



**DURFEE**

H I G H S C H O O L

**Fall River Public Schools**

Schematic Design

January 3, 2018





**Report Prepared by:**

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Project Number: 1607.00

January 3, 2018

**Report Prepared for:**

City of Fall River - School Building Committee  
One Government Center  
Fall River, MA 02722

**Evaluation Team:**

***Architect:***

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# SUMMARY OF PREFERRED SOLUTION

## Introduction

Subsequent to the submittal of the Preferred Schematic Report on June 29, 2017, the Designer and the Owner's Project Manager (Leftfield) have been working collaboratively with the Owner to further refine the Space Summary, as well as to review and develop the Preferred Schematic Study & Report option for consideration by the School Building Committee, School Committee, Finance Committee, and the City Council. We continue to meet on a regular basis with City officials, City personnel, school faculty, staff, and administration. Discussions during the meetings included all elements of the project. The design team also conducted numerous user group programming meetings with the high school faculty, staff, and administration to gather more detailed input related to the proposed program spaces.

The preferred solution consists of renovating and re-using the existing athletic building and constructing a new three-story academic and performing arts building. The entire project results in a 501,330 gsf comprehensive high school serving 2,750 students in grades 9-12. The new school will be located on the existing high school site located at 380 Elsbree Street. The existing BMC Durfee High School building will be occupied during the construction of the new building and renovation of the existing athletic building. Early release design packages will be issued to the Construction Manager; allowing for the expeditious start of the new construction in 2018. The existing football stadium and practice fields on the site would remain in their current location.

On July 27, 2017, the District, OPM, and design team updated the MSBA Facilities Assessment Subcommittee with a summary of improvements to the proposed new high school design. The evolution of the design continued as additional input provided by the Working Group, School Administration, and School Building Committee was gathered by the design team. The input resulted in refinement of the preferred solution, further strengthening the connection between the educational vision, educational program, the building floor plans, and the proposed site plan.

On August 23, 2017, the MSBA Board of Directors approved the Preferred Schematic Design and Report for the BMC Durfee High School project.

The proposed BMC Durfee High School project has received overwhelming support from City Officials, Committees, Boards, School Department, and the greater community. The discussions and evaluation of the proposed project include numerous advantages such as:

- Efficient and compact building footprint and envelope with a simplified organization and building circulation – improved security, sightlines, wayfinding, natural daylighting, etc.
- Ideal adjacencies of programmatic areas and overall educational layout
- Full integration of CVTE (Chapter 74) spaces within the core academic environment
- Meets the goals and objectives of educational visioning and program
- The least expensive option
- Meets the proposed project timeline
- Less disruption to students and staff (new construction located furthest away from existing building)
- Less unknowns or unanticipated sub-surface conditions during construction (less risk) – construction on the "flat" area of the site vs. locating the building on the "slope"
- Best site layout for the school and the community, creating an overall high school campus
- Improved distribution of parking and site circulation
- Maintains existing site amenities in which the City invested within the last 10 years (athletic stadium, practice field, and concession building)
- Building presence and identifiable entrance along Elsbree

Street (celebration of and reference to the Historic BMC  
Durfee High School Building on Rock Street)

# COMMUNITY EDUCATION PROCESS

## Introduction

Subsequent to the submittal of the Preferred Schematic Study & Report (PSR) on June 29, 2017, the Designer and the Owner's Project Manager have continued to work collaboratively with the Owner to further refine the proposed Space Summary, study the proposed building massing, study the building materials and exterior aesthetics, and plan organization for educational compliance, sustainable design strategies, and site circulation and parking for consideration by the School Building Committee.

