	2012	4:39 PM	05-May-2012	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Cloudy		
162	3101970	2012	1:40 PM	14-May-2012	Not Reported	Rear-end	Dry	Daylight	Not Reported		
163	3392231	2012	4:53 PM	14-May-2012	Property damage only (no	Sideswipe, same direction	Wet	Daylight	Rain		
164	3102066	2012	3:23 PM	16-May-2012	Non-fatal injury	Rear-end	Dry	Daylight	Not Reported		
165	3216320	2012	6:40 AM	05-Jun-2012	Property damage only (no	Angle	Wet	Daylight	Rain/Cloudy		cyc
166	3125772	2012	9:25 PM	07-Jun-2012	Not Reported	Rear-end	Dry	Dark - lighted roadway	Cloudy		
167	3245242	2012	11:40 AM	30-Jun-2012	Property damage only (no	Head-on	Dry	Daylight	Clear/Clear		
168	3245241	2012	11:57 AM	30-Jun-2012	Property damage only (no	Sideswipe, opposite direction	Dry	Daylight	Clear		
169	3247878	2012	2:43 PM	08-Jul-2012	Property damage only (no	Rear-end	Dry	Daylight	Clear/Clear		
170	3168291	2012	5:30 AM	09-Jul-2012	Non-fatal injury	Rear-end	Dry	Dawn	Clear		
171	3185731	2012	8:30 AM	12-Jul-2012	Property damage only (no	Single vehicle crash	Dry	Daylight	Clear/Clear	P2:Pedestrian	ped
172	3376932	2012	8:40 PM	25-Jul-2012	Property damage only (no	Rear-end	Dry	Dark - roadway not lighted	Not Reported		
173	3298168	2012	7:05 AM	01-Aug-2012	Property damage only (no	Rear-end	Wet	Daylight	Cloudy		
174	3241472	2012	9:15 AM	03-Aug-2012	Property damage only (no	Single vehicle crash	Dry	Daylight	Clear		
175	3248238	2012	9:15 AM	10-Aug-2012	Property damage only (no	Angle	Dry	Daylight	Clear		
176	3244479	2012	8:39 PM	16-Aug-2012	Non-fatal injury	Single vehicle crash	Dry	Dark - lighted roadway	Clear	P3:Pedestrian	ped

Lynnway Crashes (2010 to 2012)

Count	Crash Number	Crash Year	Crash Time	Crash Date2	Crash_Severity	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Non Motorized Collision	Bicycle or Pedestrian Involved
177	3253584	2012	4:35 PM	18-Aug-2012	Property damage only (no	Rear-to-rear	Dry	Daylight	Not Reported		
178	3266575	2012	2:48 PM	25-Aug-2012	Property damage only (no	Rear-end	Dry	Daylight	Clear/Clear		
179	3250915	2012	9:45 AM	02-Sep-2012	Non-fatal injury	Angle	Dry	Daylight	Clear		
180	3263161	2012	7:30 AM	04-Sep-2012	Non-fatal injury	Rear-end	Wet	Daylight	Cloudy		
181	3252548	2012	11:55 AM	06-Sep-2012	Property damage only (no	Single vehicle crash	Dry	Daylight	Clear		
182	3286168	2012	1:18 AM	22-Sep-2012	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Clear		
183	3265566	2012	9:40 AM	24-Sep-2012	Property damage only (no	Rear-end	Dry	Daylight	Clear		
184	3379080	2012	4:18 PM	24-Sep-2012	Property damage only (no	Angle	Dry	Daylight	Not Reported		
185	3298670	2012	11:05 AM	10-Oct-2012	Unknown	Angle	Dry	Daylight	Clear		
186	3286682	2012	9:36 AM	16-Oct-2012	Non-fatal injury	Sideswipe, opposite direction	Dry	Daylight	Clear		
187	3376762	2012	11:13 AM	20-Oct-2012	Property damage only (no	Rear-end	Dry	Daylight	Not Reported		
188	3291213	2012	4:40 PM	24-Oct-2012	Property damage only (no	Sideswipe, same direction	Dry	Daylight	Clear		
189	3283690	2012	6:58 AM	25-Oct-2012	Non-fatal injury	Rear-end	Dry	Daylight	Clear		
190	3288558	2012	2:23 PM	29-Oct-2012	Property damage only (no	Rear-end	Wet	Daylight	Cloudy/Rain		
191	3379087	2012	9:48 AM	31-Oct-2012	Non-fatal injury	Sideswipe, same direction	Dry	Daylight	Cloudy		
192	3288657	2012	1:10 AM	10-Nov-2012	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Clear		
193	3308107	2012	11:10 AM	10-Nov-2012	Property damage only (no	Rear-end	Wet	Daylight	Clear		
194	3376957	2012	5:25 PM	10-Nov-2012	Non-fatal injury	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		
195	3325401	2012	9:23 PM	15-Nov-2012	Property damage only (no	Head-on	Dry	Dark - lighted roadway	Clear		
196	3295148	2012	5:30 PM	17-Nov-2012	Property damage only (no	Rear-end	Dry	Dark - lighted roadway	Not Reported		
197	3301801	2012	8:05 AM	03-Dec-2012	Property damage only (no	Rear-end	Dry	Daylight	Clear		
198	3376960	2012	5:57 PM	07-Dec-2012	Non-fatal injury	Rear-end	Wet	Dark - roadway not lighted	Not Reported	P3:Other non-mo	ped
199	3321345	2012	9:30 AM	10-Dec-2012	Property damage only (no	Angle	Dry	Daylight	Clear		
200	3353663	2012	10:50 AM	14-Dec-2012	Property damage only (no	Single vehicle crash	Dry	Daylight	Clear/Clear		

Carroll Parkway Crashes

Count	Crash Number	Crash Year	Crash Time	Crash Date 1	Crash Severity	Number of Vehicles	Total Nonfatal Injury	Total Fatal Injury	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Nonmotorized Type	Bike or Pedestrian Crash
1	2578968	2010	6:08 PM	18-Mar-2010	Non-fatal injury	3	2	0	Rear-end	Dry	Daylight	Not Reported		
2	2592234	2010	6:08 PM	22-Mar-2010	Property damage only	2	0	0	Rear-end	Dry	Daylight	Not Reported		
3	2580981	2010	8:05 AM	29-Mar-2010	Property damage only	2	0	0	Rear-end	Wet	Daylight	Rain		
4	2675183	2010	00:00 AM	24-Dec-2010	Property damage only	1	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Not Reported		
5	2590581	2010	00:00 AM	18-Apr-2010	Non-fatal injury	1	1	0	Single vehicle crash	Wet	Dark - lighted roadway	Not Reported		
6	2621169	2010	4:42 PM	12-Jul-2010	Property damage only	1	0	0	Single vehicle crash	Dry	Daylight	Clear		
7	2609916	2010	4:30 AM	12-Jun-2010	Property damage only	2	0	0	Rear-end	Dry	Dawn	Clear		
8	2630059	2010	10:35 AM	17-Aug-2010	Property damage only	2	0	0	Rear-end	Dry	Daylight	Not Reported		
9	2635079	2010	12:25 PM	31-Aug-2010	Non-fatal injury	2	2	0	Angle	Dry	Daylight	Clear		
10	2733595	2010	1:45 PM	06-Sep-2010	Non-fatal injury	2	1	0	Sideswipe, same direction	Dry	Daylight	Clear		
11	2656735	2010	1:47 AM	30-Oct-2010	Property damage only	4	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Not Reported		
12	2667080	2010	5:43 AM	07-Nov-2010	Property damage only	1	0	0	Single vehicle crash	Dry	Daylight	Cloudy		
13	2617578	2010	6:44 PM	01-Jul-2010	Not Reported	2	0	0	Rear-end	Dry	Daylight	Not Reported		
14	2617584	2010	2:41 PM	05-Jul-2010	Not Reported	2	0	0	Rear-end	Dry	Daylight	Clear		
15	2628380	2010	12:10 PM	12-Aug-2010	Non-fatal injury	2	1	0	Angle	Dry	Daylight	Clear		
16	2663642	2010	3:42 PM	22-Nov-2010	Property damage only	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		
17	2683978	2011	11:31 PM	19-Jan-2011	Non-fatal injury	1	1	0	Single vehicle crash	Wet	Dark - lighted roadway	Cloudy/Snow		
18	2713520	2011	6:20 PM	09-Apr-2011	Property damage only	2	0	0	Angle	Dry	Daylight	Clear		
19	2716708	2011	8:00 AM	14-Apr-2011	Property damage only	2	0	0	Rear-end	Dry	Daylight	Cloudy		
20	2720788	2011	3:51 AM	01-May-2011	Property damage only	1	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear		
21	2737365	2011	11:06 AM	04-Jul-2011	Property damage only	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		
22	2759499	2011	1:30 PM	26-Aug-2011	Property damage only	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		
23	2760300	2011	8:15 PM	26-Aug-2011	Property damage only	1	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear		cyc
24	2754783	2011	8:05 AM	27-Aug-2011	Not Reported	1	0	0	Single vehicle crash	Dry	Daylight	Clear		
25	2765034	2011	6:14 PM	06-Sep-2011	Property damage only	4	0	0	Rear-end	Wet	Daylight	Rain		
26	2782972	2011	3:00 PM	13-Oct-2011	Property damage only	1	0	0	Single vehicle crash	Wet	Daylight	Not Reported		
27	2791147	2011	11:57 PM	15-Oct-2011	Non-fatal injury	2	5	0	Rear-end	Dry	Dark - lighted roadway	Not Reported		
28	2791148	2011	1:35 AM	03-Nov-2011	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Dark - lighted roadway	Cloudy		
29	2844102	2011	1:15 AM	23-Dec-2011	Not Reported	1	0	0	Single vehicle crash	Wet	Dark - lighted roadway	Cloudy/Rain		
30	3372604	2011	5:15 PM	16-Sep-2011	Property damage only	1	0	0	Single vehicle crash	Dry	Daylight	Clear		
31	3280748	2012	11:31 AM	12-Oct-2012	Property damage only	2	0	0	Rear-end	Wet	Daylight	Cloudy/Rain		
32	2864362	2012	6:55 PM	12-Jan-2012	Property damage only	3	0	0	Rear-end	Dry	Dark - lighted roadway	Clear		
33	3004246	2012	6:45 AM	02-Apr-2012	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Cloudy		
34	3109858	2012	3:20 PM	22-May-2012	Not Reported	2	0	0	Angle	Wet	Daylight	Not Reported		
35	3138861	2012	9:40 PM	15-Jun-2012	Not Reported	2	0	0	Sideswipe, same direction	Dry	Dark - lighted roadway	Clear		
36	3153148	2012	1:25 PM	20-Jun-2012	Property damage only	2	0	0	Sideswipe, same direction	Dry	Daylight	Clear		
37	3179571	2012	9:26 PM	29-Jun-2012	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear	P2:Pedestrian	ped
38	3279026	2012	12:53 PM	14-Aug-2012	Non-fatal injury	1	1	0	Single vehicle crash	Dry	Daylight	Clear		
39	3246217	2012	5:15 PM	14-Aug-2012	Non-fatal injury	2	1	0	Sideswipe, same direction	Dry	Daylight	Clear		
40	3230906	2012	9:10 AM	04-Aug-2012	Property damage only	1	0	0	Single vehicle crash	Dry	Daylight	Clear		
41	3285763	2012	3:21 AM	03-Nov-2012	Property damage only	1	0	0	Single vehicle crash	Dry	Dark - lighted roadway	Clear		

APPENDIX F

Crash Rate Worksheets

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Lynn COUNT DATE : 28-May-15

DISTRICT : 4

~ SEGMENT DATA ~

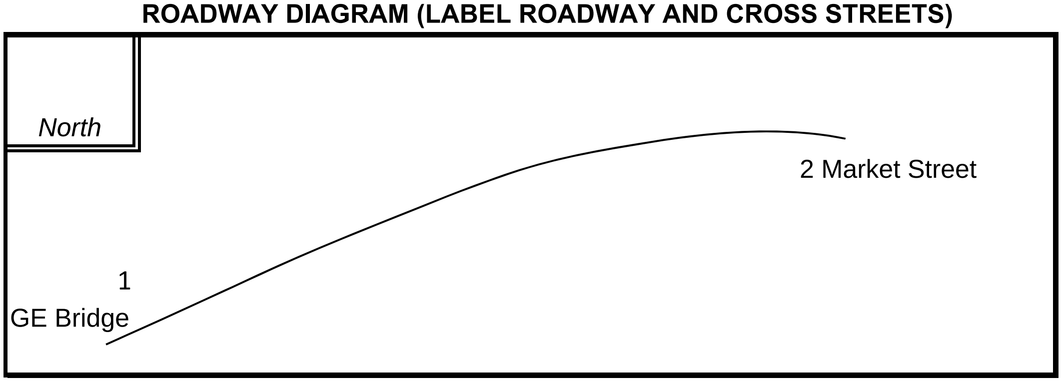
ROADWAY NAME: Lynnway/Route 1A

START POI[N]T: General Edward Bridge

END POINT: Market Street

FUNCTIONAL CLASSIFICATION OF ROADWAY: Principal Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**):	**1.5**
AVERAGE DAILY TRAFFIC VOLUME (**V**):	37,700

TOTAL # OF CRASHES:	200	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**66.67**

CRASH RATE CALCULATION : **3.23**

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

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

MassDOT Highway

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Lynn COUNT DATE : 28-May-15

DISTRICT : 4

~ SEGMENT DATA ~

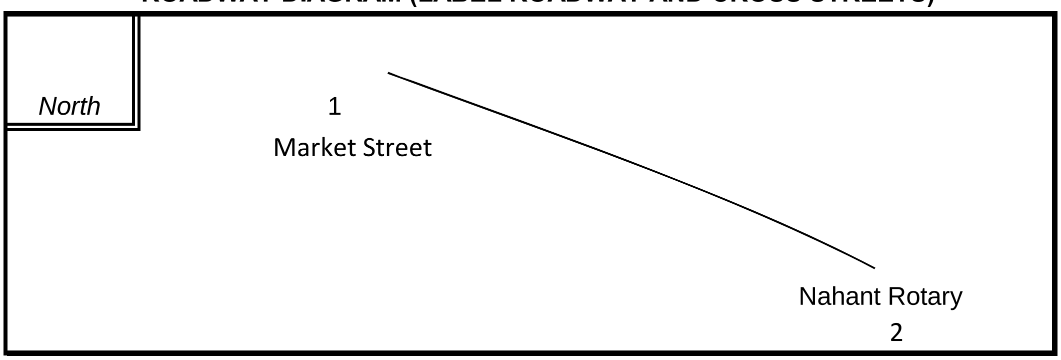
ROADWAY NAME: Carroll Parkway

START POINT: General Edward Bridge

END POINT: Nahant Rotary

FUNCTIONAL CLASSIFICATION OF ROADWAY: Principal Arterial

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**): **0.5**

AVERAGE DAILY TRAFFIC VOLUME (**V**): 29,300

TOTAL # OF CRASHES: 40

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **13.33**

CRASH RATE CALCULATION : **2.49**

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

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynn   COUNT DATE : 28-Apr-15

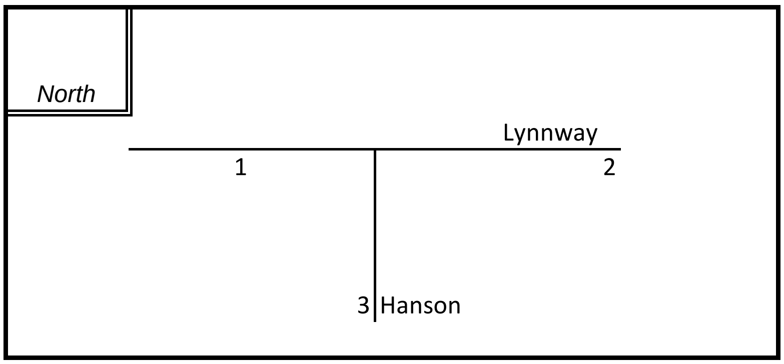
DISTRICT : 4   UNSIGNALIZED :   SIGNALIZED : **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Lynnway/Route 1A

MINOR STREET(S) : Hanson St

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	SB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	2,190	1,240	175			**3,605**

" K " FACTOR : **0.090**   APPROACH VOLUME : **40,056**

TOTAL # OF CRASHES : 31   # OF YEARS : 3   AVERAGE # OF CRASHES PER YEAR (**A**) : **10.33**

CRASH RATE CALCULATION : **0.71**   RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynn | COUNT DATE : 28-May-15

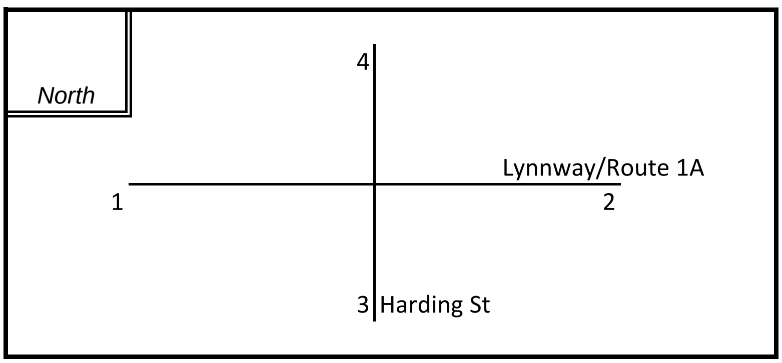
DISTRICT : 4 | UNSIGNALIZED : | SIGNALIZED : **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Lynnway/Route 1A

MINOR STREET(S) : Harding St

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (AM/PM) :	2340	1280	80	30		**3,730**

" K " FACTOR : **0.090** | APPROACH VOLUME : **41,444**

TOTAL # OF CRASHES : 26 | # OF YEARS : 3 | AVERAGE # OF CRASHES PER YEAR (**A**) : **8.67**

CRASH RATE CALCULATION : **0.57**

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

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynn
COUNT DATE : 28-May-15

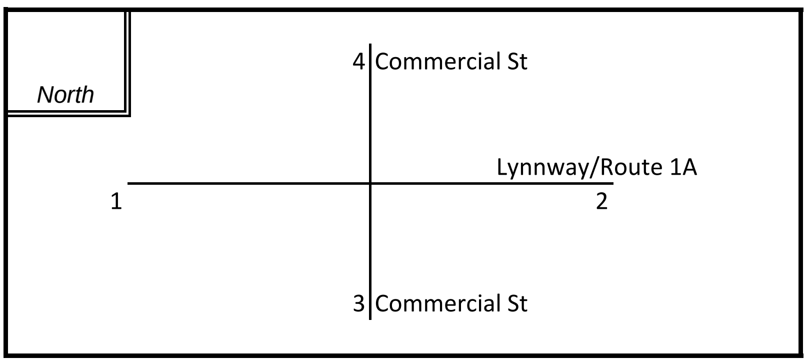
DISTRICT : 4
UNSIGNALIZED :
SIGNALIZED : **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Lynnway/Route 1A

MINOR STREET(S) : Commercial Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (AM/PM) :	2,505	1,390	0	650		**4,545**

" K " FACTOR : **0.090**
APPROACH VOLUME : **50,500**

TOTAL # OF CRASHES : 59
OF YEARS : 3
AVERAGE # OF CRASHES PER YEAR (**A**) : **19.67**

CRASH RATE CALCULATION : **1.07**

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

Comments :
Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynn

COUNT DATE : 28-May-15

DISTRICT : 4

UNSIGNALIZED :

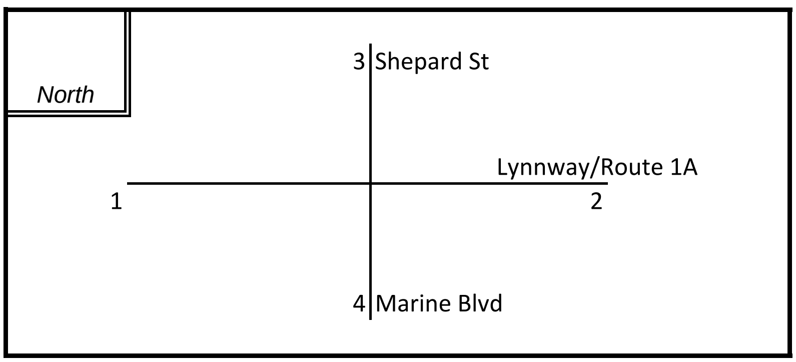
SIGNALIZED : **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Lynnway/Route 1A

MINOR STREET(S) : Marine Blvd
Shepard Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	2,300	1,400	70	25		**3,795**

" K " FACTOR : **0.090**

APPROACH VOLUME : **42,167**

TOTAL # OF CRASHES : 16

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **5.33**

CRASH RATE CALCULATION : 0.35

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

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynn

COUNT DATE : 28-May-15

DISTRICT : 4

UNSIGNALIZED :

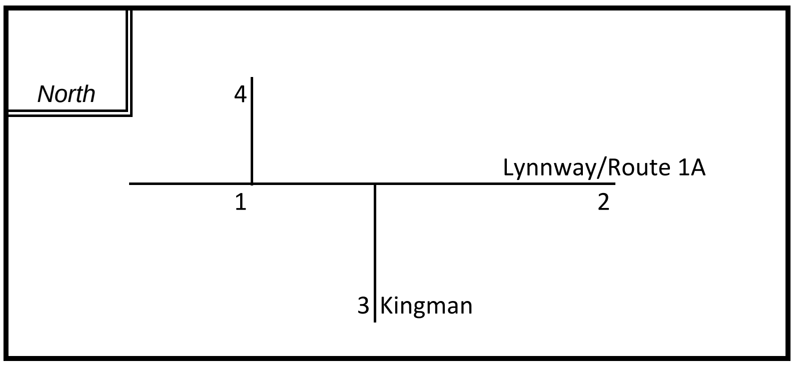
SIGNALIZED : **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Lynnway/Route 1A

MINOR STREET(S) : Kingman Street

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (AM/PM) :	2,185	1,405	220	180		**3,990**

" K " FACTOR : **0.090**

APPROACH VOLUME : **44,333**

TOTAL # OF CRASHES : 45

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **15.00**

CRASH RATE CALCULATION : **0.93**

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

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynnway/Route 1A   COUNT DATE : May-15

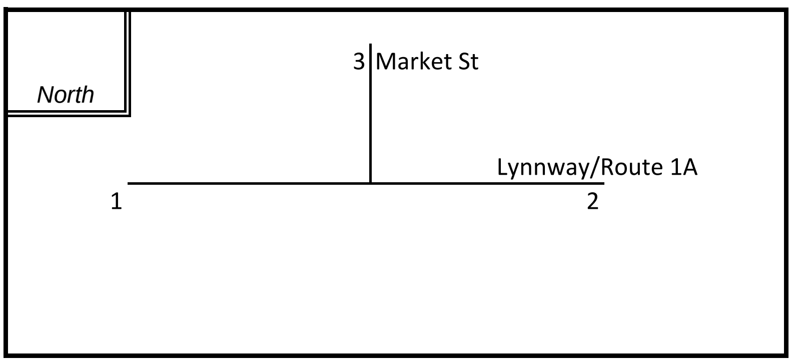
DISTRICT : 4   UNSIGNALIZED :   SIGNALIZED : **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Lynnway/Route 1A

MINOR STREET(S) : Market St

INTERSECTION DIAGRAM
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	SB	EB			
PEAK HOURLY VOLUMES (AM/PM) :	2,265	970	230			**3,465**

" K " FACTOR : **0.090**   APPROACH VOLUME : **38,500**

TOTAL # OF CRASHES : 19   # OF YEARS : 3   AVERAGE # OF CRASHES PER YEAR (**A**) : **6.33**

CRASH RATE CALCULATION : **0.45**   RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Lynnway/Route 1A/Carroll Parkway Study

massDOT Highway — Moving Massachusetts Forward.

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lynn and Nahant   COUNT DATE : 28-May-15

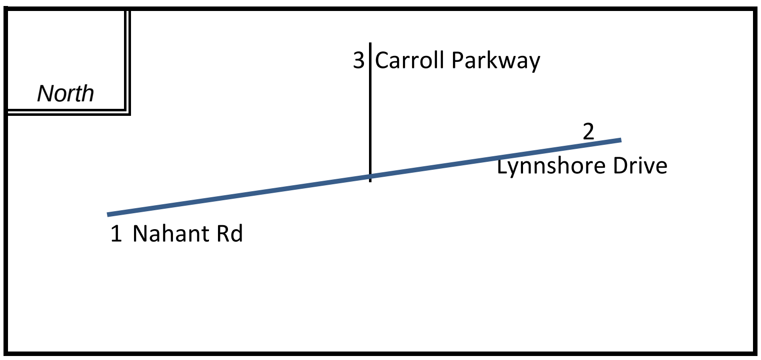
DISTRICT : 4   UNSIGNALIZED : Yes   SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Carroll Parkway

MINOR STREET(S) : Lynnshore Drive/Nahant Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB			
PEAK HOURLY VOLUMES (AM/PM) :	490	800	1,750			**3,040**

" K " FACTOR : **0.090**   APPROACH VOLUME : **33,778**

TOTAL # OF CRASHES : 33   # OF YEARS : 3   AVERAGE # OF CRASHES PER YEAR (**A**) : **11.00**

CRASH RATE CALCULATION : 0.89   RATE = $\frac{(A * 1,000,000)}{(V * 365)}$

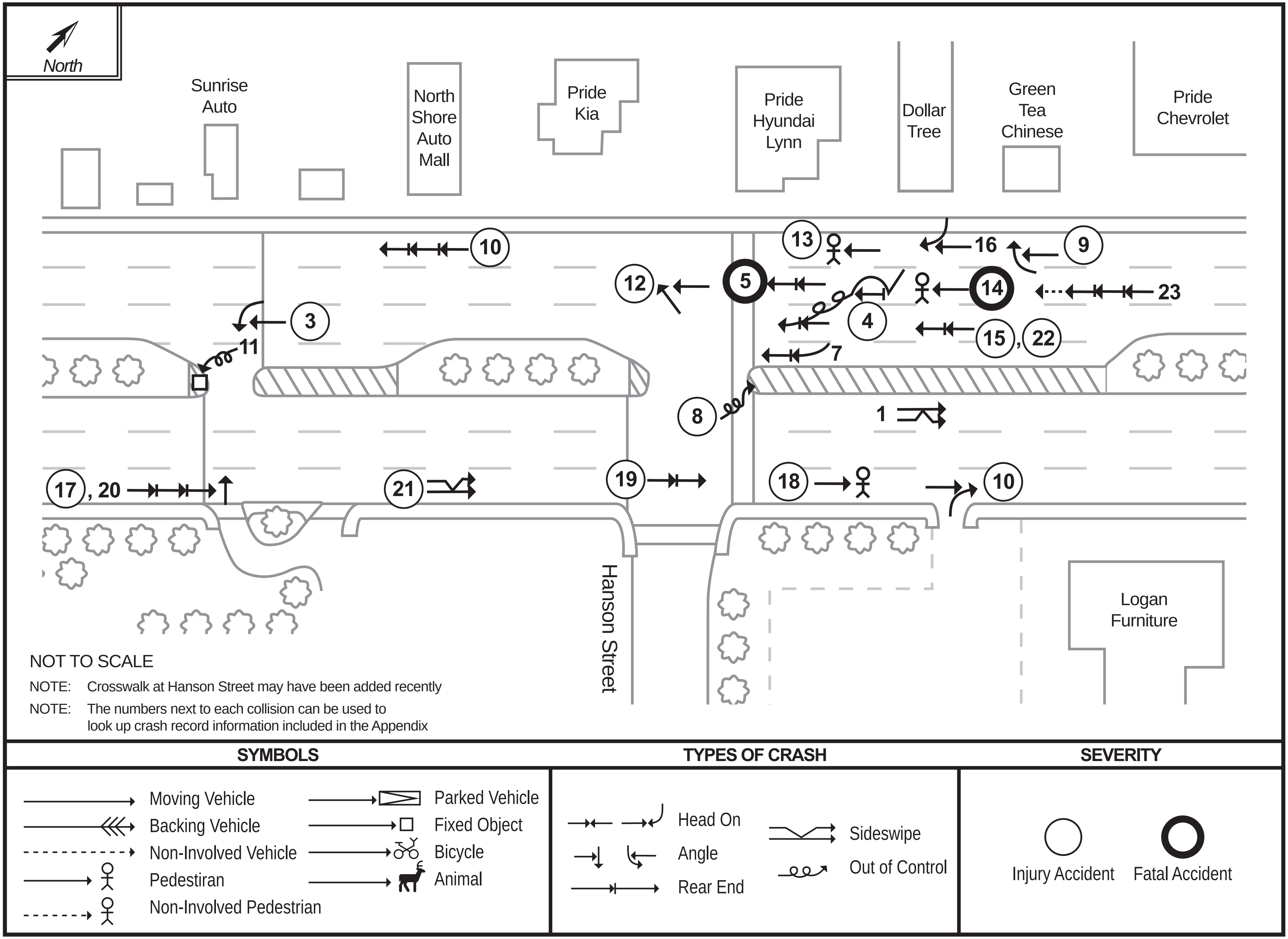
Comments :

Project Title & Date:

APPENDIX G

Collision Diagrams

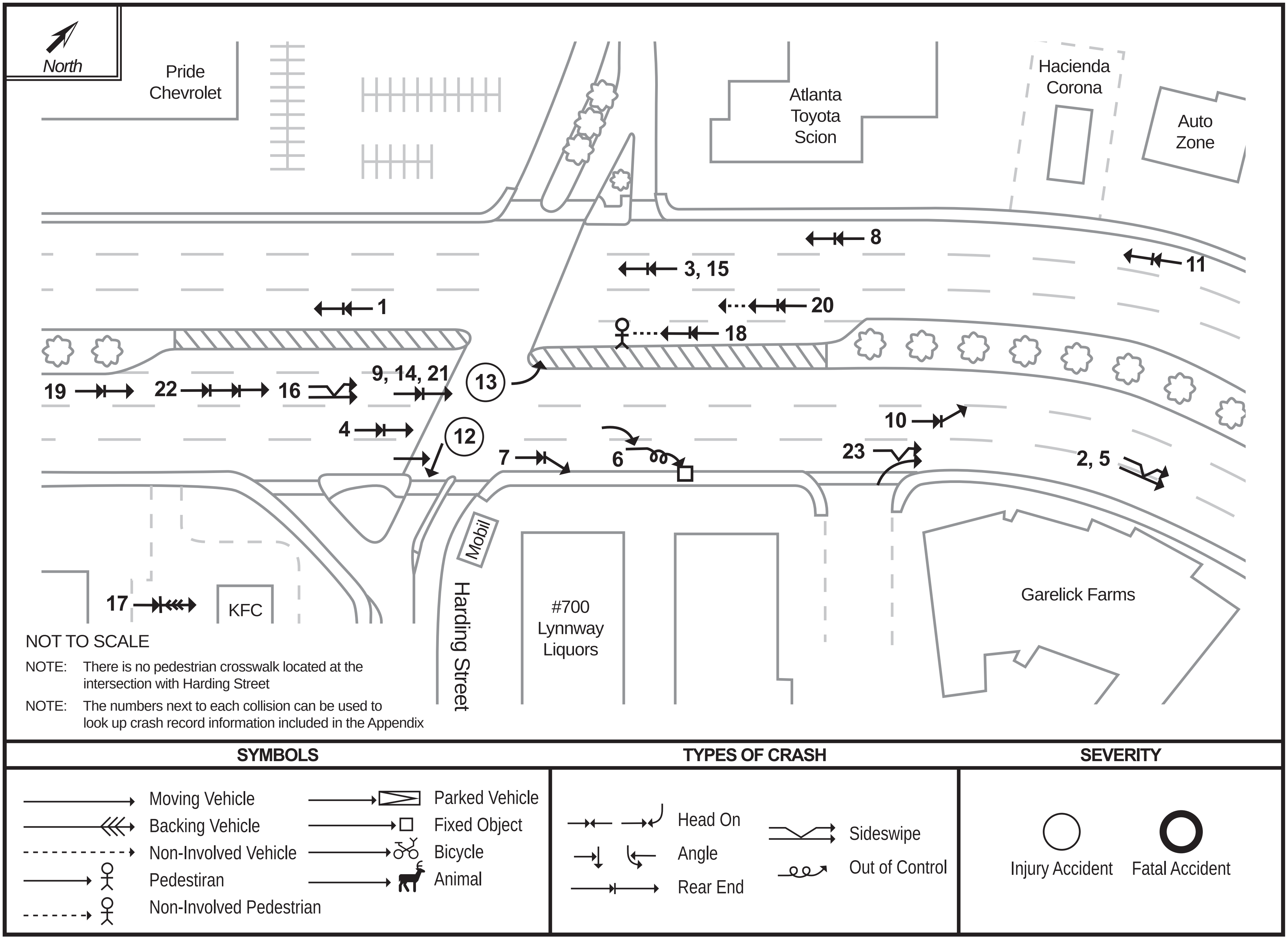
Figure 1
Lynnway, Lynn, MA
Section 1: Hanson Street



Collision Diagram
Section 1: Hanson Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
1	1	2577195	10:45 PM	16-Mar-2010	Property damage only (n	Sideswipe, same direction	V1:Northbound / V2:Northbound	Dry	Dark - lighted roadway	Clear	
1	2	2577960	12:30 PM	20-Mar-2010	Property damage only (n	Angle	V1:Northbound / V2:Not reported	Dry	Daylight	Not Reported	
1	3	2579796	1:33 PM	23-Mar-2010	Non-fatal injury	Angle	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy	
1	4	2610582	1:10 PM	12-Jun-2010	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound / V3	Dry	Daylight	Clear	
1	5	2626781	4:31 PM	30-Jul-2010	Fatal injury	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
1	6	2676736	1:45 PM	28-Dec-2010	Non-fatal injury	Angle	V1:Northbound / V2:Westbound	Wet	Daylight	Not Reported	
1	7	2678147	11:12 AM	06-Jan-2011	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
1	8	2680257	2:41 PM	12-Jan-2011	Non-fatal injury	Single vehicle crash	V1:Northbound	Snow	Daylight	Cloudy/Snow	
1	9	2690357	11:00 AM	22-Jan-2011	Non-fatal injury	Angle	V1:Southbound / V2:Southbound	Wet	Daylight	Snow	
1	10	2726956	2:20 PM	20-May-2011	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound / V3	Dry	Daylight	Not Reported	
1	11	2835768	11:50 AM	17-Dec-2011	Property damage only (n	Single vehicle crash	V1:Southbound	Dry	Daylight	Clear	
1	12	2849868	7:24 PM	23-Dec-2011	Non-fatal injury	Angle	V1:Southbound / V2:Southbound	Dry	Dark - roadway not lighted	Clear	
1	13	2958525	12:50 PM	24-Feb-2012	Non-fatal injury	Single vehicle crash	V1:Southbound	Dry	Daylight	Not Reported	ped
1	14	3109854	11:05 AM	14-Apr-2012	Fatal injury	Single vehicle crash	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	ped
1	15	3168291	5:30 AM	09-Jul-2012	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound	Dry	Dawn	Clear	
1	16	3372633	11:35 AM	07-Sep-2011	Property damage only (n	Angle	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy/Rain	
1	17	3376756									
1	18	3376886	5:10 PM	20-Apr-2012	Property damage only (n	Single vehicle crash	V1:Northbound	Dry	Daylight	Not Reported	ped
1	19	3376896	11:45 AM	29-Apr-2012	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
1	20	3376940									
1	21	3376957	5:25 PM	10-Nov-2012	Non-fatal injury	Sideswipe, same direction	V1:Northbound / V2:Northbound	Dry	Dark - lighted roadway	Clear	
1	22	3376960	5:57 PM	07-Dec-2012	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound	Wet	Dark - roadway not lighted	Not Reported	ped
1	23	3376963	4:45 PM	16-Dec-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound / V3	Wet	Dusk	Not Reported	

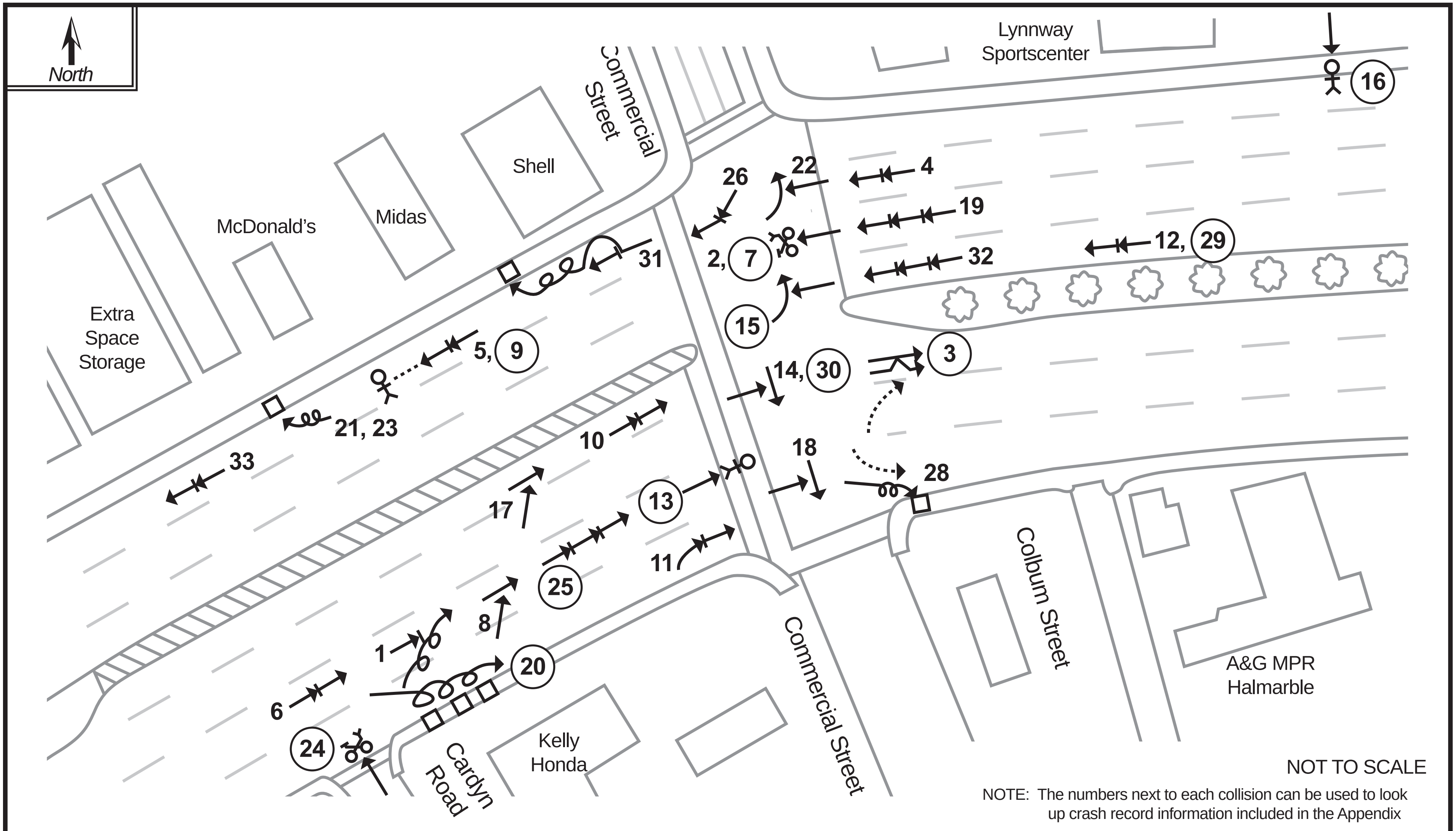
Figure 2
Lynnway, Lynn, MA
Section 2: Harding Street



Collision Diagram
Section 2: Harding Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
2	1	2577961	2:00 PM	20-Mar-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Not Reported	
2	2	2595348	12:55 PM	04-May-2010	Property damage only (n	Sideswipe, same direction	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
2	3	2600183	2:05 PM	19-May-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Not Reported	
2	4	2617583	12:16 PM	05-Jul-2010	Not Reported	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
2	5	2622069	2:40 AM	14-Jul-2010	Not Reported	Sideswipe, same direction	V1:Northbound / V2:Northbound	Dry	Dark - lighted roadway	Clear	
2	6	2625622	5:08 PM	01-Aug-2010	Property damage only (n	Angle	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
2	7	2632037	7:38 AM	24-Aug-2010	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
2	8	2643257	10:20 PM	26-Aug-2010	Property damage only (n	Angle	V1:Southbound / V2:Not reported / V	Dry	Dark - lighted roadway	Clear	
2	9	2650100	6:33 AM	12-Oct-2010	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Wet	Dark - lighted roadway	Cloudy	
2	10	2653051	00:00 AM	19-Oct-2010	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound / V3	Dry	Dark - lighted roadway	Clear	
2	11	2656727	3:20 PM	02-Nov-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
2	12	2663641	8:50 AM	20-Nov-2010	Non-fatal injury	Angle	V1:Southbound / V2:Northbound	Dry	Daylight	Not Reported	
2	13	2664787	9:02 PM	28-Nov-2010	Non-fatal injury	Single vehicle crash	V1:Northbound	Dry	Dark - lighted roadway	Clear	
2	14	3101970	1:40 PM	14-May-2012	Not Reported	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
2	15	3125772	9:25 PM	07-Jun-2012	Not Reported	Rear-end	V1:Southbound / V2:Southbound	Dry	Dark - lighted roadway	Cloudy	
2	16	3168281	4:45 PM	16-Mar-2012	Property damage only (n	Sideswipe, same direction	V1:Northbound / V2:Northbound	Dry	Daylight	Cloudy	
2	17	3253584	4:35 PM	18-Aug-2012	Property damage only (n	Rear-to-rear	V1:Not reported / V2:Not reported	Dry	Daylight	Not Reported	
2	18	3288558	2:23 PM	29-Oct-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy/Rain	
2	19	3295148	5:30 PM	17-Nov-2012	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Dark - lighted roadway	Not Reported	
2	20	3298168	7:05 AM	01-Aug-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy	
2	21	3321830	5:10 PM	18-Dec-2012	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Dark - lighted roadway	Not Reported	
2	22	3372644	2:35 PM	16-Oct-2011	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound / V3	Dry	Daylight	Not Reported	
2	23	3373309	5:50 AM	06-Sep-2011	Property damage only (n	Sideswipe, same direction	V1:Northbound / V2:Northbound	Wet	Dawn	Rain	

Figure 3
Lynnway, Lynn, MA
Section 3: Commericial Street



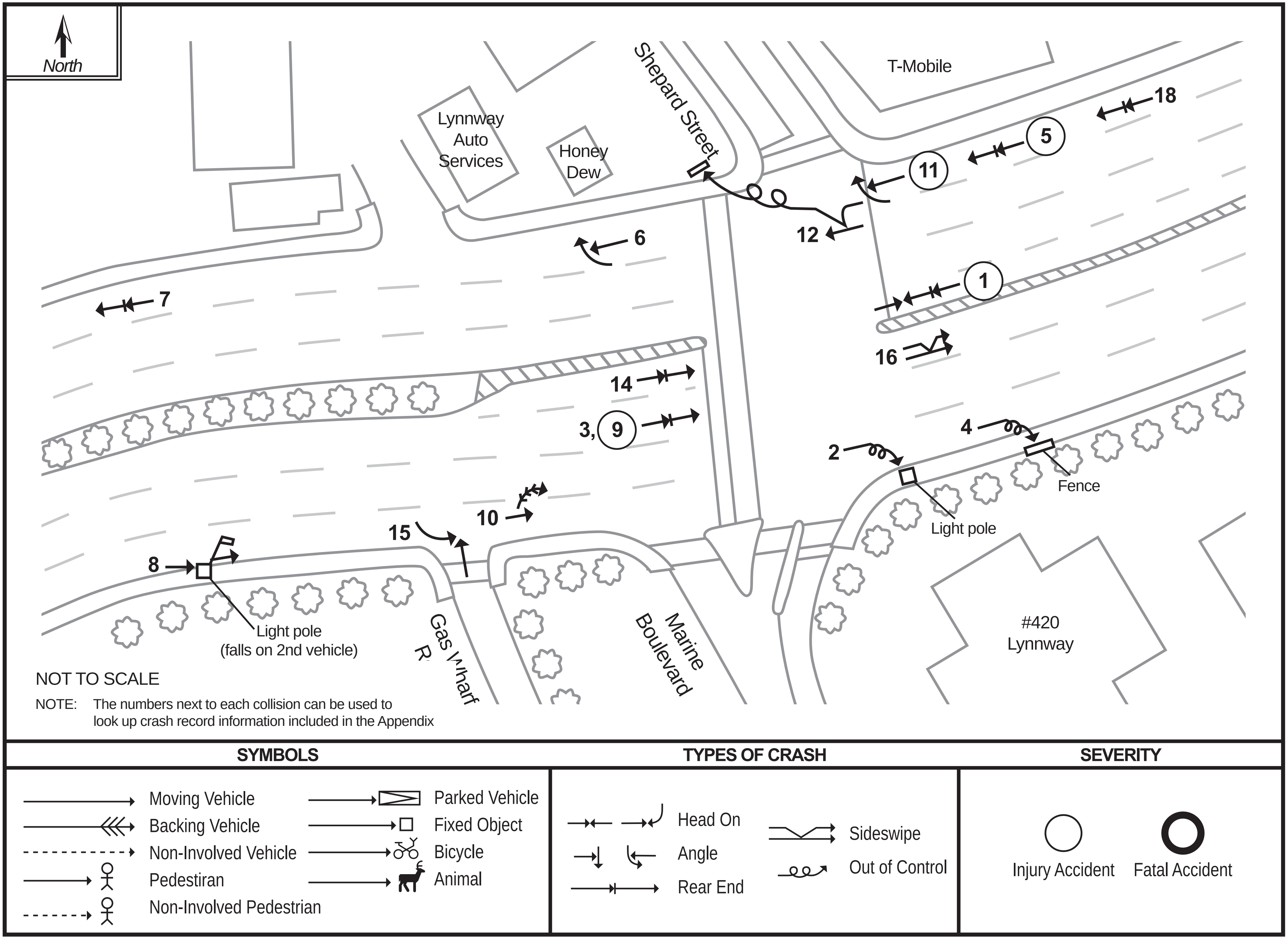
SYMBOLS		TYPES OF CRASH		SEVERITY
Moving Vehicle	Parked Vehicle	Head On	Sideswipe	Injury Accident
Backing Vehicle	Fixed Object	Angle	Out of Control	Fatal Accident
Non-Involved Vehicle	Bicycle	Rear End		
Pedestiran	Animal			
Non-Involved Pedestrian				

Collision Diagram
Section 3: Commercial Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
3	1	2577953	8:43 PM	15-Mar-2010	Property damage only (n	Angle	V1:Westbound / V2:Northbound / V3	Wet	Dark - lighted roadway	Rain	
3	2	2590566	10:20 AM	02-Apr-2010	Property damage only (n	Angle	V1:Northbound	Dry	Daylight	Not Reported	cyc
3	3	2592258	6:45 AM	19-Apr-2010	Non-fatal injury	Sideswipe, same direction	V1:Northbound / V2:Northbound / V3	Dry	Daylight	Clear	
3	4	2597879	6:40 AM	11-May-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Not Reported	
3	5	2599760	2:50 PM	19-May-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Not Reported	
3	6	2607139	1:52 PM	29-May-2010	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
3	7	2613172	3:24 PM	20-Jun-2010	Not Reported	Angle	V1:Southbound	Dry	Daylight	Not Reported	ped
3	8	2623109	7:43 PM	18-Jun-2010	Property damage only (n	Angle	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
3	9	2647165	11:20 AM	02-Oct-2010	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
3	10	2647241	1:15 PM	01-Oct-2010	Property damage only (n	Rear-end	V1:Northbound	Wet	Daylight	Rain	
3	11	2653159	9:50 AM	15-Oct-2010	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Cloudy	
3	12	2654018	6:57 AM	26-Oct-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Clear	
3	13	2671213	00:00 AM	13-Dec-2010	Not Reported	Single vehicle crash	V1:Not reported	Wet	Dark - lighted roadway	Cloudy/Rain	
3	14	2675182	8:42 AM	23-Dec-2010	Property damage only (n	Angle	V1:Northbound / V2:Eastbound	Wet	Daylight	Cloudy/Other	
3	15	2680658	9:03 AM	16-Jan-2011	Non-fatal injury	Angle	V1:Southbound / V2:Westbound	Dry	Daylight	Clear	
3	16	2689459	7:20 AM	05-Feb-2011	Non-fatal injury	Single vehicle crash	V1:Eastbound	Ice	Daylight	Clear	ped
3	17	2690159	11:23 AM	11-Jan-2011	Property damage only (n	Angle	V1:Northbound / V2:Northbound	Wet	Daylight	Not Reported	
3	18	2690161	9:30 AM	26-Jan-2011	Property damage only (n	Angle	V1:Eastbound / V2:Northbound	Dry	Daylight	Not Reported	
3	19	2727578	8:00 PM	28-May-2011	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound / V3	Dry	Dark - lighted roadway	Clear	
3	20	2735176	3:38 AM	21-Jun-2011	Non-fatal injury	Single vehicle crash	V1:Northbound	Wet	Dark - lighted roadway	Not Reported	
3	21	2757686	4:24 AM	05-Sep-2011	Property damage only (n	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Cloudy	
3	22	2789384	1:00 PM	30-Oct-2011	Property damage only (n	Angle	V1:Westbound / V2:Southbound	Dry	Daylight	Cloudy	
3	23	2960341	9:34 PM	18-Feb-2012	Non-fatal injury	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Clear	
3	24	3022045	12:35 PM	05-Apr-2012	Non-fatal injury	Angle	V1:Westbound	Dry	Daylight	Clear	cyc
3	25	3102066	3:23 PM	16-May-2012	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound / V3	Dry	Daylight	Not Reported	
3	26	3162957	4:40 PM	24-Feb-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Dusk	Rain	
3	27	3168287	4:35 PM	21-Mar-2012	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound / V3	Dry	Daylight	Clear	
3	28	3252548	11:55 AM	06-Sep-2012	Property damage only (n	Single vehicle crash	V1:Northbound	Dry	Daylight	Clear	
3	29	3283690	6:58 AM	25-Oct-2012	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
3	30	3286682	9:36 AM	16-Oct-2012	Non-fatal injury	Sideswipe, opposite direction	V1:Eastbound / V2:Northbound	Dry	Daylight	Clear	
3	31	3288657	1:10 AM	10-Nov-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Dark - lighted roadway	Clear	
3	32	3372643	7:01 PM	11-Oct-2011	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound / V3	Dry	Dark - lighted roadway	Not Reported	
3	33	3376762	11:13 AM	20-Oct-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Not Reported	

NOT TO SCALE

Figure 4
Lynnway, Lynn, MA
Section 4: Shepard Marine

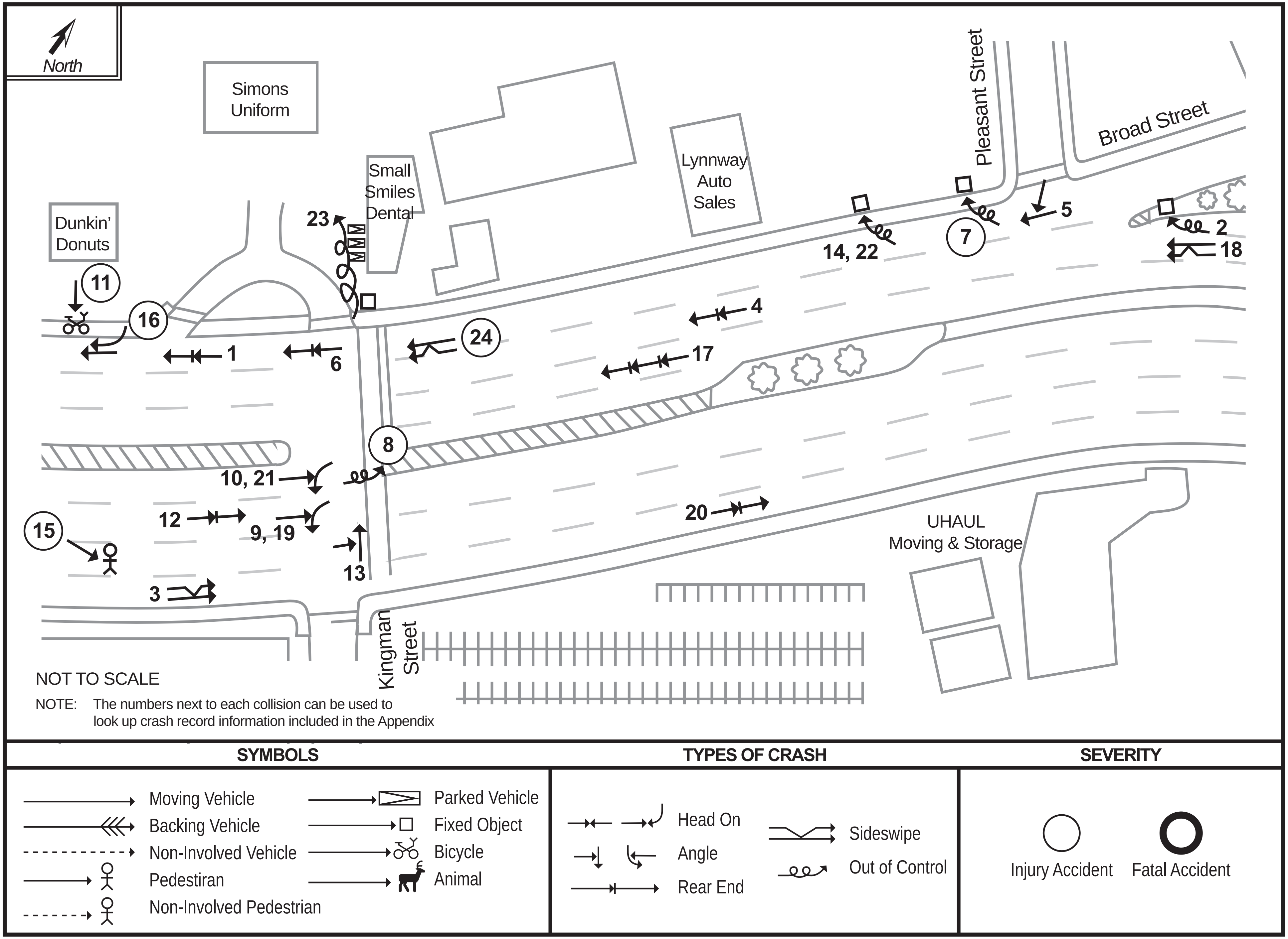


Collision Diagram
Section 4: Shepard Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
4	1	2578970	12:40 PM	22-Mar-2010	Non-fatal injury	Head-on	V1:Northbound / V2:Southbound / V3	Dry	Daylight	Cloudy	
4	2	2590577	7:28 PM	10-Apr-2010	Property damage only (n	Single vehicle crash	V1:Northbound	Dry	Dusk	Not Reported	
4	3	2601448	7:20 AM	24-May-2010	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
4	4	2634265	9:08 PM	25-Aug-2010	Property damage only (n	Single vehicle crash	V1:Not reported	Wet	Dark - lighted roadway	Rain	
4	5	2658383	2:15 PM	29-Oct-2010	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Not Reported	
4	6	2663637	12:20 PM	05-Nov-2010	Property damage only (n	Angle	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
4	7	2663639	9:15 AM	10-Nov-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
4	8	2663811	3:20 PM	05-Nov-2010	Property damage only (n	Single vehicle crash	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
4	9	2665452	5:57 AM	26-Nov-2010	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound	Water (stand	Dark - lighted roadway	Sleet, hail (freezing rain or drizzle)	
4	10	2667084	3:30 PM	11-Nov-2010	Property damage only (n	Angle	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
4	11	2668610	9:55 AM	01-Dec-2010	Property damage only (n	Angle	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy	
4	12	2675113	10:15 PM	18-Dec-2010	Property damage only (n	Sideswipe, same direction	V1:Southbound / V2:Southbound	Dry	Dark - lighted roadway	Clear	
4	13	2701727	10:10 AM	20-Feb-2011	Not Reported	Rear-end	V1:Southbound / V2:Not reported	Dry	Daylight	Clear	
4	14	2742769	2:01 PM	18-Jul-2011	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Wet	Daylight	Not Reported	
4	15	3248238	9:15 AM	10-Aug-2012	Property damage only (n	Angle	V1:Westbound / V2:Northbound	Dry	Daylight	Clear	
4	16	3392231	4:53 PM	14-May-2012	Property damage only (n	Sideswipe, same direction	V1:Southbound / V2:Southbound / V3	Wet	Daylight	Rain	

NOT TO SCALE

Figure 5
Lynnway, Lynn, MA
Section 6: Kingman Street

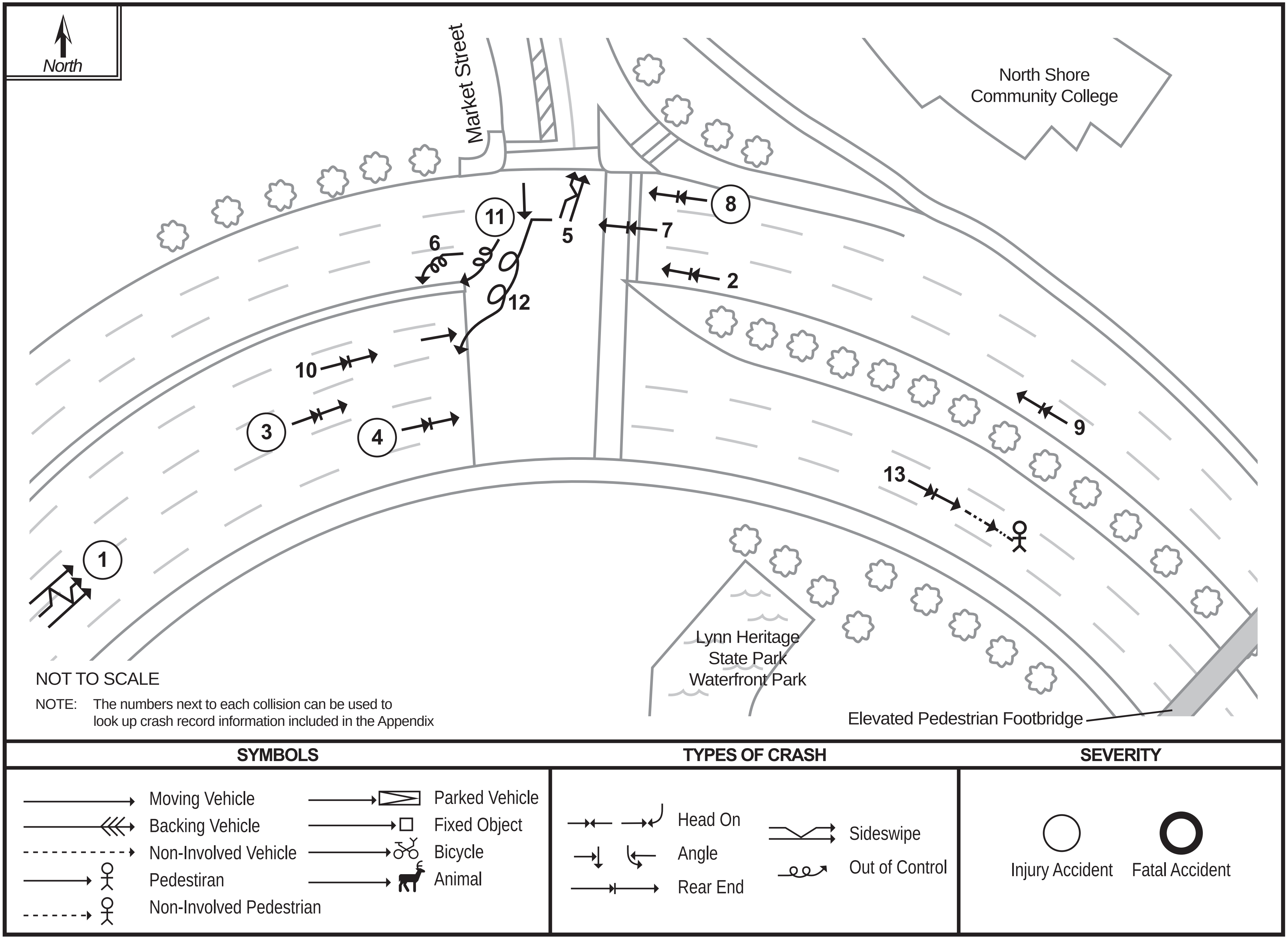


Collision Diagram
Section 6: Kingman Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
6	1	2554563	9:30 AM	13-Jan-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
6	2	2579795	1:26 AM	20-Mar-2010	Property damage only (n	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Not Reported	
6	3	2592251	4:40 PM	09-Apr-2010	Property damage only (n	Sideswipe, same direction	V1:Southbound / V2:Southbound	Wet	Daylight	Not Reported	
6	4	2617582	11:15 AM	05-Jul-2010	Not Reported	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
6	5	2620589	1:00 PM	23-Jun-2010	Property damage only (n	Angle	V1:Southbound / V2:Southbound	Dry	Daylight	Not Reported	
6	6	2657774	2:45 PM	04-Nov-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Rain	
6	7	2666153	10:35 PM	19-Nov-2010	Non-fatal injury	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Not Reported	
6	8	2667901	7:25 PM	29-Nov-2010	Non-fatal injury	Single vehicle crash	V1:Northbound	Dry	Dark - lighted roadway	Not Reported	
6	9	2689458	12:49 PM	04-Feb-2011	Property damage only (n	Angle	V1:Northbound / V2:Eastbound	Dry	Daylight	Clear	
6	10	2700900	2:22 PM	14-Feb-2011	Property damage only (n	Angle	V1:Eastbound / V2:Northbound	Dry	Daylight	Clear	
6	11	2737363	7:50 AM	01-Jul-2011	Non-fatal injury	Not reported	V1:Southbound	Dry	Daylight	Not Reported	cyc
6	12	2765133	9:35 AM	15-Sep-2011	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Cloudy	
6	13	2898288	9:35 AM	27-Jan-2012	Property damage only (n	Angle	V1:Westbound / V2:Northbound	Wet	Daylight	Rain	
6	14	3241472	9:15 AM	03-Aug-2012	Property damage only (n	Single vehicle crash	V1:Southbound	Dry	Daylight	Clear	
6	15	3244479	8:39 PM	16-Aug-2012	Non-fatal injury	Single vehicle crash	V1:Northbound	Dry	Dark - lighted roadway	Clear	ped
6	16	3250915	9:45 AM	02-Sep-2012	Non-fatal injury	Angle	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
6	17	3265566	9:40 AM	24-Sep-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound / V3	Dry	Daylight	Clear	
6	18	3291213	4:40 PM	24-Oct-2012	Property damage only (n	Sideswipe, same direction	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
6	19	3321345	9:30 AM	10-Dec-2012	Property damage only (n	Angle	V1:Northbound / V2:Eastbound	Dry	Daylight	Clear	
6	20	3372601	5:25 PM	12-Sep-2011	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
6	21	3372617	1:04 PM	06-Nov-2011	Property damage only (n	Angle	V1:Eastbound / V2:Northbound	Dry	Daylight	Clear	
6	22	3372651	3:38 AM	29-Oct-2011	Property damage only (n	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Clear	
6	23	3379080	4:18 PM	24-Sep-2012	Property damage only (n	Angle	V1:Westbound / V2:Not reported / V3	Dry	Daylight	Not Reported	
6	24	3379087	9:48 AM	31-Oct-2012	Non-fatal injury	Sideswipe, same direction	V1:Southbound / V2:Southbound	Dry	Daylight	Cloudy	

NOT TO SCALE

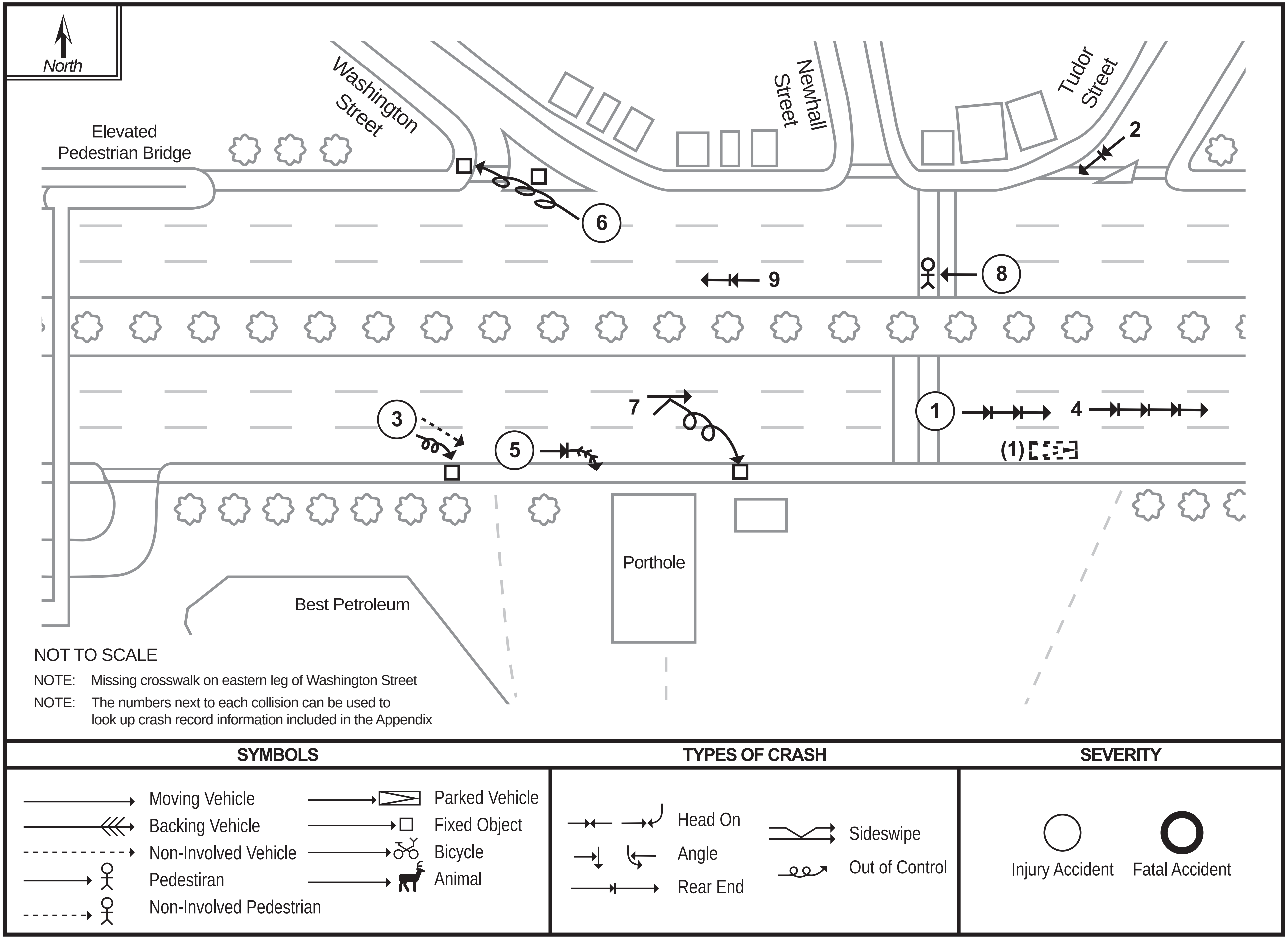
Figure 6
Lynnway, Lynn, MA
Section 7: Market Street



Collision Diagram
Section 7: Market Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
7	1	2603095	6:00 PM	22-May-2010	Non-fatal injury	Sideswipe, same direction	V1:Eastbound / V2:Eastbound / V3:Ea	Dry	Daylight	Not Reported	
7	2	2630861	9:32 AM	28-Jul-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
7	3	2657966	5:47 PM	07-Nov-2010	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound / V3	Dry	Dark - lighted roadway	Not Reported	
7	4	2669912	1:51 PM	09-Dec-2010	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
7	5	2793850	1:05 PM	09-Nov-2011	Property damage only (n	Sideswipe, same direction	V1:Northbound / V2:Northbound	Dry	Daylight	Not Reported	
7	6	3117824	4:49 AM	28-May-2012	Not Reported	Single vehicle crash	V1:Southbound	Dry	Dawn	Clear	
7	X	3156154	10:30 PM	29-Nov-2011	Property damage only (n	Not reported	V1:Southbound / V2:Not reported	Dry	Dark - lighted roadway	Clear	
7	7	3162956	3:46 PM	12-Feb-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Dusk	Clear	
7	8	3263161	7:30 AM	04-Sep-2012	Non-fatal injury	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy	
7	9	3301801	8:05 AM	03-Dec-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
7	10	3332184	6:44 PM	29-Dec-2012	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Ice	Dark - lighted roadway	Not Reported	
7	11	3372657	8:10 PM	24-Nov-2011	Non-fatal injury	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Clear	
7	12	3373325	8:44 AM	17-Oct-2011	Property damage only (n	Angle	V1:Northbound / V2:Southbound / V3	Dry	Daylight	Not Reported	
7	13	3376932	8:40 PM	25-Jul-2012	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound	Dry	Dark - roadway not lighted	Not Reported	

Figure 7
Lynnway, Lynn, MA
Section 7A: Washington Street, Newhall Street, and Tudor Street

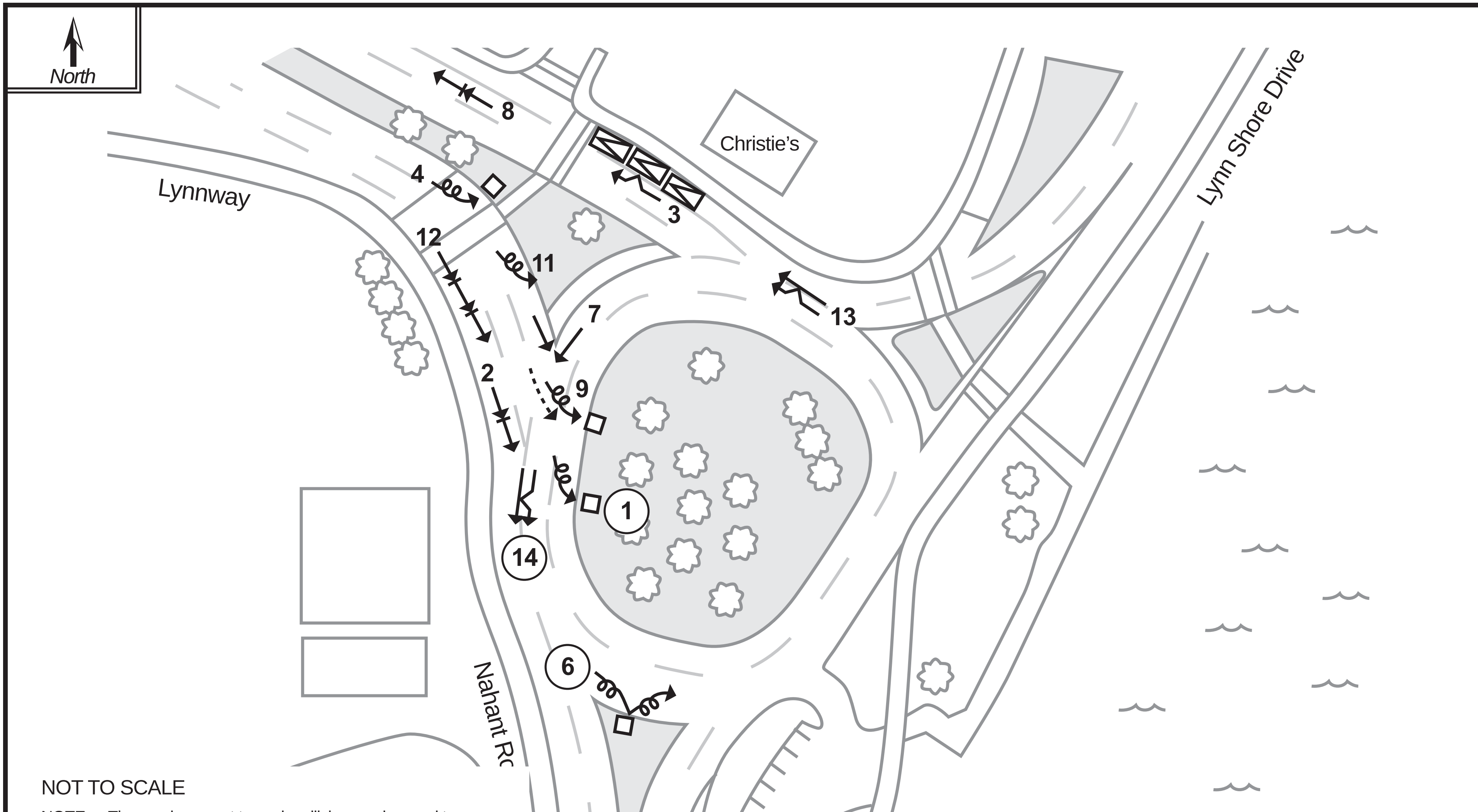


Collision Diagram
Section 7A: Washington Street

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
7A	1	2578968	6:08 PM	18-Mar-2010	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound / V3	Dry	Daylight	Not Reported	
7A	2	2580981	8:05 AM	29-Mar-2010	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Rain	
7A	3	2635079	12:25 PM	31-Aug-2010	Non-fatal injury	Angle	V1:Northbound / V2:Northbound	Dry	Daylight	Clear	
7A	4	2765034	6:14 PM	06-Sep-2011	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound / V3	Wet	Daylight	Rain	
7A	5	2791147	11:57 PM	15-Oct-2011	Non-fatal injury	Rear-end	V1:Northbound / V2:Northbound	Dry	Dark - lighted roadway	Not Reported	
7A	6	3004246	6:45 AM	02-Apr-2012	Non-fatal injury	Single vehicle crash	V1:Westbound	Dry	Daylight	Cloudy	
7A	7	3109858	3:20 PM	22-May-2012	Not Reported	Angle	V1:Northbound / V2:Northbound	Wet	Daylight	Not Reported	
7A	8	3179571	9:26 PM	29-Jun-2012	Non-fatal injury	Single vehicle crash	V1:Southbound	Dry	Dark - lighted roadway	Clear	ped
7A	9	3280748	11:31 AM	12-Oct-2012	Property damage only (n	Rear-end	V1:Southbound / V2:Southbound	Wet	Daylight	Cloudy/Rain	

NOT TO SCALE

Figure 8
Lynnway, Lynn, MA
Section 8: Nahant Rotary



NOT TO SCALE

NOTE: The numbers next to each collision can be used to look up crash record information included in the Appendix

SYMBOLS		TYPES OF CRASH		SEVERITY
Moving Vehicle	Parked Vehicle	Head On	Sideswipe	Injury Accident
Backing Vehicle	Fixed Object	Angle	Out of Control	Fatal Accident
Non-Involved Vehicle	Bicycle	Rear End		
Pedestiran	Animal			
Non-Involved Pedestrian				

Collision Diagram
Section 8: Nahant Rotary

Figure Number	Final Sketch Number	Crash Number	Crash Time	Crash Date1	Crash Severity	Manner of Collision	Vehicle Traveled Direction	Road Surface Condition	Ambient Light Condition	Weather Condition	Bike or Ped
8	1	2590581	00:00 AM	18-Apr-2010	Non-fatal injury	Single vehicle crash	V1:Eastbound	Wet	Dark - lighted roadway	Not Reported	
8	2	2592234	6:08 PM	22-Mar-2010	Property damage only (n	Rear-end	V1:Eastbound / V2:Not reported	Dry	Daylight	Not Reported	
8	3	2656735	1:47 AM	30-Oct-2010	Property damage only (n	Sideswipe, same direction	V1:Southbound / V2:Not reported / V	Dry	Dark - lighted roadway	Not Reported	
8	4	2667080	5:43 AM	07-Nov-2010	Property damage only (n	Single vehicle crash	V1:Northbound	Dry	Daylight	Cloudy	
8	5	2675183	00:00 AM	24-Dec-2010	Property damage only (n	Single vehicle crash	V1:Northbound	Dry	Dark - lighted roadway	Not Reported	
8	6	2683978	11:31 PM	19-Jan-2011	Non-fatal injury	Single vehicle crash	V1:Northbound	Wet	Dark - lighted roadway	Cloudy/Snow	
8	7	2713520	6:20 PM	09-Apr-2011	Property damage only (n	Angle	V1:Eastbound / V2:Southbound	Dry	Daylight	Clear	
8	8	2716708	8:00 AM	14-Apr-2011	Property damage only (n	Rear-end	V1:Westbound / V2:Westbound	Dry	Daylight	Cloudy	
8	9	2720788	3:51 AM	01-May-2011	Property damage only (n	Single vehicle crash	V1:Northbound	Dry	Dark - lighted roadway	Clear	
8	10	2754783	8:05 AM	27-Aug-2011	Not Reported	Single vehicle crash	V1:Northbound	Dry	Daylight	Clear	
8	11	2844102	1:15 AM	23-Dec-2011	Not Reported	Single vehicle crash	V1:Northbound	Wet	Dark - lighted roadway	Cloudy/Rain	
8	12	2864362	6:55 PM	12-Jan-2012	Property damage only (n	Rear-end	V1:Northbound / V2:Northbound / V3	Dry	Dark - lighted roadway	Clear	
8	13	3153148	1:25 PM	20-Jun-2012	Property damage only (n	Sideswipe, same direction	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	
8	14	3246217	5:15 PM	14-Aug-2012	Non-fatal injury	Sideswipe, same direction	V1:Southbound / V2:Southbound	Dry	Daylight	Clear	

APPENDIX H

Level of Service (LOS) Analysis
Existing Conditions

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	15	925	35	150	2210
Future Volume (vph)	20	15	925	35	150	2210
Satd. Flow (prot)	1678	1501	4797	0	1678	4821
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1678	1501	4797	0	1678	4821
Satd. Flow (RTOR)		16	6			
Lane Group Flow (vph)	21	16	1000	0	156	2302
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	58.0		27.0	85.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Act Effct Green (s)	12.8	12.8	82.8		17.3	105.6
Actuated g/C Ratio	0.11	0.11	0.69		0.14	0.88
v/c Ratio	0.12	0.09	0.30		0.65	0.54
Control Delay	45.5	18.1	9.9		63.7	1.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.5	18.1	9.9		63.7	1.2
LOS	D	B	A		E	A
Approach Delay	33.6		9.9			5.2
Approach LOS	C		A			A
Queue Length 50th (ft)	16	0	100		111	0
Queue Length 95th (ft)	33	18	231		178	198
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	433	399	3310		321	4244
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	0.05	0.04	0.30		0.49	0.54

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 6.8 Intersection LOS: A
Intersection Capacity Utilization 55.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Future Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Satd. Flow (prot)	1678	1501	0	0	1678	1501	1678	4807	0	1678	4816	0
Flt Permitted	0.754				0.754		0.950			0.950		
Satd. Flow (perm)	1332	1501	0	0	1332	1501	1678	4807	0	1678	4816	0
Satd. Flow (RTOR)		310				109		4			1	
Lane Group Flow (vph)	26	5	0	0	5	5	26	959	0	73	2448	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	30.0	30.0		30.0	30.0	30.0	20.0	70.0		20.0	70.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Act Effct Green (s)	9.9	9.9			9.7	9.7	12.8	94.4		11.7	96.5	
Actuated g/C Ratio	0.08	0.08			0.08	0.08	0.11	0.79		0.10	0.80	
v/c Ratio	0.24	0.01			0.05	0.02	0.15	0.25		0.45	0.63	
Control Delay	55.8	0.0			50.0	0.2	42.3	6.6		63.2	3.2	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	55.8	0.0			50.0	0.2	42.3	6.6		63.2	3.2	
LOS	E	A			D	A	D	A		E	A	
Approach Delay		46.8			25.1			7.5			5.0	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)	19	0			4	0	18	83		58	122	
Queue Length 95th (ft)	48	0			16	0	24	149		m67	160	
Internal Link Dist (ft)		148			94			1043			1847	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	288	568			288	410	223	3781		223	3871	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.09	0.01			0.02	0.01	0.12	0.25		0.33	0.63	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 93 (78%), Referenced to phase 2:NET and 6:SWT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 6.1	Intersection LOS: A

Intersection Capacity Utilization 69.3%	ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

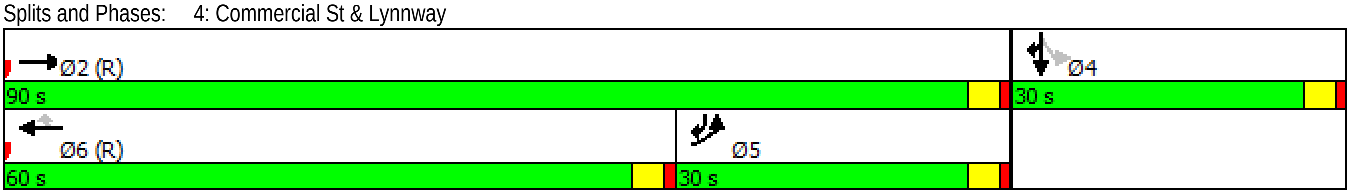
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	765	10	0	1990	275	0	0	0	245	95	535
Future Volume (vph)	260	765	10	0	1990	275	0	0	0	245	95	535
Satd. Flow (prot)	1678	4812	0	0	4821	1501	0	0	0	1678	1766	1501
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1678	4812	0	0	4821	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		4				276						9
Lane Group Flow (vph)	271	807	0	0	2073	286	0	0	0	255	99	557
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	30.0	90.0			60.0	60.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	26.0	88.7			58.7	58.7				23.3	23.3	53.3
Actuated g/C Ratio	0.22	0.74			0.49	0.49				0.19	0.19	0.44
v/c Ratio	0.75	0.23			0.88	0.33				0.78	0.29	0.83
Control Delay	59.1	5.6			45.7	11.9				63.0	42.7	40.6
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	59.1	5.6			45.7	11.9				63.0	42.7	40.6
LOS	E	A			D	B				E	D	D
Approach Delay		19.0			41.6						47.1	
Approach LOS		B			D						D	
Queue Length 50th (ft)	222	113			631	103				184	64	351
Queue Length 95th (ft)	#324	9			681	143				279	115	511
Internal Link Dist (ft)		1847			1063			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	363	3559			2359	875				363	382	705
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	0.75	0.23			0.88	0.33				0.70	0.26	0.79

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 49 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 37.2 Intersection LOS: D
Intersection Capacity Utilization 78.2% 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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	955	20	70	2215	45	10	0	5	35	10	15
Future Volume (vph)	50	955	20	70	2215	45	10	0	5	35	10	15
Satd. Flow (prot)	1678	4807	0	1678	4807	0	1678	1501	0	0	1656	0
Flt Permitted	0.950			0.950			0.719				0.818	
Satd. Flow (perm)	1678	4807	0	1678	4807	0	1270	1501	0	0	1394	0
Satd. Flow (RTOR)		5			4			302			12	
Lane Group Flow (vph)	52	1016	0	73	2354	0	10	5	0	0	62	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	20.0	77.0		20.0	77.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Act Effct Green (s)	10.1	86.8		14.4	90.9		12.6	12.6			12.6	
Actuated g/C Ratio	0.08	0.72		0.12	0.76		0.10	0.10			0.10	
v/c Ratio	0.37	0.29		0.36	0.65		0.08	0.01			0.40	
Control Delay	40.8	10.1		40.7	2.4		47.1	0.0			47.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	40.8	10.1		40.7	2.4		47.1	0.0			47.4	
LOS	D	B		D	A		D	A			D	
Approach Delay		11.6			3.5			31.4			47.4	
Approach LOS		B			A			C			D	
Queue Length 50th (ft)	27	205		57	35		7	0			37	
Queue Length 95th (ft)	m55	180		m71	67		23	0			77	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	223	3480		223	3640		201	491			230	
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	0.23	0.29		0.33	0.65		0.05	0.01			0.27	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 103 (86%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 6.8 Intersection LOS: A
Intersection Capacity Utilization 68.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Future Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Satd. Flow (prot)	1678	4792	0	1678	4778	0	1678	1524	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1678	4792	0	1678	4778	0	1678	1524	0	0	0	0
Satd. Flow (RTOR)		8			14			52				
Lane Group Flow (vph)	57	1058	0	99	2489	0	47	57	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	9.7	86.6		12.4	92.3		10.9	10.9				
Actuated g/C Ratio	0.08	0.72		0.10	0.77		0.09	0.09				
v/c Ratio	0.42	0.31		0.58	0.68		0.31	0.31				
Control Delay	65.2	6.6		79.8	7.7		53.5	18.3				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	65.2	6.6		79.8	7.7		53.5	18.3				
LOS	E	A		E	A		D	B				
Approach Delay		9.6			10.5			34.2				
Approach LOS		A			B			C				
Queue Length 50th (ft)	47	72		80	73		35	4				
Queue Length 95th (ft)	92	127		m110	767		66	40				
Internal Link Dist (ft)		494			544			142			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	223	3461		226	3678		363	370				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.26	0.31		0.44	0.68		0.13	0.15				

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 90 (75%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	425	600	1515	200	160	25
Future Volume (vph)	425	600	1515	200	160	25
Satd. Flow (prot)	3255	4821	4821	1501	3220	0
Flt Permitted	0.950				0.959	
Satd. Flow (perm)	3255	4821	4821	1501	3220	0
Satd. Flow (RTOR)				208	15	
Lane Group Flow (vph)	443	625	1578	208	193	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	50.0	80.0	30.0	30.0	40.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	46.0	100.0	50.0	50.0	12.0	
Actuated g/C Ratio	0.38	0.83	0.42	0.42	0.10	
v/c Ratio	0.36	0.16	0.79	0.28	0.57	
Control Delay	11.8	0.9	34.3	4.2	50.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.8	0.9	34.3	4.2	50.6	
LOS	B	A	C	A	D	
Approach Delay		5.4	30.8		50.6	
Approach LOS		A	C		D	
Queue Length 50th (ft)	78	5	382	0	71	
Queue Length 95th (ft)	19	8	469	48	108	
Internal Link Dist (ft)		431	1038		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1247	4016	2008	746	976	
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	0.36	0.16	0.79	0.28	0.20	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 80 (67%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

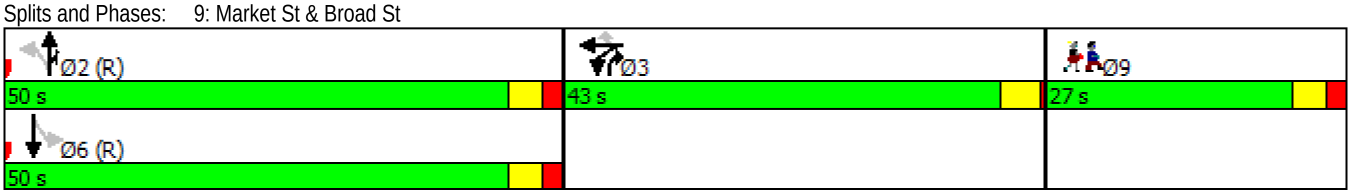
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Future Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Satd. Flow (prot)	0	0	0	0	3339	1501	0	3349	1501	0	3124	0
Flt Permitted					0.995			0.939			0.706	
Satd. Flow (perm)	0	0	0	0	3339	1501	0	3151	1501	0	2243	0
Satd. Flow (RTOR)						188			323		102	
Lane Group Flow (vph)	0	0	0	0	576	188	0	328	323	0	469	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		4.0			4.0	
Act Effct Green (s)					30.0	30.0		65.8	101.4		65.8	
Actuated g/C Ratio					0.25	0.25		0.55	0.84		0.55	
v/c Ratio					0.69	0.36		0.19	0.25		0.37	
Control Delay					41.8	12.6		9.0	2.1		16.3	
Queue Delay					0.0	0.0		0.0	0.3		0.0	
Total Delay					41.8	12.6		9.0	2.4		16.3	
LOS					D	B		A	A		B	
Approach Delay					34.6			5.7			16.3	
Approach LOS					C			A			B	
Queue Length 50th (ft)					203	15		45	0		97	
Queue Length 95th (ft)					256	112		98	84		163	
Internal Link Dist (ft)		27			626			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1085	614		1727	1347		1275	
Starvation Cap Reductn					0	0		0	558		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.53	0.31		0.19	0.41		0.37	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 20.1 | Intersection LOS: C
Intersection Capacity Utilization 47.5% | ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Market St & Broad St

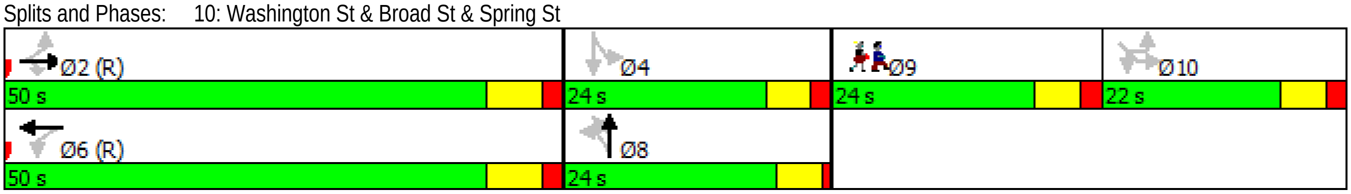


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Future Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Satd. Flow (prot)	0	1750	1501	0	3322	0	0	1678	1718	0	0	1660
Flt Permitted		0.806			0.921			0.702				0.880
Satd. Flow (perm)	0	1423	1501	0	3069	0	0	1240	1718	0	0	1484
Satd. Flow (RTOR)			214		136				8			
Lane Group Flow (vph)	0	281	214	0	671	0	0	104	89	0	0	63
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		custom	NA
Protected Phases		2			6				8			
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	50.0	50.0	50.0	50.0	50.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		4.0	4.0		4.0			4.0	4.0			4.0
Act Effct Green (s)		75.5	75.5		75.5			15.5	15.5			15.5
Actuated g/C Ratio		0.63	0.63		0.63			0.13	0.13			0.13
v/c Ratio		0.31	0.21		0.34			0.65	0.39			0.33
Control Delay		6.1	0.5		11.2			67.5	47.3			50.7
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		6.1	0.5		11.2			67.5	47.3			50.7
LOS		A	A		B			E	D			D
Approach Delay		3.7			11.2				58.2			50.7
Approach LOS		A			B				E			D
Queue Length 50th (ft)		29	0		82			77	58			45
Queue Length 95th (ft)		77	0		220			134	107			87
Internal Link Dist (ft)		626			404				1111			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		894	1023		1980			206	293			247
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.31	0.21		0.34			0.50	0.30			0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 67.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	20	5	60	120	30	
Future Volume (vph)	20	5	60	120	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	68	156	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		24.0
Total Lost Time (s)			4.0	4.0		
Act Effct Green (s)			12.2	12.2		
Actuated g/C Ratio			0.10	0.10		
v/c Ratio			0.40	0.55		
Control Delay			56.5	17.3		
Queue Delay			0.0	0.0		
Total Delay			56.5	17.3		
LOS			E	B		
Approach Delay			29.2			
Approach LOS			C			
Queue Length 50th (ft)			50	8		
Queue Length 95th (ft)			94	71		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			251	348		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.27	0.45		

Intersection Summary

Intersection	
Intersection Delay, s/veh	26.5
Intersection LOS	D

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1531	791	521
Demand Flow Rate, veh/h	1592	822	542
Vehicles Circulating, veh/h	390	76	687
Vehicles Exiting, veh/h	839	1906	76
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	41.4	6.4	13.6
Approach LOS	E	A	B

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	TR
Assumed Moves	LTR	R	L	LTR	R	L	TR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.720	0.280
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	748	844	364	323	135	390	152
Cap Entry Lane, veh/h	843	860	1067	1071	1071	675	699
Entry HV Adj Factor	0.962	0.961	0.962	0.962	0.962	0.962	0.961
Flow Entry, veh/h	720	811	350	311	130	375	146
Cap Entry, veh/h	811	827	1027	1031	1030	649	671
V/C Ratio	0.887	0.981	0.341	0.301	0.126	0.578	0.218
Control Delay, s/veh	32.6	49.1	7.0	6.5	4.6	15.7	7.9
LOS	D	E	A	A	A	C	A
95th %tile Queue, veh	12	17	2	1	0	4	1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	100	2140	50	225	1065
Future Volume (vph)	75	100	2140	50	225	1065
Satd. Flow (prot)	1711	1531	4901	0	1711	4916
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1711	1531	4901	0	1711	4916
Satd. Flow (RTOR)		104	4			
Lane Group Flow (vph)	78	104	2281	0	234	1109
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	62.0		23.0	85.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	13.9	13.9	69.9		21.2	97.1
Actuated g/C Ratio	0.12	0.12	0.58		0.18	0.81
v/c Ratio	0.40	0.39	0.80		0.77	0.28
Control Delay	52.3	11.8	23.0		46.0	6.4
Queue Delay	0.0	0.0	0.1		0.0	0.0
Total Delay	52.3	11.8	23.0		46.0	6.4
LOS	D	B	C		D	A
Approach Delay	29.2		23.0			13.3
Approach LOS	C		C			B
Queue Length 50th (ft)	59	0	472		100	9
Queue Length 95th (ft)	90	44	#741		#341	301
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	427	460	2856		304	3977
Starvation Cap Reductn	0	0	33		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.18	0.23	0.81		0.77	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 19.9 — Intersection LOS: B
Intersection Capacity Utilization 73.3% — 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: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Future Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Satd. Flow (prot)	1711	1531	0	0	1711	1531	1711	4896	0	1711	4876	0
Flt Permitted	0.737				0.730		0.950			0.950		
Satd. Flow (perm)	1327	1531	0	0	1314	1531	1711	4896	0	1711	4876	0
Satd. Flow (RTOR)		207				64		6			11	
Lane Group Flow (vph)	42	42	0	0	31	5	47	2391	0	172	1313	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	30.0	30.0		30.0	30.0	30.0	20.0	70.0		20.0	70.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	9.3	9.3			9.3	9.3	9.0	79.0		18.0	91.4	
Actuated g/C Ratio	0.08	0.08			0.08	0.08	0.08	0.66		0.15	0.76	
v/c Ratio	0.41	0.14			0.31	0.03	0.37	0.74		0.67	0.35	
Control Delay	63.6	0.9			58.9	0.2	70.4	3.6		56.6	2.9	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.6	0.9			58.9	0.2	70.4	3.6		56.6	2.9	
LOS	E	A			E	A	E	A		E	A	
Approach Delay		32.3			50.7			4.9			9.1	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)	32	0			23	0	39	20		140	47	
Queue Length 95th (ft)	68	0			54	0	m52	32		m191	61	
Internal Link Dist (ft)		148			94			1043			1865	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	265	471			262	357	213	3226		264	3717	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.09			0.12	0.01	0.22	0.74		0.65	0.35	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 20 (17%), Referenced to phase 2:NET and 6:SWT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 7.4	Intersection LOS: A

Intersection Capacity Utilization 75.9%	ICU Level of Service D

Analysis Period (min) 15

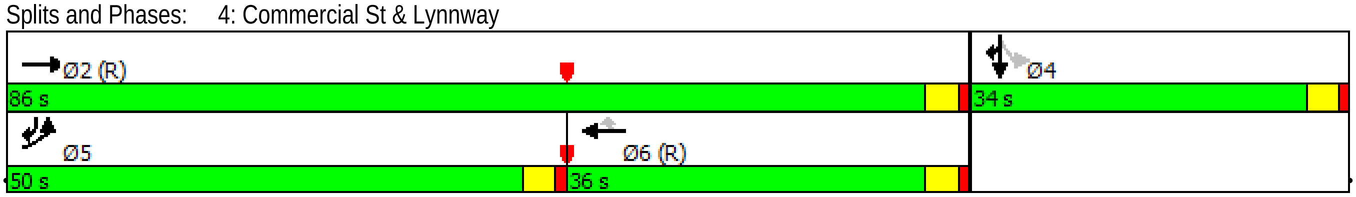
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Future Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Satd. Flow (prot)	1711	4916	0	0	4916	1531	0	0	0	1711	1801	1531
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1711	4916	0	0	4916	1531	0	0	0	1711	1801	1531
Satd. Flow (RTOR)		1				307						9
Lane Group Flow (vph)	563	2036	0	0	1141	307	0	0	0	354	26	297
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	50.0	86.0			36.0	36.0				34.0	34.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	43.0	84.0			37.0	37.0				28.0	28.0	75.0
Actuated g/C Ratio	0.36	0.70			0.31	0.31				0.23	0.23	0.62
v/c Ratio	0.92	0.59			0.75	0.45				0.89	0.06	0.31
Control Delay	43.5	23.5			27.3	7.1				69.0	35.0	10.4
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	43.5	23.5			27.3	7.1				69.0	35.0	10.4
LOS	D	C			C	A				E	C	B
Approach Delay		27.9			23.0						42.0	
Approach LOS		C			C						D	
Queue Length 50th (ft)	457	593			306	150				261	15	84
Queue Length 95th (ft)	#612	645			257	19				#416	39	128
Internal Link Dist (ft)		1865			1085			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	655	3443			1516	684				427	450	992
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	0.86	0.59			0.75	0.45				0.83	0.06	0.30

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 14 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 79.9%	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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Future Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Satd. Flow (prot)	1711	4911	0	1711	4906	0	1711	1621	0	0	1666	0
Flt Permitted	0.950			0.950			0.739				0.814	
Satd. Flow (perm)	1711	4911	0	1711	4906	0	1331	1621	0	0	1395	0
Satd. Flow (RTOR)		2			2			10			20	
Lane Group Flow (vph)	182	2214	0	36	1422	0	21	15	0	0	73	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	29.0	80.0		13.0	64.0		27.0	27.0		27.0	27.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	17.7	91.9		7.6	75.4		11.5	11.5			11.5	
Actuated g/C Ratio	0.15	0.77		0.06	0.63		0.10	0.10			0.10	
v/c Ratio	0.73	0.59		0.33	0.46		0.17	0.09			0.48	
Control Delay	74.4	1.4		47.6	22.8		49.8	28.4			47.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	74.4	1.4		47.6	22.8		49.8	28.4			47.0	
LOS	E	A		D	C		D	C			D	
Approach Delay		7.0			23.4			40.8			47.0	
Approach LOS		A			C			D			D	
Queue Length 50th (ft)	141	35		21	319		15	4			40	
Queue Length 95th (ft)	m208	83		55	381		38	23			81	
Internal Link Dist (ft)		1085			554			123			133	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	327	3760		108	3083		232	291			260	
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	0.56	0.59		0.33	0.46		0.09	0.05			0.28	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 108 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 14.1 — Intersection LOS: B
Intersection Capacity Utilization 72.6% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Future Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Satd. Flow (prot)	1711	4906	0	1711	4891	0	1711	1541	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1711	4906	0	1711	4891	0	1711	1541	0	0	0	0
Satd. Flow (RTOR)		3			6			120				
Lane Group Flow (vph)	68	2312	0	78	1386	0	104	125	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	10.3	85.6		10.9	86.2		13.7	13.7				
Actuated g/C Ratio	0.09	0.71		0.09	0.72		0.11	0.11				
v/c Ratio	0.46	0.66		0.51	0.39		0.53	0.44				
Control Delay	72.3	5.4		66.4	3.3		58.8	13.8				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	72.3	5.4		66.4	3.3		58.8	13.8				
LOS	E	A		E	A		E	B				
Approach Delay		7.3			6.7			34.2				
Approach LOS		A			A			C				
Queue Length 50th (ft)	51	113		63	47		78	4				
Queue Length 95th (ft)	m82	519		113	80		124	55				
Internal Link Dist (ft)		494			544			258			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	228	3502		228	3515		370	427				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.30	0.66		0.34	0.39		0.28	0.29				

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 14 (12%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	815	1450	805	165	215	15
Future Volume (vph)	815	1450	805	165	215	15
Satd. Flow (prot)	3319	4916	4916	1531	3303	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	3319	4916	4916	1531	3303	0
Satd. Flow (RTOR)				172	6	
Lane Group Flow (vph)	849	1510	839	172	240	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	54.0	92.0	38.0	38.0	28.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	49.0	98.2	44.2	44.2	13.8	
Actuated g/C Ratio	0.41	0.82	0.37	0.37	0.12	
v/c Ratio	0.63	0.38	0.46	0.26	0.62	
Control Delay	27.4	0.7	30.3	5.1	60.7	
Queue Delay	0.1	0.0	0.0	0.0	0.0	
Total Delay	27.5	0.7	30.3	5.1	60.7	
LOS	C	A	C	A	E	
Approach Delay		10.4	26.0		60.7	
Approach LOS		B	C		E	
Queue Length 50th (ft)	351	3	179	0	78	
Queue Length 95th (ft)	349	4	232	48	111	
Internal Link Dist (ft)		429	1170		327	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1355	4022	1810	672	665	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	28	0	0	4	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.38	0.46	0.26	0.36	

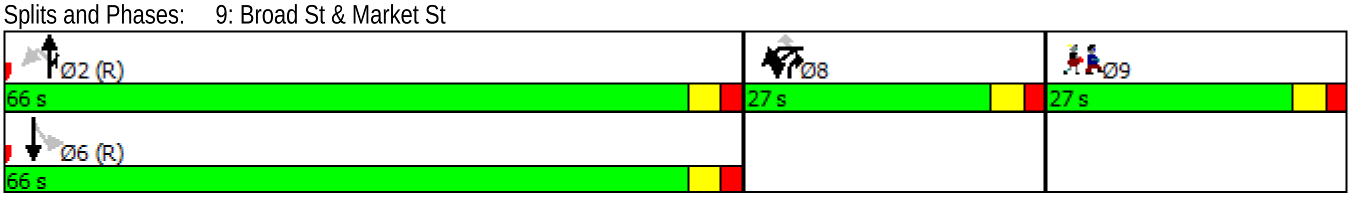
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 24 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 56.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø9
Lane Configurations												
Traffic Volume (vph)	50	335	205	15	395	570	290	175	160	0	0	
Future Volume (vph)	50	335	205	15	395	570	290	175	160	0	0	
Satd. Flow (prot)	0	3319	1531	0	3414	1531	0	3216	0	0	0	
Flt Permitted		0.950			0.922			0.639				
Satd. Flow (perm)	0	3319	1531	0	3154	1531	0	2103	0	0	0	
Satd. Flow (RTOR)			214			594		58				
Lane Group Flow (vph)	0	401	214	0	427	594	0	651	0	0	0	
Turn Type	Prot	Prot	Perm	Perm	NA	pt+ov	Perm	NA				
Protected Phases	8	8			2	2 8		6				9
Permitted Phases			8	2			6					
Total Split (s)	27.0	27.0	27.0	66.0	66.0		66.0	66.0				27.0
Total Lost Time (s)		5.0	5.0		5.0			5.0				
Act Effct Green (s)		20.1	20.1		73.7	100.8		73.7				
Actuated g/C Ratio		0.17	0.17		0.61	0.84		0.61				
v/c Ratio		0.72	0.49		0.22	0.43		0.50				
Control Delay		51.0	14.6		22.6	13.1		16.1				
Queue Delay		0.0	0.0		0.0	0.7		0.0				
Total Delay		51.0	14.6		22.6	13.8		16.1				
LOS		D	B		C	B		B				
Approach Delay		38.3			17.5			16.1				
Approach LOS		D			B			B				
Queue Length 50th (ft)		166	4		173	260		162				
Queue Length 95th (ft)		219	138		218	324		226				
Internal Link Dist (ft)		246			327			471		2		
Turn Bay Length (ft)												
Base Capacity (vph)		608	455		1937	1378		1314				
Starvation Cap Reductn		0	0		0	449		0				
Spillback Cap Reductn		0	0		0	0		0				
Storage Cap Reductn		0	0		0	0		0				
Reduced v/c Ratio		0.66	0.47		0.22	0.64		0.50				

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 112 (93%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 22.7	Intersection LOS: C
Intersection Capacity Utilization 62.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: Broad St & Market St

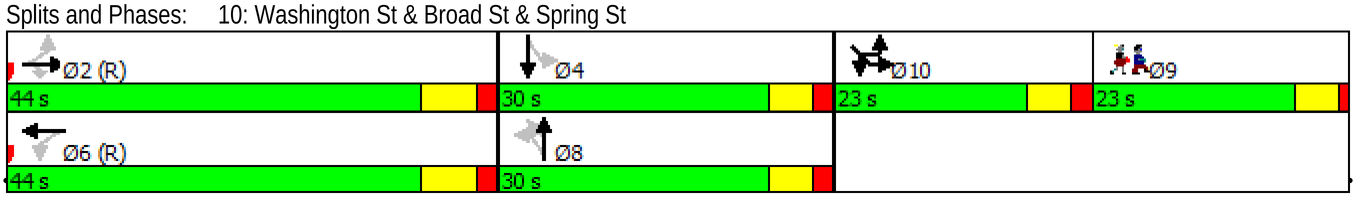


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Future Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Satd. Flow (prot)	0	1797	1531	0	3404	0	0	1711	1732	0	0	1616
Flt Permitted		0.978			0.918			0.625				0.984
Satd. Flow (perm)	0	1761	1531	0	3134	0	0	1125	1732	0	0	1595
Satd. Flow (RTOR)			422		127				12			
Lane Group Flow (vph)	0	448	422	0	417	0	0	109	104	0	0	99
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	
Total Split (s)	44.0	44.0	44.0	44.0	44.0		30.0	30.0	30.0		30.0	30.0
Total Lost Time (s)		7.0	7.0		7.0			6.0	6.0			6.0
Act Effct Green (s)		66.7	66.7		66.7			16.0	16.0			16.0
Actuated g/C Ratio		0.56	0.56		0.56			0.13	0.13			0.13
v/c Ratio		0.46	0.41		0.23			0.73	0.43			0.46
Control Delay		16.0	2.8		12.5			75.2	46.2			53.7
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		16.0	2.8		12.5			75.2	46.2			53.7
LOS		B	A		B			E	D			D
Approach Delay		9.6			12.5				61.1			53.7
Approach LOS		A			B				E			D
Queue Length 50th (ft)		63	0		50			82	66			72
Queue Length 95th (ft)		#473	63		137			138	115			120
Internal Link Dist (ft)		389			409				413			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		978	1038		1797			225	356			319
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.46	0.41		0.23			0.48	0.29			0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 112 (93%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 22.5 | 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.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	70	15	105	100	30	
Future Volume (vph)	70	15	105	100	30	
Satd. Flow (prot)	0	0	1711	1531	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1711	1531	0	
Satd. Flow (RTOR)				136		
Lane Group Flow (vph)	0	0	125	135	0	
Turn Type		Prot	Prot	Prot		
Protected Phases		10	10	10		9
Permitted Phases						
Total Split (s)		23.0	23.0	23.0		23.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			13.7	13.7		
Actuated g/C Ratio			0.11	0.11		
v/c Ratio			0.64	0.46		
Control Delay			65.3	12.8		
Queue Delay			0.0	0.0		
Total Delay			65.3	12.8		
LOS			E	B		
Approach Delay			38.0			
Approach LOS			D			
Queue Length 50th (ft)			94	0		
Queue Length 95th (ft)			154	56		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			245	335		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.51	0.40		

Intersection Summary

Intersection	
Intersection Delay, s/veh	15.2
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	833	1719	406
Demand Flow Rate, veh/h	850	1753	414
Vehicles Circulating, veh/h	393	212	1424
Vehicles Exiting, veh/h	1445	1030	212
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.1	15.7	21.4
Approach LOS	B	C	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.471	0.529	0.530	0.470		0.529	0.471
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	400	450	755	669	329	219	195
Cap Entry Lane, veh/h	841	858	964	974	974	388	417
Entry HV Adj Factor	0.979	0.981	0.980	0.981	0.980	0.983	0.979
Flow Entry, veh/h	392	441	740	656	323	215	191
Cap Entry, veh/h	824	842	945	955	955	382	408
V/C Ratio	0.475	0.524	0.783	0.687	0.338	0.564	0.468
Control Delay, s/veh	10.6	11.5	20.0	15.0	7.4	23.8	18.7
LOS	B	B	C	C	A	C	C
95th %tile Queue, veh	3	3	8	6	2	3	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	180	1530	120	260	1450
Future Volume (vph)	95	180	1530	120	260	1450
Satd. Flow (prot)	1678	1501	4768	0	1678	4821
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1678	1501	4768	0	1678	4821
Satd. Flow (RTOR)		188	14			
Lane Group Flow (vph)	99	188	1719	0	271	1510
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	63.0		22.0	85.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	15.0	15.0	62.0		28.1	96.0
Actuated g/C Ratio	0.12	0.12	0.52		0.23	0.80
v/c Ratio	0.47	0.54	0.70		0.69	0.39
Control Delay	54.1	11.4	23.9		50.0	5.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	54.1	11.4	23.9		50.0	5.8
LOS	D	B	C		D	A
Approach Delay	26.2		23.9			12.5
Approach LOS	C		C			B
Queue Length 50th (ft)	74	0	343		158	120
Queue Length 95th (ft)	110	58	440		#408	430
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	419	516	2469		392	3858
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	0.24	0.36	0.70		0.69	0.39

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 18.7 Intersection LOS: B
Intersection Capacity Utilization 65.0% 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: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Future Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Satd. Flow (prot)	1678	1529	0	0	1701	1501	1678	4788	0	1678	4816	0
Flt Permitted	0.744				0.746		0.950			0.950		
Satd. Flow (perm)	1314	1529	0	0	1317	1501	1678	4788	0	1678	4816	0
Satd. Flow (RTOR)		42				109		9			2	
Lane Group Flow (vph)	36	47	0	0	21	5	89	1698	0	208	1714	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	30.0	30.0		30.0	30.0	30.0	20.0	70.0		20.0	70.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	8.8	8.8			8.8	8.8	15.0	74.4		23.2	82.5	
Actuated g/C Ratio	0.07	0.07			0.07	0.07	0.12	0.62		0.19	0.69	
v/c Ratio	0.38	0.31			0.22	0.02	0.43	0.57		0.64	0.52	
Control Delay	63.1	23.1			56.5	0.2	75.2	33.7		72.4	6.5	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.1	23.1			56.5	0.2	75.2	33.7		72.4	6.5	
LOS	E	C			E	A	E	C		E	A	
Approach Delay		40.4			45.6			35.8			13.6	
Approach LOS		D			D			D			B	
Queue Length 50th (ft)	27	4			16	0	58	395		166	120	
Queue Length 95th (ft)	61	41			41	0	m100	515		241	143	
Internal Link Dist (ft)		148			94			1043			1847	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	262	339			263	387	209	2970		323	3312	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.14	0.14			0.08	0.01	0.43	0.57		0.64	0.52	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 81 (68%), Referenced to phase 2:NET and 6:SWT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 24.8 — Intersection LOS: C

Intersection Capacity Utilization 64.7% — ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

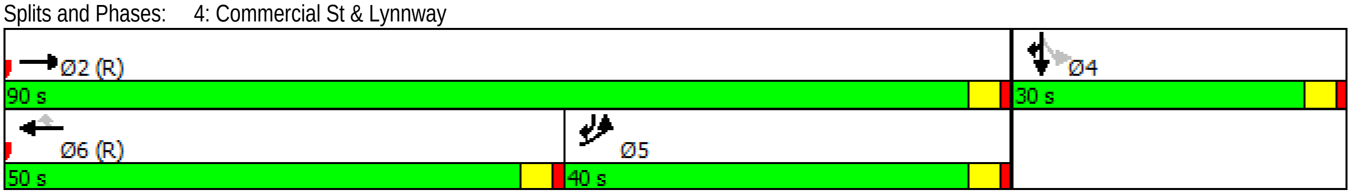
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Future Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Satd. Flow (prot)	1678	4816	0	0	4821	1501	0	0	0	1678	1766	1501
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1678	4816	0	0	4821	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		2				271						13
Lane Group Flow (vph)	573	1448	0	0	1240	271	0	0	0	344	83	479
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	40.0	90.0			50.0	50.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	36.0	86.0			46.0	46.0				26.0	26.0	66.0
Actuated g/C Ratio	0.30	0.72			0.38	0.38				0.22	0.22	0.55
v/c Ratio	1.14	0.42			0.67	0.37				0.95	0.22	0.58
Control Delay	126.2	14.7			39.4	16.2				83.0	40.5	20.7
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	126.2	14.7			39.4	16.2				83.0	40.5	20.7
LOS	F	B			D	B				F	D	C
Approach Delay		46.3			35.2						46.2	
Approach LOS		D			D						D	
Queue Length 50th (ft)	~498	216			366	102				265	53	227
Queue Length 95th (ft)	#723	404			419	210				#448	99	333
Internal Link Dist (ft)		1847			1063			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	503	3454			1850	742				363	382	831
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	1.14	0.42			0.67	0.37				0.95	0.22	0.58