The project team (Designer and OPM) conducted public meetings to review the project throughout the Schematic Design Phase. The new BMC Durfee High School was openly discussed and reviewed at the following meetings listed below:

- August 10, 2017  
School Building Committee Presentation
- September 11, 2017  
School Committee Presentation
- September 14, 2017  
School Building Committee Presentation
- October 12, 2017  
Fall River Office of Economic Development (FREOD) Presentation
- October 12, 2017  
School Building Committee Presentation
- October 12, 2017  
Public Forum #3
- October 25, 2017  
Durfee Warner & Swasey Telescope Discussion

- November 9, 2017  
Durfee Bells Committee Presentation
- November 9, 2017  
School Building Committee Presentation
- November 21, 2017  
School Committee Presentation
- December 19, 2017  
School Building Committee Presentation

The Designer and Owner's Project Manager, along with District and City representatives, also met with the Fall River Fire Department and Fall River Police Department representatives, as well as other City Departments to provide an overview of the project, discuss specific City requirements, regulations, and permitting guidelines for the new high school project.

Also, the School Department continues its partnership with the Bristol County Chamber of Commerce Foundation, which is funding a robust communications plan using traditional and social media channels. The Foundation hired the communication firm ThreeC Strategy to develop and implement a plan to engage the community in the potential for a new high school. The communication plan, called "Durfee Rising", includes interaction with Fall River local media, starting with an editorial board meeting with the Superintendent and the Chief Operating Officer that has resulted in news coverage and positive editorials; and appearances on several shows on the local talk radio station, WSAR. In addition, the campaign launched and maintains a web site (DurfeeRising.com) with links to reports and materials submitted to the MSBA as well as social media channels on Facebook (/DurfeeRising) and Twitter (@DurfeeRising). Traction on social media is strong and closely monitored to ensure the generation of "buzz" about the "being the generation that builds a new Durfee" and #BuildingForTheFuture.

The campaign uses social media advertising on Facebook to drive awareness and attendance at the public forums, as well as continuing engagement with design and progress. Facebook-boosted posts target Fall River parents with children of all ages to reach those who will benefit the most from a new Durfee. The media mix is intended, however, to ensure that all voters learn about the value of the project.

The City's support for the new BMC Durfee High School project remains overwhelmingly positive.





# DISTRICT'S TOTAL PROJECT BUDGET NARRATIVE Introduction

The Total Project Budget for the B.M.C. Durfee High School new construction project is \$263,811,726. This budget reflects an increase in the indicated potential \$239,043,243 Total Project Budget presented in the Preferred Schematic Report (PSR). The Total Project Cost increase of \$24,768,483 is a result of the following changes from PSR to Schematic Design (SD):

- Development of the site area adjacent to the existing Auditorium and in the footprint of the existing building including excavation, blasting, earthwork, retaining walls and playfield  
**\$4,500,000**
- Expand the current on-site parking spaces from 800 to 1,200 in order to provide more parking adjacent to the new building  
**\$2,500,000**
- Develop 8 new tennis courts in a new location in lieu of being able to save a portion of the existing courts  
**\$1,200,000**
- Scope of partial renovation to the existing pool (\$1,500,000) and locker room facilities (\$3,000,000)  
**\$4,500,000**
- Inclusion of the clock tower and observatory building elements which are reflective of the original Durfee High School  
**\$1,500,000**
- Additional costs of the increased functionality and aesthetics of a sloped roof on the primary building

façade  
**\$1,750,000**

- Additional cost of a full brick and stone exterior aesthetic  
**\$3,250,000**
- Additional cost of a first floor interior aesthetic Lobby/Atrium/Corridor which incorporates traditional mill building details (wood and steel) and historical reference, artifacts and exhibits from Fall River history  
**\$ 500,000**
- Excel cell error carrying only \$3,084,000 for FFE and technology instead of the cost per student of \$2,400  
**\$3,084,000**
- Design and Estimating Contingency  
**\$1,984,483**

There may be opportunities for more economical solutions as the design develops but based on the current information, this is the estimated cost increase from PSR to SD.

The \$263,811,726 budget is all-inclusive and includes construction costs of \$214,392,026 preconstruction costs of \$270,000 and soft costs of \$36,286,179 including a 5% Construction Contingency of \$10,719,601 and a 1% Owner's Contingency of \$2,143,920 on the construction costs.