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 37 (31%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 42.5	Intersection LOS: D
Intersection Capacity Utilization 81.7%	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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Future Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Satd. Flow (prot)	1678	4821	0	1678	4797	0	1678	1634	0	0	1624	0
Flt Permitted	0.950			0.950			0.737				0.837	
Satd. Flow (perm)	1678	4821	0	1678	4797	0	1302	1634	0	0	1392	0
Satd. Flow (RTOR)		1			8			5			26	
Lane Group Flow (vph)	120	1630	0	57	1510	0	5	10	0	0	72	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	20.0	77.0		20.0	77.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		6.0	6.0			6.0	
Act Effct Green (s)	13.0	86.2		13.4	83.2		10.4	10.4			10.4	
Actuated g/C Ratio	0.11	0.72		0.11	0.69		0.09	0.09			0.09	
v/c Ratio	0.66	0.47		0.30	0.45		0.04	0.07			0.50	
Control Delay	52.6	13.9		43.1	2.3		47.8	35.8			46.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	52.6	13.9		43.1	2.3		47.8	35.8			46.0	
LOS	D	B		D	A		D	D			D	
Approach Delay		16.5			3.8			39.8			46.0	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	69	390		45	51		4	4			35	
Queue Length 95th (ft)	m122	m502		90	28		16	20			79	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	212	3462		209	3327		184	235			219	
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	0.57	0.47		0.27	0.45		0.03	0.04			0.33	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 91 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 60.1% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Future Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Satd. Flow (prot)	1678	4816	0	1678	4802	0	1678	1501	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1678	4816	0	1678	4802	0	1678	1501	0	0	0	0
Satd. Flow (RTOR)		2			5			230				
Lane Group Flow (vph)	68	1610	0	16	1605	0	31	31	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	10.4	99.7		7.4	92.3		10.3	10.3				
Actuated g/C Ratio	0.09	0.83		0.06	0.77		0.09	0.09				
v/c Ratio	0.47	0.40		0.16	0.43		0.22	0.09				
Control Delay	63.0	1.3		73.3	3.9		51.5	0.5				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	63.0	1.3		73.3	3.9		51.5	0.5				
LOS	E	A		E	A		D	A				
Approach Delay		3.8			4.6			26.0				
Approach LOS		A			A			C				
Queue Length 50th (ft)	49	8		13	41		23	0				
Queue Length 95th (ft)	107	37		m29	84		48	0				
Internal Link Dist (ft)		497			543			258			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	223	4000		223	3693		363	505				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.30	0.40		0.07	0.43		0.09	0.06				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 78 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 4.6 — Intersection LOS: A
Intersection Capacity Utilization 49.1% — ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	600	985	970	225	300	10
Future Volume (vph)	600	985	970	225	300	10
Satd. Flow (prot)	3255	4821	4821	1501	3252	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	3255	4821	4821	1501	3252	0
Satd. Flow (RTOR)				234	3	
Lane Group Flow (vph)	625	1026	1010	234	323	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	50.0	80.0	30.0	30.0	40.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	45.0	94.8	44.8	44.8	17.2	
Actuated g/C Ratio	0.38	0.79	0.37	0.37	0.14	
v/c Ratio	0.51	0.27	0.56	0.33	0.69	
Control Delay	19.7	3.5	31.8	4.9	49.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.7	3.5	31.8	4.9	49.7	
LOS	B	A	C	A	D	
Approach Delay		9.6	26.8		49.7	
Approach LOS		A	C		D	
Queue Length 50th (ft)	66	11	224	0	126	
Queue Length 95th (ft)	158	131	289	56	151	
Internal Link Dist (ft)		431	1171		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1220	3808	1799	707	977	
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	0.51	0.27	0.56	0.33	0.33	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 68 (57%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 20.3	Intersection LOS: C
Intersection Capacity Utilization 55.6%	ICU Level of Service B
Analysis Period (min) 15	

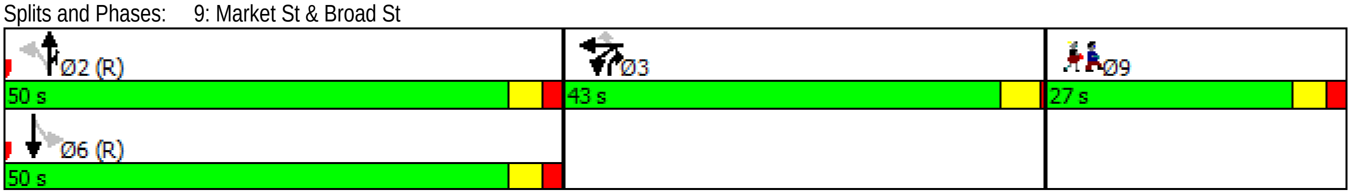
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Future Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Satd. Flow (prot)	0	0	0	0	3329	1501	0	3349	1501	0	3170	0
Flt Permitted					0.992			0.922			0.677	
Satd. Flow (perm)	0	0	0	0	3329	1501	0	3094	1501	0	2183	0
Satd. Flow (RTOR)						182			396		47	
Lane Group Flow (vph)	0	0	0	0	505	182	0	407	396	0	615	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		5.0			5.0	
Act Effct Green (s)					27.5	27.5		67.3	100.8		67.3	
Actuated g/C Ratio					0.23	0.23		0.56	0.84		0.56	
v/c Ratio					0.66	0.38		0.23	0.30		0.49	
Control Delay					46.9	16.1		7.1	2.1		20.6	
Queue Delay					0.0	0.0		0.0	0.4		0.0	
Total Delay					46.9	16.1		7.1	2.5		20.6	
LOS					D	B		A	A		C	
Approach Delay					38.8			4.8			20.6	
Approach LOS					D			A			C	
Queue Length 50th (ft)					197	12		24	0		163	
Queue Length 95th (ft)					248	127		131	135		260	
Internal Link Dist (ft)		27			734			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1081	610		1734	1366		1244	
Starvation Cap Reductn					0	0		0	520		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.47	0.30		0.23	0.47		0.49	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 53.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Market St & Broad St

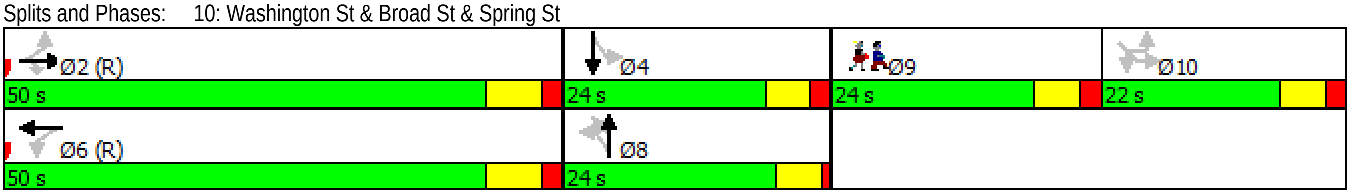


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Future Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Satd. Flow (prot)	0	1757	1501	0	3335	0	0	1678	1704	0	0	1622
Flt Permitted		0.878			0.914			0.814				0.923
Satd. Flow (perm)	0	1551	1501	0	3055	0	0	1438	1704	0	0	1511
Satd. Flow (RTOR)			136		136				11			
Lane Group Flow (vph)	0	567	31	0	646	0	0	21	68	0	0	57
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	50.0	50.0	50.0	50.0	50.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		7.0	7.0		7.0			5.0	5.0			6.0
Act Effct Green (s)		84.1	84.1		84.1			10.5	10.5			9.8
Actuated g/C Ratio		0.70	0.70		0.70			0.09	0.09			0.08
v/c Ratio		0.52	0.03		0.30			0.17	0.43			0.46
Control Delay		12.5	0.1		9.1			51.9	50.7			63.9
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		12.5	0.1		9.1			51.9	50.7			63.9
LOS		B	A		A			D	D			E
Approach Delay		11.8			9.1				51.0			63.9
Approach LOS		B			A				D			E
Queue Length 50th (ft)		59	0		70			15	42			43
Queue Length 95th (ft)		#286	m0		195			40	87			85
Internal Link Dist (ft)		734			418				457			220
Turn Bay Length (ft)								150				
Base Capacity (vph)		1086	1092		2181			227	279			226
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.52	0.03		0.30			0.09	0.24			0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15
\# 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: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	30	5	35	50	30	
Future Volume (vph)	30	5	35	50	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	41	83	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		24.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			8.4	8.4		
Actuated g/C Ratio			0.07	0.07		
v/c Ratio			0.35	0.35		
Control Delay			60.6	4.2		
Queue Delay			0.0	0.0		
Total Delay			60.6	4.2		
LOS			E	A		
Approach Delay			22.8			
Approach LOS			C			
Queue Length 50th (ft)			31	0		
Queue Length 95th (ft)			67	3		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			223	325		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.18	0.26		

Intersection Summary

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1037	1411	860
Demand Flow Rate, veh/h	1079	1467	895
Vehicles Circulating, veh/h	488	309	785
Vehicles Exiting, veh/h	1192	1258	309
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.7	14.0	23.2
Approach LOS	C	B	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	TR
Assumed Moves	LTR	R	L	LTR	R	L	TR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.545	0.455
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	507	572	416	369	682	488	407
Cap Entry Lane, veh/h	784	803	896	910	910	627	652
Entry HV Adj Factor	0.961	0.961	0.962	0.962	0.962	0.961	0.961
Flow Entry, veh/h	487	550	400	355	656	469	391
Cap Entry, veh/h	753	772	862	875	875	603	627
V/C Ratio	0.647	0.712	0.464	0.405	0.750	0.778	0.624
Control Delay, s/veh	16.3	18.9	10.1	8.9	19.1	27.6	17.9
LOS	C	C	B	A	C	D	C
95th %tile Queue, veh	5	6	2	2	7	7	4

TABLE 1
Existing Conditions: Traffic Queue Lengths in Feet

Intersection/Approach	Movement	Weekday AM 50th Percentile	Weekday AM 95th Percentile	Weekday PM 50th Percentile	Weekday PM 95th Percentile	Saturday PM 50th Percentile	Saturday PM 95th Percentile
Lynnway and Hanson Street	--	--	--	--	--	--	--
Lynnway	NB – Through/right	100	231	472	#741	343	440
Lynnway	SB – Left	111	178	100	#341	158	#408
Lynnway	SB – Through/right	0	198	9	301	120	430
Hanson Street	WB – Left	16	33	59	90	74	110
Hanson Street	WB – Right	0	18	0	44	0	58
Lynnway and Harding Street	--	--	--	--	--	--	--
Lynnway	NB – Left	18	24	39	m52	58	m100
Lynnway	NB – Through/right	83	149	20	32	395	515
Lynnway	SB – Left	58	m67	140	m191	166	241
Lynnway	SB – Through/right	122	160	47	m61	120	143
Harding Street	WB – Left	19	48	32	68	27	61
Harding Street	WB – Through/right	0	0	0	0	4	41
Harding Street	EB – Left/Through	16	94	23	54	16	41
Harding Street	EB – Right	0	0	0	0	0	0
Lynnway and Commercial Street	--	--	--	--	--	--	--
Lynnway	NB – Left	222	#324	457	#612	~498	#732
Lynnway	NB – Through/right	113	239	593	645	216	404
Lynnway	SB – Through	631	681	306	257	366	419
Lynnway	SB – Right	103	143	150	190	102	210
Commercial Street	EB – Left	184	279	261	#461	265	#448
Commercial Street	EB – Through	64	115	15	39	53	99
Commercial Street	EB -- Right	351	511	84	128	227	333
Lynnway, Shepard Street, and Marine Boulevard	--	--	--	--	--	--	--
Lynnway	NB – Left	27	m55	141	m208	69	m122
Lynnway	NB – Through/right	205	280	35	83	390	m502
Lynnway	SB – Left	57	m71	21	55	45	90
Lynnway	SB – Through/right	35	67	319	381	51	28
Marine Boulevard	WB – Left	7	23	15	38	4	16
Marine Boulevard	WB – Through/right	0	0	4	23	4	20
Shepard Street	EB – Left/through/right	37	77	40	81	35	79
Lynnway and Kingman Street	--	--	--	--	--	--	--
Lynnway	NB – Left	47	92	51	m82	49	107
Lynnway	NB – Through/right	72	127	113	519	8	37
Lynnway	SB – Left	80	m110	63	113	13	m29
Lynnway	SB – Through/right	73	767	47	80	41	84
Kingman Street	WB – Left	35	66	78	124	23	48
Kingman Street	WB – Through/right	0	40	4	55	0	0

Lynnway, Carroll Parkway, and Market Street	--	--	--	--	--	--	--
Lynnway	NB – Left	79	119	351	349	66	158
Lynnway	NB – Through	5	8	3	4	11	131
Carroll Parkway	SB – Through	382	469	179	232	224	289
Carroll Parkway	SB – Right	0	48	0	48	0	56
Market Street	EB – Left	71	108	78	111	126	151
Carroll Parkway, Nahant Road, and Lynn Shore Drive	--	--	--	--	--	--	--
Carroll Parkway	NB – Left	25	50	150	200	25	50
Carroll Parkway	NB – Right	25	50	125	150	125	175
Nahant Road	NB – Left	50	100	50	75	125	175
Nahant Road	NB – Through	25	50	25	50	75	100
Lynn Shore Drive	SB – Through	250	300	50	75	100	125
Lynn Shore Drive	SB – Right	300	450	50	75	125	150
Market Street and Broad Street	--	--	--	--	--	--	--
Market Street	NB – Through/left	45	98	173	218	24	131
Market Street	NB – Right	0	84	260	324	163	260
Market Street	SB – Left/through/right	97	163	162	226	24	
Broad Street	WB – Through/left	203	256	166	219	197	248
Broad Street	WB – Right	15	112	4	138	12	127
Broad Street, Washington Street, and Spring Street	--	--	--	--	--	--	--
Broad Street	WB – Left/through/right	82	220	50	137	70	195
Broad Street	EB – Through/left	29	77	63	#147	59	#286
Broad Street	EB – Right	0	0	0	63	0	0
Washington Street	NB – Left	77	134	50	137	15	40
Washington Street	NB – Through/right	58	107	82	138	42	87
Washington Street	SB – Left/through/right	50	94	66	115	31	67
Spring Street	SB -- Left/through/right	45	87	72	120	43	85

APPENDIX I

Level of Service (LOS) Analysis
Alternative 1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	15	925	35	150	2210
Future Volume (vph)	20	15	925	35	150	2210
Satd. Flow (prot)	1678	1501	4797	0	1678	4821
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1678	1501	4797	0	1678	4821
Satd. Flow (RTOR)		16	6			
Lane Group Flow (vph)	21	16	1000	0	156	2302
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	58.0		27.0	85.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Act Effct Green (s)	12.8	12.8	82.8		17.3	105.6
Actuated g/C Ratio	0.11	0.11	0.69		0.14	0.88
v/c Ratio	0.12	0.09	0.30		0.65	0.54
Control Delay	45.5	18.1	10.0		67.8	1.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.5	18.1	10.0		67.8	1.0
LOS	D	B	B		E	A
Approach Delay	33.6		10.0			5.2
Approach LOS	C		B			A
Queue Length 50th (ft)	16	0	100		122	0
Queue Length 95th (ft)	33	18	233		166	89
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	433	399	3310		321	4244
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	0.05	0.04	0.30		0.49	0.54

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 6.9 Intersection LOS: A
Intersection Capacity Utilization 55.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Future Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Satd. Flow (prot)	1678	1501	0	0	1678	1501	1678	4807	0	1678	4816	0
Flt Permitted	0.754				0.754		0.950			0.950		
Satd. Flow (perm)	1332	1501	0	0	1332	1501	1678	4807	0	1678	4816	0
Satd. Flow (RTOR)		310				109		4			1	
Lane Group Flow (vph)	26	5	0	0	5	5	26	959	0	73	2448	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	30.0	30.0		30.0	30.0	30.0	20.0	70.0		20.0	70.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Act Effct Green (s)	9.9	9.9			9.7	9.7	12.8	94.4		11.7	96.5	
Actuated g/C Ratio	0.08	0.08			0.08	0.08	0.11	0.79		0.10	0.80	
v/c Ratio	0.24	0.01			0.05	0.02	0.15	0.25		0.45	0.63	
Control Delay	55.8	0.0			50.0	0.2	35.9	4.9		70.2	3.1	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	55.8	0.0			50.0	0.2	35.9	4.9		70.2	3.1	
LOS	E	A			D	A	D	A		E	A	
Approach Delay		46.8			25.1			5.7			5.1	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)	19	0			4	0	18	78		59	134	
Queue Length 95th (ft)	48	0			16	0	18	95		m67	138	
Internal Link Dist (ft)		148			94			1043			1847	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	288	568			288	410	223	3781		223	3871	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.09	0.01			0.02	0.01	0.12	0.25		0.33	0.63	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 98 (82%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 5.7 Intersection LOS: A
Intersection Capacity Utilization 69.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

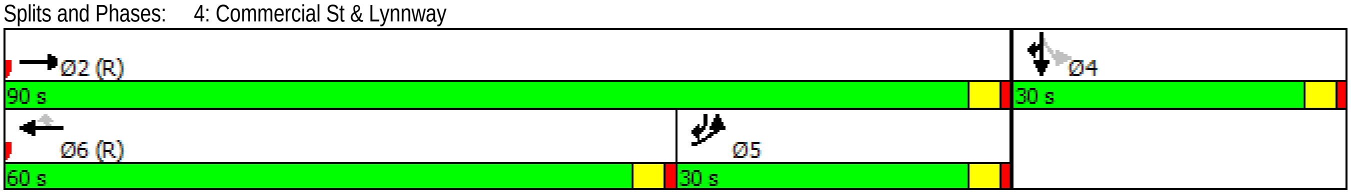
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	765	10	0	1990	275	0	0	0	245	95	535
Future Volume (vph)	260	765	10	0	1990	275	0	0	0	245	95	535
Satd. Flow (prot)	1678	4812	0	0	4821	1501	0	0	0	1678	1766	1501
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1678	4812	0	0	4821	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		4				276						9
Lane Group Flow (vph)	271	807	0	0	2073	286	0	0	0	255	99	557
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	30.0	90.0			60.0	60.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	26.0	88.7			58.7	58.7				23.3	23.3	53.3
Actuated g/C Ratio	0.22	0.74			0.49	0.49				0.19	0.19	0.44
v/c Ratio	0.75	0.23			0.88	0.33				0.78	0.29	0.83
Control Delay	58.1	4.6			14.1	2.2				63.0	42.7	40.6
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	58.1	4.6			14.1	2.2				63.0	42.7	40.6
LOS	E	A			B	A				E	D	D
Approach Delay		18.0			12.7						47.1	
Approach LOS		B			B						D	
Queue Length 50th (ft)	169	102			366	11				184	64	351
Queue Length 95th (ft)	#248	12			463	39				279	115	511
Internal Link Dist (ft)		1847			1063			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	363	3559			2359	875				363	382	705
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	0.75	0.23			0.88	0.33				0.70	0.26	0.79

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 21.2 | Intersection LOS: C
Intersection Capacity Utilization 78.2% | 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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	955	20	70	2215	45	10	0	5	35	10	15
Future Volume (vph)	50	955	20	70	2215	45	10	0	5	35	10	15
Satd. Flow (prot)	1678	4807	0	1678	4807	0	1678	1501	0	0	1656	0
Flt Permitted	0.950			0.950			0.719				0.818	
Satd. Flow (perm)	1678	4807	0	1678	4807	0	1270	1501	0	0	1394	0
Satd. Flow (RTOR)		5			4			302			12	
Lane Group Flow (vph)	52	1016	0	73	2354	0	10	5	0	0	62	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	20.0	77.0		20.0	77.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Act Effct Green (s)	10.1	86.8		14.4	90.9		12.6	12.6			12.6	
Actuated g/C Ratio	0.08	0.72		0.12	0.76		0.10	0.10			0.10	
v/c Ratio	0.37	0.29		0.36	0.65		0.08	0.01			0.40	
Control Delay	50.0	13.0		33.7	2.2		47.1	0.0			47.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	50.0	13.0		33.7	2.2		47.1	0.0			47.4	
LOS	D	B		C	A		D	A			D	
Approach Delay		14.8			3.2			31.4			47.4	
Approach LOS		B			A			C			D	
Queue Length 50th (ft)	41	168		48	31		7	0			37	
Queue Length 95th (ft)	m80	209		m71	54		23	0			77	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	223	3480		223	3640		201	491			230	
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	0.23	0.29		0.33	0.65		0.05	0.01			0.27	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 5 (4%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 7.5 Intersection LOS: A
Intersection Capacity Utilization 68.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Future Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Satd. Flow (prot)	1678	4792	0	1678	4778	0	1678	1524	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1678	4792	0	1678	4778	0	1678	1524	0	0	0	0
Satd. Flow (RTOR)		8			14			52				
Lane Group Flow (vph)	57	1058	0	99	2489	0	47	57	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	9.7	86.6		12.4	92.3		10.9	10.9				
Actuated g/C Ratio	0.08	0.72		0.10	0.77		0.09	0.09				
v/c Ratio	0.42	0.31		0.58	0.68		0.31	0.31				
Control Delay	60.1	5.9		67.5	6.1		53.5	18.3				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	60.1	5.9		67.5	6.1		53.5	18.3				
LOS	E	A		E	A		D	B				
Approach Delay		8.7			8.5			34.2				
Approach LOS		A			A			C				
Queue Length 50th (ft)	43	75		80	73		35	4				
Queue Length 95th (ft)	92	90		m114	138		66	40				
Internal Link Dist (ft)		494			544			142			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	223	3461		226	3678		363	370				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.26	0.31		0.44	0.68		0.13	0.15				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 65.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	425	600	1515	200	160	25
Future Volume (vph)	425	600	1515	200	160	25
Satd. Flow (prot)	3255	4821	4821	1501	3220	0
Flt Permitted	0.950				0.959	
Satd. Flow (perm)	3255	4821	4821	1501	3220	0
Satd. Flow (RTOR)				208	15	
Lane Group Flow (vph)	443	625	1578	208	193	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	50.0	80.0	30.0	30.0	40.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	46.0	100.0	50.0	50.0	12.0	
Actuated g/C Ratio	0.38	0.83	0.42	0.42	0.10	
v/c Ratio	0.36	0.16	0.79	0.28	0.57	
Control Delay	17.2	0.4	34.3	4.2	55.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.2	0.4	34.3	4.2	55.2	
LOS	B	A	C	A	E	
Approach Delay		7.3	30.8		55.2	
Approach LOS		A	C		E	
Queue Length 50th (ft)	134	2	382	0	70	
Queue Length 95th (ft)	97	7	469	48	105	
Internal Link Dist (ft)		431	1038		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1247	4016	2008	746	976	
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	0.36	0.16	0.79	0.28	0.20	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 2 (2%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 24.1	Intersection LOS: C
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

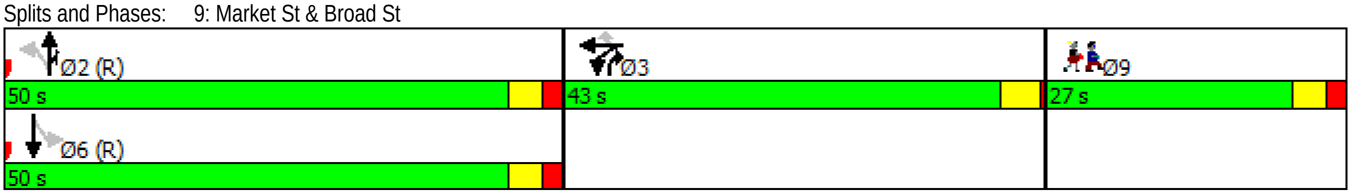
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Future Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Satd. Flow (prot)	0	0	0	0	3339	1501	0	3349	1501	0	3124	0
Flt Permitted					0.995			0.939			0.706	
Satd. Flow (perm)	0	0	0	0	3339	1501	0	3151	1501	0	2243	0
Satd. Flow (RTOR)						188			323		102	
Lane Group Flow (vph)	0	0	0	0	576	188	0	328	323	0	469	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		4.0			4.0	
Act Effct Green (s)					30.0	30.0		65.8	101.4		65.8	
Actuated g/C Ratio					0.25	0.25		0.55	0.84		0.55	
v/c Ratio					0.69	0.36		0.19	0.25		0.37	
Control Delay					39.9	11.1		7.6	1.1		16.3	
Queue Delay					0.0	0.0		0.0	0.2		0.0	
Total Delay					39.9	11.1		7.6	1.2		16.3	
LOS					D	B		A	A		B	
Approach Delay					32.8			4.4			16.3	
Approach LOS					C			A			B	
Queue Length 50th (ft)					196	15		27	12		97	
Queue Length 95th (ft)					248	109		50	22		163	
Internal Link Dist (ft)		27			626			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1085	614		1727	1347		1275	
Starvation Cap Reductn					0	0		0	408		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.53	0.31		0.19	0.34		0.37	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 33 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 18.9 Intersection LOS: B
Intersection Capacity Utilization 47.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Market St & Broad St

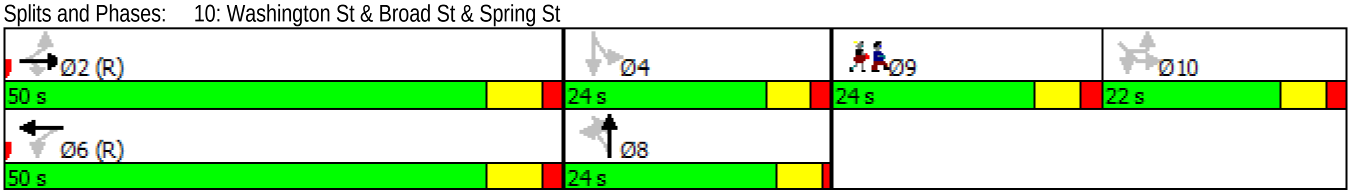


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Future Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Satd. Flow (prot)	0	1750	1501	0	3322	0	0	1678	1718	0	0	1660
Flt Permitted		0.806			0.921			0.702				0.880
Satd. Flow (perm)	0	1423	1501	0	3069	0	0	1240	1718	0	0	1484
Satd. Flow (RTOR)			214		136				8			
Lane Group Flow (vph)	0	281	214	0	671	0	0	104	89	0	0	63
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		custom	NA
Protected Phases		2			6				8			
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	50.0	50.0	50.0	50.0	50.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		4.0	4.0		4.0			4.0	4.0			4.0
Act Effct Green (s)		75.5	75.5		75.5			15.5	15.5			15.5
Actuated g/C Ratio		0.63	0.63		0.63			0.13	0.13			0.13
v/c Ratio		0.31	0.21		0.34			0.65	0.39			0.33
Control Delay		7.4	0.6		11.2			67.5	47.3			50.7
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		7.4	0.6		11.2			67.5	47.3			50.7
LOS		A	A		B			E	D			D
Approach Delay		4.4			11.2				58.2			50.7
Approach LOS		A			B				E			D
Queue Length 50th (ft)		37	0		82			77	58			45
Queue Length 95th (ft)		85	0		220			134	107			87
Internal Link Dist (ft)		626			404				1111			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		894	1023		1980			206	293			247
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.31	0.21		0.34			0.50	0.30			0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 18.6 — Intersection LOS: B
Intersection Capacity Utilization 67.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	20	5	60	120	30	
Future Volume (vph)	20	5	60	120	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	68	156	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		24.0
Total Lost Time (s)			4.0	4.0		
Act Effct Green (s)			12.2	12.2		
Actuated g/C Ratio			0.10	0.10		
v/c Ratio			0.40	0.55		
Control Delay			56.5	17.3		
Queue Delay			0.0	0.0		
Total Delay			56.5	17.3		
LOS			E	B		
Approach Delay			29.2			
Approach LOS			C			
Queue Length 50th (ft)			50	8		
Queue Length 95th (ft)			94	71		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			251	348		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.27	0.45		

Intersection Summary

Intersection	
Intersection Delay, s/veh	26.5
Intersection LOS	D

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1531	791	521
Demand Flow Rate, veh/h	1592	822	542
Vehicles Circulating, veh/h	390	76	687
Vehicles Exiting, veh/h	839	1906	76
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	41.4	6.4	13.6
Approach LOS	E	A	B

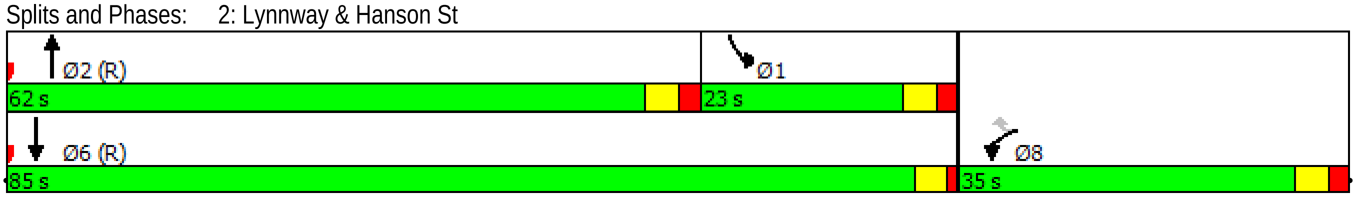
Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	TR
Assumed Moves	LTR	R	L	LTR	R	L	TR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.720	0.280
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	748	844	364	323	135	390	152
Cap Entry Lane, veh/h	843	860	1067	1071	1071	675	699
Entry HV Adj Factor	0.962	0.961	0.962	0.962	0.962	0.962	0.961
Flow Entry, veh/h	720	811	350	311	130	375	146
Cap Entry, veh/h	811	827	1027	1031	1030	649	671
V/C Ratio	0.887	0.981	0.341	0.301	0.126	0.578	0.218
Control Delay, s/veh	32.6	49.1	7.0	6.5	4.6	15.7	7.9
LOS	D	E	A	A	A	C	A
95th %tile Queue, veh	12	17	2	1	0	4	1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	100	2140	50	225	1065
Future Volume (vph)	75	100	2140	50	225	1065
Satd. Flow (prot)	1711	1531	4901	0	1711	4916
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1711	1531	4901	0	1711	4916
Satd. Flow (RTOR)		104	4			
Lane Group Flow (vph)	78	104	2281	0	234	1109
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	62.0		23.0	85.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	13.9	13.9	73.1		18.0	97.1
Actuated g/C Ratio	0.12	0.12	0.61		0.15	0.81
v/c Ratio	0.40	0.39	0.76		0.91	0.28
Control Delay	52.3	11.8	20.0		68.7	0.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	52.3	11.8	20.1		68.7	0.9
LOS	D	B	C		E	A
Approach Delay	29.2		20.1			12.7
Approach LOS	C		C			B
Queue Length 50th (ft)	59	0	409		188	9
Queue Length 95th (ft)	90	44	#753		#338	22
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	427	460	2987		256	3977
Starvation Cap Reductn	0	0	44		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.18	0.23	0.78		0.91	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 73.3% 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: Lynnway & Hanson St

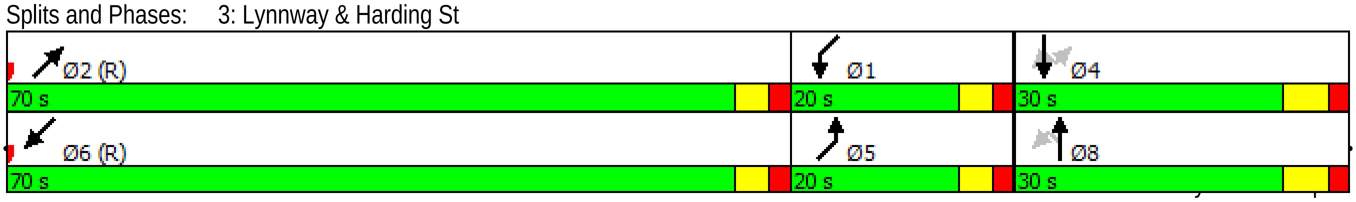


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Future Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Satd. Flow (prot)	1711	1531	0	0	1711	1531	1711	4896	0	1711	4876	0
Flt Permitted	0.737				0.730		0.950			0.950		
Satd. Flow (perm)	1327	1531	0	0	1314	1531	1711	4896	0	1711	4876	0
Satd. Flow (RTOR)		207				64		6			11	
Lane Group Flow (vph)	42	42	0	0	31	5	47	2391	0	172	1313	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	30.0	30.0		30.0	30.0	30.0	20.0	70.0		20.0	70.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	9.3	9.3			9.3	9.3	13.4	82.6		14.4	87.0	
Actuated g/C Ratio	0.08	0.08			0.08	0.08	0.11	0.69		0.12	0.72	
v/c Ratio	0.41	0.14			0.31	0.03	0.25	0.71		0.84	0.37	
Control Delay	63.6	0.9			58.9	0.2	33.2	9.0		69.6	2.3	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.6	0.9			58.9	0.2	33.2	9.0		69.6	2.3	
LOS	E	A			E	A	C	A		E	A	
Approach Delay		32.3			50.7			9.5			10.1	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	32	0			23	0	34	116		141	30	
Queue Length 95th (ft)	68	0			54	0	m41	267		m#213	48	
Internal Link Dist (ft)		148			94			1043			1865	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	265	471			262	357	213	3371		213	3539	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.16	0.09			0.12	0.01	0.22	0.71		0.81	0.37	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 117 (98%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 75.9% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lynnway & Harding St

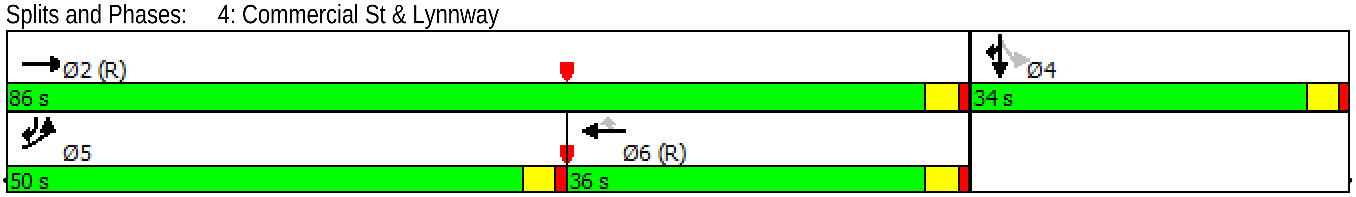


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Future Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Satd. Flow (prot)	1711	4916	0	0	4916	1531	0	0	0	1711	1801	1531
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1711	4916	0	0	4916	1531	0	0	0	1711	1801	1531
Satd. Flow (RTOR)		1				307						9
Lane Group Flow (vph)	563	2036	0	0	1141	307	0	0	0	354	26	297
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	50.0	86.0			36.0	36.0				34.0	34.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	43.0	84.0			37.0	37.0				28.0	28.0	75.0
Actuated g/C Ratio	0.36	0.70			0.31	0.31				0.23	0.23	0.62
v/c Ratio	0.92	0.59			0.75	0.45				0.89	0.06	0.31
Control Delay	38.4	12.8			27.5	5.5				69.0	35.0	10.4
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	38.4	12.8			27.5	5.5				69.0	35.0	10.4
LOS	D	B			C	A				E	C	B
Approach Delay		18.4			22.8						42.0	
Approach LOS		B			C						D	
Queue Length 50th (ft)	386	528			198	37				261	15	84
Queue Length 95th (ft)	#584	482			255	55				#416	39	128
Internal Link Dist (ft)		1865			1085			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	655	3443			1516	684				427	450	992
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	0.86	0.59			0.75	0.45				0.83	0.06	0.30

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 79.9% 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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Future Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Satd. Flow (prot)	1711	4911	0	1711	4906	0	1711	1621	0	0	1666	0
Flt Permitted	0.950			0.950			0.739				0.814	
Satd. Flow (perm)	1711	4911	0	1711	4906	0	1331	1621	0	0	1395	0
Satd. Flow (RTOR)		2			2			10			20	
Lane Group Flow (vph)	182	2214	0	36	1422	0	21	15	0	0	73	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	29.0	80.0		13.0	64.0		27.0	27.0		27.0	27.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	17.7	91.9		7.6	75.4		11.5	11.5			11.5	
Actuated g/C Ratio	0.15	0.77		0.06	0.63		0.10	0.10			0.10	
v/c Ratio	0.73	0.59		0.33	0.46		0.17	0.09			0.48	
Control Delay	73.0	1.6		60.5	6.6		49.8	28.4			47.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	73.0	1.6		60.5	6.6		49.8	28.4			47.0	
LOS	E	A		E	A		D	C			D	
Approach Delay		7.0			7.9			40.8			47.0	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	144	20		29	73		15	4			40	
Queue Length 95th (ft)	m208	89		67	119		38	23			81	
Internal Link Dist (ft)		1085			554			123			133	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	327	3760		108	3083		232	291			260	
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	0.56	0.59		0.33	0.46		0.09	0.05			0.28	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 69 (58%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 8.4 — Intersection LOS: A
Intersection Capacity Utilization 72.6% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

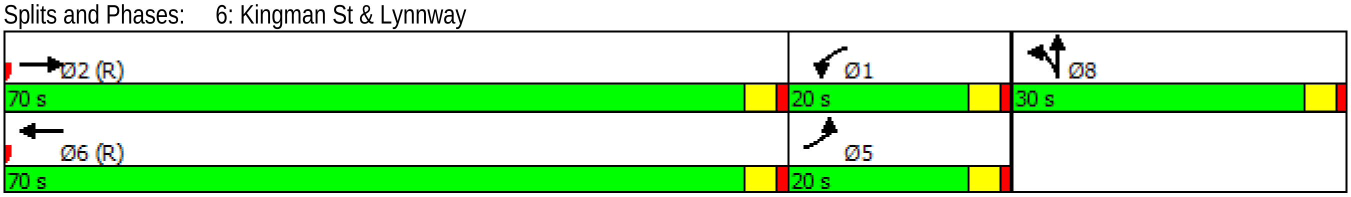
Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Future Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Satd. Flow (prot)	1711	4906	0	1711	4891	0	1711	1541	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1711	4906	0	1711	4891	0	1711	1541	0	0	0	0
Satd. Flow (RTOR)		3			6			120				
Lane Group Flow (vph)	68	2312	0	78	1386	0	104	125	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	10.9	85.6		10.9	85.6		13.7	13.7				
Actuated g/C Ratio	0.09	0.71		0.09	0.71		0.11	0.11				
v/c Ratio	0.44	0.66		0.51	0.40		0.53	0.44				
Control Delay	38.8	7.9		66.8	3.4		58.8	13.8				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	38.8	7.9		66.8	3.4		58.8	13.8				
LOS	D	A		E	A		E	B				
Approach Delay		8.8			6.8			34.2				
Approach LOS		A			A			C				
Queue Length 50th (ft)	49	140		63	48		78	4				
Queue Length 95th (ft)	m80	208		113	87		124	55				
Internal Link Dist (ft)		494			544			258			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	228	3502		228	3492		370	427				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.30	0.66		0.34	0.40		0.28	0.29				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 9.5 Intersection LOS: A
Intersection Capacity Utilization 66.2% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	815	1450	805	165	215	15
Future Volume (vph)	815	1450	805	165	215	15
Satd. Flow (prot)	3319	4916	4916	1531	3303	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	3319	4916	4916	1531	3303	0
Satd. Flow (RTOR)				172	6	
Lane Group Flow (vph)	849	1510	839	172	240	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	54.0	92.0	38.0	38.0	28.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	49.0	98.2	44.2	44.2	13.8	
Actuated g/C Ratio	0.41	0.82	0.37	0.37	0.12	
v/c Ratio	0.63	0.38	0.46	0.26	0.62	
Control Delay	21.3	3.3	30.3	5.1	54.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	3.3	30.3	5.1	54.2	
LOS	C	A	C	A	D	
Approach Delay		9.8	26.0		54.2	
Approach LOS		A	C		D	
Queue Length 50th (ft)	207	83	179	0	92	
Queue Length 95th (ft)	226	79	232	48	135	
Internal Link Dist (ft)		429	1170		327	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1355	4022	1810	672	665	
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	0.63	0.38	0.46	0.26	0.36	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 57 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 17.3	Intersection LOS: B
Intersection Capacity Utilization 56.2%	ICU Level of Service B
Analysis Period (min) 15	

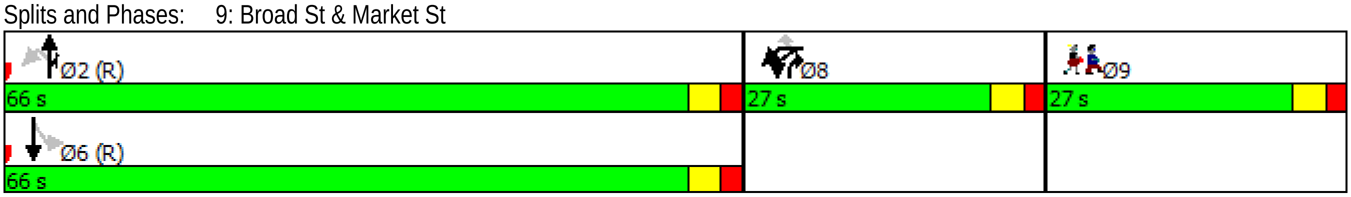
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø9
Lane Configurations												
Traffic Volume (vph)	50	335	205	15	395	570	290	175	160	0	0	
Future Volume (vph)	50	335	205	15	395	570	290	175	160	0	0	
Satd. Flow (prot)	0	3319	1531	0	3414	1531	0	3216	0	0	0	
Flt Permitted		0.950			0.922			0.639				
Satd. Flow (perm)	0	3319	1531	0	3154	1531	0	2103	0	0	0	
Satd. Flow (RTOR)			214			594		58				
Lane Group Flow (vph)	0	401	214	0	427	594	0	651	0	0	0	
Turn Type	Prot	Prot	Perm	Perm	NA	pt+ov	Perm	NA				
Protected Phases	8	8			2	2 8		6				9
Permitted Phases			8	2			6					
Total Split (s)	27.0	27.0	27.0	66.0	66.0		66.0	66.0				27.0
Total Lost Time (s)		5.0	5.0		5.0			5.0				
Act Effct Green (s)		20.1	20.1		73.7	100.8		73.7				
Actuated g/C Ratio		0.17	0.17		0.61	0.84		0.61				
v/c Ratio		0.72	0.49		0.22	0.43		0.50				
Control Delay		48.2	11.5		2.5	3.2		16.1				
Queue Delay		0.0	0.0		0.0	0.5		0.0				
Total Delay		48.2	11.5		2.5	3.7		16.1				
LOS		D	B		A	A		B				
Approach Delay		35.4			3.2			16.1				
Approach LOS		D			A			B				
Queue Length 50th (ft)		124	0		14	63		162				
Queue Length 95th (ft)		185	93		25	129		226				
Internal Link Dist (ft)		246			327			471		2		
Turn Bay Length (ft)												
Base Capacity (vph)		608	455		1937	1378		1314				
Starvation Cap Reductn		0	0		0	398		0				
Spillback Cap Reductn		0	0		0	0		0				
Storage Cap Reductn		0	0		0	0		0				
Reduced v/c Ratio		0.66	0.47		0.22	0.61		0.50				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 95 (79%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 15.5 Intersection LOS: B
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: Broad St & Market St

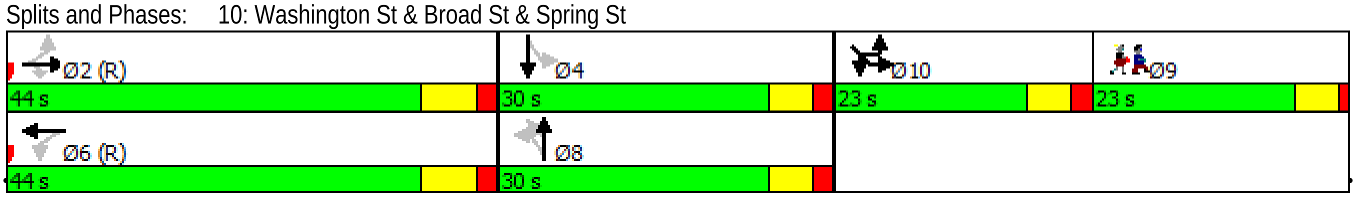


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Future Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Satd. Flow (prot)	0	1797	1531	0	3404	0	0	1711	1732	0	0	1616
Flt Permitted		0.978			0.918			0.625				0.984
Satd. Flow (perm)	0	1761	1531	0	3134	0	0	1125	1732	0	0	1595
Satd. Flow (RTOR)			422		127				12			
Lane Group Flow (vph)	0	448	422	0	417	0	0	109	104	0	0	99
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	
Total Split (s)	44.0	44.0	44.0	44.0	44.0		30.0	30.0	30.0		30.0	30.0
Total Lost Time (s)		7.0	7.0		7.0			6.0	6.0			6.0
Act Effct Green (s)		66.7	66.7		66.7			16.0	16.0			16.0
Actuated g/C Ratio		0.56	0.56		0.56			0.13	0.13			0.13
v/c Ratio		0.46	0.41		0.23			0.73	0.43			0.46
Control Delay		16.1	2.5		12.5			75.2	46.2			53.7
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		16.1	2.5		12.5			75.2	46.2			53.7
LOS		B	A		B			E	D			D
Approach Delay		9.5			12.5				61.1			53.7
Approach LOS		A			B				E			D
Queue Length 50th (ft)		79	0		50			82	66			72
Queue Length 95th (ft)		#481	65		137			138	115			120
Internal Link Dist (ft)		389			409				413			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		978	1038		1797			225	356			319
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.46	0.41		0.23			0.48	0.29			0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 22.4 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.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	70	15	105	100	30	
Future Volume (vph)	70	15	105	100	30	
Satd. Flow (prot)	0	0	1711	1531	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1711	1531	0	
Satd. Flow (RTOR)				136		
Lane Group Flow (vph)	0	0	125	135	0	
Turn Type		Prot	Prot	Prot		
Protected Phases		10	10	10		9
Permitted Phases						
Total Split (s)		23.0	23.0	23.0		23.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			13.7	13.7		
Actuated g/C Ratio			0.11	0.11		
v/c Ratio			0.64	0.46		
Control Delay			65.3	12.8		
Queue Delay			0.0	0.0		
Total Delay			65.3	12.8		
LOS			E	B		
Approach Delay			38.0			
Approach LOS			D			
Queue Length 50th (ft)			94	0		
Queue Length 95th (ft)			154	56		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			245	335		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.51	0.40		

Intersection Summary

Intersection	
Intersection Delay, s/veh	15.2
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	833	1719	406
Demand Flow Rate, veh/h	850	1753	414
Vehicles Circulating, veh/h	393	212	1424
Vehicles Exiting, veh/h	1445	1030	212
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.1	15.7	21.4
Approach LOS	B	C	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.471	0.529	0.530	0.470		0.529	0.471
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	400	450	755	669	329	219	195
Cap Entry Lane, veh/h	841	858	964	974	974	388	417
Entry HV Adj Factor	0.979	0.981	0.980	0.981	0.980	0.983	0.979
Flow Entry, veh/h	392	441	740	656	323	215	191
Cap Entry, veh/h	824	842	945	955	955	382	408
V/C Ratio	0.475	0.524	0.783	0.687	0.338	0.564	0.468
Control Delay, s/veh	10.6	11.5	20.0	15.0	7.4	23.8	18.7
LOS	B	B	C	C	A	C	C
95th %tile Queue, veh	3	3	8	6	2	3	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	180	1530	120	260	1450
Future Volume (vph)	95	180	1530	120	260	1450
Satd. Flow (prot)	1678	1501	4768	0	1678	4821
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1678	1501	4768	0	1678	4821
Satd. Flow (RTOR)		188	14			
Lane Group Flow (vph)	99	188	1719	0	271	1510
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	63.0		22.0	85.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	15.0	15.0	62.0		28.1	96.0
Actuated g/C Ratio	0.12	0.12	0.52		0.23	0.80
v/c Ratio	0.47	0.54	0.70		0.69	0.39
Control Delay	54.1	11.4	23.9		72.1	1.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	54.1	11.4	23.9		72.1	1.5
LOS	D	B	C		E	A
Approach Delay	26.2		23.9			12.3
Approach LOS	C		C			B
Queue Length 50th (ft)	74	0	343		221	24
Queue Length 95th (ft)	110	58	440		#428	49
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	419	516	2469		392	3858
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	0.24	0.36	0.70		0.69	0.39

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 65.0%	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: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Future Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Satd. Flow (prot)	1678	1529	0	0	1701	1501	1678	4788	0	1678	4816	0
Flt Permitted	0.744				0.746		0.950			0.950		
Satd. Flow (perm)	1314	1529	0	0	1317	1501	1678	4788	0	1678	4816	0
Satd. Flow (RTOR)		42				109		9			2	
Lane Group Flow (vph)	36	47	0	0	21	5	89	1698	0	208	1714	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	30.0	30.0		30.0	30.0	30.0	20.0	70.0		20.0	70.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	8.8	8.8			8.8	8.8	15.0	74.4		23.2	82.5	
Actuated g/C Ratio	0.07	0.07			0.07	0.07	0.12	0.62		0.19	0.69	
v/c Ratio	0.38	0.31			0.22	0.02	0.43	0.57		0.64	0.52	
Control Delay	63.1	23.1			56.5	0.2	34.0	2.1		41.0	16.0	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.1	23.1			56.5	0.2	34.0	2.1		41.0	16.0	
LOS	E	C			E	A	C	A		D	B	
Approach Delay		40.4			45.6			3.7			18.7	
Approach LOS		D			D			A			B	
Queue Length 50th (ft)	27	4			16	0	64	20		157	383	
Queue Length 95th (ft)	61	41			41	0	m98	38		240	441	
Internal Link Dist (ft)		148			94			1043			1847	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	262	339			263	387	209	2970		323	3312	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.14	0.14			0.08	0.01	0.43	0.57		0.64	0.52	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 12.3 Intersection LOS: B
Intersection Capacity Utilization 64.7% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

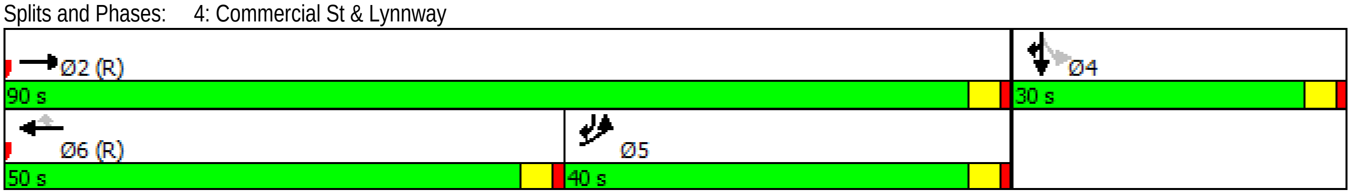
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Future Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Satd. Flow (prot)	1678	4816	0	0	4821	1501	0	0	0	1678	1766	1501
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1678	4816	0	0	4821	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		2				271						13
Lane Group Flow (vph)	573	1448	0	0	1240	271	0	0	0	344	83	479
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	40.0	90.0			50.0	50.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	36.0	86.0			46.0	46.0				26.0	26.0	66.0
Actuated g/C Ratio	0.30	0.72			0.38	0.38				0.22	0.22	0.55
v/c Ratio	1.14	0.42			0.67	0.37				0.95	0.22	0.58
Control Delay	114.3	1.4			12.9	3.1				83.0	40.5	20.7
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	114.3	1.4			12.9	3.1				83.0	40.5	20.7
LOS	F	A			B	A				F	D	C
Approach Delay		33.4			11.1						46.2	
Approach LOS		C			B						D	
Queue Length 50th (ft)	~532	21			155	3				265	53	227
Queue Length 95th (ft)	#756	24			130	25				#448	99	333
Internal Link Dist (ft)		1847			1063			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	503	3454			1850	742				363	382	831
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	1.14	0.42			0.67	0.37				0.95	0.22	0.58

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 40 (33%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 81.7%	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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Future Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Satd. Flow (prot)	1678	4821	0	1678	4797	0	1678	1634	0	0	1624	0
Flt Permitted	0.950			0.950			0.737				0.837	
Satd. Flow (perm)	1678	4821	0	1678	4797	0	1302	1634	0	0	1392	0
Satd. Flow (RTOR)		1			8			5			26	
Lane Group Flow (vph)	120	1630	0	57	1510	0	5	10	0	0	72	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	20.0	77.0		20.0	77.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		6.0	6.0			6.0	
Act Effct Green (s)	13.0	86.2		13.4	83.2		10.4	10.4			10.4	
Actuated g/C Ratio	0.11	0.72		0.11	0.69		0.09	0.09			0.09	
v/c Ratio	0.66	0.47		0.30	0.45		0.04	0.07			0.50	
Control Delay	64.8	10.4		31.6	2.3		47.8	35.8			46.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	64.8	10.4		31.6	2.3		47.8	35.8			46.0	
LOS	E	B		C	A		D	D			D	
Approach Delay		14.1			3.4			39.8			46.0	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	80	298		41	68		4	4			35	
Queue Length 95th (ft)	m134	m361		75	27		16	20			79	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	212	3462		209	3327		184	235			219	
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	0.57	0.47		0.27	0.45		0.03	0.04			0.33	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 112 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 10.0	Intersection LOS: A
Intersection Capacity Utilization 60.1%	ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Future Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Satd. Flow (prot)	1678	4816	0	1678	4802	0	1678	1501	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1678	4816	0	1678	4802	0	1678	1501	0	0	0	0
Satd. Flow (RTOR)		2			5			230				
Lane Group Flow (vph)	68	1610	0	16	1605	0	31	31	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	10.4	99.7		7.4	92.3		10.3	10.3				
Actuated g/C Ratio	0.09	0.83		0.06	0.77		0.09	0.09				
v/c Ratio	0.47	0.40		0.16	0.43		0.22	0.09				
Control Delay	62.6	1.5		58.3	3.1		51.5	0.5				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	62.6	1.5		58.3	3.1		51.5	0.5				
LOS	E	A		E	A		D	A				
Approach Delay		4.0			3.7			26.0				
Approach LOS		A			A			C				
Queue Length 50th (ft)	53	7		13	41		23	0				
Queue Length 95th (ft)	107	61		m29	84		48	0				
Internal Link Dist (ft)		497			543			258			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	223	4000		223	3693		363	505				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.30	0.40		0.07	0.43		0.09	0.06				

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 98 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 4.2 Intersection LOS: A

Intersection Capacity Utilization 49.1% ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	600	985	970	225	300	10
Future Volume (vph)	600	985	970	225	300	10
Satd. Flow (prot)	3255	4821	4821	1501	3252	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	3255	4821	4821	1501	3252	0
Satd. Flow (RTOR)				234	3	
Lane Group Flow (vph)	625	1026	1010	234	323	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	50.0	80.0	30.0	30.0	40.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	45.0	94.8	44.8	44.8	17.2	
Actuated g/C Ratio	0.38	0.79	0.37	0.37	0.14	
v/c Ratio	0.51	0.27	0.56	0.33	0.69	
Control Delay	14.8	0.8	31.8	4.9	46.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.8	0.8	31.8	4.9	46.0	
LOS	B	A	C	A	D	
Approach Delay		6.1	26.8		46.0	
Approach LOS		A	C		D	
Queue Length 50th (ft)	157	34	224	0	111	
Queue Length 95th (ft)	84	2	289	56	158	
Internal Link Dist (ft)		431	1171		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1220	3808	1799	707	977	
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	0.51	0.27	0.56	0.33	0.33	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 112 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 55.6%	ICU Level of Service B
Analysis Period (min) 15	