The Total Project Budget indicates probable ineligible costs in the amount of \$58,353,043 which is a result of the following: construction costs exceeding the allowable \$326 per square foot; overage in site costs above the 8% cap; Design, OPM and construction costs associated with the Pool/Natatorium and the Greenhouse; and removal costs of asbestos-containing flooring. The Total Project Budget is presented on the MSBA Total Project Budget Form included in this Section G.

The City is anticipating a reimbursement rate of 80% of Eligible Costs. Refer to the District's Anticipated Reimbursement Rate Narrative. The calculated reimbursement rate of Eligible Costs results in a Potential Maximum Facilities Grant for the B.M.C Durfee High School of \$157,506,402 with a proposed maximum Local Share of \$106,305,324. If the Construction and Owners

Contingencies are not utilized, the Local Share could potentially be as low as \$93,441,803. The City has fully vetted the anticipated costs and has had Bond Counsel analyze the tax impact. The Debt Analysis and Tax Impact is included in this Section and has been updated since the PSR due to a recent tax rate increase. The City feels that the Total Project Budget presented is the most cost-effective solution. They are targeting a maximum Local share of \$100,000,000. With partial funding from the City Budget, the City will need to get approval for a debt exclusion for the remaining amount. Their desire is to keep the average homeowner's cost impact at \$100 per year. The City feels that this amount puts them in the best position for the project to be approved by the voters.

The estimated construction costs total \$214,392,026 includes all Subcontractor and Trade Contractor costs, General Conditions and General Requirements costs, Bonds and Insurances, and Construction Management Overhead, Profit and Fee. Also included in the total estimated construction costs is a 4.5% factor for escalation in construction costs through the anticipated full construction start in spring 2019 bidding period, as well as a 10% Design and Pricing Contingency.

Two independent Schematic Design Construction Cost Estimates were developed by the Project Team. The two estimates were prepared by PM&C, LLC, the cost consultant to the Designer, Ai3 Architects and by A.M. Fogarty, the cost consultant to the OPM, LeftField, LLC. These estimates were based on the architectural and engineering drawings, design and building systems narratives, room data sheets and preliminary geotechnical, subsurface, geo-environmental and survey presented in this Schematic Design Submission along with the Project Schedule and proposed construction logistics plans. The two cost estimates have been thoroughly reviewed and reconciled to less than a 1% variance, indicating that the estimates represent realistic costs and a fair representation of the current construction market. Both PM&C and A.M. Fogarty's Unifomat II Level 3 cost estimates are included.

The Total Project Budget was presented at the December 19, 2017 B.M.C Durfee High School Building Committee Meeting and the School Building Committee voted unanimously to approve the Total Project Budget. A copy of the meeting minutes that records the vote is included. A vote certification letter signed by the Superintendent as the School Building Committee's Project Representative is also included.

There has been strong support from the School Building Committee, Fall River School Committee, the Fall River Office Economic Development, Fall River Chamber of Commerce, Durfee Staff, Students and Alumni for this Project. We have not received any negative feedback from the Community to date. The City

is targeting a March 6, 2018 Election for the Public Vote. The City Council is targeted to vote on January 16, 2018 to finalize paperwork and prepare for the March 6, 2018 Election.

## ALTERNATES

All of the base scope items are intended to meet the educational program, building and site requirements including LEED for Schools V.4 standards. There have been no proposed Alternates at this time and will be further analyzed in the Design Development Phase.

If discretionary scope items are identified in later phases and the District wishes to receive break-out pricing, then additional Alternates could be added to ensure that the GMP can be adjusted based on bid pricing to stay within the established budget.

## INELIGIBLE COSTS

On the Total Project Budget Form, ineligible costs have been presented. The ineligible costs are a result of Construction Costs in excess of \$326/SF, site costs above the 8% cap, Design, OPM and construction costs associated with the Pool/Natatorium and Greenhouse. The ineligible costs total \$58,353,043. The City of Fall River is aware that the Local Share for ineligible costs will be 100% and that there will be no reimbursement in the Facilities Grant for these items.