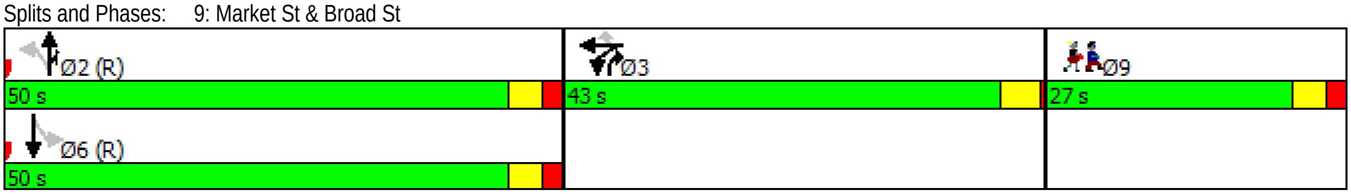
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Future Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Satd. Flow (prot)	0	0	0	0	3329	1501	0	3349	1501	0	3170	0
Flt Permitted					0.992			0.922			0.677	
Satd. Flow (perm)	0	0	0	0	3329	1501	0	3094	1501	0	2183	0
Satd. Flow (RTOR)						182			396		47	
Lane Group Flow (vph)	0	0	0	0	505	182	0	407	396	0	615	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		5.0			5.0	
Act Effct Green (s)					27.5	27.5		67.3	100.8		67.3	
Actuated g/C Ratio					0.23	0.23		0.56	0.84		0.56	
v/c Ratio					0.66	0.38		0.23	0.30		0.49	
Control Delay					40.7	8.1		8.7	1.1		20.6	
Queue Delay					0.0	0.0		0.0	0.1		0.0	
Total Delay					40.7	8.1		8.7	1.2		20.6	
LOS					D	A		A	A		C	
Approach Delay					32.1			5.0			20.6	
Approach LOS					C			A			C	
Queue Length 50th (ft)					192	12		36	11		163	
Queue Length 95th (ft)					228	47		66	12		260	
Internal Link Dist (ft)		27			734			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1081	610		1734	1366		1244	
Starvation Cap Reductn					0	0		0	253		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.47	0.30		0.23	0.36		0.49	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 53.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Market St & Broad St

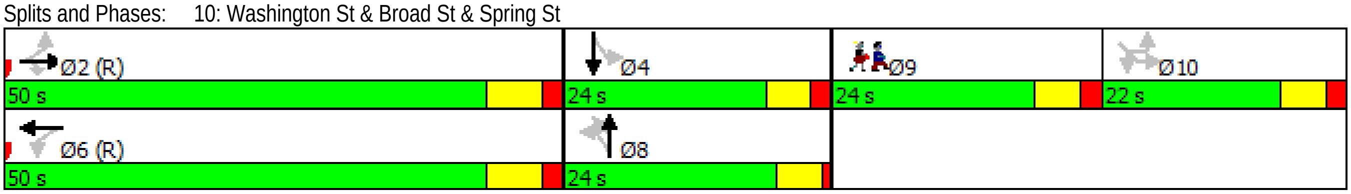


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Future Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Satd. Flow (prot)	0	1757	1501	0	3335	0	0	1678	1704	0	0	1622
Flt Permitted		0.878			0.914			0.814				0.923
Satd. Flow (perm)	0	1551	1501	0	3055	0	0	1438	1704	0	0	1511
Satd. Flow (RTOR)			136		136				11			
Lane Group Flow (vph)	0	567	31	0	646	0	0	21	68	0	0	57
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	50.0	50.0	50.0	50.0	50.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		7.0	7.0		7.0			5.0	5.0			6.0
Act Effct Green (s)		84.1	84.1		84.1			10.5	10.5			9.8
Actuated g/C Ratio		0.70	0.70		0.70			0.09	0.09			0.08
v/c Ratio		0.52	0.03		0.30			0.17	0.43			0.46
Control Delay		7.6	0.0		9.1			51.9	50.7			63.9
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		7.6	0.0		9.1			51.9	50.7			63.9
LOS		A	A		A			D	D			E
Approach Delay		7.2			9.1				51.0			63.9
Approach LOS		A			A				D			E
Queue Length 50th (ft)		27	0		70			15	42			43
Queue Length 95th (ft)		#606	m0		195			40	87			85
Internal Link Dist (ft)		734			418				457			220
Turn Bay Length (ft)								150				
Base Capacity (vph)		1086	1092		2181			227	279			226
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.52	0.03		0.30			0.09	0.24			0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 47 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15
\# 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: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	30	5	35	50	30	
Future Volume (vph)	30	5	35	50	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	41	83	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		24.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			8.4	8.4		
Actuated g/C Ratio			0.07	0.07		
v/c Ratio			0.35	0.35		
Control Delay			60.6	4.2		
Queue Delay			0.0	0.0		
Total Delay			60.6	4.2		
LOS			E	A		
Approach Delay			22.8			
Approach LOS			C			
Queue Length 50th (ft)			31	0		
Queue Length 95th (ft)			67	3		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			223	325		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.18	0.26		

Intersection Summary

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1037	1411	860
Demand Flow Rate, veh/h	1079	1467	895
Vehicles Circulating, veh/h	488	309	785
Vehicles Exiting, veh/h	1192	1258	309
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.7	14.0	23.2
Approach LOS	C	B	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	TR
Assumed Moves	LTR	R	L	LTR	R	L	TR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.545	0.455
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	507	572	416	369	682	488	407
Cap Entry Lane, veh/h	784	803	896	910	910	627	652
Entry HV Adj Factor	0.961	0.961	0.962	0.962	0.962	0.961	0.961
Flow Entry, veh/h	487	550	400	355	656	469	391
Cap Entry, veh/h	753	772	862	875	875	603	627
V/C Ratio	0.647	0.712	0.464	0.405	0.750	0.778	0.624
Control Delay, s/veh	16.3	18.9	10.1	8.9	19.1	27.6	17.9
LOS	C	C	B	A	C	D	C
95th %tile Queue, veh	5	6	2	2	7	7	4

TABLE 1
Alternative 1: Traffic Queue Lengths in Feet

Intersection/Approach	Movement	Weekday AM 50th Percentile	Weekday AM 95th Percentile	Weekday PM 50th Percentile	Weekday PM 95th Percentile	Saturday PM 50th Percentile	Saturday PM 95th Percentile
Lynnway and Hanson Street	--	--	--	--	--	--	--
Lynnway	NB – Through/right	100	233	409	#753	343	440
Lynnway	SB – Left	122	166	188	#338	221	#428
Lynnway	SB – Through/right	0	89	9	22	24	49
Hanson Street	WB – Left	16	33	59	90	74	110
Hanson Street	WB – Right	0	18	0	44	0	58
Lynnway and Harding Street	--	--	--	--	--	--	--
Lynnway	NB – Left	0	18	34	m41	64	m98
Lynnway	NB – Through/right	78	95	116	267	20	38
Lynnway	SB – Left	59	m67	141	m#213	157	240
Lynnway	SB – Through/right	134	138	30	48	383	441
Harding Street	WB – Left	19	48	32	68	27	61
Harding Street	WB – Through/right	0	0	0	0	4	41
Harding Street	EB – Left/Through	4	16	23	53	16	41
Harding Street	EB – Right	0	0	0	0	0	0
Lynnway and Commercial Street	--	--	--	--	--	--	--
Lynnway	NB – Left	169	#248	386	#584	~532	#756
Lynnway	NB – Through/right	12	102	482	528	21	24
Lynnway	SB – Through	366	463	198	255	130	155
Lynnway	SB – Right	11	39	37	55	3	25
Commercial Street	EB – Left	184	279	261	#416	265	#448
Commercial Street	EB – Through	64	115	15	39	53	99
Commercial Street	EB -- Right	351	511	84	128	227	333
Lynnway, Shepard Street, and Marine Boulevard	--	--	--	--	--	--	--
Lynnway	NB – Left	41	m80	144	m208	80	m134
Lynnway	NB – Through/right	168	209	20	88	298	m361
Lynnway	SB – Left	48	m71	29	67	41	75
Lynnway	SB – Through/right	31	54	73	119	27	68
Marine Boulevard	WB – Left	7	23	15	38	4	16
Marine Boulevard	WB – Through/right	0	0	4	23	4	20
Shepard Street	EB – Left/through/right	37	77	40	81	35	79
Lynnway and Kingman Street	--	--	--	--	--	--	--
Lynnway	NB – Left	43	92	49	m80	53	107
Lynnway	NB – Through/right	75	90	140	208	7	61
Lynnway	SB – Left	80	m114	63	113	13	m29
Lynnway	SB – Through/right	73	138	48	87	41	84
Kingman Street	WB – Left	35	66	78	124	23	48
Kingman Street	WB – Through/right	4	40	4	55	0	0

Lynnway, Carroll Parkway, and Market Street	--	--	--	--	--	--	--
Lynnway	NB – Left	97	134	207	226	84	157
Lynnway	NB – Through	2	7	79	83	2	34
Carroll Parkway	SB – Through	382	469	179	232	224	289
Carroll Parkway	SB – Right	0	48	0	48	0	56
Market Street	EB – Left	70	105	92	135	111	158
Carroll Parkway, Nahant Road, and Lynn Shore Drive	--	--	--	--	--	--	--
Carroll Parkway	NB – Left	25	50	112	200	25	50
Carroll Parkway	NB – Right	12	25	75	150	25	50
Nahant Road	NB – Left	50	100	37	75	90	175
Nahant Road	NB – Through	12	25	25	50	50	100
Lynn Shore Drive	SB – Through	150	300	37	75	65	125
Lynn Shore Drive	SB – Right	200	425	37	75	75	150
Market Street and Broad Street	--	--	--	--	--	--	--
Market Street	NB – Through/left	27	50	14	25	36	66
Market Street	NB – Right	12	22	63	129	11	12
Market Street	SB – Left/through/right	97	163	162	226	163	260
Broad Street	WB – Through/left	196	248	124	185	192	228
Broad Street	WB – Right	15	109	0	93	12	47
Broad Street, Washington Street, and Spring Street	--	--	--	--	--	--	--
Broad Street	WB – Left/through/right	82	220	50	137	70	195
Broad Street	EB – Through/left	37	85	79	#481	27	#606
Broad Street	EB – Right	0	0	0	65	0	0
Washington Street	NB – Left	77	134	82	138	15	40
Washington Street	NB – Through/right	58	107	66	115	42	87
Washington Street	SB – Left/through/right	45	87	72	120	43	85
Spring Street	SB -- Left/through/right	50	94	94	154	31	67

APPENDIX J

Level of Service (LOS) Analysis
Alternatives 2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	15	925	35	150	2210
Future Volume (vph)	20	15	925	35	150	2210
Satd. Flow (prot)	1766	1580	3514	0	1766	3532
Flt Permitted	0.950				0.234	
Satd. Flow (perm)	1766	1580	3514	0	435	3532
Satd. Flow (RTOR)		16	6			
Lane Group Flow (vph)	21	16	1010	0	158	2324
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Total Split (s)	31.0	31.0	76.0		13.0	89.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Act Effct Green (s)	19.4	19.4	85.3		97.4	99.0
Actuated g/C Ratio	0.16	0.16	0.71		0.81	0.82
v/c Ratio	0.07	0.06	0.40		0.36	0.80
Control Delay	38.5	16.3	9.7		1.1	7.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	38.5	16.3	9.7		1.1	7.6
LOS	D	B	A		A	A
Approach Delay	28.9		9.7			7.2
Approach LOS	C		A			A
Queue Length 50th (ft)	13	0	216		1	88
Queue Length 95th (ft)	35	19	266		m2	158
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	397	367	2500		452	2913
Starvation Cap Reductn	0	0	0		0	6
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.05	0.04	0.40		0.35	0.80

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 8.1 — Intersection LOS: A
Intersection Capacity Utilization 71.7% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Future Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Satd. Flow (prot)	1766	1580	0	0	1766	1580	1766	3521	0	1766	3529	0
Flt Permitted	0.754				0.754		0.048			0.256		
Satd. Flow (perm)	1402	1580	0	0	1402	1580	89	3521	0	476	3529	0
Satd. Flow (RTOR)		222				64		3			1	
Lane Group Flow (vph)	26	5	0	0	5	5	26	967	0	74	2471	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Total Split (s)	32.0	32.0		32.0	32.0	32.0	12.0	76.0		12.0	76.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Act Effct Green (s)	20.0	20.0			19.8	19.8	93.6	88.0		94.4	91.2	
Actuated g/C Ratio	0.17	0.17			0.16	0.16	0.78	0.73		0.79	0.76	
v/c Ratio	0.11	0.01			0.02	0.02	0.14	0.37		0.16	0.92	
Control Delay	38.7	0.0			35.8	0.0	15.7	8.6		5.4	18.2	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	38.7	0.0			35.8	0.0	15.7	8.6		5.4	18.2	
LOS	D	A			D	A	B	A		A	B	
Approach Delay		32.5			17.9			8.8			17.8	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)	16	0			3	0	6	155		15	~1189	
Queue Length 95th (ft)	41	0			14	0	m27	182		m15	m#1195	
Internal Link Dist (ft)		148			94			1043			1855	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	327	538			327	417	181	2582		460	2682	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.01			0.02	0.01	0.14	0.37		0.16	0.92	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 98 (82%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 15.4 Intersection LOS: B

Intersection Capacity Utilization 81.3% 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.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	765	10	0	1900	275	0	0	0	245	95	535
Future Volume (vph)	260	765	10	0	1900	275	0	0	0	245	95	535
Satd. Flow (prot)	1766	3525	0	0	3532	1580	0	0	0	1766	1859	1580
Flt Permitted	0.056									0.950		
Satd. Flow (perm)	104	3525	0	0	3532	1580	0	0	0	1766	1859	1580
Satd. Flow (RTOR)		3				243						9
Lane Group Flow (vph)	273	815	0	0	1998	289	0	0	0	258	100	563
Turn Type	pm+pt	NA			NA	Prot				Perm	NA	pt+ov
Protected Phases	5	2			6	6					4	4 5
Permitted Phases	2									4		
Total Split (s)	19.0	90.0			71.0	71.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	86.0	86.0			67.0	67.0				26.0	26.0	45.0
Actuated g/C Ratio	0.72	0.72			0.56	0.56				0.22	0.22	0.38
v/c Ratio	0.97	0.32			1.01	0.29				0.68	0.25	0.94
Control Delay	70.9	4.4			27.0	0.7				53.1	40.9	61.3
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	70.9	4.4			27.0	0.7				53.1	40.9	61.3
LOS	E	A			C	A				D	D	E
Approach Delay		21.1			23.6						56.8	
Approach LOS		C			C						E	
Queue Length 50th (ft)	117	13			~380	2				185	65	412
Queue Length 95th (ft)	#321	31			m#965	m2				279	115	#643
Internal Link Dist (ft)		1855			1064			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	282	2527			1972	989				382	402	598
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	0.97	0.32			1.01	0.29				0.68	0.25	0.94

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 82 (68%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 30.1 — Intersection LOS: C
Intersection Capacity Utilization 89.7% — ICU Level of Service E
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: 4: Commercial St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	955	10	70	2215	45	10	0	5	35	10	15
Future Volume (vph)	50	955	10	70	2215	45	10	0	5	35	10	15
Satd. Flow (prot)	1766	3525	0	1766	3521	0	1766	1580	0	0	1745	0
Flt Permitted	0.049			0.242			0.723				0.842	
Satd. Flow (perm)	91	3525	0	450	3521	0	1344	1580	0	0	1512	0
Satd. Flow (RTOR)		2			3			210			13	
Lane Group Flow (vph)	53	1015	0	74	2376	0	11	5	0	0	64	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	11.0	77.0		11.0	77.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Act Effct Green (s)	90.6	86.1		91.2	86.4		20.5	20.5			20.5	
Actuated g/C Ratio	0.76	0.72		0.76	0.72		0.17	0.17			0.17	
v/c Ratio	0.34	0.40		0.18	0.94		0.05	0.01			0.24	
Control Delay	18.2	4.8		1.1	12.6		36.5	0.0			33.7	
Queue Delay	0.0	0.0		0.0	0.6		0.0	0.0			0.0	
Total Delay	18.2	4.8		1.1	13.1		36.5	0.0			33.7	
LOS	B	A		A	B		D	A			C	
Approach Delay		5.5			12.8			25.1			33.7	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	6	142		2	~1086		7	0			32	
Queue Length 95th (ft)	m26	146		m2	#1226		23	0			70	
Internal Link Dist (ft)		1064			546			95			133	
Turn Bay Length (ft)	400			200								
Base Capacity (vph)	166	2529		418	2536		313	529			362	
Starvation Cap Reductn	0	0		0	30		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	0.32	0.40		0.18	0.95		0.04	0.01			0.18	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 11.0 Intersection LOS: B
Intersection Capacity Utilization 77.3% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1010	30	40	2170	95	10	5	15	25	20	30
Future Volume (vph)	0	1010	30	40	2170	95	10	5	15	25	20	30
Satd. Flow (prot)	0	3518	0	1766	3511	0	1766	1647	0	1766	1690	0
Flt Permitted				0.215			0.722			0.744		
Satd. Flow (perm)	0	3518	0	400	3511	0	1342	1647	0	1383	1690	0
Satd. Flow (RTOR)		5			9			16			14	
Lane Group Flow (vph)	0	1094	0	42	2382	0	11	21	0	26	53	0
Turn Type		NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases				6			8			4		
Total Split (s)		79.0		11.0	90.0		30.0	30.0		30.0	30.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)		88.3		95.9	96.7		18.0	18.0		18.0	18.0	
Actuated g/C Ratio		0.74		0.80	0.81		0.15	0.15		0.15	0.15	
v/c Ratio		0.42		0.11	0.84		0.05	0.08		0.13	0.20	
Control Delay		3.9		1.3	11.3		38.3	19.9		40.6	32.7	
Queue Delay		0.0		0.0	3.0		0.0	0.0		0.0	0.0	
Total Delay		3.9		1.3	14.3		38.3	19.9		40.6	32.7	
LOS		A		A	B		D	B		D	C	
Approach Delay		3.9			14.1			26.2			35.3	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		49		1	409		7	3		16	24	
Queue Length 95th (ft)		96		m2	#690		23	25		42	60	
Internal Link Dist (ft)		546			224			259			262	
Turn Bay Length (ft)				200								
Base Capacity (vph)		2591		399	2829		290	369		299	377	
Starvation Cap Reductn		45		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	340		0	0		0	1	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.43		0.11	0.96		0.04	0.06		0.09	0.14	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 39 (33%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 11.6 Intersection LOS: B
Intersection Capacity Utilization 75.7% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Future Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Satd. Flow (prot)	1766	3511	0	1766	5029	0	1766	1604	0	0	0	0
Flt Permitted	0.048			0.222			0.950					
Satd. Flow (perm)	89	3511	0	413	5029	0	1766	1604	0	0	0	0
Satd. Flow (RTOR)		5			14			53				
Lane Group Flow (vph)	58	1067	0	100	2513	0	47	58	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	5	2		1	6			8				
Permitted Phases	2			6			8					
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	91.3	84.0		93.1	87.5		18.1	18.1				
Actuated g/C Ratio	0.76	0.70		0.78	0.73		0.15	0.15				
v/c Ratio	0.35	0.43		0.25	0.68		0.18	0.20				
Control Delay	23.9	12.1		2.9	4.7		41.7	13.3				
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0				
Total Delay	23.9	12.1		2.9	5.0		41.7	13.3				
LOS	C	B		A	A		D	B				
Approach Delay		12.7			4.9			26.0				
Approach LOS		B			A			C				
Queue Length 50th (ft)	25	181		8	406		30	3				
Queue Length 95th (ft)	60	201		m12	132		63	39				
Internal Link Dist (ft)		227			544			258			208	
Turn Bay Length (ft)	150			200			150					
Base Capacity (vph)	294	2459		510	3671		382	389				
Starvation Cap Reductn	0	89		0	0		0	0				
Spillback Cap Reductn	0	0		0	427		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.20	0.45		0.20	0.77		0.12	0.15				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 7.8 — Intersection LOS: A
Intersection Capacity Utilization 64.3% — ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	425	600	1515	200	160	25
Future Volume (vph)	425	600	1515	200	160	25
Satd. Flow (prot)	3426	3532	3532	1580	3386	0
Flt Permitted	0.950				0.958	
Satd. Flow (perm)	3426	3532	3532	1580	3386	0
Satd. Flow (RTOR)				145	12	
Lane Group Flow (vph)	447	631	1593	210	194	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	30.0	98.0	68.0	68.0	22.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	21.5	98.7	73.2	73.2	13.3	
Actuated g/C Ratio	0.18	0.82	0.61	0.61	0.11	
v/c Ratio	0.73	0.22	0.74	0.21	0.50	
Control Delay	42.3	2.6	21.0	4.9	50.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	42.3	2.6	21.0	4.9	50.2	
LOS	D	A	C	A	D	
Approach Delay		19.1	19.1		50.2	
Approach LOS		B	B		D	
Queue Length 50th (ft)	164	4	409	18	50	
Queue Length 95th (ft)	235	88	639	63	93	
Internal Link Dist (ft)		345	874		276	
Turn Bay Length (ft)				200		
Base Capacity (vph)	742	2904	2154	1020	518	
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	0.60	0.22	0.74	0.21	0.37	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 19 (16%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 67.5%	ICU Level of Service C
Analysis Period (min) 15	

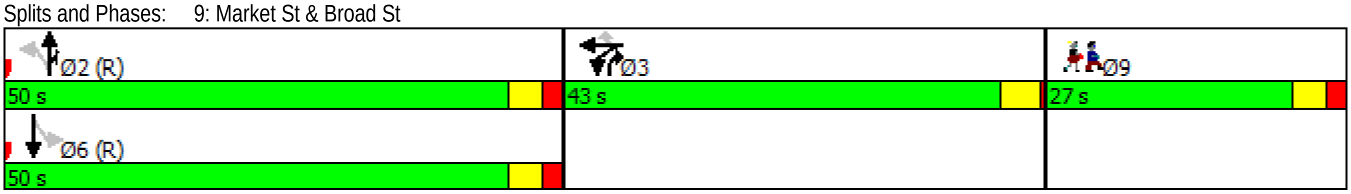
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Future Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Satd. Flow (prot)	0	0	0	0	3514	1580	0	3525	1580	0	3288	0
Flt Permitted					0.995			0.937			0.704	
Satd. Flow (perm)	0	0	0	0	3514	1580	0	3310	1580	0	2355	0
Satd. Flow (RTOR)						189			326		101	
Lane Group Flow (vph)	0	0	0	0	582	189	0	332	326	0	473	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		4.0			4.0	
Act Effct Green (s)					29.4	29.4		66.4	101.4		66.4	
Actuated g/C Ratio					0.24	0.24		0.55	0.84		0.55	
v/c Ratio					0.68	0.36		0.18	0.24		0.35	
Control Delay					41.2	6.4		7.9	1.1		15.9	
Queue Delay					0.0	0.0		0.0	0.2		0.0	
Total Delay					41.2	6.4		7.9	1.3		15.9	
LOS					D	A		A	A		B	
Approach Delay					32.7			4.6			15.9	
Approach LOS					C			A			B	
Queue Length 50th (ft)					223	14		24	14		96	
Queue Length 95th (ft)					114	17		55	24		163	
Internal Link Dist (ft)		249			662			276			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1142	641		1831	1421		1348	
Starvation Cap Reductn					0	0		0	453		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.51	0.29		0.18	0.34		0.35	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 18.8 Intersection LOS: B
Intersection Capacity Utilization 46.3% ICU Level of Service A
Analysis Period (min) 15

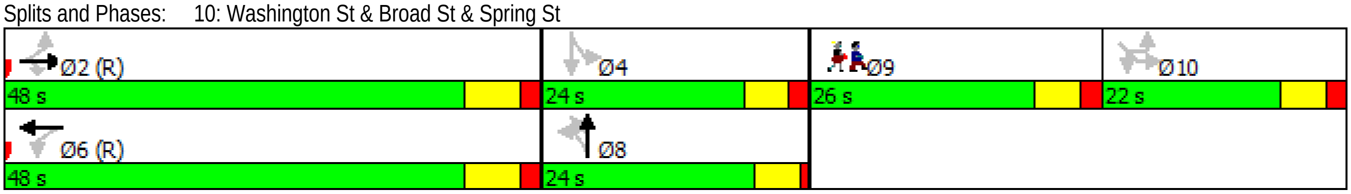
Splits and Phases: 9: Market St & Broad St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Future Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Satd. Flow (prot)	0	1842	1580	0	3497	0	0	1766	1809	0	0	1747
Flt Permitted		0.802			0.920			0.701				0.879
Satd. Flow (perm)	0	1491	1580	0	3227	0	0	1303	1809	0	0	1561
Satd. Flow (RTOR)			216		136				8			
Lane Group Flow (vph)	0	284	216	0	679	0	0	105	90	0	0	63
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		custom	NA
Protected Phases		2			6				8			
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	48.0	48.0	48.0	48.0	48.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		4.0	4.0		4.0			4.0	4.0			4.0
Act Effct Green (s)		75.5	75.5		75.5			15.3	15.3			15.3
Actuated g/C Ratio		0.63	0.63		0.63			0.13	0.13			0.13
v/c Ratio		0.30	0.20		0.33			0.63	0.38			0.32
Control Delay		7.1	1.0		11.1			65.9	47.0			50.4
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		7.1	1.0		11.1			65.9	47.0			50.4
LOS		A	A		B			E	D			D
Approach Delay		4.5			11.1				57.2			50.4
Approach LOS		A			B				E			D
Queue Length 50th (ft)		21	0		81			78	59			45
Queue Length 95th (ft)		210	27		224			134	107			86
Internal Link Dist (ft)		662			451				471			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		938	1074		2081			217	308			260
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.30	0.20		0.33			0.48	0.29			0.24

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 10 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	20	5	60	120	30	
Future Volume (vph)	20	5	60	120	30	
Satd. Flow (prot)	0	0	1766	1580	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1766	1580	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	68	158	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		26.0
Total Lost Time (s)			4.0	4.0		
Act Effct Green (s)			12.0	12.0		
Actuated g/C Ratio			0.10	0.10		
v/c Ratio			0.39	0.55		
Control Delay			56.1	17.4		
Queue Delay			0.0	0.0		
Total Delay			56.1	17.4		
LOS			E	B		
Approach Delay			29.1			
Approach LOS			C			
Queue Length 50th (ft)			50	9		
Queue Length 95th (ft)			94	73		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			264	360		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.26	0.44		

Intersection Summary

Intersection	
Intersection Delay, s/veh	27.4
Intersection LOS	D

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1546	799	526
Demand Flow Rate, veh/h	1608	831	547
Vehicles Circulating, veh/h	394	77	695
Vehicles Exiting, veh/h	848	1925	77
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	43.8	6.5	11.2
Approach LOS	E	A	B

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.529	0.471		0.530	0.470
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	756	852	368	327	136	290	257
Cap Entry Lane, veh/h	841	858	1067	1071	1071	671	695
Entry HV Adj Factor	0.961	0.962	0.962	0.960	0.962	0.961	0.962
Flow Entry, veh/h	727	819	354	314	131	279	247
Cap Entry, veh/h	808	825	1026	1028	1029	645	668
V/C Ratio	0.899	0.993	0.345	0.305	0.127	0.432	0.370
Control Delay, s/veh	34.4	52.1	7.1	6.6	4.6	11.9	10.4
LOS	D	F	A	A	A	B	B
95th %tile Queue, veh	12	17	2	1	0	2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	100	2140	50	225	1065
Future Volume (vph)	75	100	2140	50	225	1065
Satd. Flow (prot)	1711	1531	3411	0	1711	3421
Flt Permitted	0.950				0.047	
Satd. Flow (perm)	1711	1531	3411	0	85	3421
Satd. Flow (RTOR)		105	3			
Lane Group Flow (vph)	79	105	2303	0	237	1120
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Total Split (s)	31.0	31.0	73.0		16.0	89.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	15.7	15.7	78.3		94.3	95.3
Actuated g/C Ratio	0.13	0.13	0.65		0.79	0.79
v/c Ratio	0.35	0.36	1.03		1.10	0.41
Control Delay	48.9	10.8	47.4		117.7	6.4
Queue Delay	0.0	0.0	0.2		0.0	0.0
Total Delay	48.9	10.8	47.5		117.7	6.4
LOS	D	B	D		F	A
Approach Delay	27.2		47.5			25.8
Approach LOS	C		D			C
Queue Length 50th (ft)	59	0	801		~146	115
Queue Length 95th (ft)	95	46	#1275		#304	185
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)	200				400	
Base Capacity (vph)	370	413	2226		215	2716
Starvation Cap Reductn	0	0	1		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.21	0.25	1.04		1.10	0.41

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 38.9 Intersection LOS: D
Intersection Capacity Utilization 91.4% 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.

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Future Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Satd. Flow (prot)	1711	1531	0	0	1711	1531	1711	3408	0	1711	3394	0
Flt Permitted	0.736				0.730		0.155			0.049		
Satd. Flow (perm)	1325	1531	0	0	1314	1531	279	3408	0	88	3394	0
Satd. Flow (RTOR)		103				64		4			8	
Lane Group Flow (vph)	42	42	0	0	32	5	47	2413	0	174	1325	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Total Split (s)	32.0	32.0		32.0	32.0	32.0	12.0	75.0		13.0	76.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.2	18.2			18.2	18.2	87.1	80.1		89.9	84.5	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.73	0.67		0.75	0.70	
v/c Ratio	0.21	0.13			0.16	0.02	0.16	1.06		1.00	0.55	
Control Delay	42.8	0.9			41.6	0.2	1.8	44.0		91.8	2.6	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.8	0.9			41.6	0.2	1.8	44.0		91.8	2.6	
LOS	D	A			D	A	A	D		F	A	
Approach Delay		21.8			36.0			43.2			13.0	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	27	0			20	0	7	~1240		~108	51	
Queue Length 95th (ft)	59	0			49	0	m1	m#1189		m#167	m70	
Internal Link Dist (ft)		148			94			1043			1857	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	287	412			284	381	285	2276		174	2392	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.10			0.11	0.01	0.16	1.06		1.00	0.55	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 31.6 Intersection LOS: C
Intersection Capacity Utilization 96.6% 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.

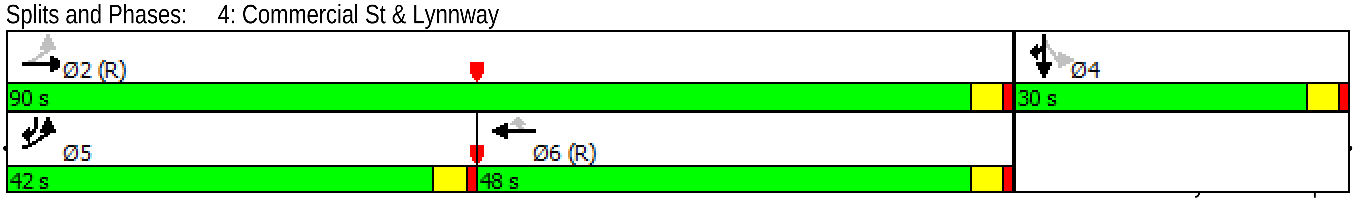
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Future Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Satd. Flow (prot)	1711	3421	0	0	3421	1531	0	0	0	1711	1801	1531
Flt Permitted	0.082									0.950		
Satd. Flow (perm)	148	3421	0	0	3421	1531	0	0	0	1711	1801	1531
Satd. Flow (RTOR)						310						15
Lane Group Flow (vph)	568	2056	0	0	1151	310	0	0	0	358	26	300
Turn Type	pm+pt	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases	2					6				4		
Total Split (s)	42.0	90.0			48.0	48.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	86.0	86.0			45.0	45.0				26.0	26.0	67.0
Actuated g/C Ratio	0.72	0.72			0.38	0.38				0.22	0.22	0.56
v/c Ratio	0.97	0.84			0.90	0.40				0.97	0.07	0.35
Control Delay	39.1	17.5			48.7	9.3				86.4	38.1	14.9
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	39.1	17.5			48.7	9.3				86.4	38.1	14.9
LOS	D	B			D	A				F	D	B
Approach Delay		22.2			40.3						53.2	
Approach LOS		C			D						D	
Queue Length 50th (ft)	308	877			480	54				277	16	113
Queue Length 95th (ft)	m290	m837			#563	89				#467	41	172
Internal Link Dist (ft)		1857			1085			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	601	2451			1282	767				370	390	874
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	0.95	0.84			0.90	0.40				0.97	0.07	0.34

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 32.2	Intersection LOS: C
Intersection Capacity Utilization 90.6%	ICU Level of Service E
Analysis Period (min) 15
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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Future Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Satd. Flow (prot)	1711	3418	0	1711	3414	0	1711	1615	0	0	1666	0
Flt Permitted	0.123			0.050			0.738				0.813	
Satd. Flow (perm)	221	3418	0	90	3414	0	1329	1615	0	0	1394	0
Satd. Flow (RTOR)		1			2			11			21	
Lane Group Flow (vph)	184	2235	0	37	1435	0	21	16	0	0	73	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	15.0	75.0		13.0	73.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	93.2	88.7		87.5	80.5		15.3	15.3			15.3	
Actuated g/C Ratio	0.78	0.74		0.73	0.67		0.13	0.13			0.13	
v/c Ratio	0.65	0.88		0.23	0.63		0.12	0.07			0.37	
Control Delay	21.2	14.7		14.8	4.6		43.0	23.8			37.3	
Queue Delay	0.0	1.8		0.0	0.1		0.0	0.0			0.0	
Total Delay	21.2	16.5		14.8	4.6		43.0	23.8			37.3	
LOS	C	B		B	A		D	C			D	
Approach Delay		16.8			4.9			34.7			37.3	
Approach LOS		B			A			C			D	
Queue Length 50th (ft)	18	161		1	42		15	4			39	
Queue Length 95th (ft)	m64	m#1186		m8	221		36	23			76	
Internal Link Dist (ft)		1085			554			123			133	
Turn Bay Length (ft)	250			200								
Base Capacity (vph)	287	2526		160	2289		287	358			318	
Starvation Cap Reductn	0	0		0	103		0	0			0	
Spillback Cap Reductn	0	158		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.64	0.94		0.23	0.66		0.07	0.04			0.23	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 106 (88%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 91.6% ICU Level of Service F
Analysis Period (min) 15
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: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2205	25	25	1250	155	20	10	25	30	10	80
Future Volume (vph)	0	2205	25	25	1250	155	20	10	25	30	10	80
Satd. Flow (prot)	0	3414	0	1711	3363	0	1711	1612	0	1711	1561	0
Flt Permitted				0.045			0.669			0.733		
Satd. Flow (perm)	0	3414	0	81	3363	0	1205	1612	0	1320	1561	0
Satd. Flow (RTOR)		2			27			26			84	
Lane Group Flow (vph)	0	2345	0	26	1477	0	21	37	0	32	95	0
Turn Type		NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases				6			8			4		
Total Split (s)		80.0		9.0	77.0		31.0	31.0		31.0	31.0	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Act Effct Green (s)		86.5		91.9	91.9		18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.72		0.77	0.77		0.15	0.15		0.15	0.15	
v/c Ratio		0.95		0.21	0.57		0.12	0.14		0.16	0.31	
Control Delay		20.1		12.6	4.3		40.5	19.5		41.6	13.1	
Queue Delay		3.2		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		23.4		12.6	4.3		40.5	19.5		41.6	13.1	
LOS		C		B	A		D	B		D	B	
Approach Delay		23.4			4.5			27.1			20.3	
Approach LOS		C			A			C			C	
Queue Length 50th (ft)		~1071		2	94		13	7		20	7	
Queue Length 95th (ft)		#1199		m18	91		36	36		49	52	
Internal Link Dist (ft)		554			242			259			262	
Turn Bay Length (ft)				200								
Base Capacity (vph)		2462		125	2582		261	369		286	404	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		78		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.98		0.21	0.57		0.08	0.10		0.11	0.24	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 90 (75%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 16.3 Intersection LOS: B
Intersection Capacity Utilization 79.7% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Future Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Satd. Flow (prot)	1711	3414	0	1711	4891	0	1711	1541	0	0	0	0
Flt Permitted	0.950			0.048			0.950					
Satd. Flow (perm)	1711	3414	0	86	4891	0	1711	1541	0	0	0	0
Satd. Flow (RTOR)		3			7			91				
Lane Group Flow (vph)	68	2335	0	79	1398	0	105	126	0	0	0	0
Turn Type	Prot	NA		pm+pt	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases				6								
Total Split (s)	14.0	80.0		10.0	76.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	9.4	87.4		90.2	84.2		16.6	16.6				
Actuated g/C Ratio	0.08	0.73		0.75	0.70		0.14	0.14				
v/c Ratio	0.51	0.94		0.54	0.41		0.44	0.43				
Control Delay	49.1	10.9		35.9	3.7		51.1	18.9				
Queue Delay	0.0	0.1		0.0	0.0		0.0	0.0				
Total Delay	49.1	11.0		35.9	3.7		51.1	18.9				
LOS	D	B		D	A		D	B				
Approach Delay		12.1			5.4			33.5				
Approach LOS		B			A			C				
Queue Length 50th (ft)	55	85		15	52		79	25				
Queue Length 95th (ft)	m63	#1182		m65	88		121	75				
Internal Link Dist (ft)		175			544			258			85	
Turn Bay Length (ft)	150			300								
Base Capacity (vph)	142	2486		146	3433		370	405				
Starvation Cap Reductn	0	6		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.48	0.94		0.54	0.41		0.28	0.31				

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 97 (81%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 10.9 | Intersection LOS: B

Intersection Capacity Utilization 77.8% | 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.

m Volume for 95th percentile queue is metered by upstream signal.

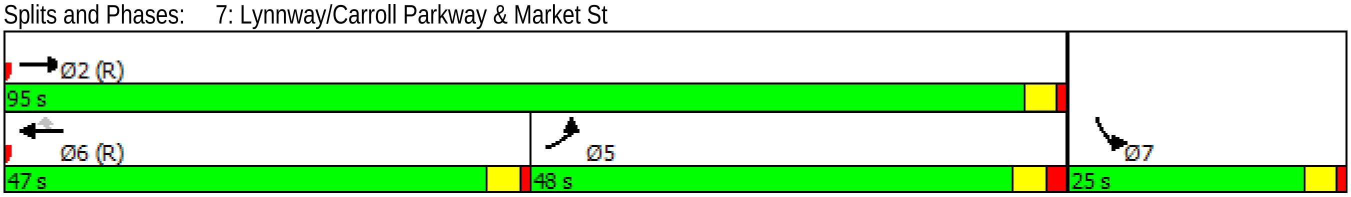
Splits and Phases: 6: Kingman St/ & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	815	1450	805	165	215	15
Future Volume (vph)	815	1450	805	165	215	15
Satd. Flow (prot)	3319	3421	3421	1531	3303	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	3319	3421	3421	1531	3303	0
Satd. Flow (RTOR)				174	5	
Lane Group Flow (vph)	857	1525	846	174	242	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	48.0	95.0	47.0	47.0	25.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	43.0	97.6	49.6	49.6	14.4	
Actuated g/C Ratio	0.36	0.81	0.41	0.41	0.12	
v/c Ratio	0.72	0.55	0.60	0.24	0.60	
Control Delay	21.4	1.5	30.2	4.4	49.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.4	1.5	30.2	4.4	49.3	
LOS	C	A	C	A	D	
Approach Delay		8.7	25.8		49.3	
Approach LOS		A	C		D	
Queue Length 50th (ft)	244	39	262	0	93	
Queue Length 95th (ft)	m258	m54	349	45	134	
Internal Link Dist (ft)		433	1170		315	
Turn Bay Length (ft)				800		
Base Capacity (vph)	1189	2781	1412	734	582	
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	0.72	0.55	0.60	0.24	0.42	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 100 (83%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 64.0%	ICU Level of Service B
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

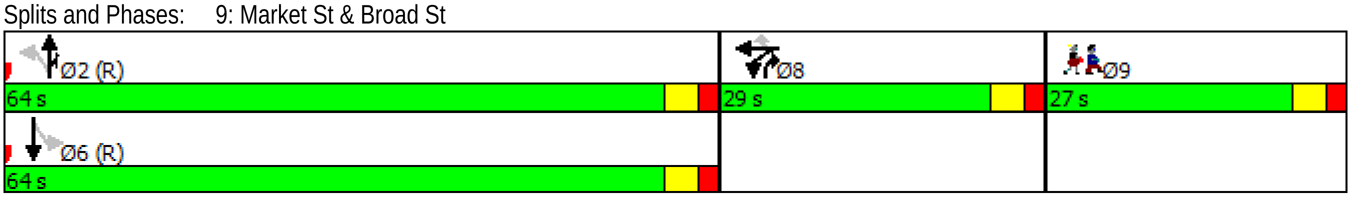


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	50	335	205	15	395	570	290	175	160
Future Volume (vph)	0	0	0	50	335	205	15	395	570	290	175	160
Satd. Flow (prot)	0	0	0	0	3397	1531	0	3414	1531	0	3216	0
Flt Permitted					0.993			0.921			0.637	
Satd. Flow (perm)	0	0	0	0	3397	1531	0	3151	1531	0	2097	0
Satd. Flow (RTOR)						216			599		56	
Lane Group Flow (vph)	0	0	0	0	405	216	0	431	599	0	657	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				8	8			2	2 8		6	
Permitted Phases						8	2			6		
Total Split (s)				29.0	29.0	29.0	64.0	64.0		64.0	64.0	
Total Lost Time (s)					5.0	5.0		5.0			5.0	
Act Effct Green (s)					21.9	21.9		71.9	100.8		71.9	
Actuated g/C Ratio					0.18	0.18		0.60	0.84		0.60	
v/c Ratio					0.65	0.47		0.23	0.43		0.51	
Control Delay					40.3	10.9		2.8	4.7		17.6	
Queue Delay					0.0	0.0		0.0	1.3		0.0	
Total Delay					40.3	10.9		2.8	6.0		17.6	
LOS					D	B		A	A		B	
Approach Delay					30.1			4.6			17.6	
Approach LOS					C			A			B	
Queue Length 50th (ft)					120	0		15	106		174	
Queue Length 95th (ft)					179	84		26	174		239	
Internal Link Dist (ft)		27			712			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					679	479		1888	1378		1279	
Starvation Cap Reductn					0	0		0	537		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.60	0.45		0.23	0.71		0.51	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 33 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.2 | Intersection LOS: B
Intersection Capacity Utilization 63.1% | ICU Level of Service B
Analysis Period (min) 15

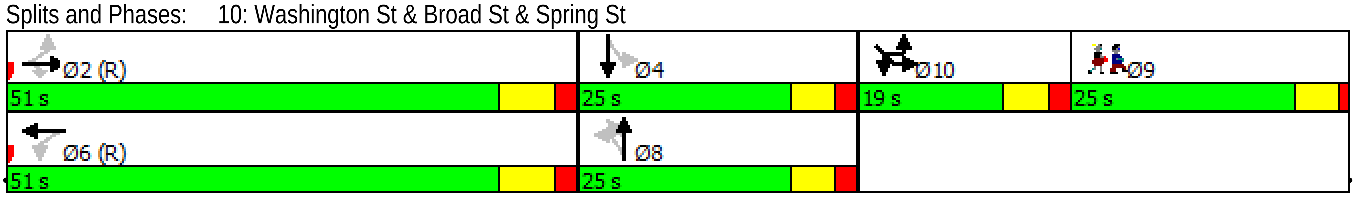
Splits and Phases: 9: Market St & Broad St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Future Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Satd. Flow (prot)	0	1797	1531	0	3408	0	0	1711	1734	0	0	1617
Flt Permitted		0.978			0.917			0.617				0.983
Satd. Flow (perm)	0	1761	1531	0	3131	0	0	1111	1734	0	0	1593
Satd. Flow (RTOR)			426		127				12			
Lane Group Flow (vph)	0	452	426	0	420	0	0	110	105	0	0	100
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	
Total Split (s)	51.0	51.0	51.0	51.0	51.0		25.0	25.0	25.0		25.0	25.0
Total Lost Time (s)		7.0	7.0		7.0			6.0	6.0			6.0
Act Effct Green (s)		63.2	63.2		63.2			15.5	15.5			15.5
Actuated g/C Ratio		0.53	0.53		0.53			0.13	0.13			0.13
v/c Ratio		0.49	0.42		0.25			0.77	0.45			0.49
Control Delay		13.4	2.1		13.8			82.7	47.9			55.8
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		13.4	2.1		13.8			82.7	47.9			55.8
LOS		B	A		B			F	D			E
Approach Delay		7.9			13.8				65.7			55.8
Approach LOS		A			B				E			E
Queue Length 50th (ft)		60	0		52			83	66			72
Queue Length 95th (ft)		182	46		126			#155	121			126
Internal Link Dist (ft)		712			345				416			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		927	1008		1709			175	284			252
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.49	0.42		0.25			0.63	0.37			0.40

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 44 (37%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 23.4	Intersection LOS: C
Intersection Capacity Utilization 73.5%	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: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	70	15	105	100	30	
Future Volume (vph)	70	15	105	100	30	
Satd. Flow (prot)	0	0	1711	1531	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1711	1531	0	
Satd. Flow (RTOR)				136		
Lane Group Flow (vph)	0	0	126	137	0	
Turn Type		Prot	Prot	Prot		
Protected Phases		10	10	10		9
Permitted Phases						
Total Split (s)		19.0	19.0	19.0		25.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			12.3	12.3		
Actuated g/C Ratio			0.10	0.10		
v/c Ratio			0.72	0.49		
Control Delay			74.7	14.8		
Queue Delay			0.0	0.0		
Total Delay			74.7	14.8		
LOS			E	B		
Approach Delay			43.5			
Approach LOS			D			
Queue Length 50th (ft)			94	1		
Queue Length 95th (ft)			#179	61		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			189	290		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.67	0.47		

Intersection Summary

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	841	1809	410
Demand Flow Rate, veh/h	858	1846	418
Vehicles Circulating, veh/h	397	214	1513
Vehicles Exiting, veh/h	1534	1041	214
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.3	18.2	24.6
Approach LOS	B	C	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.531	0.469
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	403	455	802	711	333	222	196
Cap Entry Lane, veh/h	839	856	962	973	973	363	392
Entry HV Adj Factor	0.981	0.980	0.980	0.980	0.980	0.979	0.983
Flow Entry, veh/h	395	446	786	697	326	217	193
Cap Entry, veh/h	823	838	943	954	954	356	385
V/C Ratio	0.480	0.532	0.833	0.731	0.342	0.611	0.500
Control Delay, s/veh	10.8	11.7	23.8	16.9	7.4	27.9	20.8
LOS	B	B	C	C	A	D	C
95th %tile Queue, veh	3	3	10	7	2	4	3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	180	1530	120	260	1450
Future Volume (vph)	95	180	1530	120	260	1450
Satd. Flow (prot)	1678	1501	3319	0	1678	3355
Flt Permitted	0.950				0.053	
Satd. Flow (perm)	1678	1501	3319	0	94	3355
Satd. Flow (RTOR)		191	10			
Lane Group Flow (vph)	101	191	1754	0	276	1541
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Total Split (s)	31.0	31.0	67.0		22.0	89.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	16.5	16.5	70.0		93.5	94.5
Actuated g/C Ratio	0.14	0.14	0.58		0.78	0.79
v/c Ratio	0.44	0.51	0.90		0.87	0.58
Control Delay	51.0	10.7	28.3		60.4	8.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	51.0	10.7	28.3		60.4	8.3
LOS	D	B	C		E	A
Approach Delay	24.6		28.3			16.2
Approach LOS	C		C			B
Queue Length 50th (ft)	76	0	438		197	236
Queue Length 95th (ft)	118	61	#882		m#296	321
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	363	474	1941		321	2641
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	0.28	0.40	0.90		0.86	0.58

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 22.3 Intersection LOS: C
Intersection Capacity Utilization 80.1% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Future Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Satd. Flow (prot)	1678	1529	0	0	1701	1501	1678	3332	0	1678	3352	0
Flt Permitted	0.744				0.798		0.092			0.062		
Satd. Flow (perm)	1314	1529	0	0	1409	1501	162	3332	0	109	3352	0
Satd. Flow (RTOR)		43				109		6			1	
Lane Group Flow (vph)	37	48	0	0	21	5	90	1732	0	213	1748	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Total Split (s)	32.0	32.0		32.0	32.0	32.0	14.0	67.0		21.0	74.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.1	18.1			18.1	18.1	74.4	74.4		79.2	79.2	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.62	0.62		0.66	0.66	
v/c Ratio	0.19	0.18			0.10	0.02	0.42	0.84		0.85	0.79	
Control Delay	42.3	14.7			39.9	0.0	13.9	9.0		40.1	28.8	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.3	14.7			39.9	0.0	13.9	9.0		40.1	28.8	
LOS	D	B			D	A	B	A		D	C	
Approach Delay		26.7			32.2			9.2			30.1	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)	23	3			13	0	6	~693		125	732	
Queue Length 95th (ft)	54	36			36	0	m16	#858		m162	m773	
Internal Link Dist (ft)		148			94			1043			1847	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	284	364			305	410	214	2067		280	2211	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.13			0.07	0.01	0.42	0.84		0.76	0.79	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22 (18%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 20.3 Intersection LOS: C
Intersection Capacity Utilization 79.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

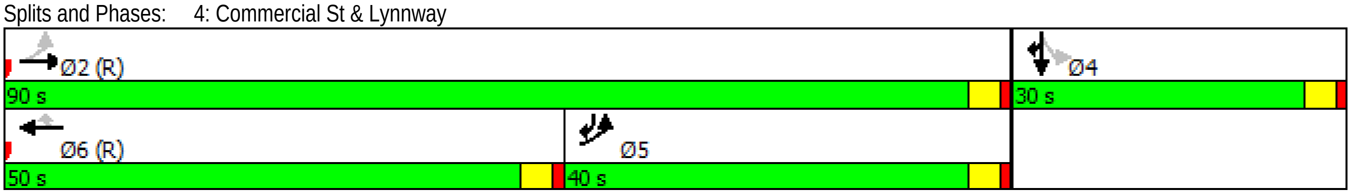
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Future Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Satd. Flow (prot)	1678	3352	0	0	3355	1501	0	0	0	1678	1766	1501
Flt Permitted	0.080									0.950		
Satd. Flow (perm)	141	3352	0	0	3355	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		2				262						12
Lane Group Flow (vph)	584	1477	0	0	1264	276	0	0	0	351	85	489
Turn Type	pm+pt	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases	2					6				4		
Total Split (s)	40.0	90.0			50.0	50.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	86.0	86.0			46.0	46.0				26.0	26.0	66.0
Actuated g/C Ratio	0.72	0.72			0.38	0.38				0.22	0.22	0.55
v/c Ratio	1.04	0.61			0.98	0.38				0.97	0.22	0.59
Control Delay	70.7	2.5			38.6	4.1				86.7	40.6	21.1
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	70.7	2.5			38.6	4.1				86.7	40.6	21.1
LOS	E	A			D	A				F	D	C
Approach Delay		21.8			32.4						47.8	
Approach LOS		C			C						D	
Queue Length 50th (ft)	~454	33			507	0				271	55	235
Queue Length 95th (ft)	m#647	36			#653	64				#461	101	343
Internal Link Dist (ft)		1847			1063			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	562	2402			1286	736				363	382	830
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	1.04	0.61			0.98	0.38				0.97	0.22	0.59

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 45 (38%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 30.7 Intersection LOS: C
Intersection Capacity Utilization 93.3% 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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Future Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Satd. Flow (prot)	1678	3355	0	1678	3339	0	1678	1634	0	0	1624	0
Flt Permitted	0.950			0.950			0.730				0.837	
Satd. Flow (perm)	1678	3355	0	1678	3339	0	1289	1634	0	0	1392	0
Satd. Flow (RTOR)					5			5			27	
Lane Group Flow (vph)	122	1663	0	58	1541	0	5	10	0	0	74	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	21.0	82.0		15.0	76.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		6.0	6.0			6.0	
Act Effct Green (s)	13.2	89.0		9.4	81.8		11.6	11.6			11.6	
Actuated g/C Ratio	0.11	0.74		0.08	0.68		0.10	0.10			0.10	
v/c Ratio	0.66	0.67		0.44	0.68		0.04	0.06			0.47	
Control Delay	63.4	12.8		41.7	2.5		46.2	34.5			42.4	
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0			0.0	
Total Delay	63.4	12.8		41.7	2.6		46.2	34.5			42.4	
LOS	E	B		D	A		D	C			D	
Approach Delay		16.2			4.0			38.4			42.4	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	87	362		44	14		4	4			35	
Queue Length 95th (ft)	m135	m681		m61	21		16	20			81	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	223	2489		139	2277		182	235			220	
Starvation Cap Reductn	0	0		0	79		0	0			0	
Spillback Cap Reductn	0	17		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.55	0.67		0.42	0.70		0.03	0.04			0.34	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118 (98%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 11.3 Intersection LOS: B
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1555	45	30	1430	120	5	10	10	10	10	30
Future Volume (vph)	0	1555	45	30	1430	120	5	10	10	10	10	30
Satd. Flow (prot)	0	3342	0	1678	3315	0	1678	1634	0	1678	1568	0
Flt Permitted				0.092			0.729			0.743		
Satd. Flow (perm)	0	3342	0	162	3315	0	1287	1634	0	1312	1568	0
Satd. Flow (RTOR)		5			18			11			32	
Lane Group Flow (vph)	0	1700	0	32	1647	0	5	22	0	11	43	0
Turn Type		NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases				6			8			4		
Total Split (s)		80.0		10.0	76.0		30.0	30.0		30.0	30.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)		90.9		96.1	96.9		17.8	17.8		17.8	17.8	
Actuated g/C Ratio		0.76		0.80	0.81		0.15	0.15		0.15	0.15	
v/c Ratio		0.67		0.16	0.61		0.03	0.09		0.06	0.17	
Control Delay		3.9		3.6	4.1		37.4	25.2		38.4	18.4	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		3.9		3.6	4.1		37.4	25.2		38.4	18.4	
LOS		A		A	A		D	C		D	B	
Approach Delay		3.9			4.0			27.5			22.5	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		587		2	58		3	7		7	7	
Queue Length 95th (ft)		56		m5	64		14	30		23	38	
Internal Link Dist (ft)		584			204			259			262	
Turn Bay Length (ft)												
Base Capacity (vph)		2532		205	2680		278	362		284	364	
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		0.67		0.16	0.61		0.02	0.06		0.04	0.12	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 104 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 4.4 | Intersection LOS: A
Intersection Capacity Utilization 59.2% | ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Future Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Satd. Flow (prot)	1678	3352	0	1678	4802	0	1678	1501	0	0	0	0
Flt Permitted	0.114			0.111			0.950					
Satd. Flow (perm)	201	3352	0	196	4802	0	1678	1501	0	0	0	0
Satd. Flow (RTOR)		1			6			134				
Lane Group Flow (vph)	69	1642	0	16	1637	0	32	32	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases	2			6								
Total Split (s)	12.0	78.0		12.0	78.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	94.6	92.3		92.4	87.6		18.0	18.0				
Actuated g/C Ratio	0.79	0.77		0.77	0.73		0.15	0.15				
v/c Ratio	0.28	0.64		0.07	0.47		0.13	0.09				
Control Delay	5.0	3.2		2.4	3.1		40.6	0.5				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	5.0	3.2		2.4	3.1		40.6	0.5				
LOS	A	A		A	A		D	A				
Approach Delay		3.3			3.1			20.6				
Approach LOS		A			A			C				
Queue Length 50th (ft)	3	43		1	69		20	0				
Queue Length 95th (ft)	m11	106		m3	79		48	0				
Internal Link Dist (ft)		212			543			258			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	257	2578		251	3507		363	430				
Starvation Cap Reductn	0	41		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.27	0.65		0.06	0.47		0.09	0.07				

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 103 (86%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 3.5	Intersection LOS: A
Intersection Capacity Utilization 62.8%	ICU Level of Service B
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

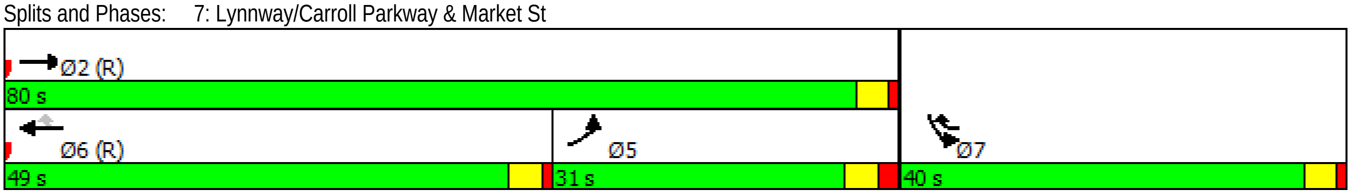
Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	600	985	970	225	300	10
Future Volume (vph)	600	985	970	225	300	10
Satd. Flow (prot)	3255	3355	3355	1501	3252	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	3255	3355	3355	1501	3252	0
Satd. Flow (RTOR)				20	3	
Lane Group Flow (vph)	638	1047	1031	239	330	0
Turn Type	Prot	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	7	7	
Permitted Phases				6		
Total Split (s)	31.0	80.0	49.0	40.0	40.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	26.0	94.4	63.4	85.0	17.6	
Actuated g/C Ratio	0.22	0.79	0.53	0.71	0.15	
v/c Ratio	0.90	0.40	0.58	0.22	0.69	
Control Delay	48.5	4.0	21.5	6.1	49.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.5	4.0	21.5	6.1	49.3	
LOS	D	A	C	A	D	
Approach Delay		20.8	18.6		49.3	
Approach LOS		C	B		D	
Queue Length 50th (ft)	213	48	274	52	129	
Queue Length 95th (ft)	#348	110	377	82	153	
Internal Link Dist (ft)		433	1171		315	
Turn Bay Length (ft)	200			600		
Base Capacity (vph)	705	2639	1772	1069	977	
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	0.90	0.40	0.58	0.22	0.34	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 108 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 22.8 — Intersection LOS: C
Intersection Capacity Utilization 64.7% — 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: 7: Lynnway/Carroll Parkway & Market St

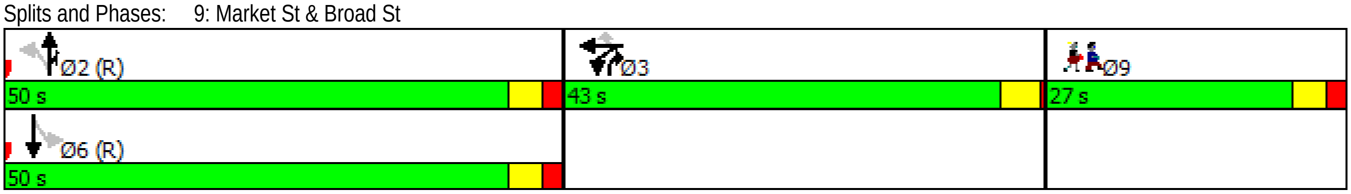


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Future Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Satd. Flow (prot)	0	0	0	0	3329	1501	0	3349	1501	0	3170	0
Flt Permitted					0.992			0.921			0.674	
Satd. Flow (perm)	0	0	0	0	3329	1501	0	3090	1501	0	2173	0
Satd. Flow (RTOR)						186			404		48	
Lane Group Flow (vph)	0	0	0	0	516	186	0	414	404	0	627	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		5.0			5.0	
Act Effct Green (s)					28.2	28.2		66.6	100.8		66.6	
Actuated g/C Ratio					0.24	0.24		0.56	0.84		0.56	
v/c Ratio					0.66	0.38		0.24	0.30		0.51	
Control Delay					40.3	8.9		4.9	1.1		21.4	
Queue Delay					0.0	0.0		0.0	0.4		0.0	
Total Delay					40.3	8.9		4.9	1.5		21.4	
LOS					D	A		A	A		C	
Approach Delay					32.0			3.2			21.4	
Approach LOS					C			A			C	
Queue Length 50th (ft)					195	14		24	1		171	
Queue Length 95th (ft)					233	85		m37	m13		272	
Internal Link Dist (ft)		27			734			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1081	613		1714	1362		1227	
Starvation Cap Reductn					0	0		0	515		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.48	0.30		0.24	0.48		0.51	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 38 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 54.1% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Market St & Broad St

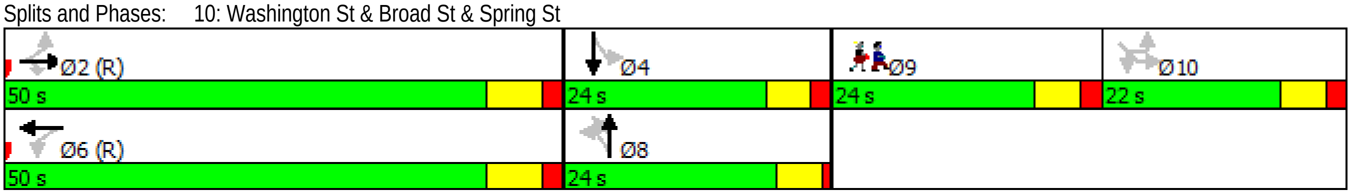


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Future Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Satd. Flow (prot)	0	1757	1501	0	3335	0	0	1678	1704	0	0	1622
Flt Permitted		0.876			0.912			0.799				0.918
Satd. Flow (perm)	0	1547	1501	0	3048	0	0	1411	1704	0	0	1503
Satd. Flow (RTOR)			136		136				11			
Lane Group Flow (vph)	0	579	32	0	659	0	0	21	69	0	0	59
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	50.0	50.0	50.0	50.0	50.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		7.0	7.0		7.0			5.0	5.0			6.0
Act Effct Green (s)		83.9	83.9		83.9			10.7	10.7			9.9
Actuated g/C Ratio		0.70	0.70		0.70			0.09	0.09			0.08
v/c Ratio		0.54	0.03		0.30			0.17	0.43			0.48
Control Delay		8.2	0.0		9.3			51.7	50.4			64.2
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		8.2	0.0		9.3			51.7	50.4			64.2
LOS		A	A		A			D	D			E
Approach Delay		7.8			9.3				50.7			64.2
Approach LOS		A			A				D			E
Queue Length 50th (ft)		28	0		72			15	43			44
Queue Length 95th (ft)		#639	m0		202			40	88			86
Internal Link Dist (ft)		734			418				457			220
Turn Bay Length (ft)								150				
Base Capacity (vph)		1081	1089		2171			223	279			225
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.54	0.03		0.30			0.09	0.25			0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 66 (55%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 14.4 | Intersection LOS: B
Intersection Capacity Utilization 83.6% | ICU Level of Service E
Analysis Period (min) 15
\# 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: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	30	5	35	50	30	
Future Volume (vph)	30	5	35	50	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	42	85	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		24.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			8.5	8.5		
Actuated g/C Ratio			0.07	0.07		
v/c Ratio			0.36	0.35		
Control Delay			60.7	4.6		
Queue Delay			0.0	0.0		
Total Delay			60.7	4.6		
LOS			E	A		
Approach Delay			23.2			
Approach LOS			C			
Queue Length 50th (ft)			32	0		
Queue Length 95th (ft)			68	4		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			223	325		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.19	0.26		

Intersection Summary

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1037	1411	860
Demand Flow Rate, veh/h	1079	1467	895
Vehicles Circulating, veh/h	488	309	785
Vehicles Exiting, veh/h	1192	1258	309
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.7	14.0	23.2
Approach LOS	C	B	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	TR
Assumed Moves	LTR	R	L	LTR	R	L	TR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.545	0.455
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	507	572	416	369	682	488	407
Cap Entry Lane, veh/h	784	803	896	910	910	627	652
Entry HV Adj Factor	0.961	0.961	0.962	0.962	0.962	0.961	0.961
Flow Entry, veh/h	487	550	400	355	656	469	391
Cap Entry, veh/h	753	772	862	875	875	603	627
V/C Ratio	0.647	0.712	0.464	0.405	0.750	0.778	0.624
Control Delay, s/veh	16.3	18.9	10.1	8.9	19.1	27.6	17.9
LOS	C	C	B	A	C	D	C
95th %tile Queue, veh	5	6	2	2	7	7	4

TABLE 1
Alternative 2: Traffic Queue Lengths in Feet

Intersection/Approach	Movement	Weekday AM 50th Percentile	Weekday AM 95th Percentile	Weekday PM 50th Percentile	Weekday PM 95th Percentile	Saturday PM 50th Percentile	Saturday PM 95th Percentile
Lynnway and Hanson Street	--	--	--	--	--	--	--
Lynnway	NB – Through/right	216	266	59	95	438	#882
Lynnway	SB – Left	20	25	0	46	197	M#296
Lynnway	SB – Through/right	88	158	801	#1205	236	321
Hanson Street	WB – Left	13	35	~146	#304	76	118
Hanson Street	WB – Right	0	19	115	185	0	61
Lynnway and Harding Street	--	--	--	--	--	--	--
Lynnway	NB – Left	6	m27	0	7	6	M16
Lynnway	NB – Through/right	155	182	~1189	1240	~693	#858
Lynnway	SB – Left	15	m15	108	m#167	125	M162
Lynnway	SB – Through/right	~1189	m#1195	51	m70	732	M773
Harding Street	WB – Left	16	41	27	57	23	54
Harding Street	WB – Through/right	0	0	0	0	3	36
Harding Street	EB – Left/Through	3	14	20	49	13	36
Harding Street	EB – Right	0	0	0	0	0	0
Lynnway and Commercial Street	--	--	--	--	--	--	--
Lynnway	NB – Left	117	#321	308	M290	~454	M#647
Lynnway	NB – Through/right	13	31	877	M837	33	36
Lynnway	SB – Through	~380	m#965	480	#563	507	#653
Lynnway	SB – Right	0	0	54	89	0	64
Commercial Street	EB – Left	185	279	277	#467	271	#461
Commercial Street	EB – Through	65	115	16	41	55	101
Commercial Street	EB -- Right	412	#612	113	172	235	343
Lynnway, Shepard Street, and Marine Boulevard	--	--	--	--	--	--	--
Lynnway	NB – Left	4	m26	18	M64	87	M135
Lynnway	NB – Through/right	142	146	161	M#1186	362	M681
Lynnway	SB – Left	0	0	1	M8	44	M61
Lynnway	SB – Through/right	1086	#1226	42	221	14	21
Marine Boulevard	WB – Left	7	23	15	36	4	16
Marine Boulevard	WB – Through/right	0	0	4	23	4	20
Shepard Street	EB – Left/through/right	32	70	39	76	35	81
Lynnway and Kingman Street	--	--	--	--	--	--	--
Lynnway	NB – Left	25	60	55	M63	3	M11
Lynnway	NB – Through/right	181	201	85	#1182	43	106
Lynnway	SB – Left	8	m12	15	M65	0	0
Lynnway	SB – Through/right	132	406	52	88	69	79
Kingman Street	WB – Left	30	63	79	121	20	48
Kingman Street	WB – Through/right	3	39	25	75	0	0

Lynnway, Carroll Parkway, and Market Street	--	--	--	--	--	--	--
Lynnway	NB – Left	164	235	244	M258	213	#348
Lynnway	NB – Through	4	88	39	M54	48	110
Carroll Parkway	SB – Through	409	639	262	349	274	377
Carroll Parkway	SB – Right	18	63	0	45	52	82
Market Street	EB – Left	50	93	93	134	129	153
Carroll Parkway, Nahant Road, and Lynn Shore Drive	--	--	--	--	--	--	--
Carroll Parkway	NB – Left	25	50	100	200	25	50
Carroll Parkway	NB – Right	25	25	90	175	25	50
Nahant Road	NB – Left	25	50	50	100	100	175
Nahant Road	NB – Through	25	50	35	75	50	100
Lynn Shore Drive	SB – Through	150	175	35	75	60	125
Lynn Shore Drive	SB – Right	400	425	35	75	80	150
Market Street and Broad Street	--	--	--	--	--	--	--
Market Street	NB – Through/left	24	55	15	26	24	M37
Market Street	NB – Right	14	24	106	174	0	M13
Market Street	SB – Left/through/right	96	163	174	239	171	272
Broad Street	WB – Through/left	114	223	120	179	195	233
Broad Street	WB – Right	14	17	0	84	14	85
Broad Street, Washington Street, and Spring Street	--	--	--	--	--	--	--
Broad Street	WB – Left/through/right	81	224	52	126	28	#639
Broad Street	EB – Through/left	21	210	60	182	0	0
Broad Street	EB – Right	0	27	0	46	72	202
Washington Street	NB – Left	78	134	83	#155	15	40
Washington Street	NB – Through/right	59	107	66	121	43	83
Washington Street	SB – Left/through/right	45	86	72	126	44	86
Spring Street	SB -- Left/through/right	50	94	94	#179	32	68

APPENDIX K

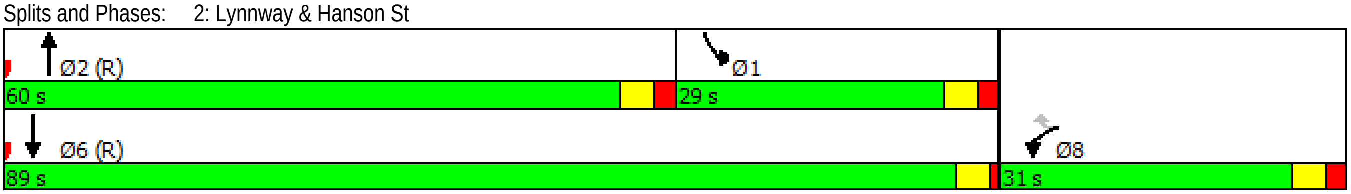
Level of Service (LOS) Analysis
Alternatives 4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	15	925	35	150	2210
Future Volume (vph)	20	15	925	35	150	2210
Satd. Flow (prot)	1678	1501	4797	0	1678	4821
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1678	1501	4797	0	1678	4821
Satd. Flow (RTOR)		16	6			
Lane Group Flow (vph)	21	16	1020	0	159	2348
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	31.0	31.0	60.0		29.0	89.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	18.4	18.4	67.4		24.0	99.0
Actuated g/C Ratio	0.15	0.15	0.56		0.20	0.82
v/c Ratio	0.08	0.07	0.38		0.47	0.59
Control Delay	39.5	16.8	17.1		27.8	1.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	39.5	16.8	17.1		27.8	1.6
LOS	D	B	B		C	A
Approach Delay	29.7		17.1			3.3
Approach LOS	C		B			A
Queue Length 50th (ft)	13	0	193		96	30
Queue Length 95th (ft)	35	19	232		m146	59
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	363	337	2696		335	3977
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	0.06	0.05	0.38		0.47	0.59

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 7.5 Intersection LOS: A
Intersection Capacity Utilization 56.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lynnway & Hanson St



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Future Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Satd. Flow (prot)	1678	1501	0	0	1678	1501	1678	4807	0	1678	4816	0
Flt Permitted	0.754				0.754		0.950			0.950		
Satd. Flow (perm)	1332	1501	0	0	1332	1501	1678	4807	0	1678	4816	0
Satd. Flow (RTOR)		203				64		4			1	
Lane Group Flow (vph)	27	5	0	0	5	5	27	977	0	74	2497	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	32.0	32.0		32.0	32.0	32.0	12.0	71.0		17.0	76.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.0	18.0			17.8	17.8	7.0	84.1		10.1	90.6	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.06	0.70		0.08	0.76	
v/c Ratio	0.14	0.01			0.03	0.02	0.28	0.29		0.52	0.69	
Control Delay	41.0	0.0			37.4	0.2	72.7	3.0		66.5	4.6	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	41.0	0.0			37.4	0.2	72.7	3.0		66.5	4.6	
LOS	D	A			D	A	E	A		E	A	
Approach Delay		34.6			18.8			4.9			6.4	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)	17	0			3	0	22	24		59	158	
Queue Length 95th (ft)	43	0			14	0	55	30		m67	170	
Internal Link Dist (ft)		148			94			1043			1859	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	288	484			288	375	97	3370		167	3636	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.09	0.01			0.02	0.01	0.28	0.29		0.44	0.69	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 2 (2%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 6.2 Intersection LOS: A
Intersection Capacity Utilization 73.6% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	765	10	0	1990	275	0	0	0	245	95	535
Future Volume (vph)	260	765	10	0	1990	275	0	0	0	245	95	535
Satd. Flow (prot)	1678	4812	0	0	4821	1501	0	0	0	1678	1766	1501
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1678	4812	0	0	4821	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		4				164						9
Lane Group Flow (vph)	276	824	0	0	2114	292	0	0	0	260	101	568
Turn Type	Prot	NA			NA	pt+ov				Split	NA	pt+ov
Protected Phases	5	2			6	6 4				4	4	4 5
Permitted Phases												
Total Split (s)	27.0	90.0			63.0					30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0					4.0	4.0	
Act Effct Green (s)	22.1	86.0			59.9	89.9				26.0	26.0	52.1
Actuated g/C Ratio	0.18	0.72			0.50	0.75				0.22	0.22	0.43
v/c Ratio	0.90	0.24			0.88	0.25				0.72	0.26	0.87
Control Delay	61.4	7.9			12.6	1.5				55.9	41.3	45.4
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	61.4	7.9			12.6	1.5				55.9	41.3	45.4
LOS	E	A			B	A				E	D	D
Approach Delay		21.3			11.2						47.9	
Approach LOS		C			B						D	
Queue Length 50th (ft)	186	43			133	14				188	65	381
Queue Length 95th (ft)	#360	62			122	5				#287	117	#595
Internal Link Dist (ft)		1859			1063			493			489	
Turn Bay Length (ft)	1000					300				200		200
Base Capacity (vph)	321	3449			2407	1165				363	382	667
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	0.86	0.24			0.88	0.25				0.72	0.26	0.85

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 91 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 21.4 Intersection LOS: C

Intersection Capacity Utilization 79.7% 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: 4: Commercial St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	955	20	70	2215	45	10	0	5	35	10	15
Future Volume (vph)	50	955	20	70	2215	45	10	0	5	35	10	15
Satd. Flow (prot)	1678	4807	0	1678	4807	0	1678	1501	0	0	1658	0
Flt Permitted	0.950			0.950			0.763				0.819	
Satd. Flow (perm)	1678	4807	0	1678	4807	0	1347	1501	0	0	1397	0
Satd. Flow (RTOR)		4			4			248			13	
Lane Group Flow (vph)	53	1036	0	74	2401	0	11	5	0	0	64	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	16.0	72.0		16.0	72.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	9.8	84.6		10.1	84.6		15.3	15.3			15.3	
Actuated g/C Ratio	0.08	0.70		0.08	0.70		0.13	0.13			0.13	
v/c Ratio	0.39	0.31		0.52	0.71		0.06	0.01			0.34	
Control Delay	54.8	1.4		49.2	7.8		40.7	0.0			40.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	54.8	1.4		49.2	7.8		40.7	0.0			40.2	
LOS	D	A		D	A		D	A			D	
Approach Delay		4.0			9.1			28.0			40.2	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)	44	9		56	113		8	0			38	
Queue Length 95th (ft)	m82	19		m92	175		23	0			72	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	167	3390		167	3390		291	519			312	
Starvation Cap Reductn	0	0		0	40		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	0.32	0.31		0.44	0.72		0.04	0.01			0.21	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 62 (52%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 8.2 Intersection LOS: A
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1010	50	50	2170	95	20	10	20	30	10	20
Future Volume (vph)	0	1010	50	50	2170	95	20	10	20	30	10	20
Satd. Flow (prot)	0	4788	0	1678	4792	0	1678	1593	0	1678	1593	0
Flt Permitted				0.950			0.736			0.736		
Satd. Flow (perm)	0	4788	0	1678	4792	0	1300	1593	0	1300	1593	0
Satd. Flow (RTOR)		11			14			21			13	
Lane Group Flow (vph)	0	1126	0	53	2407	0	21	32	0	32	32	0
Turn Type		NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)		74.0		16.0	90.0		30.0	30.0		30.0	30.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)		85.5		9.0	96.6		18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.71		0.08	0.80		0.15	0.15		0.15	0.15	
v/c Ratio		0.33		0.42	0.62		0.11	0.12		0.16	0.13	
Control Delay		1.5		74.0	1.3		40.1	21.0		41.7	27.5	
Queue Delay		0.0		0.0	0.3		0.0	0.0		0.0	0.0	
Total Delay		1.5		74.0	1.5		40.1	21.0		41.7	27.5	
LOS		A		E	A		D	C		D	C	
Approach Delay		1.5			3.1			28.6			34.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		30		36	4		13	7		20	12	
Queue Length 95th (ft)		20		m50	4		36	34		49	39	
Internal Link Dist (ft)		584			494			259			262	
Turn Bay Length (ft)				150								
Base Capacity (vph)		3416		167	3861		281	361		281	355	
Starvation Cap Reductn		0		0	640		0	0		0	0	
Spillback Cap Reductn		0		0	57		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.33		0.32	0.75		0.07	0.09		0.11	0.09	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 75 (63%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 3.5 Intersection LOS: A
Intersection Capacity Utilization 59.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Future Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Satd. Flow (prot)	1678	4792	0	1678	4778	0	1678	1524	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1678	4792	0	1678	4778	0	1678	1524	0	0	0	0
Satd. Flow (RTOR)		8			16			53				
Lane Group Flow (vph)	58	1079	0	101	2539	0	48	58	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	12.0	70.0		20.0	78.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	7.6	79.5		12.2	86.9		18.2	18.2				
Actuated g/C Ratio	0.06	0.66		0.10	0.72		0.15	0.15				
v/c Ratio	0.55	0.34		0.59	0.73		0.19	0.21				
Control Delay	64.2	13.9		80.0	7.6		42.0	13.5				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	64.2	13.9		80.0	7.6		42.0	13.5				
LOS	E	B		E	A		D	B				
Approach Delay		16.5			10.3			26.4				
Approach LOS		B			B			C				
Queue Length 50th (ft)	48	132		81	553		30	3				
Queue Length 95th (ft)	#97	173		140	142		64	39				
Internal Link Dist (ft)		494			544			258			69	
Turn Bay Length (ft)				300								
Base Capacity (vph)	111	3178		223	3465		363	371				
Starvation Cap Reductn	0	0		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.52	0.34		0.45	0.73		0.13	0.16				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53 (44%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 12.6 — Intersection LOS: B
Intersection Capacity Utilization 64.3% — 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: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	425	600	1515	200	160	25
Future Volume (vph)	425	600	1515	200	160	25
Satd. Flow (prot)	3255	4821	4821	1501	3217	0
Flt Permitted	0.950				0.959	
Satd. Flow (perm)	3255	4821	4821	1501	3217	0
Satd. Flow (RTOR)				213	13	
Lane Group Flow (vph)	452	638	1610	213	197	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	35.0	93.0	58.0	58.0	27.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	22.3	98.5	71.2	71.2	13.5	
Actuated g/C Ratio	0.19	0.82	0.59	0.59	0.11	
v/c Ratio	0.75	0.16	0.56	0.22	0.53	
Control Delay	38.2	4.1	17.0	2.5	54.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.2	4.1	17.0	2.5	54.1	
LOS	D	A	B	A	D	
Approach Delay		18.3	15.3		54.1	
Approach LOS		B	B		D	
Queue Length 50th (ft)	151	75	252	0	78	
Queue Length 95th (ft)	201	113	373	38	118	
Internal Link Dist (ft)		431	1171		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	813	3957	2862	977	627	
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	0.56	0.16	0.56	0.22	0.31	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 43 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 58.1%	ICU Level of Service B
Analysis Period (min) 15	

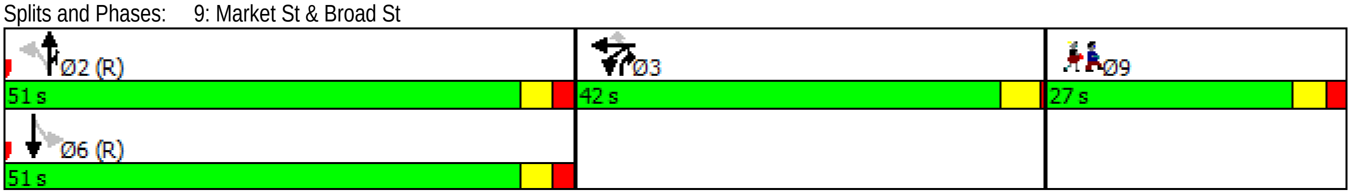
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Future Volume (vph)	0	0	0	53	500	180	10	305	310	155	135	160
Satd. Flow (prot)	0	0	0	0	3339	1501	0	3349	1501	0	3124	0
Flt Permitted					0.995			0.936			0.707	
Satd. Flow (perm)	0	0	0	0	3339	1501	0	3141	1501	0	2247	0
Satd. Flow (RTOR)						190			329		101	
Lane Group Flow (vph)	0	0	0	0	587	191	0	335	329	0	478	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				42.0	42.0	42.0	51.0	51.0		51.0	51.0	
Total Lost Time (s)					4.0	4.0		5.0			5.0	
Act Effct Green (s)					30.1	30.1		64.7	100.8		64.7	
Actuated g/C Ratio					0.25	0.25		0.54	0.84		0.54	
v/c Ratio					0.70	0.37		0.20	0.25		0.38	
Control Delay					42.2	11.7		5.6	1.4		17.0	
Queue Delay					0.0	0.0		0.0	0.5		0.0	
Total Delay					42.2	11.7		5.6	1.9		17.0	
LOS					D	B		A	A		B	
Approach Delay					34.7			3.8			17.0	
Approach LOS					C			A			B	
Queue Length 50th (ft)					206	19		24	18		103	
Queue Length 95th (ft)					259	118		33	0		169	
Internal Link Dist (ft)		27			705			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1057	605		1692	1336		1257	
Starvation Cap Reductn					0	0		0	633		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.56	0.32		0.20	0.47		0.38	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 19.6 Intersection LOS: B
Intersection Capacity Utilization 49.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Market St & Broad St

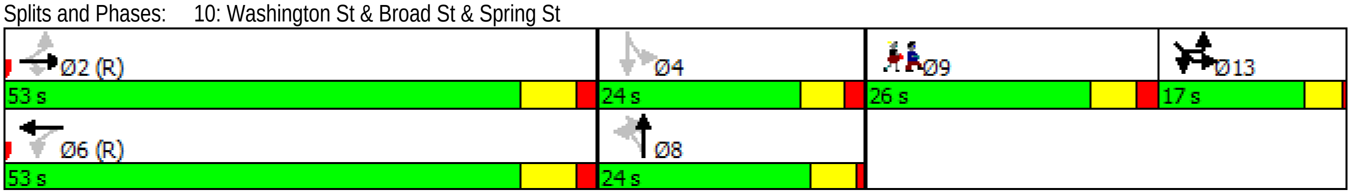


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Future Volume (vph)	50	220	205	35	580	30	100	0	70	15	20	20
Satd. Flow (prot)	0	1750	1501	0	3322	0	0	1678	1718	0	0	1660
Flt Permitted		0.794			0.918			0.767				0.861
Satd. Flow (perm)	0	1402	1501	0	3059	0	0	1355	1718	0	0	1452
Satd. Flow (RTOR)			218		118				8			
Lane Group Flow (vph)	0	287	218	0	685	0	0	106	90	0	0	63
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		custom	NA
Protected Phases		2			6				8			
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	53.0	53.0	53.0	53.0	53.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		7.0	7.0		7.0			5.0	5.0			6.0
Act Effct Green (s)		74.5	74.5		74.5			14.3	14.3			13.3
Actuated g/C Ratio		0.62	0.62		0.62			0.12	0.12			0.11
v/c Ratio		0.33	0.21		0.35			0.66	0.43			0.39
Control Delay		5.8	0.5		12.2			69.0	49.7			55.4
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		5.8	0.5		12.2			69.0	49.7			55.4
LOS		A	A		B			E	D			E
Approach Delay		3.5			12.2				60.1			55.4
Approach LOS		A			B				E			E
Queue Length 50th (ft)		28	0		90			79	59			46
Queue Length 95th (ft)		66	0		238			136	109			89
Internal Link Dist (ft)		705			409				1177			214
Turn Bay Length (ft)								200				
Base Capacity (vph)		870	1014		1944			214	278			217
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.33	0.21		0.35			0.50	0.32			0.29

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 16 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	20	5	60	120	30	
Future Volume (vph)	20	5	60	120	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	69	160	0	
Turn Type		Prot	Prot	Prot		
Protected Phases		13	13	13		9
Permitted Phases						
Total Split (s)		17.0	17.0	17.0		26.0
Total Lost Time (s)			4.0	4.0		
Act Effct Green (s)			10.0	10.0		
Actuated g/C Ratio			0.08	0.08		
v/c Ratio			0.50	0.62		
Control Delay			64.0	21.7		
Queue Delay			0.0	0.0		
Total Delay			64.0	21.7		
LOS			E	C		
Approach Delay			34.4			
Approach LOS			C			
Queue Length 50th (ft)			52	11		
Queue Length 95th (ft)			99	78		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			181	291		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.38	0.55		

Intersection Summary

Intersection							
Intersection Delay, s/veh	33.7						
Intersection LOS	D						

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1608	832	547
Demand Flow Rate, veh/h	1672	865	569
Vehicles Circulating, veh/h	410	80	723
Vehicles Exiting, veh/h	882	2002	80
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	55.1	6.6	11.9
Approach LOS	F	A	B

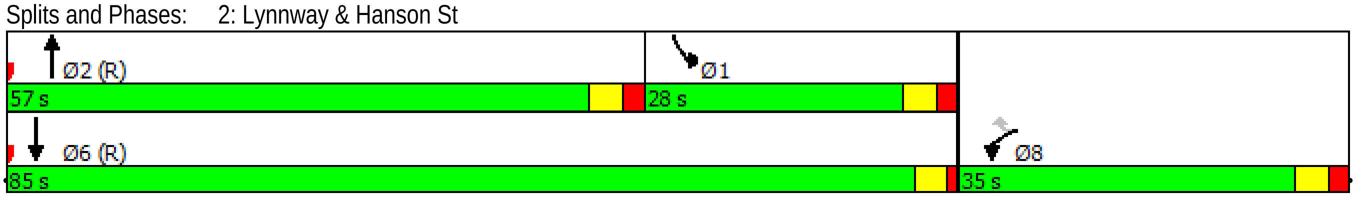
Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.531	0.469
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	786	886	383	340	142	302	267
Cap Entry Lane, veh/h	831	848	1064	1068	1068	657	681
Entry HV Adj Factor	0.962	0.962	0.962	0.961	0.962	0.960	0.963
Flow Entry, veh/h	756	852	368	327	137	290	257
Cap Entry, veh/h	799	816	1023	1026	1027	631	656
V/C Ratio	0.946	1.045	0.360	0.318	0.133	0.460	0.392
Control Delay, s/veh	42.5	66.1	7.3	6.7	4.7	12.8	10.9
LOS	E	F	A	A	A	B	B
95th %tile Queue, veh	14	20	2	1	0	2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	100	2140	50	225	1065
Future Volume (vph)	75	100	2140	50	225	1065
Satd. Flow (prot)	1711	1531	4901	0	1711	4916
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1711	1531	4901	0	1711	4916
Satd. Flow (RTOR)		106	4			
Lane Group Flow (vph)	80	106	2327	0	239	1132
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	57.0		28.0	85.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	15.8	15.8	66.2		23.0	95.2
Actuated g/C Ratio	0.13	0.13	0.55		0.19	0.79
v/c Ratio	0.36	0.36	0.86		0.73	0.29
Control Delay	48.9	10.8	28.6		37.8	1.9
Queue Delay	0.0	0.0	3.0		0.0	0.0
Total Delay	48.9	10.8	31.7		37.8	1.9
LOS	D	B	C		D	A
Approach Delay	27.2		31.7			8.2
Approach LOS	C		C			A
Queue Length 50th (ft)	60	0	484		172	24
Queue Length 95th (ft)	97	47	#793		#292	37
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	427	462	2703		327	3898
Starvation Cap Reductn	0	0	277		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.19	0.23	0.96		0.73	0.29

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 23.2 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: Lynnway & Hanson St

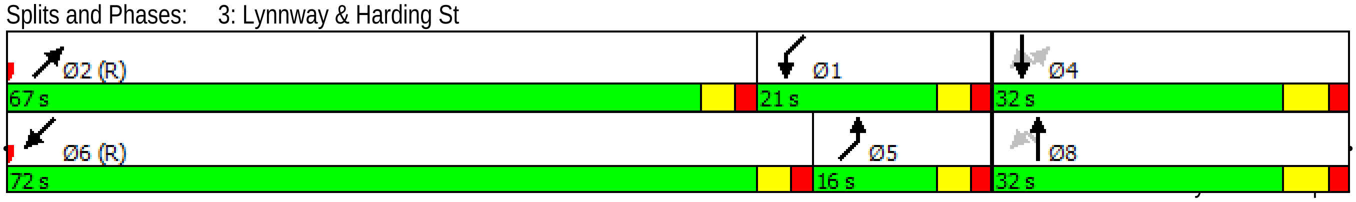


Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Future Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Satd. Flow (prot)	1711	1531	0	0	1711	1531	1711	4896	0	1711	4876	0
Flt Permitted	0.736				0.729		0.950			0.950		
Satd. Flow (perm)	1325	1531	0	0	1313	1531	1711	4896	0	1711	4876	0
Satd. Flow (RTOR)		166				64		5			11	
Lane Group Flow (vph)	43	43	0	0	32	5	48	2438	0	175	1339	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	32.0	32.0		32.0	32.0	32.0	16.0	67.0		21.0	72.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.2	18.2			18.2	18.2	10.1	73.0		15.1	81.4	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.08	0.61		0.13	0.68	
v/c Ratio	0.21	0.12			0.16	0.02	0.34	0.82		0.81	0.40	
Control Delay	42.9	0.6			41.6	0.2	49.9	7.5		73.3	2.3	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.9	0.6			41.6	0.2	49.9	7.5		73.3	2.3	
LOS	D	A			D	A	D	A		E	A	
Approach Delay		21.8			36.0			8.3			10.5	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	27	0			20	0	40	642		143	38	
Queue Length 95th (ft)	60	0			49	0	m50	#111		m#197	43	
Internal Link Dist (ft)		148			94			1043			1850	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	287	461			284	381	156	2981		228	3310	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.09			0.11	0.01	0.31	0.82		0.77	0.40	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 12 (10%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 9.7 Intersection LOS: A
Intersection Capacity Utilization 77.0% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lynnway & Harding St

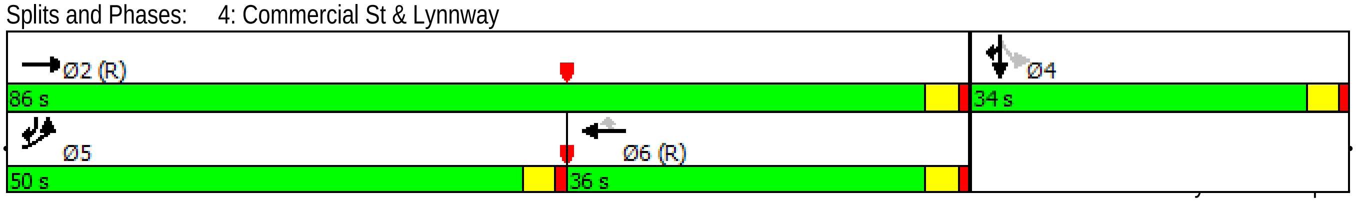


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Future Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Satd. Flow (prot)	1711	4916	0	0	4916	1531	0	0	0	1711	1801	1531
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1711	4916	0	0	4916	1531	0	0	0	1711	1801	1531
Satd. Flow (RTOR)		1				313						9
Lane Group Flow (vph)	574	2077	0	0	1163	313	0	0	0	361	27	303
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	50.0	86.0			36.0	36.0				34.0	34.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	43.4	83.8			36.3	36.3				28.2	28.2	75.7
Actuated g/C Ratio	0.36	0.70			0.30	0.30				0.24	0.24	0.63
v/c Ratio	0.93	0.61			0.78	0.46				0.90	0.06	0.31
Control Delay	39.6	4.2			24.0	6.4				70.2	35.0	10.2
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	39.6	4.2			24.0	6.4				70.2	35.0	10.2
LOS	D	A			C	A				E	C	B
Approach Delay		11.9			20.3						42.5	
Approach LOS		B			C						D	
Queue Length 50th (ft)	238	25			205	64				267	16	86
Queue Length 95th (ft)	m#591	27			#287	90				#427	41	131
Internal Link Dist (ft)		1850			1085			493			489	
Turn Bay Length (ft)	800					300				200		200
Base Capacity (vph)	655	3432			1488	681				427	450	994
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	0.88	0.61			0.78	0.46				0.85	0.06	0.30

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 102 (85%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 81.3%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Commercial St & Lynnway

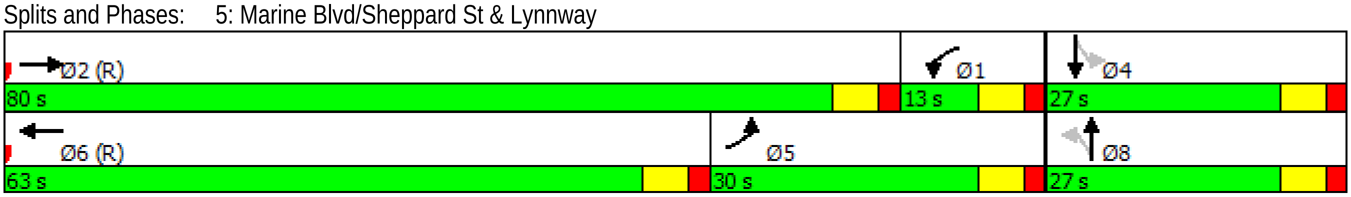


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Future Volume (vph)	175	2105	20	35	1345	20	20	5	10	40	5	25
Satd. Flow (prot)	1711	4911	0	1711	4906	0	1711	1615	0	0	1664	0
Flt Permitted	0.950			0.950			0.732				0.814	
Satd. Flow (perm)	1711	4911	0	1711	4906	0	1318	1615	0	0	1394	0
Satd. Flow (RTOR)		2			2			11			20	
Lane Group Flow (vph)	186	2258	0	37	1450	0	21	16	0	0	75	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	30.0	80.0		13.0	63.0		27.0	27.0		27.0	27.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	19.8	92.3		7.0	73.1		11.7	11.7			11.7	
Actuated g/C Ratio	0.16	0.77		0.06	0.61		0.10	0.10			0.10	
v/c Ratio	0.66	0.60		0.37	0.49		0.17	0.10			0.49	
Control Delay	45.6	1.5		54.6	9.7		49.6	27.9			47.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	45.6	1.5		54.6	9.7		49.6	27.9			47.5	
LOS	D	A		D	A		D	C			D	
Approach Delay		4.8			10.8			40.2			47.5	
Approach LOS		A			B			D			D	
Queue Length 50th (ft)	148	32		29	110		15	4			41	
Queue Length 95th (ft)	m223	90		69	169		38	24			84	
Internal Link Dist (ft)		1085			554			123			133	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	342	3779		99	2989		230	291			260	
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	0.54	0.60		0.37	0.49		0.09	0.05			0.29	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 60 (50%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 8.2	Intersection LOS: A
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2150	25	20	1275	155	20	10	25	50	10	60
Future Volume (vph)	0	2150	25	20	1275	155	20	10	25	50	10	60
Satd. Flow (prot)	0	4906	0	1711	4837	0	1711	1608	0	1711	1570	0
Flt Permitted				0.950			0.693			0.732		
Satd. Flow (perm)	0	4906	0	1711	4837	0	1248	1608	0	1318	1570	0
Satd. Flow (RTOR)		3			54			27			64	
Lane Group Flow (vph)	0	2311	0	21	1520	0	21	38	0	53	75	0
Turn Type		NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)		80.0		17.0	97.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0		4.0	4.0	
Act Effct Green (s)		85.2		8.5	92.0		18.0	18.0		19.0	19.0	
Actuated g/C Ratio		0.71		0.07	0.77		0.15	0.15		0.16	0.16	
v/c Ratio		0.66		0.17	0.41		0.11	0.14		0.25	0.25	
Control Delay		7.6		43.7	1.2		46.0	22.6		48.0	16.0	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		7.6		43.7	1.3		46.0	22.6		48.0	16.0	
LOS		A		D	A		D	C		D	B	
Approach Delay		7.6			1.8			30.9			29.2	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		43		17	31		14	7		36	7	
Queue Length 95th (ft)		243		m39	4		39	40		77	51	
Internal Link Dist (ft)		554			494			259			262	
Turn Bay Length (ft)				150								
Base Capacity (vph)		3483		171	3720		187	264		208	302	
Starvation Cap Reductn		0		0	331		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		0.66		0.12	0.45		0.11	0.14		0.25	0.25	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 48 (40%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 59.9%	ICU Level of Service B
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

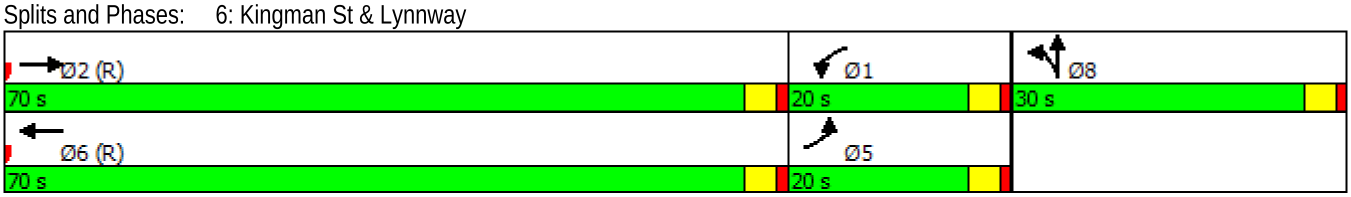
Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Future Volume (vph)	65	2185	35	75	1290	40	100	5	115	0	0	0
Satd. Flow (prot)	1711	4906	0	1711	4891	0	1711	1541	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1711	4906	0	1711	4891	0	1711	1541	0	0	0	0
Satd. Flow (RTOR)		3			6			122				
Lane Group Flow (vph)	69	2359	0	80	1414	0	106	127	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	11.0	82.5		11.0	82.5		16.7	16.7				
Actuated g/C Ratio	0.09	0.69		0.09	0.69		0.14	0.14				
v/c Ratio	0.44	0.70		0.51	0.42		0.45	0.40				
Control Delay	46.8	8.8		62.4	4.1		51.2	11.5				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	46.8	8.9		62.4	4.1		51.2	11.5				
LOS	D	A		E	A		D	B				
Approach Delay		9.9			7.2			29.5				
Approach LOS		A			A			C				
Queue Length 50th (ft)	49	243		64	50		79	4				
Queue Length 95th (ft)	m85	345		116	94		122	54				
Internal Link Dist (ft)		494			544			258			85	
Turn Bay Length (ft)	200			300								
Base Capacity (vph)	228	3375		228	3366		370	429				
Starvation Cap Reductn	0	39		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.30	0.71		0.35	0.42		0.29	0.30				

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 67.2%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	815	1450	805	165	215	15
Future Volume (vph)	815	1450	805	165	215	15
Satd. Flow (prot)	3319	4916	4916	1531	3303	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	3319	4916	4916	1531	3303	0
Satd. Flow (RTOR)				175	6	
Lane Group Flow (vph)	866	1541	855	175	244	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	50.0	80.0	30.0	30.0	40.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	45.0	97.5	47.5	47.5	14.5	
Actuated g/C Ratio	0.38	0.81	0.40	0.40	0.12	
v/c Ratio	0.70	0.39	0.44	0.25	0.61	
Control Delay	19.4	1.6	27.9	4.6	24.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.4	1.6	27.9	4.6	24.1	
LOS	B	A	C	A	C	
Approach Delay		8.0	23.9		24.1	
Approach LOS		A	C		C	
Queue Length 50th (ft)	239	35	173	0	37	
Queue Length 95th (ft)	251	40	225	47	52	
Internal Link Dist (ft)		429	1170		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1244	3994	1946	712	995	
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	0.70	0.39	0.44	0.25	0.25	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 68 (57%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 57.1%	ICU Level of Service B
Analysis Period (min) 15	

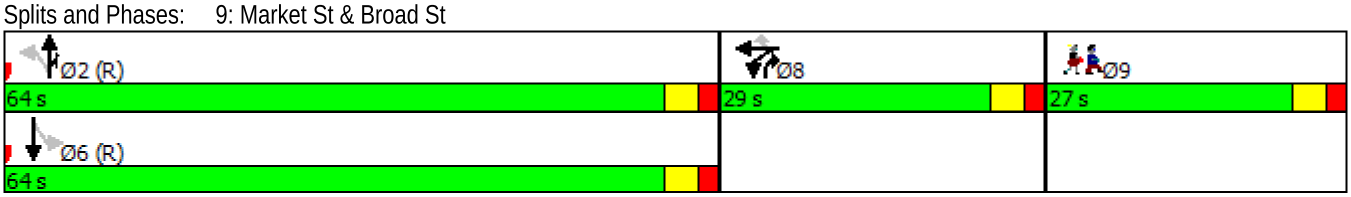
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	335	0	205	15	395	570	290	175	160
Future Volume (vph)	0	0	0	335	0	205	15	395	570	290	175	160
Satd. Flow (prot)	0	0	0	0	3250	1531	0	3414	1531	0	3216	0
Flt Permitted					0.950			0.921			0.635	
Satd. Flow (perm)	0	0	0	0	3250	1531	0	3151	1531	0	2090	0
Satd. Flow (RTOR)						218			606		56	
Lane Group Flow (vph)	0	0	0	0	356	218	0	436	606	0	664	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				8	8			2	2 8		6	
Permitted Phases						8	2			6		
Total Split (s)				29.0	29.0	29.0	64.0	64.0		64.0	64.0	
Total Lost Time (s)					5.0	5.0		5.0			5.0	
Act Effct Green (s)					21.2	21.2		72.6	100.8		72.6	
Actuated g/C Ratio					0.18	0.18		0.60	0.84		0.60	
v/c Ratio					1.18dl	0.48		0.23	0.44		0.52	
Control Delay					51.1	17.9		8.5	4.8		17.4	
Queue Delay					0.0	0.0		0.0	0.3		0.0	
Total Delay					51.1	17.9		8.5	5.1		17.4	
LOS					D	B		A	A		B	
Approach Delay					38.5			6.5			17.4	
Approach LOS					D			A			B	
Queue Length 50th (ft)					136	35		33	112		173	
Queue Length 95th (ft)					204	143		70	211		243	
Internal Link Dist (ft)		27			705			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					650	480		1906	1383		1286	
Starvation Cap Reductn					0	0		0	265		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.55	0.45		0.23	0.54		0.52	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 77 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 63.1% ICU Level of Service B
Analysis Period (min) 15
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 9: Market St & Broad St

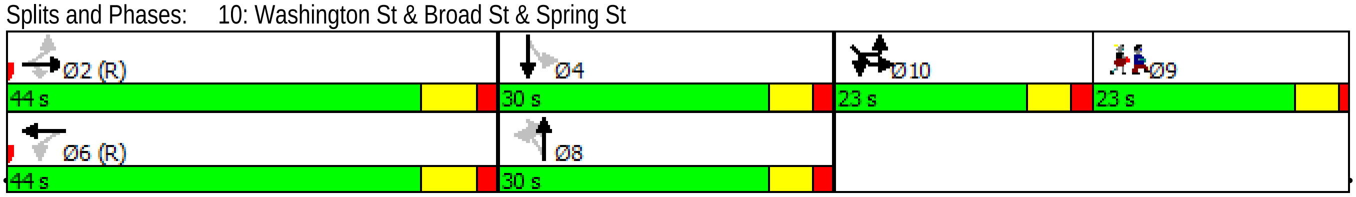


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Future Volume (vph)	15	415	405	20	375	5	105	0	75	25	5	20
Satd. Flow (prot)	0	1797	1531	0	3408	0	0	1711	1732	0	0	1617
Flt Permitted		0.978			0.918			0.625				0.984
Satd. Flow (perm)	0	1761	1531	0	3134	0	0	1125	1732	0	0	1595
Satd. Flow (RTOR)			430		127				13			
Lane Group Flow (vph)	0	457	430	0	424	0	0	112	107	0	0	100
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	
Total Split (s)	44.0	44.0	44.0	44.0	44.0		30.0	30.0	30.0		30.0	30.0
Total Lost Time (s)		7.0	7.0		7.0			6.0	6.0			6.0
Act Effct Green (s)		66.2	66.2		66.2			16.4	16.4			16.4
Actuated g/C Ratio		0.55	0.55		0.55			0.14	0.14			0.14
v/c Ratio		0.47	0.41		0.24			0.73	0.43			0.46
Control Delay		20.2	5.8		12.7			75.0	45.6			53.2
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		20.2	5.8		12.7			75.0	45.6			53.2
LOS		C	A		B			E	D			D
Approach Delay		13.2			12.7				60.7			53.2
Approach LOS		B			B				E			D
Queue Length 50th (ft)		219	11		52			84	67			72
Queue Length 95th (ft)		#514	233		140			140	117			120
Internal Link Dist (ft)		705			409				1177			214
Turn Bay Length (ft)								150				
Base Capacity (vph)		971	1037		1786			225	356			319
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.47	0.41		0.24			0.50	0.30			0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 73.5%	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:	10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	70	15	105	100	30	
Future Volume (vph)	70	15	105	100	30	
Satd. Flow (prot)	0	0	1711	1531	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1711	1531	0	
Satd. Flow (RTOR)				136		
Lane Group Flow (vph)	0	0	128	138	0	
Turn Type		Prot	Prot	Prot		
Protected Phases		10	10	10		9
Permitted Phases						
Total Split (s)		23.0	23.0	23.0		23.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			13.8	13.8		
Actuated g/C Ratio			0.12	0.12		
v/c Ratio			0.65	0.47		
Control Delay			65.9	13.4		
Queue Delay			0.0	0.0		
Total Delay			65.9	13.4		
LOS			E	B		
Approach Delay			38.6			
Approach LOS			D			
Queue Length 50th (ft)			96	1		
Queue Length 95th (ft)			158	60		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			243	334		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.53	0.41		

Intersection Summary

Intersection	
Intersection Delay, s/veh	16.0
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	851	1753	414
Demand Flow Rate, veh/h	868	1788	422
Vehicles Circulating, veh/h	401	217	1452
Vehicles Exiting, veh/h	1473	1052	217
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.5	16.6	22.7
Approach LOS	B	C	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.531	0.469
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	408	460	770	682	336	224	198
Cap Entry Lane, veh/h	836	853	960	971	971	380	409
Entry HV Adj Factor	0.980	0.980	0.980	0.981	0.980	0.980	0.983
Flow Entry, veh/h	400	451	755	669	329	219	195
Cap Entry, veh/h	820	837	941	953	952	373	402
V/C Ratio	0.488	0.539	0.802	0.703	0.346	0.589	0.484
Control Delay, s/veh	10.9	11.9	21.3	15.7	7.5	25.6	19.5
LOS	B	B	C	C	A	D	C
95th %tile Queue, veh	3	3	9	6	2	4	3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	180	1530	120	260	1450
Future Volume (vph)	95	180	1530	120	260	1450
Satd. Flow (prot)	1678	1501	4768	0	1678	4821
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1678	1501	4768	0	1678	4821
Satd. Flow (RTOR)		191	15			
Lane Group Flow (vph)	101	191	1754	0	276	1541
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Total Split (s)	35.0	35.0	66.0		19.0	85.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	16.5	16.5	61.0		27.5	94.5
Actuated g/C Ratio	0.14	0.14	0.51		0.23	0.79
v/c Ratio	0.44	0.51	0.72		0.72	0.41
Control Delay	51.0	10.7	24.8		69.4	1.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	51.0	10.7	24.8		69.4	1.5
LOS	D	B	C		E	A
Approach Delay	24.6		24.8			11.8
Approach LOS	C		C			B
Queue Length 50th (ft)	76	0	371		225	25
Queue Length 95th (ft)	118	61	428		#428	39
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	419	518	2431		383	3794
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	0.24	0.37	0.72		0.72	0.41

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 18.7 Intersection LOS: B
Intersection Capacity Utilization 65.9% 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: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Future Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Satd. Flow (prot)	1678	1529	0	0	1701	1501	1678	4788	0	1678	4816	0
Flt Permitted	0.744				0.798		0.950			0.950		
Satd. Flow (perm)	1314	1529	0	0	1409	1501	1678	4788	0	1678	4816	0
Satd. Flow (RTOR)		43				109		8			2	
Lane Group Flow (vph)	37	48	0	0	21	5	90	1732	0	213	1748	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Total Split (s)	32.0	32.0		32.0	32.0	32.0	18.0	58.0		30.0	70.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.1	18.1			18.1	18.1	13.0	68.3		19.9	75.2	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.11	0.57		0.17	0.63	
v/c Ratio	0.19	0.18			0.10	0.02	0.50	0.64		0.77	0.58	
Control Delay	42.3	14.7			39.9	0.0	37.9	7.1		50.1	30.0	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.3	14.7			39.9	0.0	37.9	7.1		50.1	30.0	
LOS	D	B			D	A	D	A		D	C	
Approach Delay		26.7			32.2			8.6			32.2	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)	23	3			13	0	66	56		166	483	
Queue Length 95th (ft)	54	36			36	0	m97	159		m204	536	
Internal Link Dist (ft)		148			94			1043			1847	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	284	364			305	410	181	2727		349	3017	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.13			0.07	0.01	0.50	0.64		0.61	0.58	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 21.1 Intersection LOS: C
Intersection Capacity Utilization 65.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Future Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Satd. Flow (prot)	1678	4816	0	0	4821	1501	0	0	0	1678	1766	1501
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1678	4816	0	0	4821	1501	0	0	0	1678	1766	1501
Satd. Flow (RTOR)		2				276						9
Lane Group Flow (vph)	584	1477	0	0	1264	276	0	0	0	351	85	489
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	49.0	88.0			39.0	39.0				32.0	32.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	45.0	84.8			35.8	35.8				27.2	27.2	76.2
Actuated g/C Ratio	0.38	0.71			0.30	0.30				0.23	0.23	0.64
v/c Ratio	0.93	0.43			0.88	0.43				0.92	0.21	0.51
Control Delay	38.1	1.7			23.3	5.5				76.0	38.9	13.7
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	38.1	1.7			23.3	5.5				76.0	38.9	13.7
LOS	D	A			C	A				E	D	B
Approach Delay		12.0			20.1						39.7	
Approach LOS		B			C						D	
Queue Length 50th (ft)	437	24			181	21				265	53	182
Queue Length 95th (ft)	#668	31			#336	90				#439	99	266
Internal Link Dist (ft)		1847			1063			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	629	3402			1436	641				391	412	966
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	0.93	0.43			0.88	0.43				0.90	0.21	0.51

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 31 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 20.4 Intersection LOS: C
Intersection Capacity Utilization 83.2% ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