## DESIGN REVIEW PROCESS AND VALUE MANAGEMENT INCORPORATED

The project design has been reviewed throughout the Schematic Design process by the Design Team, the OPM, the District and the School Building Committee. This has been an iterative process in which the design has evolved to address and solve the educational

and technical issues identified. The Project Team has reviewed the proposed materials, systems and specification narratives and has continuously aligned the project to provide the most cost-effective scope. To provide the most cost-effective Total Project Budget, a range of value management opportunities were identified and incorporated into the Schematic Design and the associated cost estimates during the Schematic Design process. These items have been fully incorporated into the Schematic Design. The major value management items incorporated include:

- Strategic positioning of the new building:
  - Away from the existing building to reduce potential educational disruption during construction.
  - Away from the existing building to reduce occupied construction phasing and construction timeline.
  - Positioning the building on the flat portion of the site to minimize sub-surface unknowns.
  - Position the building adjacent to Elsbree Street to reduce utility runs to the new building.
  - Maintain the City's recent investment in the existing football stadium and practice field – both remain as is.
- Renovate the existing athletic building complex in lieu of constructing new
- Simplified and efficient organization of the new building floor plan
- Reduced footprint of the new building (via 3-story building)
- Minimize Roof Transitions
- Use of a pre-engineered building for a portion of the new building (long span spaces)

## **COST RECONCILIATION SPREADSHEET**

The Cost Reconciliation Spreadsheet located herein within Tab 16 provides the estimated costs by the Designer's Cost Consultant and the OPM's Cost Consultant in Uniformat. Variances are provided for each Uniformat category. The estimates have been reconciled to within 0.08% for direct construction costs and to within 0.11% with related mark-ups.

The total variance between estimates totals \$229,449. The Architect's Cost Consultant's estimate was utilized for the Total Project Budget.

The Total Project Budget is included herein within Tab 14.





# PROJECT DESCRIPTION

## Introduction

The proposed project consists of renovating and re-using the existing athletic building and constructing a new three-story academic building. The entire project results in a 501,330 gsf comprehensive high school serving 2,750 students in grades 9-12. The site is approximately 63.68 Acres of land. The existing football stadium and practice fields on the site would remain in their current location; although some minor renovation will occur. A new multi-purpose playfield and tennis courts will be constructed in the current location of the existing core academic building. The performing arts portion of the existing high school will be removed from the project and turned over to the City for future use.

The total project budget for the new BMC Durfee High School is approximately \$260,000,000.

**PLEASE REFER TO THE TOTAL PROJECT BUDGET WITHIN THIS REPORT.**

The existing BMC Durfee High School building will be occupied during the construction of the new building and renovation of the existing athletic building. The location of the new building is strategically positioned with direct frontage along Elsbree Street and furthest away from the existing building, thereby achieving several educational and financial goals further outlined within this submission.

On October 12, 2017, the School Building Committee voted to proceed with Construction Manager at Risk (CM-R) construction delivery method. The City will begin the selection process for

a Construction Manager (CM) in March 2018 and plans to award a contract in April 2018.

The project includes the abatement and demolition of the existing core academic building, construction of the proposed new building, renovation of the existing athletic building, and turnover of the existing performing arts building. The project also includes related site work, underground utilities, parking, and on-site service and fire access roadways, new multi-purpose play field, and tennis courts. The project has been designated as a Leadership-in-Energy-and-Environmental-Design ("LEED") project with an anticipated goal rating of Certified.

### Phasing:

The design and construction process will require the design team to release a series of early design packages to achieve Substantial Completion of the new building and renovation of the existing athletic building during the Summer of 2021. As part of **Phase IA: New Building Construction**, the following early packages have been identified to begin construction of the new building during the late Summer/early Fall of 2018:

- **Phase IA: Site Enabling Package #1**

Early design package #1 is planned for release to the CM in the later Summer of 2018 to enable the contractor to begin subsurface improvements, underground utility modifications, and establishment of the new building pad. The completion of this work and the establishment of the new building pad will allow the contractor to begin new footings and foundations when the information is available in late Winter/early Spring of 2019.

- **Phase IA: Civil and Partial Structural Package #2 (Footings & Foundations)**

Early design package #2 is planned for release to the CM in late Winter/early Spring 2019. This package will include proposed grading, footings, and foundation information.