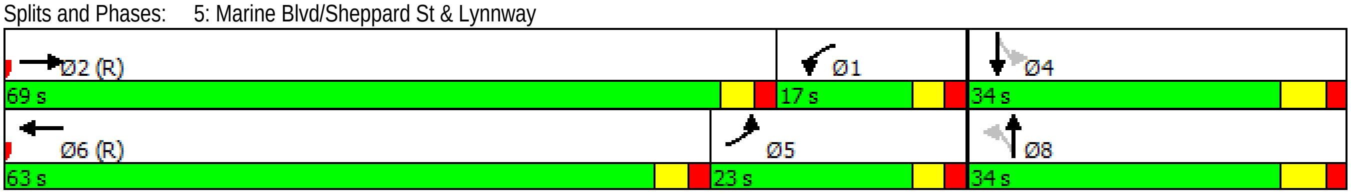
Splits and Phases: 4: Commercial St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Future Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Satd. Flow (prot)	1678	4821	0	1678	4797	0	1678	1634	0	0	1624	0
Flt Permitted	0.950			0.950			0.735				0.840	
Satd. Flow (perm)	1678	4821	0	1678	4797	0	1298	1634	0	0	1397	0
Satd. Flow (RTOR)		1			6			5			30	
Lane Group Flow (vph)	122	1663	0	58	1541	0	5	10	0	0	74	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Total Split (s)	23.0	69.0		17.0	63.0		34.0	34.0		34.0	34.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		6.0	6.0			6.0	
Act Effct Green (s)	14.6	82.1		9.5	73.6		18.4	18.4			18.4	
Actuated g/C Ratio	0.12	0.68		0.08	0.61		0.15	0.15			0.15	
v/c Ratio	0.60	0.50		0.44	0.52		0.03	0.04			0.31	
Control Delay	64.9	11.6		42.0	11.8		37.4	27.9			29.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	64.9	11.6		42.0	11.8		37.4	27.9			29.0	
LOS	E	B		D	B		D	C			C	
Approach Delay		15.2			12.9			31.1			29.0	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	95	371		44	112		3	3			28	
Queue Length 95th (ft)	m149	438		88	195		14	18			71	
Internal Link Dist (ft)		1063			584			95			161	
Turn Bay Length (ft)	250			400								
Base Capacity (vph)	251	3298		167	2944		302	385			348	
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	0.49	0.50		0.35	0.52		0.02	0.03			0.21	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 105 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1555	45	30	1430	120	20	10	20	20	10	20
Future Volume (vph)	0	1555	45	30	1430	120	20	10	20	20	10	20
Satd. Flow (prot)	0	4802	0	1678	4763	0	1678	1593	0	1678	1593	0
Flt Permitted				0.950			0.736			0.736		
Satd. Flow (perm)	0	4802	0	1678	4763	0	1300	1593	0	1300	1593	0
Satd. Flow (RTOR)		6			27			21			21	
Lane Group Flow (vph)	0	1700	0	32	1647	0	21	32	0	21	32	0
Turn Type		NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			4	
Permitted Phases							4			4		
Total Split (s)		76.0		12.0	76.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)		89.6		7.2	96.8		17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.75		0.06	0.81		0.15	0.15		0.15	0.15	
v/c Ratio		0.47		0.32	0.43		0.11	0.12		0.11	0.12	
Control Delay		1.1		53.0	0.6		40.2	21.0		40.2	21.0	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		1.1		53.0	0.6		40.2	21.0		40.2	21.0	
LOS		A		D	A		D	C		D	C	
Approach Delay		1.1			1.6			28.6			28.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		10		26	10		13	7		13	7	
Queue Length 95th (ft)		20		m54	12		36	34		36	34	
Internal Link Dist (ft)		584			497			259			262	
Turn Bay Length (ft)												
Base Capacity (vph)		3585		111	3846		303	387		303	387	
Starvation Cap Reductn		0		0	227		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		0.47		0.29	0.46		0.07	0.08		0.07	0.08	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 107 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 2.2 — Intersection LOS: A
Intersection Capacity Utilization 46.1% — ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

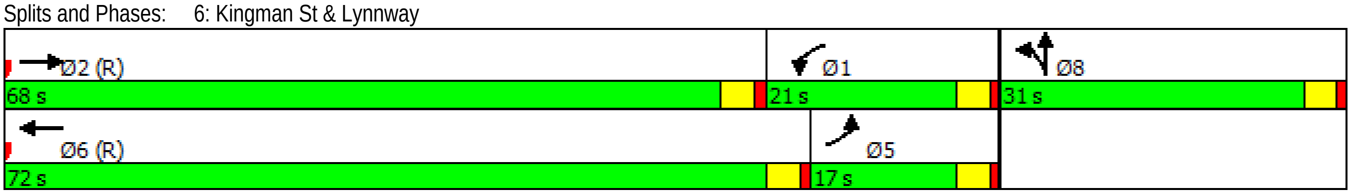
Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Future Volume (vph)	65	1530	15	15	1500	40	30	0	30	0	0	0
Satd. Flow (prot)	1678	4816	0	1678	4802	0	1678	1501	0	0	0	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1678	4816	0	1678	4802	0	1678	1501	0	0	0	0
Satd. Flow (RTOR)		2			5			198				
Lane Group Flow (vph)	69	1642	0	16	1637	0	32	32	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases												
Total Split (s)	17.0	68.0		21.0	72.0		31.0	31.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	10.2	88.5		10.8	84.7		18.0	18.0				
Actuated g/C Ratio	0.08	0.74		0.09	0.71		0.15	0.15				
v/c Ratio	0.49	0.46		0.11	0.48		0.13	0.08				
Control Delay	48.3	3.5		47.9	4.5		40.6	0.4				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	48.3	3.5		47.9	4.5		40.6	0.4				
LOS	D	A		D	A		D	A				
Approach Delay		5.3			4.9			20.5				
Approach LOS		A			A			C				
Queue Length 50th (ft)	53	11		13	81		20	0				
Queue Length 95th (ft)	102	84		m28	97		48	0				
Internal Link Dist (ft)		497			380			258			85	
Turn Bay Length (ft)				300								
Base Capacity (vph)	181	3552		237	3391		377	491				
Starvation Cap Reductn	0	95		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.38	0.47		0.07	0.48		0.08	0.07				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 107 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 5.4 Intersection LOS: A
Intersection Capacity Utilization 49.7% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	600	985	970	225	300	10
Future Volume (vph)	600	985	970	225	300	10
Satd. Flow (prot)	3255	4821	4821	1501	3252	0
Flt Permitted	0.950				0.954	
Satd. Flow (perm)	3255	4821	4821	1501	3252	0
Satd. Flow (RTOR)				239	3	
Lane Group Flow (vph)	638	1047	1031	239	330	0
Turn Type	Prot	NA	NA	Perm	Prot	
Protected Phases	5	2	6		7	
Permitted Phases				6		
Total Split (s)	50.0	80.0	30.0	30.0	40.0	
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	45.0	94.6	44.6	44.6	17.4	
Actuated g/C Ratio	0.38	0.79	0.37	0.37	0.14	
v/c Ratio	0.52	0.28	0.58	0.34	0.70	
Control Delay	16.2	2.4	32.3	4.9	45.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.2	2.4	32.3	4.9	45.7	
LOS	B	A	C	A	D	
Approach Delay		7.6	27.1		45.7	
Approach LOS		A	C		D	
Queue Length 50th (ft)	64	54	231	0	114	
Queue Length 95th (ft)	104	34	297	56	161	
Internal Link Dist (ft)		431	1171		315	
Turn Bay Length (ft)				600		
Base Capacity (vph)	1220	3799	1790	707	977	
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	0.52	0.28	0.58	0.34	0.34	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 110 (92%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 56.5%	ICU Level of Service B
Analysis Period (min) 15	

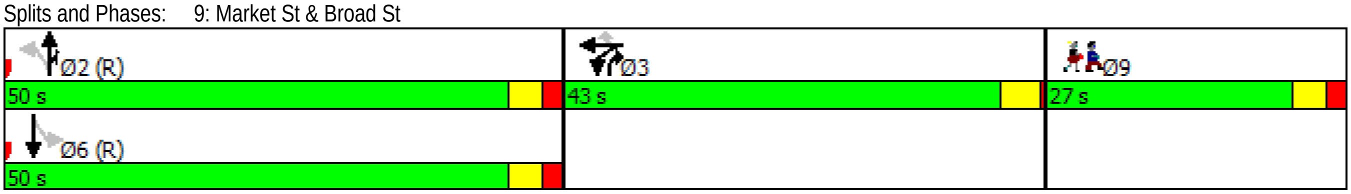
Splits and Phases: 7: Lynnway/Carroll Parkway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Future Volume (vph)	0	0	0	75	410	175	15	375	380	205	230	155
Satd. Flow (prot)	0	0	0	0	3329	1501	0	3349	1501	0	3170	0
Flt Permitted					0.992			0.921			0.674	
Satd. Flow (perm)	0	0	0	0	3329	1501	0	3090	1501	0	2173	0
Satd. Flow (RTOR)						186			404		48	
Lane Group Flow (vph)	0	0	0	0	516	186	0	414	404	0	627	0
Turn Type				Split	NA	Perm	Perm	NA	pt+ov	Perm	NA	
Protected Phases				3	3			2	2 3		6	
Permitted Phases						3	2			6		
Total Split (s)				43.0	43.0	43.0	50.0	50.0		50.0	50.0	
Total Lost Time (s)					4.0	4.0		5.0			5.0	
Act Effct Green (s)					28.2	28.2		66.6	100.8		66.6	
Actuated g/C Ratio					0.24	0.24		0.56	0.84		0.56	
v/c Ratio					0.66	0.38		0.24	0.30		0.51	
Control Delay					39.9	7.7		13.4	0.7		21.4	
Queue Delay					0.0	0.0		0.0	0.1		0.0	
Total Delay					39.9	7.7		13.4	0.8		21.4	
LOS					D	A		B	A		C	
Approach Delay					31.4			7.2			21.4	
Approach LOS					C			A			C	
Queue Length 50th (ft)					195	14		48	1		171	
Queue Length 95th (ft)					232	33		94	4		272	
Internal Link Dist (ft)		27			734			315			249	
Turn Bay Length (ft)						150						
Base Capacity (vph)					1081	613		1714	1362		1227	
Starvation Cap Reductn					0	0		0	265		0	
Spillback Cap Reductn					0	0		0	0		0	
Storage Cap Reductn					0	0		0	0		0	
Reduced v/c Ratio					0.48	0.30		0.24	0.37		0.51	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 13 (11%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 19.2 | Intersection LOS: B
Intersection Capacity Utilization 54.1% | ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Market St & Broad St

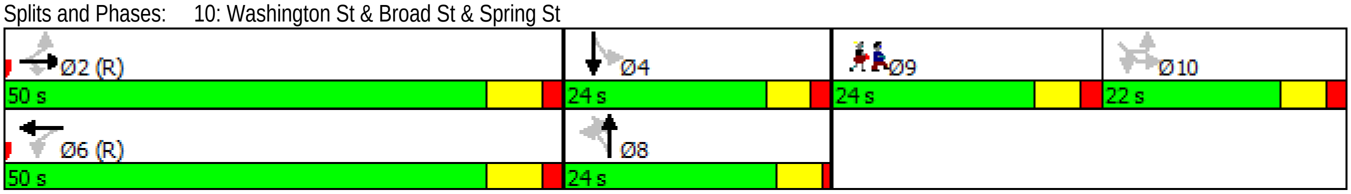


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Future Volume (vph)	55	490	30	25	580	15	20	0	50	15	10	15
Satd. Flow (prot)	0	1757	1501	0	3335	0	0	1678	1704	0	0	1622
Flt Permitted		0.876			0.912			0.799				0.918
Satd. Flow (perm)	0	1547	1501	0	3048	0	0	1411	1704	0	0	1503
Satd. Flow (RTOR)			136		136				11			
Lane Group Flow (vph)	0	579	32	0	659	0	0	21	69	0	0	59
Turn Type	Perm	NA	Perm	Perm	NA		Perm	Perm	NA		Perm	NA
Protected Phases		2			6				8			4
Permitted Phases	2		2	6			8	8			4	4
Total Split (s)	50.0	50.0	50.0	50.0	50.0		24.0	24.0	24.0		24.0	24.0
Total Lost Time (s)		7.0	7.0		7.0			5.0	5.0			6.0
Act Effct Green (s)		83.9	83.9		83.9			10.7	10.7			9.9
Actuated g/C Ratio		0.70	0.70		0.70			0.09	0.09			0.08
v/c Ratio		0.54	0.03		0.30			0.17	0.43			0.48
Control Delay		8.2	0.0		9.3			51.7	50.4			64.2
Queue Delay		0.0	0.0		0.0			0.0	0.0			0.0
Total Delay		8.2	0.0		9.3			51.7	50.4			64.2
LOS		A	A		A			D	D			E
Approach Delay		7.8			9.3				50.7			64.2
Approach LOS		A			A				D			E
Queue Length 50th (ft)		28	0		72			15	43			44
Queue Length 95th (ft)		#633	m0		202			40	88			86
Internal Link Dist (ft)		734			418				1183			220
Turn Bay Length (ft)								150				
Base Capacity (vph)		1081	1089		2171			223	279			225
Starvation Cap Reductn		0	0		0			0	0			0
Spillback Cap Reductn		0	0		0			0	0			0
Storage Cap Reductn		0	0		0			0	0			0
Reduced v/c Ratio		0.54	0.03		0.30			0.09	0.25			0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 14.4 Intersection LOS: B
Intersection Capacity Utilization 83.6% ICU Level of Service E
Analysis Period (min) 15
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: 10: Washington St & Broad St & Spring St



Lane Group	SBR	SEL2	SEL	SER	SER2	Ø9
Lane Configurations						
Traffic Volume (vph)	30	5	35	50	30	
Future Volume (vph)	30	5	35	50	30	
Satd. Flow (prot)	0	0	1678	1501	0	
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1678	1501	0	
Satd. Flow (RTOR)				145		
Lane Group Flow (vph)	0	0	42	85	0	
Turn Type		Perm	Perm	Perm		
Protected Phases						9
Permitted Phases		10	10	10		
Total Split (s)		22.0	22.0	22.0		24.0
Total Lost Time (s)			6.0	6.0		
Act Effct Green (s)			8.5	8.5		
Actuated g/C Ratio			0.07	0.07		
v/c Ratio			0.36	0.35		
Control Delay			60.7	4.6		
Queue Delay			0.0	0.0		
Total Delay			60.7	4.6		
LOS			E	A		
Approach Delay			23.2			
Approach LOS			C			
Queue Length 50th (ft)			32	0		
Queue Length 95th (ft)			68	4		
Internal Link Dist (ft)			258			
Turn Bay Length (ft)			150			
Base Capacity (vph)			223	325		
Starvation Cap Reductn			0	0		
Spillback Cap Reductn			0	0		
Storage Cap Reductn			0	0		
Reduced v/c Ratio			0.19	0.26		

Intersection Summary

Intersection	
Intersection Delay, s/veh	18.5
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1057	1439	876
Demand Flow Rate, veh/h	1099	1497	911
Vehicles Circulating, veh/h	497	315	801
Vehicles Exiting, veh/h	1215	1281	315
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	18.6	14.6	24.9
Approach LOS	C	B	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	TR
Assumed Moves	LTR	R	L	LTR	R	L	TR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.531	0.469		0.546	0.454
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	517	582	425	376	696	497	414
Cap Entry Lane, veh/h	778	798	892	906	906	620	645
Entry HV Adj Factor	0.961	0.963	0.960	0.962	0.962	0.962	0.961
Flow Entry, veh/h	497	560	408	362	669	478	398
Cap Entry, veh/h	748	768	857	872	871	596	620
V/C Ratio	0.664	0.729	0.476	0.415	0.768	0.802	0.642
Control Delay, s/veh	17.1	19.9	10.3	9.1	20.2	30.0	18.8
LOS	C	C	B	A	C	D	C
95th %tile Queue, veh	5	6	3	2	8	8	5

TABLE 1
Alternative 4: Traffic Queue Lengths in Feet

Intersection/Approach	Movement	Weekday AM 50th Percentile	Weekday AM 95th Percentile	Weekday PM 50th Percentile	Weekday PM 95th Percentile	Saturday PM 50th Percentile	Saturday PM 95th Percentile
Lynnway and Hanson Street	--	--	--	--	--	--	--
Lynnway	NB – Through/right	193	232	484	#793	371	428
Lynnway	SB – Left	96	m145	171	#292	225	#428
Lynnway	SB – Through/right	30	59	24	37	25	39
Hanson Street	WB – Left	13	35	60	97	76	118
Hanson Street	WB – Right	0	19	0	47	0	61
Lynnway and Harding Street	--	--	--	--	--	--	--
Lynnway	NB – Left	22	55	40	m50	66	M97
Lynnway	NB – Through/right	24	30	111	642	56	159
Lynnway	SB – Left	59	m67	144	m#197	166	M205
Lynnway	SB – Through/right	158	170	38	43	483	536
Harding Street	WB – Left	17	43	27	60	23	54
Harding Street	WB – Through/right	0	0	0	0	3	36
Harding Street	EB – Left/Through	3	14	20	49	13	36
Harding Street	EB – Right	0	0	0	0	0	0
Lynnway and Commercial Street	--	--	--	--	--	--	--
Lynnway	NB – Left	186	#360	238	m#591	347	#668
Lynnway	NB – Through/right	43	62	25	27	24	31
Lynnway	SB – Through	121	252	206	#291	180	#335
Lynnway	SB – Right	5	9	47	74	13	89
Commercial Street	EB – Left	188	#287	267	#427	265	#439
Commercial Street	EB – Through	65	117	16	41	53	99
Commercial Street	EB -- Right	381	#595	86	131	182	266
Lynnway, Shepard Street, and Marine Boulevard	--	--	--	--	--	--	--
Lynnway	NB – Left	44	m82	148	m223	95	M149
Lynnway	NB – Through/right	9	19	32	90	371	438
Lynnway	SB – Left	56	m87	29	67	44	88
Lynnway	SB – Through/right	98	275	108	141	98	179
Marine Boulevard	WB – Left	8	23	15	38	3	14
Marine Boulevard	WB – Through/right	0	0	4	24	3	18
Shepard Street	EB – Left/through/right	38	72	41	84	28	71
Lynnway and Kingman Street	--	--	--	--	--	--	--
Lynnway	NB – Left	48	#95	48	m72	53	103
Lynnway	NB – Through/right	112	150	275	340	8	83
Lynnway	SB – Left	81	141	64	116	13	M28
Lynnway	SB – Through/right	142	553	50	94	81	97
Kingman Street	WB – Left	30	64	79	122	20	48
Kingman Street	WB – Through/right	3	39	4	54	0	0

Lynnway, Carroll Parkway, and Market Street	--	--	--	--	--	--	--
Lynnway	NB – Left	152	202	237	249	64	104
Lynnway	NB – Through	52	99	36	41	33	55
Carroll Parkway	SB – Through	252	373	173	225	231	297
Carroll Parkway	SB – Right	0	38	0	47	0	56
Market Street	EB – Left	78	118	37	52	114	161
Carroll Parkway, Nahant Road, and Lynn Shore Drive	--	--	--	--	--	--	--
Carroll Parkway	NB – Left	25	50	110	225	37	75
Carroll Parkway	NB – Right	12	25	75	150	25	50
Nahant Road	NB – Left	25	50	50	100	100	200
Nahant Road	NB – Through	25	50	37	75	60	125
Lynn Shore Drive	SB – Through	175	350	37	75	60	125
Lynn Shore Drive	SB – Right	250	500	37	75	75	150
Market Street and Broad Street	--	--	--	--	--	--	--
Market Street	NB – Through/left	24	33	34	70	48	94
Market Street	NB – Right	0	18	112	212	0	0
Market Street	SB – Left/through/right	103	169	173	243	171	272
Broad Street	WB – Through/left	206	259	136	204	195	232
Broad Street	WB – Right	19	118	35	143	14	33
Broad Street, Washington Street, and Spring Street	--	--	--	--	--	--	--
Broad Street	WB – Left/through/right	90	238	52	140	72	202
Broad Street	EB – Through/left	28	66	219	#514	28	#632
Broad Street	EB – Right	0	0	11	233	0	0
Washington Street	NB – Left	79	136	84	140	15	40
Washington Street	NB – Through/right	59	109	67	117	43	88
Washington Street	SB – Left/through/right	52	99	96	158	32	68
Spring Street	SB -- Left/through/right	46	89	72	120	44	86

APPENDIX L

Level of Service (LOS) Analysis
Alternative 5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	20	15	925	35	150	2210
Future Volume (vph)	20	15	925	35	150	2210
Satd. Flow (prot)	1766	1580	3514	0	1766	3532
Flt Permitted	0.950				0.233	
Satd. Flow (perm)	1766	1580	3514	0	433	3532
Satd. Flow (RTOR)		16	5			
Lane Group Flow (vph)	21	16	1010	0	158	2324
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Total Split (s)	31.0	31.0	76.0		13.0	89.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	18.4	18.4	84.3		96.4	99.0
Actuated g/C Ratio	0.15	0.15	0.70		0.80	0.82
v/c Ratio	0.08	0.06	0.41		0.37	0.80
Control Delay	39.4	16.8	10.2		1.2	7.9
Queue Delay	0.0	0.0	0.0		0.0	0.1
Total Delay	39.4	16.8	10.2		1.2	7.9
LOS	D	B	B		A	A
Approach Delay	29.6		10.2			7.5
Approach LOS	C		B			A
Stops (vph)	16	6	411		2	375
Fuel Used(gal)	0	0	10		1	25
CO Emissions (g/hr)	24	11	702		90	1727
NOx Emissions (g/hr)	5	2	137		18	336
VOC Emissions (g/hr)	6	2	163		21	400
Dilemma Vehicles (#)	0	0	41		0	18
Queue Length 50th (ft)	13	0	221		1	93
Queue Length 95th (ft)	35	19	272		m2	163
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)					400	
Base Capacity (vph)	382	354	2470		436	2913
Starvation Cap Reductn	0	0	0		0	33
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.05	0.05	0.41		0.36	0.81

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 8.5 | Intersection LOS: A
Intersection Capacity Utilization 72.5% | ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Future Volume (vph)	25	0	5	5	0	5	25	900	20	70	2335	15
Satd. Flow (prot)	1766	1580	0	0	1766	1580	1766	3521	0	1766	3529	0
Flt Permitted	0.754				0.754		0.048			0.257		
Satd. Flow (perm)	1402	1580	0	0	1402	1580	89	3521	0	478	3529	0
Satd. Flow (RTOR)		218				64		3			1	
Lane Group Flow (vph)	26	5	0	0	5	5	26	967	0	74	2471	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Total Split (s)	32.0	32.0		32.0	32.0	32.0	12.0	76.0		12.0	76.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.0	18.0			17.8	17.8	91.8	87.2		92.8	90.6	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.76	0.73		0.77	0.76	
v/c Ratio	0.12	0.01			0.02	0.02	0.16	0.38		0.17	0.93	
Control Delay	40.6	0.0			37.4	0.2	16.8	8.9		5.5	17.3	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	40.6	0.0			37.4	0.2	16.8	8.9		5.5	17.3	
LOS	D	A			D	A	B	A		A	B	
Approach Delay		34.1			18.8			9.1			17.0	
Approach LOS		C			B			A			B	
Stops (vph)	21	0			6	0	15	256		16	952	
Fuel Used(gal)	0	0			0	0	0	11		1	49	
CO Emissions (g/hr)	31	1			7	1	28	785		84	3431	
NOx Emissions (g/hr)	6	0			1	0	5	153		16	668	
VOC Emissions (g/hr)	7	0			2	0	6	182		20	795	
Dilemma Vehicles (#)	0	0			0	0	0	37		0	72	
Queue Length 50th (ft)	16	0			3	0	6	155		15	~1200	
Queue Length 95th (ft)	42	0			14	0	m28	183		m14	m#1047	
Internal Link Dist (ft)		148			94			1043			1855	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	303	513			303	392	165	2559		444	2664	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.09	0.01			0.02	0.01	0.16	0.38		0.17	0.93	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 98 (82%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 85.5% ICU Level of Service E
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: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	765	10	0	2100	275	0	0	0	245	95	535
Future Volume (vph)	260	765	10	0	2100	275	0	0	0	245	95	535
Satd. Flow (prot)	1766	3525	0	0	3532	1580	0	0	0	1766	1859	1580
Flt Permitted	0.056									0.950		
Satd. Flow (perm)	104	3525	0	0	3532	1580	0	0	0	1766	1859	1580
Satd. Flow (RTOR)		3				114						9
Lane Group Flow (vph)	273	815	0	0	2208	289	0	0	0	258	100	563
Turn Type	pm+pt	NA			NA	pt+ov				Prot	NA	pt+ov
Protected Phases	5	2			6	6 7				7	4	4 5
Permitted Phases	2											
Total Split (s)	19.0	90.0			71.0					30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0					4.0	4.0	
Act Effct Green (s)	86.0	86.0			67.0	97.0				26.0	26.0	45.0
Actuated g/C Ratio	0.72	0.72			0.56	0.81				0.22	0.22	0.38
v/c Ratio	0.97	0.32			1.12	0.22				0.68	0.25	0.94
Control Delay	72.6	5.9			75.9	1.7				53.1	40.9	61.3
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	72.6	5.9			75.9	1.7				53.1	40.9	61.3
LOS	E	A			E	A				D	D	E
Approach Delay		22.6			67.3						56.8	
Approach LOS		C			E						E	
Stops (vph)	193	250			1918	47				228	79	468
Fuel Used(gal)	9	14			65	3				5	2	13
CO Emissions (g/hr)	634	970			4559	193				381	126	879
NOx Emissions (g/hr)	123	189			887	38				74	24	171
VOC Emissions (g/hr)	147	225			1057	45				88	29	204
Dilemma Vehicles (#)	0	82			11	0				0	4	0
Queue Length 50th (ft)	102	20			~1070	24				185	65	412
Queue Length 95th (ft)	#321	50			m#1130	m25				279	115	#643
Internal Link Dist (ft)		1855			1064			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	282	2527			1972	1299				382	402	598
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	0.97	0.32			1.12	0.22				0.68	0.25	0.94

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 54.4 Intersection LOS: D
Intersection Capacity Utilization 95.0% 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: 4: Commercial St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	955	10	70	2215	45	10	0	5	35	10	15
Future Volume (vph)	50	955	10	70	2215	45	10	0	5	35	10	15
Satd. Flow (prot)	1766	3525	0	1766	3521	0	1766	1580	0	0	1745	0
Flt Permitted	0.050			0.242			0.759				0.823	
Satd. Flow (perm)	93	3525	0	450	3521	0	1411	1580	0	0	1478	0
Satd. Flow (RTOR)		1			3			199			13	
Lane Group Flow (vph)	53	1015	0	74	2376	0	11	5	0	0	64	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	13.0	75.0		13.0	75.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	87.0	82.9		87.6	83.2		18.5	18.5			18.5	
Actuated g/C Ratio	0.72	0.69		0.73	0.69		0.15	0.15			0.15	
v/c Ratio	0.34	0.42		0.18	0.97		0.05	0.01			0.27	
Control Delay	26.4	3.0		3.7	23.6		38.2	0.0			35.8	
Queue Delay	0.0	0.0		0.0	1.3		0.0	0.0			0.0	
Total Delay	26.4	3.0		3.7	25.0		38.2	0.0			35.8	
LOS	C	A		A	C		D	A			D	
Approach Delay		4.2			24.3			26.3			35.8	
Approach LOS		A			C			C			D	
Stops (vph)	38	204		10	1049		10	0			42	
Fuel Used(gal)	1	10		0	30		0	0			1	
CO Emissions (g/hr)	69	718		33	2098		14	1			72	
NOx Emissions (g/hr)	13	140		6	408		3	0			14	
VOC Emissions (g/hr)	16	166		8	486		3	0			17	
Dilemma Vehicles (#)	0	3		0	72		0	0			3	
Queue Length 50th (ft)	6	95		7	~1141		7	0			32	
Queue Length 95th (ft)	m36	90		m8	#1285		23	0			72	
Internal Link Dist (ft)		1064			584			95			161	
Turn Bay Length (ft)	400			200								
Base Capacity (vph)	165	2435		405	2442		305	498			330	
Starvation Cap Reductn	0	0		0	25		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	0.32	0.42		0.18	0.98		0.04	0.01			0.19	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 45 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 80.7%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1010	20	40	2170	95	10	5	15	25	20	50
Future Volume (vph)	0	1010	20	40	2170	95	10	5	15	25	20	50
Satd. Flow (prot)	0	3521	0	1766	3511	0	1766	1647	0	1766	1660	0
Flt Permitted				0.232			0.692			0.744		
Satd. Flow (perm)	0	3521	0	431	3511	0	1286	1647	0	1383	1660	0
Satd. Flow (RTOR)		3			9			16			14	
Lane Group Flow (vph)	0	1083	0	42	2382	0	11	21	0	26	74	0
Turn Type		NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases				6			8			4		
Total Split (s)		82.0		8.0	82.0		30.0	30.0		30.0	30.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)		90.0		95.6	96.4		18.3	18.3		18.3	18.3	
Actuated g/C Ratio		0.75		0.80	0.80		0.15	0.15		0.15	0.15	
v/c Ratio		0.41		0.11	0.84		0.06	0.08		0.12	0.28	
Control Delay		12.8		3.0	16.6		38.3	19.9		40.5	35.7	
Queue Delay		0.0		0.0	11.6		0.0	0.0		0.0	0.0	
Total Delay		12.8		3.0	28.2		38.3	19.9		40.5	35.7	
LOS		B		A	C		D	B		D	D	
Approach Delay		12.8			27.8			26.2			36.9	
Approach LOS		B			C			C			D	
Stops (vph)		363		4	940		10	10		21	49	
Fuel Used(gal)		11		0	24		0	0		0	1	
CO Emissions (g/hr)		734		16	1710		13	14		30	75	
NOx Emissions (g/hr)		143		3	333		3	3		6	15	
VOC Emissions (g/hr)		170		4	396		3	3		7	17	
Dilemma Vehicles (#)		107		0	74		0	1		0	3	
Queue Length 50th (ft)		187		2	304		7	3		16	38	
Queue Length 95th (ft)		249		m7	#356		23	25		42	81	
Internal Link Dist (ft)		584			233			259			262	
Turn Bay Length (ft)				200								
Base Capacity (vph)		2642		388	2822		278	369		299	370	
Starvation Cap Reductn		0		0	0		0	0		0	0	
Spillback Cap Reductn		0		0	463		0	0		0	1	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.41		0.11	1.01		0.04	0.06		0.09	0.20	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22 (18%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 23.5 Intersection LOS: C
Intersection Capacity Utilization 75.7% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Future Volume (vph)	55	975	40	95	2240	150	45	5	50	0	0	0
Satd. Flow (prot)	1766	3511	0	1766	5029	0	1766	1604	0	0	0	0
Flt Permitted	0.048			0.222			0.950					
Satd. Flow (perm)	89	3511	0	413	5029	0	1766	1604	0	0	0	0
Satd. Flow (RTOR)		5			14			53				
Lane Group Flow (vph)	58	1067	0	100	2513	0	47	58	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	5	2		1	6			8				
Permitted Phases	2			6			8					
Total Split (s)	20.0	70.0		20.0	70.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	91.3	84.0		93.1	87.5		18.1	18.1				
Actuated g/C Ratio	0.76	0.70		0.78	0.73		0.15	0.15				
v/c Ratio	0.35	0.43		0.25	0.68		0.18	0.20				
Control Delay	31.5	3.6		1.0	6.0		41.7	13.3				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	31.5	3.6		1.0	6.0		41.7	13.3				
LOS	C	A		A	A		D	B				
Approach Delay		5.0			5.8			26.0				
Approach LOS		A			A			C				
Stops (vph)	19	345		3	1629		37	14				
Fuel Used(gal)	1	8		0	26		1	0				
CO Emissions (g/hr)	51	534		33	1824		55	28				
NOx Emissions (g/hr)	10	104		6	355		11	5				
VOC Emissions (g/hr)	12	124		8	423		13	6				
Dilemma Vehicles (#)	0	71		0	5		0	2				
Queue Length 50th (ft)	8	19		1	149		30	3				
Queue Length 95th (ft)	0	112		m1	m754		63	39				
Internal Link Dist (ft)		182			538			258			208	
Turn Bay Length (ft)				300			150					
Base Capacity (vph)	294	2459		510	3671		382	389				
Starvation Cap Reductn	0	113		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.20	0.45		0.20	0.68		0.12	0.15				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 45 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 6.1 | Intersection LOS: A
Intersection Capacity Utilization 64.3% | ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	700	0	0	265	0
Future Volume (vph)	0	700	0	0	265	0
Satd. Flow (prot)	0	3532	0	0	3426	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3532	0	0	3426	0
Satd. Flow (RTOR)					521	
Lane Group Flow (vph)	0	736	0	0	279	0
Turn Type		NA			Prot	
Protected Phases		2			7	
Permitted Phases						
Total Split (s)		86.0			34.0	
Total Lost Time (s)		4.0			4.0	
Act Effct Green (s)		101.2			10.8	
Actuated g/C Ratio		0.84			0.09	
v/c Ratio		0.25			0.36	
Control Delay		1.7			13.0	
Queue Delay		0.0			0.1	
Total Delay		1.7			13.2	
LOS		A			B	
Approach Delay		1.7			13.2	
Approach LOS		A			B	
Stops (vph)		72			156	
Fuel Used(gal)		3			2	
CO Emissions (g/hr)		236			170	
NOx Emissions (g/hr)		46			33	
VOC Emissions (g/hr)		55			39	
Dilemma Vehicles (#)		5			0	
Queue Length 50th (ft)		28			41	
Queue Length 95th (ft)		37			m52	
Internal Link Dist (ft)		422	1272		197	
Turn Bay Length (ft)						
Base Capacity (vph)		2978			1247	
Starvation Cap Reductn		0			347	
Spillback Cap Reductn		0			0	
Storage Cap Reductn		0			0	
Reduced v/c Ratio		0.25			0.31	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 44 (37%), Referenced to phase 2:EBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 4.8	Intersection LOS: A
Intersection Capacity Utilization 51.7%	ICU Level of Service A
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Lynnway & Market St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	230	0	55	2210	200	0	0	0	80	210	185
Future Volume (vph)	100	230	0	55	2210	200	0	0	0	80	210	185
Satd. Flow (prot)	1766	3532	0	1766	5014	0	0	0	0	0	3297	0
Flt Permitted	0.950			0.950							0.992	
Satd. Flow (perm)	1766	3532	0	1766	5014	0	0	0	0	0	3297	0
Satd. Flow (RTOR)					16						99	
Lane Group Flow (vph)	105	242	0	58	2534	0	0	0	0	0	500	0
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	5	2		1	6						8	
Permitted Phases										8		
Total Split (s)	11.0	58.0		14.0	61.0					21.0	21.0	
Total Lost Time (s)	4.0	5.0		5.0	5.0						5.0	
Act Effct Green (s)	9.6	53.0		19.8	64.2						16.0	
Actuated g/C Ratio	0.08	0.44		0.16	0.54						0.13	
v/c Ratio	0.74	0.16		0.20	0.94						0.95	
Control Delay	72.9	31.9		63.9	26.4						70.7	
Queue Delay	0.0	0.0		0.0	0.0						0.0	
Total Delay	72.9	31.9		63.9	26.4						70.7	
LOS	E	C		E	C						E	
Approach Delay		44.4			27.3						70.7	
Approach LOS		D			C						E	
Stops (vph)	80	191		51	1560						353	
Fuel Used(gal)	3	4		1	39						11	
CO Emissions (g/hr)	179	279		99	2694						754	
NOx Emissions (g/hr)	35	54		19	524						147	
VOC Emissions (g/hr)	41	65		23	624						175	
Dilemma Vehicles (#)	0	20		0	112						19	
Queue Length 50th (ft)	~87	86		43	~801						166	
Queue Length 95th (ft)	#206	142		m60	#920						#276	
Internal Link Dist (ft)		524			685			197			249	
Turn Bay Length (ft)	190			200								
Base Capacity (vph)	142	1559		291	2688						525	
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	0.74	0.16		0.20	0.94						0.95	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 10 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 35.3 Intersection LOS: D
Intersection Capacity Utilization 76.4% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Market St & Broad St

Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBL	NBT	NBR	Ø9
Lane Configurations									
Traffic Volume (vph)	50	260	615	30	1700	190	70	15	
Future Volume (vph)	50	260	615	30	1700	190	70	15	
Satd. Flow (prot)	0	3504	3507	0	3214	0	1616	0	
Flt Permitted		0.677			0.950		0.958		
Satd. Flow (perm)	0	2391	3507	0	3214	0	1616	0	
Satd. Flow (RTOR)			73				1		
Lane Group Flow (vph)	0	326	679	0	1377	0	701	0	
Turn Type	Perm	NA	NA		Perm	Perm	NA		
Protected Phases		2	6				8		9
Permitted Phases	2				8	8			
Total Split (s)	33.0	33.0	33.0		63.0	63.0	63.0		24.0
Total Lost Time (s)		7.0	7.0		5.0		5.0		
Act Effct Green (s)		45.7	45.7		57.5		57.5		
Actuated g/C Ratio		0.38	0.38		0.48		0.48		
v/c Ratio		0.36	0.49		0.89		0.90		
Control Delay		25.1	28.4		37.3		45.6		
Queue Delay		0.0	0.1		3.3		6.0		
Total Delay		25.1	28.5		40.6		51.6		
LOS		C	C		D		D		
Approach Delay		25.1	28.5				44.3		
Approach LOS		C	C				D		
Stops (vph)		234	439		1155		581		
Fuel Used(gal)		5	12		31		17		
CO Emissions (g/hr)		358	848		2189		1191		
NOx Emissions (g/hr)		70	165		426		232		
VOC Emissions (g/hr)		83	196		507		276		
Dilemma Vehicles (#)		18	27		0		26		
Queue Length 50th (ft)		108	174		515		528		
Queue Length 95th (ft)		m152	#316		631		#807		
Internal Link Dist (ft)		685	345				1215		
Turn Bay Length (ft)									
Base Capacity (vph)		910	1380		1553		781		
Starvation Cap Reductn		0	0		0		0		
Spillback Cap Reductn		0	105		107		53		
Storage Cap Reductn		0	0		0		0		
Reduced v/c Ratio		0.36	0.53		0.95		0.96		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 69 (58%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 38.8 Intersection LOS: D
Intersection Capacity Utilization 76.9% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Washington St & Broad St & Spring St

Intersection	
Intersection Delay, s/veh	51.5
Intersection LOS	F

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1546	1009	526
Demand Flow Rate, veh/h	1608	1049	547
Vehicles Circulating, veh/h	612	77	913
Vehicles Exiting, veh/h	848	2143	77
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	92.5	7.8	14.5
Approach LOS	F	A	B

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.530	0.470
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	756	852	484	429	136	290	257
Cap Entry Lane, veh/h	714	736	1067	1071	1071	570	596
Entry HV Adj Factor	0.961	0.962	0.961	0.961	0.962	0.961	0.962
Flow Entry, veh/h	727	819	465	412	131	279	247
Cap Entry, veh/h	686	708	1025	1029	1029	548	574
V/C Ratio	1.059	1.157	0.454	0.401	0.127	0.509	0.431
Control Delay, s/veh	75.2	107.9	8.7	7.8	4.6	15.7	13.1
LOS	F	F	A	A	A	C	B
95th %tile Queue, veh	19	26	2	2	0	3	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	100	2140	50	225	1065
Future Volume (vph)	75	100	2140	50	225	1065
Satd. Flow (prot)	1711	1531	3411	0	1711	3421
Flt Permitted	0.950				0.047	
Satd. Flow (perm)	1711	1531	3411	0	85	3421
Satd. Flow (RTOR)		105	3			
Lane Group Flow (vph)	79	105	2303	0	237	1120
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Total Split (s)	31.0	31.0	74.0		15.0	89.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	15.7	15.7	79.3		94.3	95.3
Actuated g/C Ratio	0.13	0.13	0.66		0.79	0.79
v/c Ratio	0.35	0.36	1.02		1.17	0.41
Control Delay	48.9	10.8	42.4		140.5	4.9
Queue Delay	0.0	0.0	0.1		0.0	0.0
Total Delay	48.9	10.8	42.6		140.5	4.9
LOS	D	B	D		F	A
Approach Delay	27.2		42.6			28.6
Approach LOS	C		D			C
Queue Length 50th (ft)	59	0	774		~155	65
Queue Length 95th (ft)	95	46	#1256		#337	173
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)	200				400	
Base Capacity (vph)	370	413	2254		202	2716
Starvation Cap Reductn	0	0	1		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.21	0.25	1.02		1.17	0.41

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 36.9   Intersection LOS: D
Intersection Capacity Utilization 91.4%   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.

Splits and Phases: 2: Lynnway & Hanson St

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Future Volume (vph)	40	0	40	30	0	5	45	2230	65	165	1195	65
Satd. Flow (prot)	1711	1531	0	0	1711	1531	1711	3408	0	1711	3394	0
Flt Permitted	0.736				0.730		0.154			0.049		
Satd. Flow (perm)	1325	1531	0	0	1314	1531	277	3408	0	88	3394	0
Satd. Flow (RTOR)		105				64		4			8	
Lane Group Flow (vph)	42	42	0	0	32	5	47	2413	0	174	1325	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Total Split (s)	32.0	32.0		32.0	32.0	32.0	12.0	73.0		15.0	76.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.2	18.2			18.2	18.2	85.6	78.6		91.5	84.5	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.71	0.66		0.76	0.70	
v/c Ratio	0.21	0.13			0.16	0.02	0.17	1.08		0.89	0.55	
Control Delay	42.8	0.9			41.6	0.2	1.8	52.3		69.4	3.6	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.8	0.9			41.6	0.2	1.8	52.3		69.4	3.6	
LOS	D	A			D	A	A	D		E	A	
Approach Delay		21.8			36.0			51.4			11.3	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	27	0			20	0	7	~1250		103	50	
Queue Length 95th (ft)	59	0			49	0	m1	m#1213		m#139	m55	
Internal Link Dist (ft)		148			94			1043			1857	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	287	413			284	381	281	2234		202	2392	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.15	0.10			0.11	0.01	0.17	1.08		0.86	0.55	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 25 (21%), Referenced to phase 2:NETL and 6:SWTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 35.9	Intersection LOS: D
Intersection Capacity Utilization 96.6%	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: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Future Volume (vph)	540	1950	5	0	1095	295	0	0	0	340	25	285
Satd. Flow (prot)	1711	3421	0	0	3421	1531	0	0	0	1711	1801	1531
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1711	3421	0	0	3421	1531	0	0	0	1711	1801	1531
Satd. Flow (RTOR)						310						15
Lane Group Flow (vph)	568	2056	0	0	1151	310	0	0	0	358	26	300
Turn Type	Prot	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases						6				4		
Total Split (s)	42.0	90.0			48.0	48.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	38.0	86.0			44.0	44.0				26.0	26.0	68.0
Actuated g/C Ratio	0.32	0.72			0.37	0.37				0.22	0.22	0.57
v/c Ratio	1.05	0.84			0.92	0.41				0.97	0.07	0.34
Control Delay	70.3	12.2			37.4	5.3				86.4	38.1	14.6
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	70.3	12.2			37.4	5.3				86.4	38.1	14.6
LOS	E	B			D	A				F	D	B
Approach Delay		24.8			30.6						53.1	
Approach LOS		C			C						D	
Queue Length 50th (ft)	~469	27			237	0				277	16	113
Queue Length 95th (ft)	m#386	m28			#563	81				#467	41	172
Internal Link Dist (ft)		1857			1085			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	541	2451			1254	757				370	390	874
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	1.05	0.84			0.92	0.41				0.97	0.07	0.34

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 108 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 30.6 Intersection LOS: C

Intersection Capacity Utilization 90.6% ICU Level of Service E

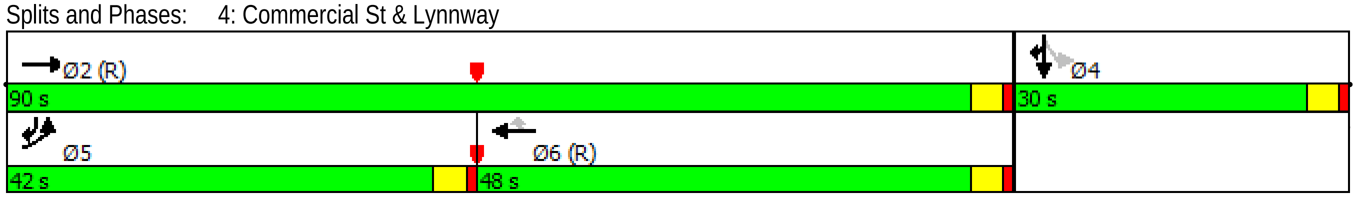
Analysis Period (min) 15

~ 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: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	2175	20	35	1345	20	20	5	10	40	5	25
Future Volume (vph)	105	2175	20	35	1345	20	20	5	10	40	5	25
Satd. Flow (prot)	1711	3418	0	1711	3414	0	1711	1615	0	0	1666	0
Flt Permitted	0.129			0.050			0.738				0.813	
Satd. Flow (perm)	232	3418	0	90	3414	0	1329	1615	0	0	1394	0
Satd. Flow (RTOR)		1			2			11			21	
Lane Group Flow (vph)	110	2308	0	37	1435	0	21	16	0	0	73	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	15.0	75.0		13.0	73.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	92.4	88.7		89.0	82.0		15.3	15.3			15.3	
Actuated g/C Ratio	0.77	0.74		0.74	0.68		0.13	0.13			0.13	
v/c Ratio	0.41	0.91		0.23	0.62		0.12	0.07			0.37	
Control Delay	5.8	15.3		19.2	5.8		43.0	23.8			37.3	
Queue Delay	0.0	0.9		0.0	0.1		0.0	0.0			0.0	
Total Delay	5.8	16.2		19.2	5.9		43.0	23.8			37.3	
LOS	A	B		B	A		D	C			D	
Approach Delay		15.8			6.2			34.7			37.3	
Approach LOS		B			A			C			D	
Queue Length 50th (ft)	1	157		1	28		15	4			39	
Queue Length 95th (ft)	m22	m#1248		m15	352		36	23			76	
Internal Link Dist (ft)		1085			554			123			133	
Turn Bay Length (ft)	250			200								
Base Capacity (vph)	290	2526		161	2333		287	358			318	
Starvation Cap Reductn	0	0		0	111		0	0			0	
Spillback Cap Reductn	0	68		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.38	0.94		0.23	0.65		0.07	0.04			0.23	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 94 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 93.6%	ICU Level of Service F
Analysis Period (min) 15
\# 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: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2205	25	10	1250	155	20	10	25	30	10	80
Future Volume (vph)	0	2205	25	10	1250	155	20	10	25	30	10	80
Satd. Flow (prot)	0	3414	0	1711	3363	0	1711	1612	0	1711	1561	0
Flt Permitted				0.044			0.669			0.733		
Satd. Flow (perm)	0	3414	0	79	3363	0	1205	1612	0	1320	1561	0
Satd. Flow (RTOR)		2			27			26			84	
Lane Group Flow (vph)	0	2345	0	11	1477	0	21	37	0	32	95	0
Turn Type		NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases				6			8			4		
Total Split (s)		80.0		9.0	89.0		31.0	31.0		31.0	31.0	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Act Effct Green (s)		90.1		91.9	91.9		18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.75		0.77	0.77		0.15	0.15		0.15	0.15	
v/c Ratio		0.91		0.09	0.57		0.12	0.14		0.16	0.31	
Control Delay		14.4		3.0	4.0		40.5	19.5		41.6	13.1	
Queue Delay		0.9		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay		15.3		3.0	4.1		40.5	19.5		41.6	13.1	
LOS		B		A	A		D	B		D	B	
Approach Delay		15.3			4.1			27.1			20.3	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)		172		1	77		13	7		20	7	
Queue Length 95th (ft)		#1197		m1	52		36	36		49	52	
Internal Link Dist (ft)		554			508			259			262	
Turn Bay Length (ft)				200								
Base Capacity (vph)		2564		122	2582		261	369		286	404	
Starvation Cap Reductn		0		0	306		0	0		0	0	
Spillback Cap Reductn		66		0	53		0	0		0	1	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.94		0.09	0.65		0.08	0.10		0.11	0.24	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 79.7% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	2085	35	75	1290	40	100	0	115	0	0	0
Future Volume (vph)	65	2085	35	75	1290	40	100	0	115	0	0	0
Satd. Flow (prot)	1711	3414	0	1711	3404	0	1711	1531	0	0	0	0
Flt Permitted	0.145			0.048			0.950					
Satd. Flow (perm)	261	3414	0	86	3404	0	1711	1531	0	0	0	0
Satd. Flow (RTOR)		3			5			93				
Lane Group Flow (vph)	68	2229	0	79	1398	0	105	121	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases	2			6								
Total Split (s)	14.0	80.0		10.0	76.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	96.5	87.4		90.2	84.2		16.6	16.6				
Actuated g/C Ratio	0.80	0.73		0.75	0.70		0.14	0.14				
v/c Ratio	0.21	0.90		0.54	0.59		0.44	0.41				
Control Delay	6.7	17.5		40.4	5.2		51.1	17.3				
Queue Delay	0.0	0.9		0.0	0.0		0.0	0.0				
Total Delay	6.7	18.4		40.4	5.3		51.1	17.3				
LOS	A	B		D	A		D	B				
Approach Delay		18.0			7.1			33.0				
Approach LOS		B			A			C				
Queue Length 50th (ft)	10	344		22	40		79	20				
Queue Length 95th (ft)	m17	#1093		m43	m530		121	69				
Internal Link Dist (ft)		508			531			258			98	
Turn Bay Length (ft)	200			300								
Base Capacity (vph)	332	2486		146	2389		370	404				
Starvation Cap Reductn	0	86		0	0		0	0				
Spillback Cap Reductn	0	0		0	42		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.20	0.93		0.54	0.60		0.28	0.30				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 77.5% 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.
m Volume for 95th percentile queue is metered by upstream signal.

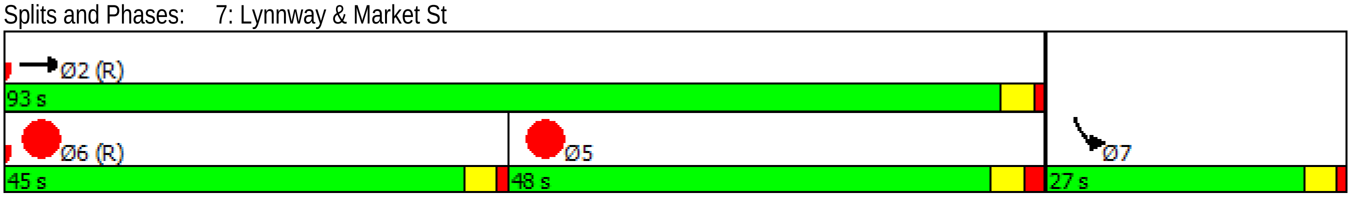
Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø5	Ø6
Lane Configurations								
Traffic Volume (vph)	0	1450	0	0	500	0		
Future Volume (vph)	0	1450	0	0	500	0		
Satd. Flow (prot)	0	3421	0	0	3319	0		
Flt Permitted					0.950			
Satd. Flow (perm)	0	3421	0	0	3319	0		
Satd. Flow (RTOR)					136			
Lane Group Flow (vph)	0	1525	0	0	526	0		
Turn Type		NA			Prot			
Protected Phases		2			7		5	6
Permitted Phases								
Total Split (s)		93.0			27.0		48.0	45.0
Total Lost Time (s)		4.0			4.0			
Act Effct Green (s)		92.7			19.3			
Actuated g/C Ratio		0.77			0.16			
v/c Ratio		0.58			0.81			
Control Delay		13.2			11.9			
Queue Delay		0.0			1.1			
Total Delay		13.2			13.1			
LOS		B			B			
Approach Delay		13.2			13.1			
Approach LOS		B			B			
Queue Length 50th (ft)		322			1			
Queue Length 95th (ft)		708			m4			
Internal Link Dist (ft)		384	1232		273			
Turn Bay Length (ft)								
Base Capacity (vph)		2643			746			
Starvation Cap Reductn		0			75			
Spillback Cap Reductn		0			0			
Storage Cap Reductn		0			0			
Reduced v/c Ratio		0.58			0.78			

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 116 (97%), Referenced to phase 2:EBT and 6:Hold, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 13.2	Intersection LOS: B
Intersection Capacity Utilization 62.1%	ICU Level of Service B
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Lynnway & Market St

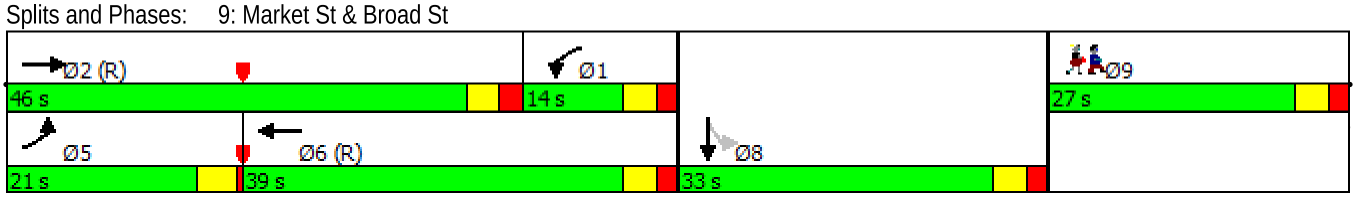


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	570	0	50	1010	235	0	0	0	90	450	250
Future Volume (vph)	230	570	0	50	1010	235	0	0	0	90	450	250
Satd. Flow (prot)	1711	3421	0	1711	4778	0	0	0	0	0	3241	0
Flt Permitted	0.950			0.950							0.994	
Satd. Flow (perm)	1711	3421	0	1711	4778	0	0	0	0	0	3241	0
Satd. Flow (RTOR)					45						59	
Lane Group Flow (vph)	242	599	0	53	1309	0	0	0	0	0	831	0
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	5	2		1	6						8	
Permitted Phases										8		
Total Split (s)	21.0	46.0		14.0	39.0					33.0	33.0	
Total Lost Time (s)	4.0	5.0		5.0	5.0						5.0	
Act Effct Green (s)	19.5	54.6		8.3	42.3						28.0	
Actuated g/C Ratio	0.16	0.46		0.07	0.35						0.23	
v/c Ratio	0.87	0.38		0.45	0.76						1.04	
Control Delay	60.3	22.6		51.5	24.6						83.7	
Queue Delay	0.0	0.0		0.0	0.0						0.0	
Total Delay	60.3	22.6		51.5	24.6						83.7	
LOS	E	C		D	C						F	
Approach Delay		33.4			25.6						83.7	
Approach LOS		C			C						F	
Queue Length 50th (ft)	185	217		39	341						~345	
Queue Length 95th (ft)	m#247	m252		m70	#465						#475	
Internal Link Dist (ft)		520			712			273			249	
Turn Bay Length (ft)	200			200								
Base Capacity (vph)	277	1556		128	1714						801	
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	0.87	0.38		0.41	0.76						1.04	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 41 (34%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 43.7 Intersection LOS: D
Intersection Capacity Utilization 73.4% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Market St & Broad St

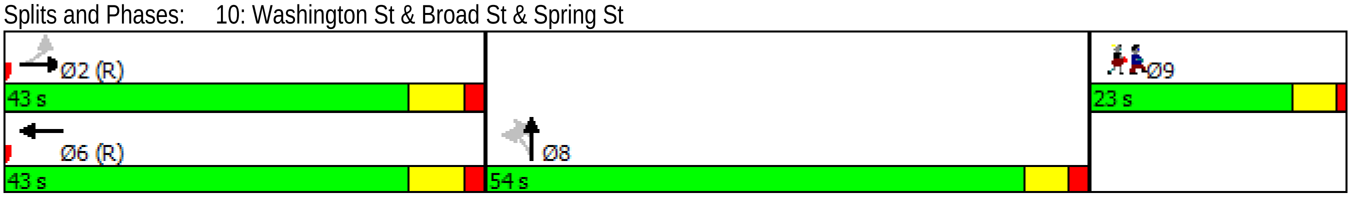


Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBL	NBT	NBR	Ø9
Lane Configurations									
Traffic Volume (vph)	15	570	395	5	900	135	75	25	
Future Volume (vph)	15	570	395	5	900	135	75	25	
Satd. Flow (prot)	0	3418	3414	0	3319	0	1722	0	
Flt Permitted		0.937			0.950		0.972		
Satd. Flow (perm)	0	3206	3414	0	3319	0	1722	0	
Satd. Flow (RTOR)			73				6		
Lane Group Flow (vph)	0	615	420	0	946	0	247	0	
Turn Type	Perm	NA	NA		Perm	Perm	NA		
Protected Phases		2	6				8		9
Permitted Phases	2				8	8			
Total Split (s)	43.0	43.0	43.0		54.0	54.0	54.0		23.0
Total Lost Time (s)		7.0	7.0		6.0		6.0		
Act Effct Green (s)		59.7	59.7		42.7		42.7		
Actuated g/C Ratio		0.50	0.50		0.36		0.36		
v/c Ratio		0.39	0.24		0.80		0.40		
Control Delay		27.8	16.9		40.3		29.6		
Queue Delay		0.0	0.0		0.0		0.0		
Total Delay		27.8	16.9		40.3		29.6		
LOS		C	B		D		C		
Approach Delay		27.8	16.9				38.1		
Approach LOS		C	B				D		
Queue Length 50th (ft)		238	72		331		137		
Queue Length 95th (ft)		m296	158		389		198		
Internal Link Dist (ft)		712	345				1199		
Turn Bay Length (ft)									
Base Capacity (vph)		1595	1735		1327		692		
Starvation Cap Reductn		0	0		0		0		
Spillback Cap Reductn		0	0		0		0		
Storage Cap Reductn		0	0		0		0		
Reduced v/c Ratio		0.39	0.24		0.71		0.36		

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 81 (68%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 31.2	Intersection LOS: C
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Washington St & Broad St & Spring St



Intersection	
Intersection Delay, s/veh	30.3
Intersection LOS	D

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	841	2103	410
Demand Flow Rate, veh/h	858	2140	418
Vehicles Circulating, veh/h	660	214	1807
Vehicles Exiting, veh/h	1565	1304	214
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.3	34.0	40.0
Approach LOS	C	D	E

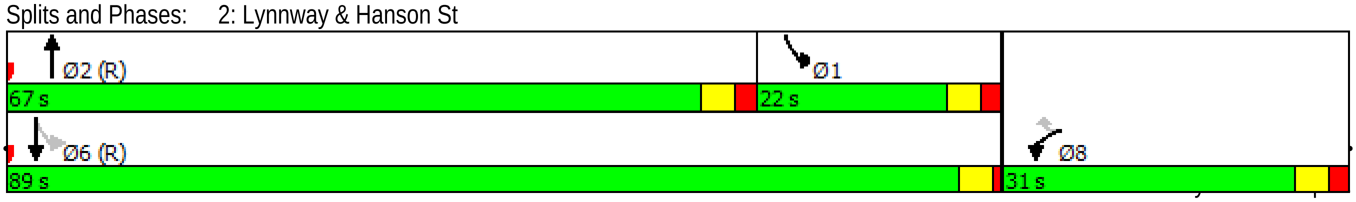
Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.531	0.469
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	403	455	958	849	333	222	196
Cap Entry Lane, veh/h	689	712	962	973	973	291	319
Entry HV Adj Factor	0.981	0.980	0.983	0.984	0.980	0.979	0.983
Flow Entry, veh/h	395	446	942	835	326	217	193
Cap Entry, veh/h	676	697	946	957	954	285	314
V/C Ratio	0.585	0.639	0.995	0.873	0.342	0.762	0.615
Control Delay, s/veh	15.5	17.0	49.1	27.4	7.4	47.7	31.2
LOS	C	C	E	D	A	E	D
95th %tile Queue, veh	4	5	19	12	2	6	4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	180	1530	120	220	1450
Future Volume (vph)	95	180	1530	120	220	1450
Satd. Flow (prot)	1711	1531	3384	0	1711	3421
Flt Permitted	0.950				0.058	
Satd. Flow (perm)	1711	1531	3384	0	104	3421
Satd. Flow (RTOR)		189	10			
Lane Group Flow (vph)	100	189	1735	0	231	1525
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Total Split (s)	31.0	31.0	67.0		22.0	89.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	4.0
Act Effct Green (s)	16.4	16.4	71.6		93.6	94.6
Actuated g/C Ratio	0.14	0.14	0.60		0.78	0.79
v/c Ratio	0.43	0.51	0.86		0.75	0.57
Control Delay	50.7	10.6	24.4		28.5	1.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	50.7	10.6	24.4		28.5	1.0
LOS	D	B	C		C	A
Approach Delay	24.5		24.4			4.7
Approach LOS	C		C			A
Queue Length 50th (ft)	75	0	224		109	1
Queue Length 95th (ft)	116	61	#310		m#175	34
Internal Link Dist (ft)	376		617			1043
Turn Bay Length (ft)	200				400	
Base Capacity (vph)	370	479	2022		308	2696
Starvation Cap Reductn	0	0	1		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.27	0.39	0.86		0.75	0.57

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 15.2 Intersection LOS: B
Intersection Capacity Utilization 77.3% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Lynnway & Hanson St



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Future Volume (vph)	35	5	40	15	5	5	85	1555	75	200	1630	15
Satd. Flow (prot)	1711	1559	0	0	1734	1531	1711	3397	0	1711	3418	0
Flt Permitted	0.744				0.799		0.095			0.062		
Satd. Flow (perm)	1340	1559	0	0	1439	1531	171	3397	0	112	3418	0
Satd. Flow (RTOR)		42				109		6			1	
Lane Group Flow (vph)	37	47	0	0	21	5	89	1714	0	210	1730	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Total Split (s)	32.0	32.0		32.0	32.0	32.0	14.0	68.0		20.0	74.0	
Total Lost Time (s)	6.0	6.0			6.0	6.0	5.0	5.0		5.0	5.0	
Act Effct Green (s)	18.1	18.1			18.1	18.1	75.1	75.1		79.2	79.2	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.63	0.63		0.66	0.66	
v/c Ratio	0.18	0.17			0.10	0.02	0.40	0.81		0.85	0.77	
Control Delay	42.2	14.7			39.8	0.0	15.6	9.8		64.0	10.5	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.2	14.7			39.8	0.0	15.6	9.8		64.0	10.5	
LOS	D	B			D	A	B	A		E	B	
Approach Delay		26.8			32.1			10.1			16.3	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	23	3			13	0	9	643		132	216	
Queue Length 95th (ft)	54	36			36	0	m13	#814		m161	m226	
Internal Link Dist (ft)		148			94			1043			1857	
Turn Bay Length (ft)							300			300		
Base Capacity (vph)	290	370			311	417	222	2127		273	2254	
Starvation Cap Reductn	0	0			0	0	0	0		0	0	
Spillback Cap Reductn	0	0			0	0	0	0		0	0	
Storage Cap Reductn	0	0			0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.13			0.07	0.01	0.40	0.81		0.77	0.77	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 16 (13%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 13.7 Intersection LOS: B
Intersection Capacity Utilization 79.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

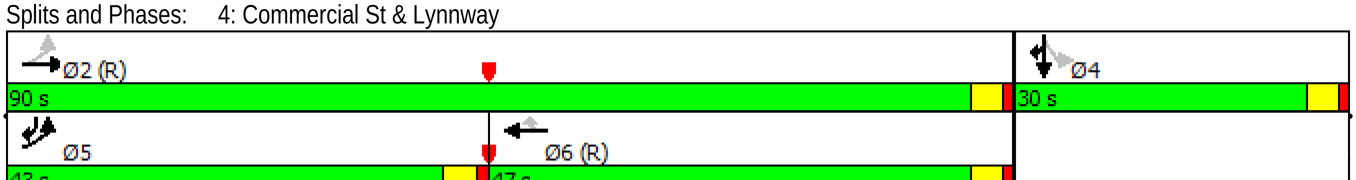
Splits and Phases: 3: Lynnway & Harding St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Future Volume (vph)	550	1380	10	0	1190	260	0	0	0	330	80	460
Satd. Flow (prot)	1711	3418	0	0	3421	1531	0	0	0	1711	1801	1531
Flt Permitted	0.083									0.950		
Satd. Flow (perm)	149	3418	0	0	3421	1531	0	0	0	1711	1801	1531
Satd. Flow (RTOR)		2				252						9
Lane Group Flow (vph)	578	1462	0	0	1251	273	0	0	0	347	84	484
Turn Type	pm+pt	NA			NA	Perm				Perm	NA	pt+ov
Protected Phases	5	2			6						4	4 5
Permitted Phases	2					6				4		
Total Split (s)	43.0	90.0			47.0	47.0				30.0	30.0	
Total Lost Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
Act Effct Green (s)	86.2	86.2			44.2	44.2				25.8	25.8	67.8
Actuated g/C Ratio	0.72	0.72			0.37	0.37				0.22	0.22	0.56
v/c Ratio	0.96	0.60			0.99	0.38				0.94	0.22	0.56
Control Delay	47.5	6.5			42.0	2.8				81.5	40.5	19.0
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	47.5	6.5			42.0	2.8				81.5	40.5	19.0
LOS	D	A			D	A				F	D	B
Approach Delay		18.1			34.9						44.7	
Approach LOS		B			C						D	
Queue Length 50th (ft)	281	102			~434	7				266	54	217
Queue Length 95th (ft)	#600	137			#664	25				#449	100	316
Internal Link Dist (ft)		1857			1085			493			489	
Turn Bay Length (ft)	600					300				200		200
Base Capacity (vph)	614	2454			1259	723				370	390	874
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	0.94	0.60			0.99	0.38				0.94	0.22	0.55

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 102 (85%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 29.3 | Intersection LOS: C
Intersection Capacity Utilization 93.3% | 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.

Splits and Phases: 4: Commercial St & Lynnway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Future Volume (vph)	115	1560	5	55	1400	50	5	5	5	35	5	30
Satd. Flow (prot)	1711	3421	0	1711	3404	0	1711	1666	0	0	1656	0
Flt Permitted	0.098			0.095			0.735				0.840	
Satd. Flow (perm)	176	3421	0	171	3404	0	1323	1666	0	0	1425	0
Satd. Flow (RTOR)					4			5			29	
Lane Group Flow (vph)	121	1645	0	58	1525	0	5	10	0	0	74	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	20.0	75.0		13.0	68.0		32.0	32.0		32.0	32.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Act Effct Green (s)	89.9	83.0		83.7	76.7		18.4	18.4			18.4	
Actuated g/C Ratio	0.75	0.69		0.70	0.64		0.15	0.15			0.15	
v/c Ratio	0.48	0.70		0.28	0.70		0.02	0.04			0.30	
Control Delay	19.5	7.9		8.6	8.3		37.4	27.9			29.4	
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0			0.0	
Total Delay	19.5	7.9		8.6	8.3		37.4	27.9			29.4	
LOS	B	A		A	A		D	C			C	
Approach Delay		8.7			8.3			31.1			29.4	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	22	203		4	60		3	3			28	
Queue Length 95th (ft)	m65	m283		m18	208		14	18			72	
Internal Link Dist (ft)		1085			554			123			164	
Turn Bay Length (ft)	250			200								
Base Capacity (vph)	314	2365		209	2178		286	364			331	
Starvation Cap Reductn	0	0		0	53		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	0.39	0.70		0.28	0.72		0.02	0.03			0.22	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 9.1 — Intersection LOS: A

Intersection Capacity Utilization 75.8% — ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Marine Blvd/Sheppard St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1610	45	30	1430	120	5	10	10	10	10	30
Future Volume (vph)	0	1610	45	30	1430	120	5	10	10	10	10	30
Satd. Flow (prot)	0	3408	0	1711	3380	0	1711	1666	0	1711	1599	0
Flt Permitted				0.083			0.729			0.743		
Satd. Flow (perm)	0	3408	0	149	3380	0	1313	1666	0	1338	1599	0
Satd. Flow (RTOR)		4			17			11			32	
Lane Group Flow (vph)	0	1740	0	32	1630	0	5	22	0	11	43	0
Turn Type		NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases				6			8			4		
Total Split (s)		80.0		9.0	79.0		31.0	31.0		31.0	31.0	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Act Effct Green (s)		89.9		94.3	95.3		17.8	17.8		17.8	17.8	
Actuated g/C Ratio		0.75		0.79	0.79		0.15	0.15		0.15	0.15	
v/c Ratio		0.68		0.18	0.61		0.03	0.09		0.06	0.16	
Control Delay		3.5		2.4	1.2		37.4	25.2		38.4	18.4	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		3.5		2.4	1.3		37.4	25.2		38.4	18.4	
LOS		A		A	A		D	C		D	B	
Approach Delay		3.5			1.3			27.5			22.4	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		60		1	37		3	7		7	7	
Queue Length 95th (ft)		72		m1	18		14	30		23	38	
Internal Link Dist (ft)		554			496			259			262	
Turn Bay Length (ft)				200								
Base Capacity (vph)		2554		177	2688		284	369		289	371	
Starvation Cap Reductn		0		0	47		0	0		0	0	
Spillback Cap Reductn		0		0	31		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.68		0.18	0.62		0.02	0.06		0.04	0.12	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 63 (53%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 2.9 Intersection LOS: A
Intersection Capacity Utilization 62.4% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Blossom St & Lynnway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1530	15	15	1500	40	30	20	30	0	0	0
Future Volume (vph)	65	1530	15	15	1500	40	30	20	30	0	0	0
Satd. Flow (prot)	1711	3418	0	1711	3408	0	1711	1637	0	0	0	0
Flt Permitted	0.122			0.114			0.950					
Satd. Flow (perm)	220	3418	0	205	3408	0	1711	1637	0	0	0	0
Satd. Flow (RTOR)		2			4			32				
Lane Group Flow (vph)	68	1625	0	16	1619	0	32	53	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA				
Protected Phases	5	2		1	6		8	8				
Permitted Phases	2			6								
Total Split (s)	14.0	80.0		10.0	76.0		30.0	30.0				
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0				
Act Effct Green (s)	99.8	99.8		91.8	92.6		10.9	10.9				
Actuated g/C Ratio	0.83	0.83		0.76	0.77		0.09	0.09				
v/c Ratio	0.23	0.57		0.07	0.62		0.21	0.30				
Control Delay	4.6	3.0		0.9	6.8		50.0	27.4				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	4.6	3.1		0.9	6.8		50.0	27.4				
LOS	A	A		A	A		D	C				
Approach Delay		3.1			6.7			35.9				
Approach LOS		A			A			D				
Queue Length 50th (ft)	6	77		0	151		24	16				
Queue Length 95th (ft)	m11	103		m1	m687		48	48				
Internal Link Dist (ft)		496			544			258			42	
Turn Bay Length (ft)	200			300								
Base Capacity (vph)	305	2844		232	2632		370	379				
Starvation Cap Reductn	0	115		0	0		0	0				
Spillback Cap Reductn	0	0		0	0		0	0				
Storage Cap Reductn	0	0		0	0		0	0				
Reduced v/c Ratio	0.22	0.60		0.07	0.62		0.09	0.14				

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 64 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 5.7	Intersection LOS: A
Intersection Capacity Utilization 62.0%	ICU Level of Service B
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Kingman St & Lynnway

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø5
Lane Configurations							
Traffic Volume (vph)	0	985	0	0	330	0	
Future Volume (vph)	0	985	0	0	330	0	
Satd. Flow (prot)	0	3421	0	0	3319	0	
Flt Permitted					0.950		
Satd. Flow (perm)	0	3421	0	0	3319	0	
Satd. Flow (RTOR)					338		
Lane Group Flow (vph)	0	1036	0	0	347	0	
Turn Type		NA			Prot		
Protected Phases		2			7		5
Permitted Phases							
Total Split (s)		93.0			27.0		48.0
Total Lost Time (s)		4.0			4.0		
Act Effct Green (s)		104.0			8.0		
Actuated g/C Ratio		0.87			0.07		
v/c Ratio		0.35			0.65		
Control Delay		1.6			9.8		
Queue Delay		0.0			0.0		
Total Delay		1.6			9.8		
LOS		A			A		
Approach Delay		1.6			9.8		
Approach LOS		A			A		
Queue Length 50th (ft)		1			8		
Queue Length 95th (ft)		117			m12		
Internal Link Dist (ft)		384	1232		276		
Turn Bay Length (ft)							
Base Capacity (vph)		2965			909		
Starvation Cap Reductn		0			0		
Spillback Cap Reductn		0			0		
Storage Cap Reductn		0			0		
Reduced v/c Ratio		0.35			0.38		

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 113 (94%), Referenced to phase 2:EBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 3.7	Intersection LOS: A
Intersection Capacity Utilization 44.0%	ICU Level of Service A
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Lynnway & Market St

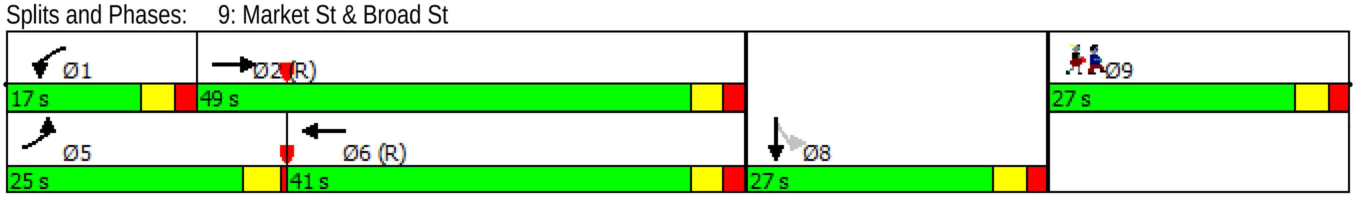
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	300	0	75	1280	275	0	0	0	205	230	155
Future Volume (vph)	300	300	0	75	1280	275	0	0	0	205	230	155
Satd. Flow (prot)	1711	3421	0	1711	4783	0	0	0	0	0	3232	0
Flt Permitted	0.950			0.950							0.983	
Satd. Flow (perm)	1711	3421	0	1711	4783	0	0	0	0	0	3232	0
Satd. Flow (RTOR)					40						37	
Lane Group Flow (vph)	315	315	0	79	1635	0	0	0	0	0	621	0
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	5	2		1	6						8	
Permitted Phases										8		
Total Split (s)	25.0	49.0		17.0	41.0					27.0	27.0	
Total Lost Time (s)	4.0	5.0		5.0	5.0						5.0	
Act Effct Green (s)	25.1	59.0		10.1	42.7						22.0	
Actuated g/C Ratio	0.21	0.49		0.08	0.36						0.18	
v/c Ratio	0.88	0.19		0.55	0.95						1.00	
Control Delay	65.7	16.7		72.5	40.2						82.0	
Queue Delay	0.0	0.0		0.0	0.0						0.0	
Total Delay	65.7	16.7		72.5	40.2						82.0	
LOS	E	B		E	D						F	
Approach Delay		41.2			41.7						82.0	
Approach LOS		D			D						F	
Queue Length 50th (ft)	~260	85		63	~532						242	
Queue Length 95th (ft)	#446	146		m88	#619						#370	
Internal Link Dist (ft)		510			739			276			264	
Turn Bay Length (ft)	200			200								
Base Capacity (vph)	358	1681		171	1727						622	
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	0.88	0.19		0.46	0.95						1.00	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 31 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 50.0 — Intersection LOS: D
Intersection Capacity Utilization 77.7% — 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Market St & Broad St

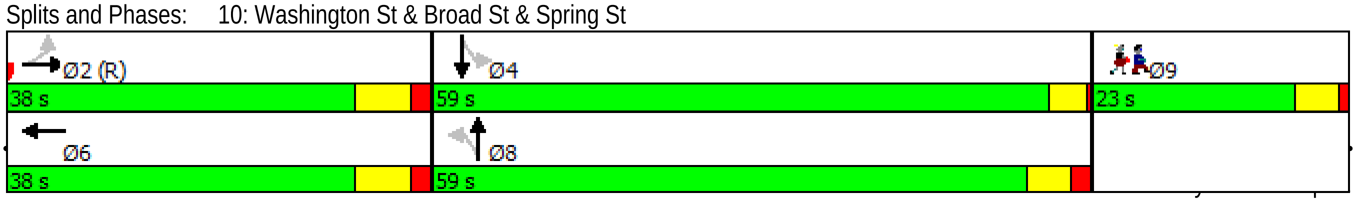


Lane Group	EBL	EBT	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations											
Traffic Volume (vph)	20	530	605	15	970	220	15	10	0	45	
Future Volume (vph)	20	530	605	15	970	220	15	10	0	45	
Satd. Flow (prot)	0	3414	3408	0	3319	1783	0	0	1590	0	
Flt Permitted		0.911			0.750				0.943		
Satd. Flow (perm)	0	3117	3408	0	2620	1783	0	0	1513	0	
Satd. Flow (RTOR)			73			4					
Lane Group Flow (vph)	0	578	652	0	1020	247	0	0	58	0	
Turn Type	Perm	NA	NA		Perm	NA		Perm	NA		
Protected Phases		2	6			8			4		9
Permitted Phases	2				8			4			
Total Split (s)	38.0	38.0	38.0		59.0	59.0		59.0	59.0		23.0
Total Lost Time (s)		7.0	7.0		6.0	6.0			4.0		
Act Effct Green (s)		51.1	51.1		51.3	51.3			53.3		
Actuated g/C Ratio		0.43	0.43		0.43	0.43			0.44		
v/c Ratio		0.44	0.44		0.91	0.32			0.09		
Control Delay		20.5	24.5		45.0	23.4			19.0		
Queue Delay		0.0	0.0		0.0	0.0			0.0		
Total Delay		20.5	24.5		45.0	23.4			19.0		
LOS		C	C		D	C			B		
Approach Delay		20.5	24.5			40.8			19.0		
Approach LOS		C	C			D			B		
Queue Length 50th (ft)		143	155		364	119			25		
Queue Length 95th (ft)		m211	283		#481	182			50		
Internal Link Dist (ft)		739	345			1199			214		
Turn Bay Length (ft)											
Base Capacity (vph)		1327	1492		1157	789			693		
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		0.44	0.44		0.88	0.31			0.08		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 81 (68%), Referenced to phase 2:EBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 31.5 Intersection LOS: C
Intersection Capacity Utilization 75.5% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Washington St & Broad St & Spring St



Intersection	
Intersection Delay, s/veh	16.6
Intersection LOS	C

Approach	WB	SB	NE
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1047	1424	867
Demand Flow Rate, veh/h	1068	1452	884
Vehicles Circulating, veh/h	482	306	777
Vehicles Exiting, veh/h	1179	1244	306
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.9	13.4	21.4
Approach LOS	C	B	C

Lane	Left	Right	Left	Right	Bypass	Left	Right
Designated Moves	LTR	R	L	LTR	R	L	LTR
Assumed Moves	LTR	R	L	LTR	R	L	LTR
RT Channelized					Yield		
Lane Util	0.470	0.530	0.530	0.470		0.531	0.469
Critical Headway, s	4.293	4.113	4.293	4.113		4.293	4.113
Entry Flow, veh/h	502	566	412	365	675	469	415
Cap Entry Lane, veh/h	787	806	898	912	912	631	656
Entry HV Adj Factor	0.980	0.980	0.980	0.981	0.980	0.980	0.982
Flow Entry, veh/h	492	555	404	358	662	460	407
Cap Entry, veh/h	772	791	880	895	894	618	644
V/C Ratio	0.638	0.702	0.459	0.400	0.740	0.743	0.633
Control Delay, s/veh	15.7	18.0	9.8	8.7	18.3	24.5	17.9
LOS	C	C	A	A	C	C	C
95th %tile Queue, veh	5	6	2	2	7	7	4

TABLE 1
Alternative 5: Traffic Queue Lengths in Feet

Intersection/Approach	Movement	Weekday AM 50th Percentile	Weekday AM 95th Percentile	Weekday PM 50th Percentile	Weekday PM 95th Percentile	Saturday PM 50th Percentile	Saturday PM 95th Percentile
Lynnway and Hanson Street	--	--	--	--	--	--	--
Lynnway	NB – Through/right	221	272	774	#1256	224	#310
Lynnway	SB – Left	0	0	~157	#337	110	m#175
Lynnway	SB – Through/right	91	164	74	173	0	34
Hanson Street	WB – Left	13	35	59	95	75	116
Hanson Street	WB – Right	0	19	0	46	0	61
Lynnway and Harding Street	--	--	--	--	--	--	--
Lynnway	NB – Left	6	m28	0	7	9	m13
Lynnway	NB – Through/right	155	183	m#1213	~1250	643	#814
Lynnway	SB – Left	15	m20	103	m#139	132	m161
Lynnway	SB – Through/right	~m#1047	~1201	50	m55	216	m226
Harding Street	WB – Left	16	42	27	59	23	54
Harding Street	WB – Through/right	0	0	0	0	3	36
Harding Street	EB – Left/Through	3	14	20	49	13	36
Harding Street	EB – Right	0	0	0	0	0	0
Lynnway and Commercial Street	--	--	--	--	--	--	--
Lynnway	NB – Left	102	#321	m#386	~469	281	#600
Lynnway	NB – Through/right	20	50	27	m28	102	137
Lynnway	SB – Through	~1070	m#1129	241	3563	~426	#655
Lynnway	SB – Right	24	25	0	81	2	25
Commercial Street	EB – Left	185	279	277	#467	266	#449
Commercial Street	EB – Through	65	115	16	41	54	100
Commercial Street	EB -- Right	412	#643	113	172	217	216
Lynnway, Shepard Street, and Marine Boulevard	--	--	--	--	--	--	--
Lynnway	NB – Left	6	m36	1	m22	22	m65
Lynnway	NB – Through/right	90	95	157	m#1248	203	m283
Lynnway	SB – Left	0	0	1	8	4	m17
Lynnway	SB – Through/right	~1153	#1294	33	80	61	206
Marine Boulevard	WB – Left	7	23	15	36	3	14
Marine Boulevard	WB – Through/right	0	0	4	23	3	18
Shepard Street	EB – Left/through/right	32	72	39	76	28	72
Lynnway and Kingman Street	--	--	--	--	--	--	--
Lynnway	NB – Left	7	34	6	m9	5	m10
Lynnway	NB – Through/right	236	297	231	#1092	69	91
Lynnway	SB – Left	0	0	22	m43	0	0
Lynnway	SB – Through/right	149	m754	40	m530	151	m687
Kingman Street	WB – Left	30	63	79	121	24	48
Kingman Street	WB – Through/right	3	39	20	69	16	48

Lynnway, Carroll Parkway, and Market Street	--	--	--	--	--	--	--
Lynnway	NB – Through	2	5	320	708	2	112
Market Street	EB – Left	41	m52	1	m4	8	m12
Carroll Parkway, Nahant Road, and Lynn Shore Drive	--	--	--	--	--	--	--
Carroll Parkway	NB – Left	25	50	230	475	25	50
Carroll Parkway	NB – Right	25	50	125	300	125	175
Nahant Road	NB – Left	37	75	75	150	87	175
Nahant Road	NB – Through	25	50	37	100	50	100
Lynn Shore Drive	SB – Through	235	475	50	100	65	125
Lynn Shore Drive	SB – Right	330	650	36	125	75	150
Market Street and Broad Street	--	--	--	--	--	--	--
Market Street	SB – Left/through/right	166	#276	~345	#475	242	#370
Broad Street	WB -- Left	43	m60	39	m70	63	m88
Broad Street	WB – Through/right	~801	#920	341	#465	~532	#619
Broad Street	EB – Left	~87	#206	184	#247	~259	#446
Broad Street	EB – Through/right	95	142	217	m252	88	146
Broad Street, Washington Street, and Spring Street	--	--	--	--	--	--	--
Broad Street	WB – Through/right	174	#316	238	m296	155	283
Broad Street	EB – Through	108	m152	72	158	143	m120
Washington Street	NB – Left	515	631	331	389	364	#481
Washington Street	NB – Through/right	528	807	137	198	119	182

APPENDIX M

MassDOT Highway Division
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
Step I: Problem/Need/Opportunity Identification The proponent completes a Project Need Form (PNF). This form is then reviewed by the MassDOT District office which provides guidance to the proponent on the subsequent steps of the process.	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.	1 to 3 months
Step II: Planning 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.	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.	Project Planning Report: 3 to 24+ months
Step III: Project Initiation 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 District office, and formally reviewed by the PRC.	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.	1 to 4 months
Step IV: Design, Environmental, and Right of Way 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.	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 district and appropriate sections is completed in this step.	3 to 48+ months
Step V: Programming 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.	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.	3 to 12+ months
Step VI: Procurement The project is advertised for construction and a contract awarded.	Administration of competing projects can influence the advertising schedule.	1 to 12 months
Step VII: Construction The construction process is initiated including public notification and any anticipated public involvement. Construction continues to project completion.	The duration for this step is entirely dependent upon project complexity and phasing.	3 to 60+ months
Step VIII: Project Assessment The construction period is complete and project elements and processes are evaluated on a voluntary basis.	The duration for this step is dependent upon the proponent's approach to this step and any follow-up required.	1 month

Source: MassDOT Highway Division Project Development and Design Guide

DRAFT-Please do not quote

ECONOMIC DEVELOPMENT SELF-ASSESSMENT TOOL

RESULTS FOR THE CITY OF LYNN, MA

AUGUST 2, 2011

NATIONAL LEAGUE of CITIES | CENTER FOR RESEARCH & INNOVATION

Northeastern University
Dukakis Center for Urban and Regional Policy

For additional information about the Economic Development Self Assessment Tool (EDSAT), please visit www.economicdevelopment.neu.edu/ or contact

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Introduction

A robust and adaptable local economy depends greatly on municipal officials taking the lead on formulating and implementing an economic development strategy. This includes understanding what it is that businesses are looking for, what local and regional resources are available, what advantages their municipality has to offer, and what weaknesses they must overcome. The Economic Development Self Assessment Tool (EDSAT) is an important step municipal officials can undertake in assessing their municipality's strengths and weaknesses for sustaining and expanding economic growth. Municipal officials and business and civic leaders who come together as a team for self assessment also benefit from an integrated view of how various departments and stakeholders affect economic development and their roles in creating a business friendly environment.

By participating in this self assessment, the City of Lynn is on its way to better understanding the assets it has for economic development and addressing the challenges working against it. This report contains a summary and analysis of the responses provided by Lynn to the EDSAT questions on June 27, 2011 at a meeting of municipal, business, and civic leaders. The analysis includes comparisons between the responses from Lynn and responses from all of the other jurisdictions that have completed the self assessment. These jurisdictions will be referred to as the comparison group municipalities (CGM) and are viewed as representing Lynn's competitors for private investment. The comparisons indicate where Lynn is particularly strong relative to the CGM and where there may be areas of improvement to enhance the city's economic development potential.

Project Overview

The EDSAT and accompanying analysis are part of an ongoing partnership between Northeastern University's Dukakis Center for Urban Research and Policy (Dukakis Center) and the National League of Cities (NLC). The larger economic development efforts between the Dukakis Center and the NLC include an Economic Development Toolkit of which EDSAT is the first tool. Since 2005, the Dukakis Center has sought to identify the "deal breakers" impeding private investment in local jurisdictions. Based on research on the rebirth of older industrial cities, the Dukakis Center has studied and identified what municipalities can do to respond to changing market forces and highlighted strategic opportunities with other key actors including state government, regional agencies, the private sector, and academic institutions. The result has been the development of EDSAT and the creation of an analytical framework for providing practical feedback to municipalities that take part in the self assessment.

Methodology

The EDSAT questionnaire is the product of a rigorous and interactive process involving the research team, partners in the development community, and communities that have participated in the self assessment. The foundation for the over 250 questions that make up the EDSAT questionnaire was established when the Dukakis Center surveyed a large group of members from the National Association of Industrial and Office Properties (NAIOP) and CoreNet Global, the professional association representing in-house location experts. They were asked to identify those themes that are most important to businesses when evaluating locations. That process generated a set of 38 broad themes relevant to economic growth and development. Examples of themes are highway access, capacity of infrastructure, and the timeliness of permit approvals.

The location experts ranked the themes as “Very Important,” “Important,” or “Less Important” to companies and developers when evaluating locations.

Each question in EDSAT addresses a location factor within a theme. The response provided by Lynn to a question is compared to the median or majority response of the CGM. Depending on Lynn’s response relative to the CGM, EDSAT assigns a color code to the comparison, indicating Lynn’s relative strength in that location factor. Green indicates a municipality is stronger than the median or majority response of the comparison group; yellow indicates the response equals the median or majority response or is qualitatively similar and; red indicates a municipality is weaker than the median or majority response. The interaction between the importance of a location factor and Lynn’s relative strength in that factor yields the most telling information. A comparison yielding “red” for a Very Important factor represents the potential for a “deal breaker,” while a comparison resulting in “green” for a Very Important factor represents the likelihood of a “deal maker.” An overall goal for municipalities is to turn “deal breakers” into “deal makers.”

Occasionally grey is assigned to a comparison. This indicates there is no comparison and the intent of the question is to obtain a list of characteristics related to a question. For example, a question in Section 2B asks if the municipality targets any specific industries. This question is assigned “grey” because EDSAT is collecting information for a list and not attempting to make a comparison.

Interpretation of some comparisons and color assignments may depend on the individual circumstances of the municipality answering the question and its objectives for economic development. For example, if a municipality has many more square feet of vacant warehouse space than the median number for the CGM, EDSAT assigns “red” because large amounts of warehouse space could indicate out dated facilities in an industry experiencing stagnant economic activity; a weakness if all else where equal. However, the empty space may actually be an asset if the municipality is focusing on attracting businesses that would benefit from such large spaces. Examples include a distribution center, manufacturing, or creative mixed use projects. For some questions, the red and green color assignments serve to flag the response for further consideration within the context of the municipality’s objectives and circumstances.

Summary and Organization of Relative Strengths and Weaknesses

This section highlights Lynn’s primary strengths and weaknesses for economic development relative to the CGM. EDSAT does not provide an overall grade for a municipality. Each municipality has its unique set of strengths, weaknesses, and economic development objectives, thus it would not be relevant to the process to assign an overall ranking among the CGM. Instead, the Dukakis Center staff create a list of relative strengths and weaknesses for each of the Very Important, Important, and Less Important location factors. The strengths are listed in the order that the questions appear in the self assessment. Dukakis Center staff suggest that municipalities review the lists and use them to highlight and enhance strengths.

The lists of weaknesses on the other hand are prioritized for municipal leaders to consider mitigating or eliminating. The weaknesses are ordered according to what the Dukakis Center staff consider more feasible and within the control of the municipality. For example, if a municipality does not have easy highway access, building a new highway interchange or connector would neither be a task that can be finished quickly nor would it likely be an efficient use of resources. However, streamlining the municipality's permitting process and making that information easily accessible to location experts and businesses are tasks that could be accomplished with modest investments of time and resources. Location experts rank both highway access and the timeliness of permitting as Very Important. In the list of "deal breakers," the permitting process would be listed higher than the highway interchange because streamlining the permitting process is in the control of municipalities.

At the end of each list of "deal breakers" is a list of on par comparisons between Lynn and the CGM. On par comparisons indicate that neither Lynn nor the majority of CGM undertakes these activities or that the comparisons do not show any quantitative or qualitative differences. The Dukakis Center staff included these with the weakness to draw attention to them. These activities tend to be within reach from the perspectives of implementation and municipal control. If Lynn initiated some of these activities, then the city would differentiate itself from the CGM for that location factor rather than simply being on par with them.

Dukakis Center staff suggest that Lynn review the prioritized lists and the more detailed narrative about all the location factors, while keeping in mind its economic development objectives and the resources available for addressing "deal breakers." This is an opportunity for informed dialogue among municipal officials and those with a role and interest in economic development that leads to establishing a roadmap to turn "deal breakers" into "deal makers."

Potential "Deal Makers" and other Strengths

These are the location factors in which Lynn has strengths relative to the CGM and they are the economic development assets of the city. Lynn should build upon them in economic development strategies and plans; highlight them to potential businesses and developers; use them to focus marketing opportunities; and continue to augment them. Please note that strengths are listed in the order that questions appear in the self assessment.

Lynn has very few dominant categories of "deal makers." There are several factors within categories namely rent and classes of office space under Cost of Land; and permitting for existing properties under Local Process.

<u>Strengths among Very Important Location Factors</u>

- Rent for retail space in Lynn's central business district is lower than among the CGM.
- The distribution of classes of office space in Lynn is more desirable than the CGM. There is more Class A space. However, there is also more Class B space, which is less desirable.
- Permitting decisions for site plan review, zoning variance, and special permits associated with existing properties are faster than the median duration among the CGM.

<u>Strengths among Important Location Factors</u>

- Lynn has access to a complete list of available development sites that is maintained by EDIC, while the majority of the CGM do not maintain such a list.

- The city has a business incubator for clean technology and energy efficiency industrial sector.
- Lynn considers more than half of its available development sites as greenfields, while the median range among the CGM is 0-10%.
- Lynn uses overlay districts to expedite permitting for certain land uses, which the majority of the CGM do not utilize.
- Lynn has a major museum and a performing arts auditorium, which the majority of the CGM do not have.
- Lynn seeks tax abatements for tax title properties to clear the liens for new owners. It is likely that the property tax revenue streams and the economic benefits from a vibrant and successful business will over time outweigh the benefit of the one time tax payment.

Strengths among Less Important Location Factors

- Lynn is in proximity of a general aviation airport (Beverly Municipal Airport) and the major international airport(Logan) is closer to Lynn (6-10 miles) than the median distance (20-30 miles) among the CGM.
- Lynn has commuter rail service, while the majority of the CGM do not.
- Lynn has more four year colleges (8) within ten miles of the city than the median number (2) among the CGM.

Potential "Deal Breakers" and other Weaknesses

These are the location factors with which Lynn is experiencing some challenges. The factors in the Very Important group are the ones the municipality should consider addressing first because they are the most critical potential "deal breakers" that could be turned into vital "deal makers" if appropriate action is taken. Next, the city should consider those in the Important group and finally the Less Important group. Note that at the end of each list of weaknesses there is a list of on par comparisons between Lynn and the CGM. The Dukakis Center staff included these with the weaknesses to draw attention to them. These activities tend to be within reach from the perspectives of implementation and municipal control, therefore if Lynn were to pursue them, the city would create a strength relative to the CGM, rather than being on par with them.

There are several potential "deal breakers" for Lynn. The most critical one being the significantly longer permitting review process for new applications. Others include a higher proportion of unskilled and less educated workers; and fewer development sites with onsite parking and access to major highways.

Weaknesses among Very Important Location Factors

- A site plan review of a new project takes six to eight months longer for a decision in Lynn. Other permitting review processes take more time in Lynn than among the CGM. This is the most serious "deal breaker" facing Lynn. It is essential that the city streamline its permitting processes.

- Rush hour congestion in Lynn is more severe (extreme) than the median level among the CGM (moderate).
- Lynn has a higher proportion of unskilled workers than that CGM and the city has a higher proportion of English Language Learners.
- The percentage of residents age 25 and older in Lynn with at least a high school diploma is lower (66-84%) than the median range among the CGM (85% or greater); and the percentage of residents age 25 and with at least a bachelor's degree is lower (11-20%) than among the CGM (21-35%).
- On site parking is available at a lower proportion of retail trade sites (26-49%) and general office sites (50-74%) as compared to the CGM (75% or greater); and the daily, hourly, and monthly parking fees in Lynn are higher.
- Rents for manufacturing space and for retail space in the highway district are higher than among the CGM.
- Lower proportions of development sites for retail (1-25%), manufacturing (0%), and general office space (1-25%) in Lynn have access within two miles to a major highway than among the CGM, which has proportions of 75% or greater for all types of sites.

On Par Comparisons among Very Important Location Factors

- There were no significant factors.

<u>Weaknesses among Important Location Factors</u>

- It is essential for Lynn to provide prospective businesses and developers at least a checklist of permitting requirements, in addition to a flow chart of the permitting process and a handbook for developers to help make permitting more transparent.
- Adopt as many municipal permit fast tracking options as possible, such as pre-permitting certain districts, expediting permits for publicly or cooperatively owned industrial parks, or marketing fast tracking opportunities to businesses and developers
- Lynn can strengthen its industrial attraction policy by using the findings from this self assessment and the working partnerships among the city, the LACC, the EDIC, and the regional economic development committee.
- Lynn does not pursue cross marketing opportunities with local businesses and business organizations and does not pursue similar opportunities with regional and state planning and development agencies and organizations.
- The industrial/commercial property tax and the residential property tax rate are both higher in Lynn.
- The city's public schools are less desirable than those in a typical CGM. Lynn's school have fewer student scoring at least "proficient" in English and Mathematics; SAT scores are lower; and there are school deemed "underperforming."

- The city's residential burglary rate, auto theft, robbery and homicide are all higher than among the CGM. Burglary is about 2.3 times higher; auto theft about 3.6 times higher; robbery about 7.6 times higher; and homicide rate about 3 times higher.
- Abutters and organized neighborhood groups slow the permitting process in Lynn more extensively ("very much") than among the CGM ("somewhat").
- More than half of the city's available development sites are considered brownfields, while the median percentage is 0-10% among the CGM.
- More of Lynn's housing stock is considered dilapidated and more of its commercial development sites are in need of renovations or are vacant than among the CGM.
- Access to public transportation within a quarter mile of retail, manufacturing, and general office sites is overall higher in Lynn (75% or greater) than among the CGM (75% or greater for retail, but 50-74% for manufacturing and office space).

On Par Comparisons among Important Location Factors

- Design a marketing plan that includes input from location and industry specialists; address and correct any misconceptions businesses may have about Lynn, and incorporation a rebranding component into the marketing plan.
- Involve spokespersons from local businesses to speak on behalf of the city.
- The city can obtain detailed and real time information from prospective businesses about why they decided to locate in Lynn or elsewhere if it routinely de-briefs businesses and developers after they have made their location decisions.
- Lynn can improve business friendliness for local businesses already part of the community by establishing a formal procedure for regularly checking on firm satisfaction and addressing any dissatisfaction that surfaces.
- While Lynn has good regional cooperation with LACC and EDIC, the city could complement with state collaboration by exploring state business incentives.
- Create processes to reclaim tax delinquent properties and abandoned or underutilized shopping centers as a way to get properties back onto the market for redevelopment.
- Lynn can dedicate and monitor a phone line and/or email address for residents to report nuisance code violations and maintenance needs.
- Work with the local arts community and local residents to come up with creative and low cost ways to enhance public spaces around development sites.

Weaknesses among Less Important Location Factors

- The local licensing processes in Lynn take about two to three months longer than the median duration among the CGM.
- Lynn has had a major union organizing drive in the past three years and unions are more active ("very") than among the CGM ("somewhat").

On Par Comparisons among Less Important Location Factors

- Lynn should establish an ombudsperson or team to oversee the streamlining of the permitting process and to act as a primary point of contact for prospective businesses and developers.

Detailed Section Analysis

The following is a section by section analysis of the EDSAT results comparing Lynn and the CGM. Within each section are several related themes, where the symbols ●, ◖, and ○ indicate the relative importance of the theme to developers and businesses, as ranked by NAIOP and CoreNet Global location experts. The shaded circle (●) denotes a Very Important factor, the half-shaded circle (◖) denotes an Important factor, and the unshaded circle (○) denotes a Less Important factor.

Section 1. Access to Customers/Markets

In order to minimize transportation costs and time to market, businesses, customers, and employees would want adequate access to transportation corridors that have the least amount of congestion. Highway access, congestion, and on site parking are Very Important factors in location decisions. Public transportation is Important, while proximity to airports, rail, water transportation are Less Important. However, rail can be a more important factor to certain types of heavy manufacturing that use it to transport inputs and finished products. The overall physical attractiveness of the public spaces, enforcement of codes, and condition of housing and commercial real estate is Important, as they are indications of general economic health and quality of life in Lynn.

A. Highway Access ●

Significantly lower proportions of development sites for retail (1-25%), manufacturing (0%), and general office space (1-25%) in Lynn are within two miles of an entrance or exit of a major highway than among the CGM. The median proportion among the CGM for all types of sites is 75% or greater. Like the CGM, Lynn does not impose weight restriction son streets or access roads.

B. Public Transit ◖

Public transit service in Lynn is overall better than among the CGM. The same proportion of retail sights (75% or greater) are within one quarter mile of a transit stop and a larger proportion (75% or greater) of manufacturing sites and general office sites have access within one quarter mile, while the CGM proportion is (50-74%). Lynn also has a transit oriented development component to the city's development strategy, while the majority of the CGM do not. As gasoline prices increase and general understanding of the benefits of public transit grows, Lynn's public transit service may increasingly become more advantageous to the city.

Similar to the majority of the CGM, Lynn's public transit is available on nights and weekends; and there is a commuter rail within five miles of the city's boundaries, but the city does not offer a shuttle service to the commuter stations.

C. Parking ●

The on-site parking location factors for Lynn show an overall disadvantage for the city. The proportion of development sites for retail (26-49%) and general office space (50-74%) are lower than among the CGM (75% or greater). However, the proportion of manufacturing sites with on-site parking is the same (75% or greater). The hourly, daily, and monthly parking rates are higher in Lynn than the median rate among the CGM, which adds to the city's relative disadvantage. On par with the majority of the CGM, Lynn does not offer parking facilities near development site and has not used state or federal infrastructure grants to improve parking.

A suggestion was made during the June 27, 2011 group discussion that the City of Lynn has adequate parking in its downtown business district, but needs better signage for the benefit of visitors and those who are not extremely familiar with the downtown area. Signage is an effective and fairly easy way to make the city more appealing to visitors by making it easier to find the district and parking. This creates a business and user friendly atmosphere that benefits residents, visitors, and prospective business alike.

D. Traffic ●

Lynn rates its level of congestion during a typical weekday rush hour as "extremely congested," while the median level among the CGM is "moderately congested." The average speed of automobile traffic in Lynn at rush hour is approximately 11 to 25 mph, which appears to be consistent with the reported level of congestion.[1] A traffic study may help Lynn determine the causes of the rush hour congestion, if they are not already known. Looking into how changes to the public transportation system may help alleviate congestion is another option for Lynn, especially since the city already has a higher level of transit service at available development sites.

For the remaining traffic factors, Lynn is on par with the CGM for using a transportation consultant, but not having a transportation specialist on staff; having access to traffic count data; and requiring traffic impact studies for large-scale development projects. Lynn has a slight advantage over the CGM because the city does not require businesses or developers to mitigate traffic beyond streets adjacent to their projects, while the majority of the CGM do.

E. Airport ○

Access to airports is generally better in Lynn than among the CGM. Lynn is in proximity to a general aviation airport (Beverly Municipal Airport), and the major international airport (Logan) is closer at a distance of 6-10 miles, as opposed to 20-30 miles among the CGM. The distance to the regional airport is about 6-10 miles for Lynn and the typical CGM.

The major international airport is accessible by public transportation from Lynn and most of the CGM. The driving time to the major airport from Lynn is 21 to 60 minutes. [2]

[1] Note that the miles per hour of rush hour traffic is a recently added question to EDSAT. There is an insufficient number of responses to date to provide a comparison to other municipalities.
[2] The question about the time it takes to drive to the major airport was recently added to EDSAT. There is an insufficient number of responses to date to provide a comparison to other municipalities

F. Rail ○

Lynn has freight rail service, which is on par with the majority of the CGM, and can be an advantage for any type of manufacturing that can rely on rail to transport raw materials in and finished products out to market or an intermodal transportation hub.

An advantage for Lynn over the CGM is that the city has commuter rail service within its jurisdiction.

G. Physical Attractiveness ◖

The indicators of physical attractiveness for Lynn are somewhat of a mixed bag compared to the CGM. The city "vigorously" enforces nuisance codes on abandoned property and trash ("moderately" among the CGM) and has a system for monitoring the quality of responses to code violations, which the majority of the CGM do not. The city has a higher proportion of acreage reserved for parks (21% or more versus 6-10%). However, the city is less extensively maintains public areas ("weakly" versus moderately to vigorously) such as streets and sidewalks near available development sites. In addition, about 5% more across the board of its housing stock and commercial buildings are considered dilapidated, in need of renovations, or vacant relative to the CGM.[3]

It would be more of a fiscal burden for the city to renovate homes and buildings, but it could increase maintenance of public spaces near development sites. Appearances of these spaces can make a positive or negative impression on a location scout. Other relatively low cost options would be to dedicate and regularly monitored a phone line or email address to allow residents to report code violations and maintenance needs; and working with the local arts community to identify low cost and creative enhancements to public spaces that could involve school children, the elderly, or other members of the community.

H. Water Transportation ○

Lynn has a seaport with public landings and marina, a commercial pier, and a commuter ferry to Boston.[4] Any future economic development strategies and marketing plans should take into account the potential of the port to benefit businesses.

Section 2. Agglomeration

Agglomeration refers to the amount of complementary and supplemental services, including academic institutions that are available within a jurisdiction to support new or existing companies. A concentration of similar or supporting companies helps create a critical mass of businesses within an industry, making it easier for that industry to thrive in the municipality or regionally. The level of agglomeration within a jurisdiction can be enhanced by the intensity of its plans to attract companies, coordination of marketing plans with regional or state efforts, cross marketing among organizations, and follow up with existing and potential firms. With the exception of proximity to universities and research, the agglomeration themes are all considered Important to businesses. The proximity to universities and research is Less Important to

[3] There are two new EDSAT questions that ask about the condition of industrial buildings. There is an insufficient number of responses to data to provide a comparison to other municipalities.

[4] The question about water transportation was recently added to EDSAT due in part to discussions at Lynn's June 23 meeting. There is an insufficient number of responses to date to provide a comparison.

businesses overall but tends to be more important to cutting edge technology firms with an interest in academic research and potential partnerships.

A. Complementary/Supplemental Business Services ◖
   The level of complementary and supporting business services in Lynn is on par with the majority of the CGM, with two exceptions. Both Lynn and the CGM have a chamber of commerce that is "moderately" active in the city's economic development activities; a volunteer committee working on economic development; and financial services firms, law firms with expertise in commercial or intellectual property law, and major commercial banks. An advantage in Lynn is the incubator focused on clean energy and energy efficiency technologies. Most CGM do not have any sort of business incubator. A disadvantage in Lynn is the business services firms, such as venture capital, business planning, or recruiting, are not capable of assisting emerging technology or scientific firms.

   The area in which Lynn would most likely see benefits is to continue to engage the Lynn Area Chamber of Commerce (LACC), the Economic Development & Industrial Corporation (EDIC), and the regional volunteer economic development committee to collaborate more extensively on development and marketing strategies and their implementation. The rapport and network already exists, which was evident at the June 23 meeting, to facilitate new and more complex initiatives and programs.

B. Critical Mass Firms ◖
   Lynn is on par with the CGM for most of the critical mass location factors. They have an overall economic development plan (OEDP), are part of a comprehensive economic development strategy (CEDS), their states have a development strategy, and access to experts who can interpret the needs of targeted industry clusters. A disadvantage for Lynn is its industrial attraction policy is "weak" as compared to the median level of aggressiveness of "moderate" among the CGM. Using the findings from this self assessment and the working partnerships among the city, the LACC, the EDIC, and the regional economic development committee, Lynn can strengthen and focus its industrial attraction policy to take advantage of its strengths and existing capacity to support existing business clusters.

   The city has identified some industrial sectors as targets. They include Healthcare, Life Sciences/Biotechnology, Traditional Manufacturing, Financial Services, Alternative Energy, and the Arts. With a focus on the arts, the city can kickoff an effort with the arts community and beautifying public spaces near development sites. See Section 1H above.

C. Cross Marketing ◖
   Lynn is at a disadvantage in cross marketing relative to the majority of the CGM. The city is on par for not enlisting the help of firms already located in the jurisdiction. However, the city does not engage local and regional business organizations, regional planning and development organizations, or state agencies to market the advantages of doing business in Lynn, while the majority of the CGM do pursue these cross marketing opportunities.

   By collaborating with local businesses and local and regional business organizations, Lynn can access specific details about what existing businesses need to grow and target those supporting and supplemental industries. Collaborating with regional and state planning and/or development agencies provides the opportunity for Lynn to align some of their targeted industries with those of within the region and state. In addition, regional and state organizations often have more access to marketing and technical assistance resources and expertise.

D. Marketing Follow-up ◖

While on par with the majority of the CGM for not pursing any marketing follow up processes, Lynn could distinguish itself by doing so. Lynn does not follow up with prospective businesses or developers after they have made their decisions to locate in Lynn or to locate elsewhere. By obtaining feedback, the city can learn first hand and real time information as to why the decision was made and adjust its marketing strategies accordingly.

The city does not have formal procedures to contact existing firms to check on their satisfaction with doing business in Lynn. The city does not have a formal procedure for intervening when early news surfaces about a firm's dissatisfaction with the city. Working closely with existing businesses contributes to economic development by ensuring firms already in the city stay because they feel the city values them and wants to help provide the resources they need to grow. By being proactive in addressing dissatisfaction, the city addresses problems while they are more likely to be manageable and helps facilitate a more business friendly environment for firms already a part of the community.

E. Proximity to Universities & Research ○

Lynn has an overall advantage over the majority of the CGM in terms of proximity to educational facilities. While there are no four year colleges within city limits (the median number among the CGM is one), there are eight four year colleges within ten miles of the city. The median number within ten miles is two among the CGM. The number of community colleges and vocational/technical schools in Lynn is on par with the CGM.

The proximity to colleges is more important to certain new technology industries, but less important to businesses in general. This does not mean that Lynn cannot capitalize on having a community college and vocational/technical school in its jurisdiction. Lynn can align the skills needed by the local businesses it wants to support and the industries it wants to attract with its workforce through these schools. By working with the schools to design curriculum, Lynn can prepare its workforce and demonstrate to existing and prospective businesses that the skills they need will be available locally and job training can evolve as their companies grow.

Section 3. Cost of Land (Implicit/Explicit)

The cost of land to a firm includes two Very Important factors: infrastructure and rent. Updating civil, utility, and telecommunications infrastructure can create significant expenses for a firm and therefore, if a municipality does not have adequate capacity in place, a potential firm could decide the location is not suitable. Like infrastructure the cost of electricity can be used to differentiate locations, especially for commercial and industrial users. Rents are Very Important to businesses because they contribute to operating expenses. EDSAT asks for square foot, triple net, lease rental costs. Location experts consider the quality of available space and amount of available land for development Important factors.

A. Infrastructure ●

Infrastructure capacity for water supply, public sewer, wastewater treatment, natural gas, electricity, and telecommunications (land lines, cellular, and high speed data) are all at "sufficient capacity for growth & reliable service," which is on par with the median capacity levels among the CGM.

The cost of electricity can impact a municipality's competitiveness from the commercial and industrial business perspective. The EDSAT questions about the cost of residential, commercial, and industrial electricity is a recently added one and there is not yet a sufficient number of responses to make a comparison between Lynn and the CGM. The table below compares Lynn's average electricity rates in cents per kilowatt (¢/kWh) for the month of April 2011 with the average in Massachusetts, as a point of reference. Lynn's commercial and residential rates are slightly lower than the state average.

End User of Electricity	**Lynn (¢/kWh)**	**Massachusetts (¢/kWh)**	**Difference (¢/kWh)**
Residential	13.52	Data not available	-
Commercial	13.35	13.97	0.62 lower in Lynn
Industrial	11.96	12.75	0.79 lower in Lynn

B. Rents ●

Rent in Lynn higher on the whole than among the CGM making the city less competitive. Rents for retail space in Lynn's central business district are lower than among the CGM but are higher in the highway district. Rents for manufacturing space in Lynn are also higher than among the CGM.

In Lynn's central business district, rents for general office space is about on par for Class A space and lower for classes B and C. In the highway district, rent for Class A office space is higher, while Class B and Class C are lower.

Lynn has more Class A office space than the CGM and is about on par for Class C office space. The Class A is an advantage for the city since Class A is desirable and usually ready for occupation, making the start up process faster for businesses. The city has more Class B space than the CGM, which can be a disadvantage. About half of Lynn's office space is Class B, which is not severely out of proportion.

C. Quality of Available Space ◖

Lynn has a significantly higher percentage of brownfields among its available development sites (51% or greater) than the CGM (0-10%), which represents higher costs for redevelopment and more time to navigate environmental regulations for prospective businesses and developers. However, the city has a "moderate" level of experience redeveloping brownfields versus a "limited" level among the CGM. This additional experience could help guide prospective developers more effectively through brownfield redevelopment best practices options and environmental regulations. If Lynn wants to target redevelopment of brownfields, the city should continue to develop its expertise and establish relationships with state and federal agencies that can provide technical support and brownfields related grants and other financial resources.

Lynn also has notably more greenfield sites (51% or greater than the CGM (0-10%). This is an advantage because greenfield sites tend to take less time and cost less to develop, while providing more flexibility to the developer. Note that both brownfields and greenfields are 51% or greater of the available development sites, indicating there may be a mistake in the data.

Lynn is on par with the CGM for having 1-10% of its available development sites considered abandoned or underutilized shopping centers.

D. Land (space) ◖

Lynn is on par with the amount of acres zoned as commercial/industrial, having a similar amount of warehouse space in commercial/industrial buildings, and a similar amount of useable office space in commercial/industrial buildings.

Lynn has a smaller proportion (0-10%) of available development parcels that are five acres or larger than the CGM (11-20%). This may limit the ability of developers to implement larger scale projects. However, Lynn can mitigate any constraints by remaining flexible through zoning.

Section 4. Labor

The effect of labor factors on location decisions runs somewhat contrary to popular belief. An available labor force that is adequately trained (Workforce Composition) is a Very Important factor, while the cost of labor is Important and the presence of strong unions is Less Important. Conventional wisdom often tells municipalities that higher labor costs and unions negatively impact a firm’s decision to consider a location because they raise the cost for labor. This is less of a “deal breaker” than previously thought, if the workforce is adequately skilled. Businesses are willing to pay higher wages for workers that have the skills they need. Workforce training resources are Less Important, reemphasizing the point that businesses want workers with ready skills. This is not to say Workforce Training is unimportant. Having job training and academic programs that align with the needs of the industries a municipality wants to attract is a valuable selling point because the programs will continue to train workers with the necessary skills to meet future demand for workers.

A. Labor Costs ◖

Average hourly labor rates in Lynn tend to be higher than the median rates among the CGM for semi-skilled manufacturing jobs. The average hourly rates for mid-level clerical workers are approximately on par with CGM. The average annual salary for public high school teachers is higher than among the CGM. Like the CGM, Lynn does not have a local minimum or living wage statue.

B. Workforce Composition ●

The distribution of skill levels in Lynn’s workforce is general on par with the CGM. They have the similar percentages of semi-skilled, technically skilled, managerial, and professional workers. However, Lynn has a higher percentage of unskilled workers and English language learners. The larger numbers of unskilled workers represents a disadvantage for Lynn. The larger numbers of English Language Learners may not be a disadvantage if their skills are of the type and at the level prospective businesses would be demanding and their limited English proficiency does not interfere with job performance.

By working with the local community college and technical/vocational school, Lynn can begin to offer job training for the unskilled portion of the workforce and English language classes in preparation for the arrival of new businesses or to meet any demand from existing businesses. Prospective businesses rank an appropriately trained workforce among the most important location factors and Lynn should proactively try to anticipate that need.

C. Unions ○

There has been a major union organizing drive in Lynn in the past three years, while there has not been on among the majority of the CGM. Unions are more active (“very much”) in Lynn than among the CGM (“somewhat”). While these are disadvantages, unions are considered less important to businesses in general.

There have been no major strikes or work stoppages in the last three years, which is on par with the majority of the CGM.

D. Labor (available) ●

The percentage of residents age 25 and older in Lynn who have earned at least a high school diploma is lower (66-84%) than the median range among the CGM (85% or greater). Likewise the percentage of residents age 25 and older in Lynn who have earned at least a bachelor’s degree is lower (11-20%) than among the CGM (21-35%). Lynn is at a relative disadvantage for both factors because along with the higher proportion of unskilled workers (see Section 4B), prospective businesses may be concerned that the skill sets they need would not be available in Lynn.

E. Workforce Training ○

The City of Lynn is actively working with workforce training resources that include regional and state employment agencies, area high schools, the vocational/technical school, and human service and non-profit career training centers. The city is on par with the majority of the CGM in terms of supporting public-private workforce training partnerships, but is at a relative disadvantage for adult education programs. An adult education program exists, but has insufficient capacity, while programs among the CGM tend to be able to meet demand.

Providing job training is difficult because there are so many human factors involved and funding is a perennial challenge. One way for Lynn to focus limited resources is to target training for skills that are in demand by existing firms and to align future training to industries the city wants to attract and to emerging job trends. For example, there is an emerging if not existing shortage for middle level skill jobs such as the technical trades (electricians, plumbers, finish work in construction), healthcare support staff (hygienists, technicians, therapist assistants), clerical, and machine operators. In general, these are jobs that require a high school diploma, but less than a bachelor’s degree. Businesses that relocate will bring or recruit senior management and subject matter experts, but look to the local workforce to fill technical positions, middle level skilled positions, first line supervisors, and unskilled positions.

Section 5. Municipal Process

The municipal process section covers several themes of marketing and permitting. When it comes to marketing themselves, jurisdictions that are aggressive and collaborate with firms already located in their municipality may have an upper hand at attracting new investment. Those firms can speak about first hand experiences and market conditions with prospective companies and developers. Likewise, they can advise municipal leaders about industries they are intimately familiar with. Once the marketing efforts pay off, a municipality then needs to have a transparent and efficient permitting process to minimize time and costs for the new businesses to open their doors. Among the factors examined in this theme, the timeliness of approvals is Very Important and the remaining themes are Important with the exception of the Permitting Ombudsman, which is Less Important.

A. Industrial Sensitivity ◖

Lynn is on par with the majority of the CGM for all the factors related to understanding the industries in Lynn. That is the city and the majority of the CGM do not pursue efforts to help them get to know these industries better. Lynn does not have a marketing program that is based on business needs identified by location or industry experts or based on the core strengths, opportunities, and industry concentrations in the city. Lynn does not engage local business spokesperson to speak on behalf o the city. Lynn does not engage its racial the ethnic populations to create unique businesses and cultural events to bring consumers into the city and enrich its cultural life. Lastly, Lynn does not have a quick response team to address negative press about the city. If Lynn pursued any of the above efforts to learn about or engage industries and niche markets it would distinguish itself from most of the CGM.

The pursuit that is most likely to have an impact is to create a marketing plan that is based on local businesses and core strengths already existing in the city. With a focused and targeted plan, the city can be more aggressive in attracting businesses (see also Section 2B.) by taking on a recruiting position. The city can also be proactive in not only quickly addressing negative news as it arises, but also changing the “mind map” or image that businesses and developers might have about the city. This image may very well be out of date or incorrect and still influencing location decisions. Correcting the “mind map” and rebranding the city can be a component of the marketing plan.

B. Sites Available ◖

A relative advantage that Lynn has over the majority of the CGM is it has access to a complete list that is maintained by EDIC of all available development sites in the city. The majority of the CGM do not maintain such a list. This list is a foundation piece for determining development opportunities, industry concentrations, business spokespeople, and marketing opportunities for an economic development plan.

On par with the CGM, Lynn markets sites owned by the city and maintains an active relationship with real estate professionals and developers with sites in the city. Also on par but in the negative, is neither Lynn nor the majority of the CGM have an active strategy for reclaiming or land banking tax delinquent properties and abandoned or underutilized shopping plazas. Lynn may want to consider developing these plans as a way to get properties back onto the market for redevelopment.

Lynn does not implement land use regulations to protect land currently zoned as industrial from encroachment by residential or other incompatible uses, while the majority of the CGM do. This may be viewed as a disadvantage by businesses and Lynn should remain flexible in the use of zoning to minimize conflicts between incompatible uses.

C. Timeliness of Approvals ●

The municipal permitting process in Lynn takes significantly longer than the median duration among the CGM for new projects. The approval process is faster for existing sites. Appeals for both new and existing projects are longer. The following table summarizes the differences in duration between Lynn and the CGM.

Type of Permit	New Project	Existing Project
Site plan review	32-40 weeks longer	4 weeks shorter
Zoning variance	16 weeks longer	4 weeks shorter
Special permit	12 weeks longer	4 weeks shorter
Building permit	On par at 0-4 weeks	On par at 0-4 weeks
Appeals process	At least 40 weeks longer	At least 40 weeks longer

The timeliness and efficiency of the permitting process is one of the most often cited "deal breakers" by businesses. In a global economy, "time to market" is essential and if a municipality's permitting processes create delays, a prospective business will look to another location that understands the importance of bringing goods to market quickly.

A site plan review of a new project takes six to eight months longer for a decision in Lynn. To a business this means it can be off the ground at least five months sooner if it locates in another city. Zoning variances take four months longer, special permits three months longer, and appeals at least ten months longer. The review processes for an existing project is much faster with the exception of appeals, which is also at least ten months longer.

This is the most serious "deal breaker" facing Lynn. It is essential that the city streamline its permitting processes.

D. Predictable Permits ◖

Not only are Lynn's permitting processes significantly more lengthy, the city provides less information about permitting to prospective businesses. Most CGM provide a checklist of permitting requirements, but Lynn does not. Neither Lynn nor the majority of the CGM provide flowcharts or handbooks. It is essential for Lynn to develop these resources for businesses and developers as means to making the permitting process more transparent if not faster.

Neither Lynn nor the CGM offer a single presentation of a development proposal to all boards and commissions with permit authority. This should be long term goal for Lynn. The city's more goal is to streamline permitting.

E. Fast Track Permits ◖

Lynn uses overlay districts to expedite permitting for certain land uses. This is an advantage over the majority of the CGM, which do not use overlay districts. Neither Lynn or the majority of the CGM pre-permits certain districts, expedites permitting for publicly or cooperatively owned industrial parks, or markets any fast tracking opportunities to businesses and developers. While Lynn is working to streamline its permitting process, the city should adopt as many fast tracking options as possible.

F. Citizen Participation in the Review Process ◖

Abutters and organized neighborhood groups slow the permitting process in Lynn more extensively ("very much") than among the CGM ("somewhat"). However, Lynn's elected officials facilitate dialogue with community groups more ("somewhat") than among the CGM ("very little"). Elected officials should continue this trend of engaging abutters and community groups, not only for specific projects, but also to exchange ideas about economic development strategies and objectives. If the community is aware of and supports the strategies, residents will contribute to the sense of business friendliness towards prospective projects and contribute to discussions about economic development more substantively.

A development proposal has been stopped by opposition from an abutter or neighborhood group within the past five years, which is on par with the majority of the CGM. Lynn officials have intervened to rescue the proposal, which is not the case among the CGM. Regular engagement of the community about economic development plans and specific projects will lessen opposition that is strong enough to stop a projects moving forward. This decreases the risks to a prospective business or developer while increasing the receptiveness of the community to new development and investors.

G. Permitting Ombudsman ○

Neither the mayor of Lynn nor another local official empowered to ensure the efficiency of the local permitting process. Among the majority of the CGM, if the chief executive officer of the municipality tends not to be the permitting ombudsman, but another official has that role. The majority of the CGM also convene a development group to review major projects, while Lynn does not. It is important for Lynn to establish an ombudsperson or team to oversee the streamlining of the permitting process (see Section 5C) and to act as a primary point of contact for prospective businesses and developers. Because the permitting process is currently too long and non-transparent (see Section 5D), a contact person can help businesses navigate the process, as well as other state and federal requirements. Even after permitting as been streamlined, this person acts as a liaison to prospective businesses, helping to create a facilitated and collaborative experience.

Local licensing processes in Lynn take two to three months longer than among the CGM. In Lynn the process is about 13-16 weeks, while the median duration among the CGM is about 0-4 weeks. This is another area where streamlining is essential.

Similar to the majority of the CGM, Lynn does not have an established training program in economic development for staff, boards, commissions, and elected officials. Training for Lynn would help officials and staff understand better what businesses need to thrive in a global economy and how to change their strategies and processes to support that.

Section 6. Quality of Life (Community)

The quality of life within the community is Important in location decisions because companies want to be able to offer its employees a safe community with affordable housing, good schools, and a rich selection of cultural and recreational opportunities.

A. Cultural and Recreational Amenities ◖

Lynn has a major museum and a performing arts auditorium, which the majority of the CGM do not have. For other cultural amenities, Lynn is mostly on par with the CGM. There is no professional sports team, dance company, orchestra, or repertory theatre company. There is a golf course and public beaches within five miles.

B. Crime ◖

The crime rate per 100,000 residents in Lynn is much higher than the median rates among the CGM. The residential burglary rate is about 2.3 times higher; auto theft is about 3.6 times higher; robbery is about 7.6 times higher; and the homicide rate is about on par.

C. Housing ◖

The rental costs for a two bedroom apartment in Lynn is the same as the median rent among the CGM at $801-$1000. The vacancy rate of rental property is on par with the CGM. The median sale price of a single family home in Lynn ($151,000-$250,000) is lower than the median among the CGM ($251,000-$350,000). Despite the lower home prices, the homeownership rate is lower and a higher percentage of homes are for sale in Lynn.

D. Local Schools ◖

The performance of public schools is a common indicator or quality of life in a municipality. Unfortunately, Lynn’s school system appears to be less desirable than those among the CGM. There are schools deemed “underperforming” in the district, while there are none in the majority of the CGM. The percent of students who tested at least “proficient” in English and Mathematics is lower (51-65%) than among the CGM (66-80%). Average combined SAT scores in 2010 for reading, math, and writing were 1293. This average is about 243 points lower than the Massachusetts average and 54% of the maximum test score of 2400[5].

Lynn’s average expenditures per K-12 student is about on par with the CGM. The drop out rate is also on par[6]. The percentage of students eligible for free or reduced-cost lunch is significantly higher than the CGM.

Section 7. Quality of Life (Site)

This section looks at the amenities and services available within one mile of existing development sites. Having a variety of amenities and services near employment centers makes it more pleasant and convenient for employees to work in a location when it is easier to find places to eat lunch or meet friends and family for dinner or to run errands before or after work.

[5] The question regarding the SAT is a recent addition. There is insufficient data to make a comparison to the comparison group. The comparison to the Massachusetts average is made as a reference point.
[6] There is a corresponding question about the percentage of freshman who normally graduate within five years, but the question is a recent addition and there is insufficient data to make a comparison to the comparison group.

A. Amenities ◖

The proportion of development sites in Lynn with amenities within one mile as compared to the CGM is a mixed bag. More sites have fast food restaurants within one mile, but fewer sites are within one mile of fine dining. The same proportion of sites is within one mile of a daycare, while fewer sites are within one mile of retail shops.

Section 8. Business Incentives

Business incentives are Important considerations for location experts as they consider candidate communities, however, incentives are not at the highest level of importance or the first factors a prospective business looks at. Like the effects of labor costs and unions, the importance of incentives is contrary to popular belief. Factors like infrastructure capacity, skills within the workforce, and the timeliness of permitting are at the highest levels of importance and possible "deal breakers." A municipality must clear those hurdles before an interested developer or company will advance negotiations to the point when they will consider incentives. Therefore, providing a broader portfolio of business incentives to offer potential investors is valuable as "deal closers."

A. State ◖

Businesses in Lynn are eligible for several state tax credits and financial incentive programs including investment tax credits, job training tax credits, R&D tax credits, subsidized low interest loans, and workforce training grants. Massachusetts also allows for priority funding for distressed economic areas. However, Lynn indicates that it takes "very little' advantage of state business incentives, while the CGM takes "somewhat" advantage. Lynn already appears to have a good regional working relationship with LACC and EDIC and may want to complement that with state collaboration.

B. Local ◖

The City of Lynn offers a revolving loan fund, subsidized low interest loans, uses tax increment financing, and participates in a regional brownfield loan fund The city takes advantage of federal and state programs to attract and retain business. The city actively tries to attract public facilities that can act as an anchor or stimulus for additional development. Lynn may want to consider working with state and federal agencies and organizations to make additional incentives and programs available. Certain incentives such as loan, grants, or equity participation require large capital investments and by working with larger entities, the city can join established programs.

Property tax abatements are often used as incentives for businesses to locate in a municipality. However, they should be used judiciously and tied to benefits for the community such as job creation over a specified period. Currently, Lynn does not offer property tax abatements to new or existing businesses, which may not be a disadvantage to businesses if other Very Important factors are addressed. Abatement is a new addition to the questionnaire and there is insufficient data to make a comparison to the comparison group.

Section 9. Tax Rates

Tax rates are another cost factor that has traditionally been thought of as a "deal breaker" for businesses. Municipalities have often thought that if tax rates are too high, then they will have a hard time attracting businesses. Like business and other financial incentives, the tax rate is not one of the Very Important factors identified by location experts. If the Very Important factors are satisfied, then a potential developer or firm will likely ask for a more favorable tax rate as a part of later stage negotiations. However, negotiations are unlikely to get to this point if the More Important location factors have not been satisfied.

A. Local ◖

Lynn does not currently abate any commercial or industrial property taxes. While tax abatements should not be ruled out, applying them to unique situations helps the city maintain its tax base[7]. Currently, 5% of the Lynn's tax base comes from Industrial property tax, 13% form commercial, and 79% from residential. The split rate for property contributes to a higher portion from commercial and industrial property.

The industrial/commercial rate is $32.41 per $1000 and is higher than the median rate of approximately $19.53 among the CGM. The residential rate is $16.22, which is also higher than the median of approximately $11.01.

B. Tax Delinquency ◖

Lynn has more properties that are tax defaulted than the CGM. The city auctions the properties after about one to five years, which is on par with the CGM, but the city does not have a defined process for the auctions. Defining such a process will help the city get the tax defaulted properties back onto the redevelopment market more efficiently. (See also Section 5B.) However, if a tax delinquent or tax title property becomes an impediment to development, the city gives special attention to the situation, which is not the case among the majority of the CGM.

Lynn seeks clear the liens on tax title properties for new owners. This is an advantage for the city because it is likely that the property tax revenue streams and the economic benefits from a vibrant and successful business will over time outweigh the benefit of a one time tax payment.

Section 10. Access to Information

A town's website could be the first impression for location experts researching potential candidates. In this information age, a location expert could use a municipality's website to gather initial information and if it is not available, easy to find, and easy to understand, the researcher may reject the town as a potential location without further consideration. While a town's website may rank as Less Important in terms of decision making, it can be that initial source of information that entices a location expert to probe deeper and contact a municipality to seek additional information. At that point, the municipality's economic development leader or permitting ombudsman has an opportunity to step in and develop one-on-one rapport with the developer or company representative.

A. Website ○

Lynn has slight more information on its website than the CGM. The city offers a couple of features the CGM do not, including the ability to file a permit application electronically and links to state permitting agencies. There are also links to colleges and universities,

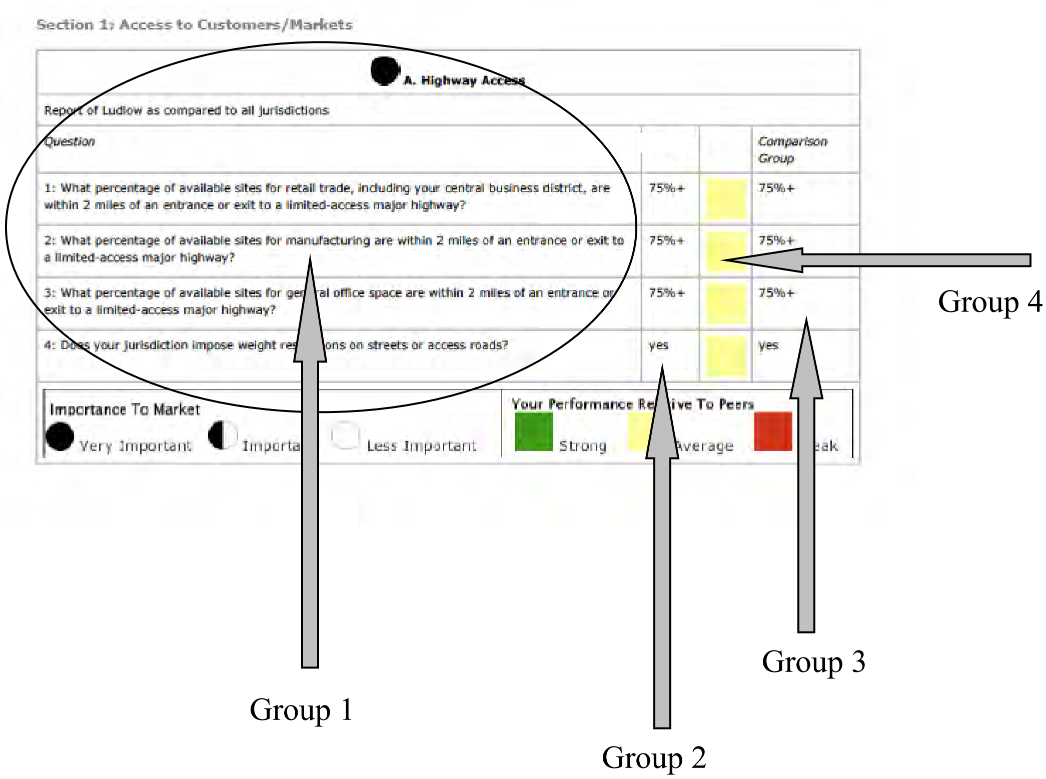
[7] This question is a new addition and there is insufficient data to make a comparison to the comparison group.

community development agencies, and arts and cultural venues and recreational opportunities. Lynn does not post a list of city hearings and demographic information. The city should work towards adding more information to its website, starting with contact information for the primary economic development contact person or the permitting ombudsperson; and as much development site specific information as possible such as assessor's information, site maps, aerial photos, and GIS links.

EDSAT Questionnaire Results for Lynn, Massachusetts

This section of the report presents a tabular printout from the EDSAT. The results are displayed in four primary groupings of information:

- Group 1 identifies location themes, such as Highway Access, and questions about specific location factors related to that theme. At the top of each table is a circle that represents the relative importance of a theme to location experts and businesses. A filled circle (●) indicates "Very Important," a half-filled circle (◖) indicates "Important," and an unfilled circle (○) indicates "Less Important."
- Group 2 shows Lynn's responses to the EDSAT questions.
- Group 3 is the median or majority (for yes/no questions) response of all the other jurisdictions (the comparison group municipalities or CGM) that have completed the EDSAT questionnaire.
- Group 4 is a series of green, yellow, or red blocks indicating how Lynn compares to the CGM. There is a built-in function in EDSAT that allows a municipality to compare itself against a subset of the CGM by other criteria such as population, median income, or size of operating budget. For purposes of this analysis, Lynn is compared with all the CGM.
- Grey blocks are used in indicate that EDSAT is collecting information to describe a location factor and is not making a comparison.



Economic Development Self-Assessment Tool

You are logged in as: **admin** [Log Out] [Change Password]
Survey for: **Lynn, MA** [Main Menu] [View Report]
[Search Surveys] [Register Users]

Dukakis Center for Urban and Regional Policy at Northeastern University and the National League of Cities Center for Research and Innovation

SELF-ASSESSMENT SURVEY RESULTS

Lynn MA

July 27, 2011

Comparison of Lynn with: all jurisdictions in study Run Report

Section 1: Access to Customers/Markets

A. Highway Access

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: What percentage of available sites for retail trade, including your central business district, are within 2 miles of an entrance or exit to a limited-access major highway?	1-25%		75% or greater
2: What percentage of available sites for manufacturing are within 2 miles of an entrance or exit to a limited-access major highway?	0%		75% or greater
3: What percentage of available sites for general office space are within 2 miles of an entrance or exit to a limited-access major highway?	1-25%		75% or greater
4: Does your jurisdiction impose weight restrictions on streets or access roads?	no		yes

Importance To Market: Very Important, Important, Less Important

Your Performance Relative To Peers: Strong, Average, Weak, No Comparison

B. Public Transit

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
5: What percentage of available sites for retail trade are within 1/4 mile of public bus or rail rapid transit?	75% or greater		75% or greater
6: What percentage of available sites for manufacturing are within 1/4 mile of public bus or rail rapid transit?	75% or greater		50-74%
7: What percentage of available sites for general office space are within 1/4 mile of public bus or rail rapid transit?	75% or greater		50-74%
8: Is there a transit-oriented development strategy in your plans for attracting new firms?	yes		no
9: Is there a commuter rail or bus stop within 5 miles of your jurisdiction's boundaries?	yes		yes
10: Do you offer any shuttle services to other public commuting stations?	no		no
11: Is public transit service available on nights and weekends?	yes		yes

Importance To Market	Your Performance Relative To Peers
Very Important Important Less Important	Strong Average Weak No Comparison

C. Parking

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
12: What percentage of available sites for retail trade have on-site parking?	26-49%		75% or greater
13: What percentage of available sites for manufacturing have on-site parking?	75% or greater		75% or greater
14: What percentage of available sites for general office space have on-site parking?	50-74%		75% or greater
15: Does your jurisdiction offer parking facilities near development sites?	no		no
16: Have you used state or federal infrastructure grants to improve parking in your jurisdiction?	no		no
17: How much is typically charged for parking in your central business district? $ Hourly	1.00		.25
18: How much is typically charged for parking in your central business district? $ Daily	5.00		2
19: How much is typically charged for parking in your central business district? $ Monthly	45.00		between 20-25 and 24

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

D. Traffic

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
20: Do you have regular access to a traffic engineer or transportation planner, such as one who is on staff or with a regional organization to which your jurisdiction is a member?	no		no
21: Do you routinely use the services of a transportation consultant?	yes		yes
22: Do you have access to traffic count data for the major roadways in your jurisdiction?	yes		yes
23: Do you require firms or developers to provide traffic mitigation beyond the streets adjacent to the site? (e.g. installing traffic signals, metering flow)	no		yes
24: How would you rate traffic into and out of your jurisdiction during a typical weekday rush hour?	Extremely congested		Moderately congested
25: What is the average speed of automobile commuter traffic during a typical weekday rush hour?	11 – 25 mph		11 – 25 mph
26: Do you require a traffic impact analysis for large-scale development or redevelopment projects?	yes		yes

Question 25 is a recently added question. There is currently insufficient data to make a comparison to the Comparison Group. This range is a placeholder.

Importance To Market
Very Important — Important — Less Important

Your Performance Relative To Peers
Strong — Average
Weak — No Comparison

E. Airports

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
27: Do you have a local (municipal/ general aviation) airport?	yes	Strong	no
28: The closest regional airport is how many miles away?	6-10 miles	Average	between 6-10 miles and 11-20 miles
29: The closest major/international airport is how many miles away?	6-10 miles	Strong	20-30 miles
30: Is the major/international airport accessible by public transportation?	yes	Average	yes
31: How long does it take to drive to the major/international airport from your downtown?	21 minutes to 60 minutes	Average	21 minutes to 60 minutes

Importance To Market: Very Important · Important · Less Important

Your Performance Relative To Peers: Strong · Average · Weak · No Comparison

Question 31 is a recent addition. There is currently insufficient data to make a comparison to the Comparison Group. This range is a placeholder.

F. Rail

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
32: Do you have rail freight service available?	yes		yes
33: Do you have intercity passenger rail service? Check all that apply.			
- Commuter	yes		no
- Intercity/Interstate(Amtrak)	no		no
- no	no		no

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

G. Physical Attractiveness

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
34: To what extent do you enforce codes and regulations on abandoned properties / abandoned vehicles / trash and rubbish disposal within your jurisdiction?	Vigorously		between Vigorously and Moderately
35: To what extent does your jurisdiction maintain streets, sidewalks, parks, etc., near available development sites?	Weakly		between Vigorously and Moderately
36: Is there a hotline available for reporting code violations and maintenance needs within your jurisdiction?	no		no
37: Is there a system for monitoring the timeliness and quality of responses to reported violations within your jurisdiction?	yes		no
38: Do you involve the arts community in the design of open space (street furniture, murals, etc.)?	no		no
39: What percentage of the acreage within your jurisdiction is reserved for parks?	21% or greater		6-10%
40: What percentage of your housing stock is considered dilapidated?	6-10%		0-5%
41: What percentage of your commercial buildings are boarded up or closed down and would need renovations to reopen?	6-10%		0-5%
42: What percentage of commercial space is presently vacant (not currently occupied)?	11-15%		6-10%
43: What percentage of your industrial buildings are boarded up or closed down and would need renovations to reopen?	16-20%		16-20%
44: What percentage of industrial space is presently vacant (not currently occupied)?	16-20%		16-20%

Questions 43 and 44 are recent additions. There is currently insufficient data to make a comparison to the Comparison Group. These ranges are placeholders.

Importance To Market	Your Performance Relative To Peers
Very Important · Important · Less Important	Strong · Average · Weak · No Comparison

H. Water Transportation

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
45: Do you have water based transportation facilities within your jurisdiction? Check all that apply.	Sea port		Sea port

Question 45 is a recent addition in part due to discussions at the June 23 meeting at the LACC. There is currently insufficient data to make a comparison to the Comparison Group. This is a placeholder.

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

Section 2: Agglomeration

A. Complementary / Supplemental Business Services

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: Is your local chamber of commerce or business association actively involved in the economic development activities of your jurisdiction?	Moderately		Moderately
2: Does your jurisdiction have an active volunteer economic development committee or nonprofit center for economic development?	yes		yes
3: Is there an incubator or other form of cooperative and supportive space for start-up businesses in your jurisdiction?	yes		no
4: Are there CPA, business advisory and financial services firms in your jurisdiction?	yes		yes
5: Are there law firms in your jurisdiction specializing in commercial law, intellectual property rights, and patents?	yes		yes
6: Are there branches of major commercial banks in your jursidiction?	yes		yes
7: To what extent are the business services (e.g. venture capital, business planning, specialized recruiting, etc.) in your jurisdiction capable of working with emerging technical and scientific firms?	Not capable		Moderately capable

Importance To Market: Very Important, Important, Less Important

Your Performance Relative To Peers: Strong, Average, Weak, No Comparison

B. Critical Mass Firms

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
8: Does your jurisdiction have an up-to-date development strategy, overall economic development plan (OEDP), or an economic development plan within your community master plan?	yes		yes
9: Is your jurisdiction part of a county or regional OEDP or Comprehensive Economic Development Strategy (CEDS)?	yes		yes
10: Does your state have a development strategy or economic development plan?	yes		yes
11: If yes, are there firms within specific industry types or sectors that are targeted in your jurisdiction's, your county's or your state's development strategy?	yes		yes
12: If yes, what specific industry types or sectors are targeted by your municipality's development strategy? (Your Municipality)	Other, please specify; Alternative Energy; Financial Services; Traditional Manufacturing; Other Life Sciences, including Biotech; Healthcare		
13: If yes, what specific industry types or sectors are targeted by your municipality's development strategy? Other, please specify (Your Municipality)	Arts		
14: If yes, what specific industry types or sectors are targeted by your region/county's development strategy? (Regional/County)			
15: If yes, what specific industry types or sectors are targeted by your region/county's development strategy? Other, please specify (Regional/County)			
16: If yes, what specific industry types or sectors are targeted by your state's development strategy? (State)			
17: If yes, what specific industry types or sectors are targeted by your state's development strategy? (State)			
18: Which of the following jurisdictions have development specialists to assist in interpreting the needs of these clusters? (Choose all that apply)	Regional/County		Regional/County
19: How aggressive is your industrial attraction policy?	Weak		Moderate

Data for questions 14-17 will be updated for the final report.

Importance To Market			Your Performance Relative To Peers	
Very Important	Important	Less Important	Strong	Average
			Weak	No Comparison

C. Cross Marketing

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
20: Do you actively enlist the services of firms already resident in your jurisdiction to assist in attracting new firms?	no		no
21: Do you engage local and regional business organizations to participate in marketing your jurisdiction?	no		yes
22: Do you engage regional planning and development organizations to participate in marketing your jurisdiction?	no		yes
23: Do you engage state agencies and organizations to participate in marketing your jurisdiction?	no		yes

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

D. Marketing Follow-Up

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
24: Is there a formal de-briefing process with firms that chose to locate in your jurisdiction about what made the difference?	no		no
25: Is there a formal de-briefing process with firms that chose <u>not</u> to locate in your jurisdiction about what made the difference?	no		no
26: Do you have a formal procedure for contacting existing local firms about their satisfaction with your jurisdiction?	no		no
27: Do you have a formal procedure for intervening when early news surfaces about firm dissatisfaction with your jurisdiction?	no		no

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

E. Proximity to Universities & Research

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
28: How many major public or private four-year college or universities are located within your jurisdiction?	0		1
29: How many major public or private four-year college or universities are located within 10 miles of your jurisdiction?	8		2
30: How many community colleges are located within your jurisdiction?	1		1
31: How many vocational/technical schools are located within your jurisdiction?	1		1

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

Section 3: Cost of Land (Implicit/Explicit)

A. Infrastructure

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: Are there significant limitations to any of your existing infrastructure systems? - Water Supply	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
2: Public Sewer	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
3: Wastewater Treatment	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
4: Natural Gas	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
5: Electric Power	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
6: Data/Telecommunications - Land Lines	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
7: Data/Telecommunications - Cellular	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
8: Data/Telecommunications - Fiber optic / Cable / DSL	Sufficient capacity for growth & reliable service		Sufficient capacity for growth & reliable service
9: What is the average cost in cents per kilowatt-hour (kWh) for residential, commercial, and industrial end users in your municipality? Residential	13.52		13.52
10: What is the average cost in cents per kilowatt-hour (kWh) for residential, commercial, and industrial end users in your municipality? Commercial	13.35		13.35
11: What is the average cost in cents per kilowatt-hour (kWh) for residential, commercial, and industrial end users in your municipality? Industrial	11.96		11.96

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

Questions 9-11 are recent additions. There is currently insufficient data to make comparisons to the Comparison Group and these prices are placeholders. As a point of reference, Lynn's electricity prices were compared to the average cents per kWh in Massachusetts and were found to be slightly lower.

B. Rents

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
12: What is the current average square foot cost for existing retail space in your central business district (Triple Net/Lease)?	8.00		11
13: What is the current average square foot cost for existing retail space in your highway business district (Triple Net/Lease)?	12.00		10.00
14: What is the current average square foot cost for existing manufacturing space (Triple Net/Lease)?	12.00		5-10
15: What is the current average square foot cost for existing general office space in your central business district (Triple Net/Lease)?: CLASS A	12.00		12-14
16: What is the current average square foot cost for existing general office space in your central business district (Triple Net/Lease)?: CLASS B	9.00		12
17: What is the current average square foot cost for existing general office space in your central business district (Triple Net/Lease)?: CLASS C	7.00		between 8 and 8-12
18: What is the current average square foot cost for existing general office space in your highway business district (Triple Net/Lease)?: CLASS A	16.00		between N/A and
19: What is the current average square foot cost for existing general office space in your highway business district (Triple Net/Lease)?: CLASS B	9.00		between 8 and 8.5
20: What is the current average square foot cost for existing general office space in your highway business district (Triple Net/Lease)?: CLASS C	7.00		5-9
21: Of all the available office space in your jurisdiction, what percentage is: CLASS A	25		10
22: Of all the available office space in your jurisdiction, what percentage is: CLASS B	50		39
23: Of all the available office space in your jurisdiction, what percentage is: CLASS C	25		between 25 and 29

Importance To Market: Very Important, Important, Less Important

Your Performance Relative To Peers: Strong, Average, Weak, No Comparison

Questions 14 and 18 have formatting errors and will be corrected for the Final Report. Preliminary comparisons indicate that the cost of manufacturing space is higher in Lynn and Class A office space in the highway district is also higher.

C. Quality of Available Space

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
24: Approximately what percentage of available sites in your jurisdiction would be considered contaminated or brownfield sites?	51% or greater		0-10%
25: What experience does your jurisdiction have with the redevelopment of contaminated or brownfield sites?	Moderate		Limited
26: Approximately what percentage of available sites in your jurisdiction would be considered vacant or severely underutilized shopping centers?	1-10%		0-10%
27: Approximately what percentage of available sites in your jurisdiction would be considered unused open land or greenfield sites?	51% or greater		between 0-10% and 11-20%

Question 26 has a formatting error and will be corrected for the Final Report. The preliminary comparison indicates that Lynn is on par with the Comparison Group in terms of the percentage of vacant or underutilized shopping centers.

Importance To Market	Your Performance Relative To Peers
Very Important; Important; Less Important	Strong; Average; Weak; No Comparison

D. Land (space)

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
28: Approximately how much vacant developable land in your jurisdiction is currently zoned for commercial/industrial uses?	301-450 acres		301-450 acres
29: Approximately how much vacant useable industrial or warehouse space exists in commercial/industrial buildings in your jurisdiction?	1-250,000 sq. feet		1-250,000 sq. feet
30: Approximately how much vacant useable office space exists in commercial/industrial buildings in your jurisdiction?	1-250,000 sq. feet		1-250,000 sq. feet
31: What proportion of the parcels available for industrial development or large scale commercial development are of 5 acres or more?	0-10%		11-20%

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

Section 4: Labor

A. Labor Cost			
Report of Lynn as compared to all jurisdictions			
Question	*Lynn*		*Comparison Group*
1: What is the prevailing average hourly wage rate for semi-skilled, blue-collar manufacturing workers?	$22.26 or higher	Weak	$20 or higher
2: What is the prevailing average hourly wage rate for mid-level clerical workers?	$12.26 – $17.25	Weak	$12.51-$20
3: What is the prevailing average annual salary for public high school teachers?	$60,001-$70,000	Strong	$45,000-$54,000
4: Is there a local minimum or living wage statute?	no	Average	no

Importance To Market: Very Important / Important / Less Important

Your Performance Relative To Peers: Strong / Average / Weak / No Comparison

Questions 1-3 have formatting errors and will be corrected for the Final Report. Preliminary comparisons indicate that the prevailing hourly wage for semi-skilled workers is higher than the comparison group; mid-level clerical wages are similar to the comparison group; and prevailing annual salary of public high school teachers is higher.

B. Workforce Composition

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
5: What percentage of your workforce is Unskilled?	26-49%		1-25%
6: What percentage of your workforce is Semi-skilled	1-25%		1-25%
7: What percentage of your workforce is Technically skilled	1-25%		1-25%
8: What percentage of your workforce is Managerial	1-25%		1-25%
9: What percentage of your workforce is Professional	1-25%		1-25%
10: What percentage of your workforce are current English language learners?	21-35%		0-10%

Importance To Market	Your Performance Relative To Peers
Very Important Important Less Important	Strong Average Weak No Comparison

C. Unions

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
11: Have any employers in your jurisdiction had a major strike or work stoppage within the last three years?	no		no
12: Has there been a major union organizing drive among public or private workers in the last 3 years?	yes		no
13: Do labor unions have a significant presence in the labor market of your jurisdiction?	Very much		Somewhat

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

D. Labor (available)

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
14: What percentage of residents age 25 or older have earned at least a high school diploma?	66-84%		85% or greater
15: What percentage of residents age 25 or older have earned at least a bachelor's degree?	11-20%		21-35%

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

E. Workforce Training

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
16: Which of the following workforce training resources do you interact with to respond to skill development needs of firms?			
- Regional employment board or state employment services department	yes		
- Area High schools	yes		
- Voc-tech schools or community colleges	yes		
- Human service or nonprofit career training centers	yes		
17: Do you support public-private partnerships to provide specific workforce training?	yes		yes
18: Is there an adult education program readily available to residents of your jurisdiction?	yes, but insufficient capacity to serve existing need		yes

Importance To Market	Your Performance Relative To Peers
Very Important / Important / Less Important	Strong / Average / Weak / No Comparison

Section 5: Local Process

A. Industry Sensitivity			
Report of Lynn as compared to all jurisdictions			
Question	*Lynn*		*Comparison Group*
1: Does your jurisdiction have a marketing program based on the needs identified by industrial or office location specialists?	no		no
2: Does your jurisdiction have a marketing program based on existing core strengths, identified opportunities, or industry concentrations?	no		no
3: Do you have a quick response team available when negative data, stories, or incidents about your jurisdiction make the news?	no		no
4: Do you actively engage local business spokespersons to speak on behalf of your jurisdiction?	no		no
5: Do you have a strategy for engaging your jurisdiction's racial or ethnic populations in unique businesses, festivals, etc., as a way to attract regional niche shopping?	no		no

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

B. Sites Available

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
6: Does your jurisdiction own sites that it is currently marketing for development?	yes		yes
7: Is there a readily accessible, up-to-date, complete list of sites that are available for development in your jurisdiction?	yes		no
8: Do you maintain an active relationship with commercial real estate brokers, developers, or agents with sites in your jurisdiction?	yes		yes
9: Do your land use regulations protect land currently zoned industrial from encroachment by residential or other incompatible uses?	no		yes
10: Do you have an active strategy for reclaiming or land banking tax delinquent and tax title properties?	no		no
11: Do you have an active strategy for reclaiming vacant or underutilized shopping plazas?	no		no

Importance To Market
Very Important Important Less Important

Your Performance Relative To Peers
Strong Average
Weak No Comparison

C. Timeliness of Approvals

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
12: What is the average time from application to completion of the review process for the following?: Site plan review	37-48 weeks		5-8 weeks
13: What is the average time from application to completion of the review process for the following?: Zoning variance	21-24 weeks		5-8 weeks
14: What is the average time from application to completion of the review process for the following?: Special permit	21-24 weeks		9-12 weeks
15: What is the average time from application to completion of the review process for the following?: Building permit	0-4 weeks		0-4 weeks
16: What is the average time from application to completion of the review process for the following?: Appeals process	48 or more		5-8 weeks
17: What is the average time from application to completion or occupation in existing structures: Site plan review	0-4 weeks		5-8 weeks
18: What is the average time from application to completion or occupation in existing structures: Zoning variance	0-4 weeks		5-8 weeks
19: What is the average time from application to completion or occupation in existing structures: Special permit	5-8 weeks		9-12 weeks
20: What is the average time from application to completion or occupation in existing structures: Building permit	0-4 weeks		0-4 weeks
21: What is the average time from application to completion or occupation in existing structures: Appeals process	48 or more		5-8 weeks

Importance To Market	Your Performance Relative To Peers
Very Important · Important · Less Important	Strong · Average · Weak · No Comparison

D. Predicable Permits

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
22: Do you provide a checklist of permitting requirements to prospective developers?	no		yes
23: Do you provide a flowchart of the permitting process to prospective developers?	no		no
24: Do you provide a development handbook to prospective developers?	no		no
25: Do you allow for a single presentation of a development proposal to all review boards and commissions with relevant permit authority?	no		no

Importance To Market	Your Performance Relative To Peers
Very Important / Important / Less Important	Strong / Average / Weak / No Comparison

E. Fast Track Permits

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
26: Do you pre-permit development in certain districts?	no		no
27: Are there any publicly or cooperatively owned industrial parks in your jurisdiction that have their own expedited permitting authority?	no		no
28: Do you have an "overlay" district that allows expedited permitting of certain uses?	yes		no
29: Do you market "fast track" permitting to potential developers or firms?	no		no

Importance To Market	Your Performance Relative To Peers
Very Important Important Less Important	Strong Average Weak No Comparison

F. Citizen Participation in the Review Process

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
30: To what extent do abutters slow the permitting process in your jurisdiction?	Very much	Weak	Somewhat
31: To what extent do organized neighborhood groups slow the permitting process?	Very much	Weak	Somewhat
32: To what extent do elected officials in your jurisdiction expedite development by facilitating dialogue with community groups?	Somewhat	Strong	Very little
33: Do you establish a specific time frame and procedure for abutter or neighborhood response in the initial stage of the process?	no	Weak	yes
34: Do interested parties get multiple opportunities for review and comment during the various development review processes?	yes	Average	yes
35: Has a development proposal in your jurisdiction been stopped by abutter or neighborhood opposition in the past 5 years?	yes	Average	yes
36: Have officials from your jurisdiction intervened to rescue a development proposal that was endangered by abutter or neighborhood opposition in the last 5 years?	yes	Strong	no

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

G. Permitting Ombudsman

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
37: Does the chief executive officer of your jurisdiction play a significant role in ensuring the efficiency of your local permitting process?	no		no
38: Are there other local officials empowered to ensure the efficiency of your local permitting process?	yes		yes
39: Is there a "development cabinet" or "development team" that is convened to review major developments?	no		yes
40: Do you have an established training program for development staff that regularly identifies critical adjustments in policy or regulation to accommodate changing needs of firms?	no		no
41: Do you have an established training program for boards, commissions, authorities, districts, and elected officials that regularly identifies critical adjustments in policy or regulation to accommodate changing needs of firms?	no		no
42: If yes, approximately how long (in weeks) is your local licensing process for businesses?	13-16 weeks		0-4 weeks
43: Is your jurisdiction involved in the process for businesses that require state or federal permitting or licensing?	yes		yes
44: Do you provide technical assistance for businesses in the state or federal permit or license application process?	no		between yes and no
45: Does your jurisdiction require any local licenses for specific businesses or industries?			
- General license for all businesses	no		no
- Auto dealership	yes		no
- Barber shop	yes		no
- Bar/Tavern	yes		no
- Beauty salon	yes		no

Question 45 is a recent addition. There is insufficient data to make comparisons to the Comparison Group. In general, the more licenses required by a municipality, the more likely a business will view this as a disadvantage because the additional processes extend "time to market" and raise costs for the prospective business.

- Child care services	yes		no
- Construction contractor	yes		no
- Home health care	no		no
- Massage therapist	yes		no
- Real estate agent/broker	no		no
- Restaurant	yes		no
- Skilled Trades (electrician, plumber, etc)	no		no
- Other, please specify	no		no
46: other:			

Importance To Market
Very Important   Important   Less Important

Your Performance Relative To Peers
Strong   Average
Weak   No Comparison

Section 6: Quality of Life (Community)

A. Cultural and Recreational Amenities

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: Is there a professional sports team resident within your jurisdiction?	no		no
2: Is there a major art, science or historical museum?	yes		no
3: Is there a professional repertory theater company?	no		no
4: Is there a civic center, arena or major concert hall?	yes		no
5: Is there a golf course within your jurisdiction?	yes		yes
6: Is there a symphony orchestra, opera, or ballet company?	no		no
7: Are there public beaches or boating activities within 5 miles of your jurisdiction?	yes		yes

Importance To Market: Very Important · Important · Less Important

Your Performance Relative To Peers: Strong · Average · Weak · No Comparison

B. Crime

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
8: What was the residential burglary rate per 100,000 last year in your jurisdiction?	578		between 241 and 250
9: What was the auto theft rate per 100,000 last year?	332		between 84 and 93
10: What was the robbery rate per 100,000 last year?	235		between 30 and 31
11: What was the homicide rate per 100,000 last year?	3		0

Importance To Market: Very Important · Important · Less Important

Your Performance Relative To Peers: Strong · Average · Weak · No Comparison

Question 11 contains a formatting error and will be corrected for the Final Report. Preliminary comparisons show that Lynn is on par with an approximate median homicide rate of 3 among the Comparison Group.

C. Housing

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
12: What was the median sale price of a single family home in your jurisdiction last year?	$151,000-$250,000		$251,000-$350,000
13: What was the median rent for a two bedroom apartment in your jurisdiction last year?	$801-$1000		$801-$1000
14: What is the home ownership rate?	34-50%		66-75%
15: What is the vacancy rate for rental housing?	3-5%		3-5%
16: What percent of homes are for sale?	5-7%		Less than 3%
17: Approximately what proportion of the major officers of firms located in your jurisdiction live in the community?	Few		Some

Importance To Market	Your Performance Relative To Peers
Very Important / Important / Less Important	Strong / Average / Weak / No Comparison

D. Local Schools

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
18: What is the average K-12 per pupil expenditure in your jurisdiction last year?	$10,001-$12,000		$8,501 or greater
19: Does your state mandate an assessment or proficiency test as a prerequisite for high school graduation?	yes		yes
20: If yes, what percent of students in your jurisdiction tested at least "proficient" in English?	51-65%		66-80%
21: If yes, what percent of students in your jurisdiction tested at least "proficient" in Mathematics?	51-65%		66-80%
22: If yes, are the tests used as a measure of performance within your local school district for teacher assessments or teacher evaluations?	no		no
23: What percentage of your jurisdiction's K-12 students are eligible for free or reduced-cost lunch last year?	75% or greater		1-25%
24: What was the average combined (reading, math, and writing) SAT score last year?	1293		
25: What was the average composite score (English, math, reading, and science) for the ACT last year?			
26: What percentage of high school freshmen normally graduate within 5 years?	66%-80%		66%-80%
27: What is the high school drop out rate last year?	1-25%		1-25%
28: Are there any schools in your jurisdiction that are currently deemed "underperforming?"	yes		no
29: What percentage of high school graduates from last year's class went on to a four-year college?	26-49%		50-74%
30: Are there any charter schools in your jurisdiction?	yes		no
31: What types of private schools are there in your jurisdiction?			

Question 18 contains a formatting error and will be corrected for the Final Report. Preliminary comparisons indicate that the per pupil expenditure in Lynn is on par with the Comparison Group.

Question 24 is a recent addition and there is insufficient data to make comparisons to the Comparison Group. As a point of reference, Lynn's 2010 average SAT score was 243 points lower than the average in Massachusetts and is 54% of the maximum score of 2400.

Question 31 is a recent addition and here is currently insufficient data to make a comparison to the Comparison Group. This range is a placeholder.

- Parochial	yes		
- Non-sectarian	yes		
- Boarding	no		

Importance To Market	Your Performance Relative To Peers
Very Important · Important · Less Important	Strong · Average · Weak · No Comparison

Section 7: Quality of Life (site)

A. Amenities

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: What proportion of existing development sites within your jurisdiction have the following within 1 mile?: Fast food restaurant	All		Most
2: What proportion of existing development sites within your jurisdiction have the following within 1 mile?: Fine dining	Few		Some
3: What proportion of existing development sites within your jurisdiction have the following within 1 mile?: Day care	Some		Some
4: What proportion of existing development sites within your jurisdiction have the following within 1 mile?: Retail shops	Few		Most

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison

Section 8: Business Incentives

A. State

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: Are businesses in your jurisdiction eligible for any of the following special state tax incentives? Check all that apply.			
- Investment tax credits	yes		no
- Job training tax credits	yes		no
- Research and development (R&D) tax credits	yes		no
- Low (subsidized) interest loans	yes		no
- Loan guarantees	no		no
- Equity financing	no		no
- Workforce training grants	yes		no
- Other, please specify	no		no
2: Are businesses in your jurisdiction eligible for any of the following special state tax incentives? Other, please specify			
3: To what extent does your jurisdiction actively take advantage of any special state business incentives?	Very little		Somewhat
4: Does your state allow for priority funding for distressed economic areas?	yes		yes

Importance To Market: Very Important, Important, Less Important

Your Performance Relative To Peers: Strong, Average, Weak, No Comparison

The investment tax credits, job training tax credits, R&D tax credits, and low (subsidized) interest loans are new additions to the list of incentives. There is insufficient data to make comparisons to the Comparison Group. In general, the more options available to businesses the more advantageous it is for the municipality.

B. Local

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
5: Does your jurisdiction offer existing or new businesses property tax abatement? Existing businesses	no		no
6: If yes, what proportion of existing businesses are offered abatements?			
7: Does your jurisdiction offer existing or new businesses property tax abatement? New businesses	no		no
8: If yes, what proportion of existing businesses are offered abatements?			
9: Who negotiates the tax abatement?			
10: Does your jurisdiction offer any of the following incentives for businesses to locate in your jurisdiction? (Check all that apply)			
- Revolving loan fund	yes		no
- Loan guarantees	no		no
- Revenue bonds	no		no
- Equity participation	no		no
- Business district group loans	no		no
- None	no		no
- Investment tax credits	no		no
- Job training tax credits	no		no

Questions 5 and 7 are recent additions. There is currently insufficient data to make comparisons to the Comparison Group. Generally, abatements are viewed as advantageous by businesses.

- Research and development (R&D) tax credits	no		no
- Low (subsidized) interest loans	yes		no
- Workforce training grants	no		no
- Other, please specify	no		no
11: other:			
12: Does your jurisdiction actively pursue federal and/or state programs designed to assist in attracting and retaining businesses?	yes		yes
13: Does your jurisdiction use Tax Increment Financing (TIF) or other programs to provide tax breaks to businesses?	yes		yes
14: Does your jurisdiction grant TIFs or similar programs for retail development?	no		no
15: Does your jurisdiction assist in securing financing for businesses with commercial lenders or state industrial finance mechanisms?	yes		yes
16: Do you actively try to attract local, state, and federal facilities, including post offices, to your jurisdiction?	yes		no
17: Is any part of your jurisdiction in a designated Enterprise Zone?	no		no
18: Do you participate in a regional brownfield revolving loan fund or offer your own?	Regional		Regional

Importance To Market	Your Performance Relative To Peers
Very Important / Important / Less Important	Strong / Average / Weak / No Comparison

Section 9: Tax Rates

A. Local

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: What types of taxes are collected by your jurisdiction to pay for local services?			
- Property tax	yes		yes
- Local sales tax	no		no
- Local income tax	no		no
- Hotel room tax	no		no
- Meals tax	no		no
2: Of the potential commercial and industrial property tax revenue your jurisdiction could collect, what percent is currently abated?	0%		0%
3: Does your jurisdiction tax property in industrial or commercial uses at a different rate than residential properties?	yes		yes
4: If yes, what is the tax rate on industrial/commercial property? $ /$1,000	32.41		between 19.37 and 19.68
5: If yes, what is the tax rate on residential property? $ /$1,000	16.22		between 10.77 and 11.25
6: If no, what is the tax rate on all property?			12
7: What % of your tax revenue is derived from: Industrial %	5		
8: What % of your tax revenue is derived from: Commercial %	13		
9: What % of your tax revenue is derived from: Residential %	79		

The hotel room tax and meals tax are new additions to the list of local taxes. There is insufficient data to make comparisons to the Comparison Group. Generally, the hotel and meals tax would be viewed negatively by service related industries.

Question 2 is a recent addition. There is insufficient data to make comparisons to the Comparison Group. The intent of the question is to estimate an effective commercial/industrial tax rate taking into account abatements. Since Lynn does not abate, the effective rate is $32.41 per $1000.

10: Does your jurisdiction impose impact fees on new commercial or industrial development?	no		no

Importance To Market Very Important Important Less Important	Your Performance Relative To Peers Strong Average Weak No Comparison

B. Tax Delinquency

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
11: What proportion of residential property in your jurisdiction is more than one year delinquent in taxes?	4%-6%		4%-6%
12: What proportion of commercial property in your jurisdiction is more than one year delinquent in taxes?	7%-10%		7%-10%
13: What proportion of industrial property in your jurisdiction is more than one year delinquent in taxes?	7%-10%		7%-10%
14: How many properties are tax defaulted or subject to the power of sale?	100-200		between 0-50 and 50-100
15: When do you choose to auction tax title properties?	1-5 years		1-5 years
16: Do you have an organized and defined process for conducting such auctions and ensuring that they are successful?	no		yes
17: Do you auction the "right to foreclose" on tax delinquent properties?	no		no
18: Do you seek tax abatement on tax title properties to allow the liens to clear for new owners?	no		no
19: If a tax delinquent or tax title property serves as an impediment to development, does the property receive special attention?	yes		no

Questions 11-13 are recent additions. There is currently insufficient data to make comparisons to the Comparison Group and these ranges are placeholders. Generally, higher ranges would be disadvantages because tax revenues are lost and the properties are not available for redevelopment.

Importance To Market: Very Important, Important, Less Important

Your Performance Relative To Peers: Strong, Average, Weak, No Comparison

Section 10: Access to Information

A. Website

Report of Lynn as compared to all jurisdictions

Question	*Lynn*		*Comparison Group*
1: Does your jurisdiction's website list all local development policies and procedures?	no		no
2: Does your website have contact information for key officials?	yes		yes
3: Does your website have general information about your jurisdiction?	yes		yes
4: How frequently is your website updated?	Weekly		Weekly
5: Does your website include an explicitly designed economic development tool aimed at businesses and developers?	no		no
6: Is there a development permit checklist or flow chart on the website?	no		no
7: Are permit applications available for downloading on the website?	yes		yes
8: Are applications and other forms date certified to ensure that they are the most recent versions (i.e. the same versions that you would get in person)?	no		no
9: Is it possible to file a permit application electronically?	yes		no
10: Is there a list of available land and building sites on the website?	no		no
11: If yes, check the types of information available about each site. (Check all that apply)			
- :Owner	no		no
- Square footage of vacant land	no		no
- Square footage and quality of existing buildings and structures	no		no

- Abutters	no		no
- Zoning	no		no
- Assessed value	no		no
- Tax rate	no		no
- Current tax status (e.g. paid up, delinquent)	no		no
- Contamination	no		no
- Aerial photos	no		no
- GIS links	no		no
12: Other, please specify			
13: Is there a posting of current hearings available on the website?	no		yes
14: Is there a posting of pending applications available on the website?	no		no
15: Is there a listing of current members of development review boards and staff contact information?	yes		yes
16: Are there links to other local development resources? (Check all that apply)			
- State finance agencies	no		no
- State permitting agencies	yes		no
- Regional planning agencies	no		no

- Regional development organizations	no		no
- Workforce training organizations	no		no
- Local public or quasi-public financing resources	no		no
- Demographic information	no		yes
- Economic development agencies	no		no
17: Other, please specify	LACC, businesses		LACC, businesses
18: Are there links to other locally-based private or non-profit organizations?			
- Colleges and universities	yes		no
- Chambers of Commerce	yes		yes
- Community development corporations	yes		no
- Arts and cultural organizations	yes		no
- Sports and recreation venues	yes		no
- Convention and tourist organization	no		no
19: Other, please specify			
20: Is there a designated webmaster or staff person responsible for maintaining the website?	yes		yes

Importance To Market	Your Performance Relative To Peers
Very Important, Important, Less Important	Strong, Average, Weak, No Comparison