- **Phase IA: Structural Steel Package #3**

Early design package #3 is planned for release to the CM in early Spring 2019 as a continuation of the foundation placement and structural steel erection that is planned to occur in the Summer/Fall of 2019.

- **Phase IA: Roofing & Partial MEP Package #4**

Early design package #4 is planned for release to the CM in late Spring/Summer 2019 as a continuation of the structural steel erection that is planned to occur in the Summer/Fall of 2019. The release of this package allows the CM to continue construction of the exterior envelope (roof) prior to the issuance of the 100% Construction Documents and subsequent bidding of the remaining trades.

- **Phase IB: Renovation of Existing Athletic Building**

It is currently planned to renovate the existing Athletic Building during the Summer of 2019 and Summer of 2020 as to minimize the educational disruption while school is in session.

- **Phase II: Existing Building Demolition**

Following Substantial Completion of Phase I (New Building Construction) and the Owner's occupancy of the new building, the existing core academic building will be abated and demolished, and completion of the site improvement package will be completed. The anticipated Substantial Completion for Phase II work is the Summer of 2022.

Naturally, the construction schedule will be further refined following the District's selection of and discussions with the Construction Manager in the Spring 2019.

**Alternates:**

No alternates have been identified at the Schematic Design stage of the design process.

On August 23, 2017, the MSBA Board of Directors approved the Preferred Schematic Design and Report for the BMC Durfee High School project.

As noted in the Summary of Preferred Solution, the proposed BMC Durfee High School project has received overwhelming support from the City, Committees, Boards, School Department, and the greater community. The discussion and evaluation of the proposed project includes numerous advantages such as:

- Efficient and compact building footprint and envelope with a simplified organization and building circulation – improved security, sightlines, wayfinding, natural daylighting, etc.
- Ideal adjacencies of programmatic areas and overall educational layout
- Full integration of CVTE (Chapter 74) spaces within the core academic environment
- Meets the goals and objectives of educational visioning and program
- The least expensive option

- Meets the proposed project timeline
- Less disruption to students and staff (new construction located furthest away from existing building)
- Less unknowns or unanticipated sub-surface conditions during construction (less risk) – construction on the "flat" area of the site vs. locating the building on the "slope"
- Best site layout for the school and the community, creating an overall high school campus
- Improved distribution of parking and site circulation
- Maintains existing site amenities the City invested in within the last 10 years (athletic stadium, practice field, and concession building)
- Building presence and identifiable entrance along Elsbree Street (celebration of and reference to the Historic BMC Durfee High School Building on Rock Street)

On October 12, 2017, the School Building Committee voted to proceed with Construction Manager at Risk (CM-R) construction delivery method. The City will begin the selection process for a Construction Manager (CM) in March 2018 and a contract awarded in April 2018.

# VISUAL AIDS

The following are Visual Aids of the BMC Durfee High School for use by the MSBA. Electronic copies of the Visual Aids are also being provided. These Visual Aids include overall floor plans, site plan, exterior elevations, front entry perspectives, and various perspectives around the building perimeter.





MAIN ENTRANCE  
ALONG ELSBREE STREET  
LOOKING SOUTH









ACADEMIC WING  
ALONG ELSBREE STREET  
LOOKING NORTH  
TOWARD MAIN ENTRANCE









STADIUM PLAZA  
LOOKING SOUTH TOWARD  
ATHLETIC BUILDING











STADIUM PLAZA  
LOOKING SOUTH TOWARD  
ATHLETIC BUILDING







DURFEE PRIDE ATRIUM  
LOOKING TOWARD  
MAIN ENTRANCE









DURFEE PRIDE ATRIUM  
LOOKING TOWARD  
NORTH COURTYARD

















SECONDARY LOBBY  
LOOKING TOWARD  
STUDENT COMMONS





LARGE GROUP SEMINAR









TEACHER COLLABORATION





TEACHER COLLABORATION







RENDERED EXTERIOR ELEVATIONS



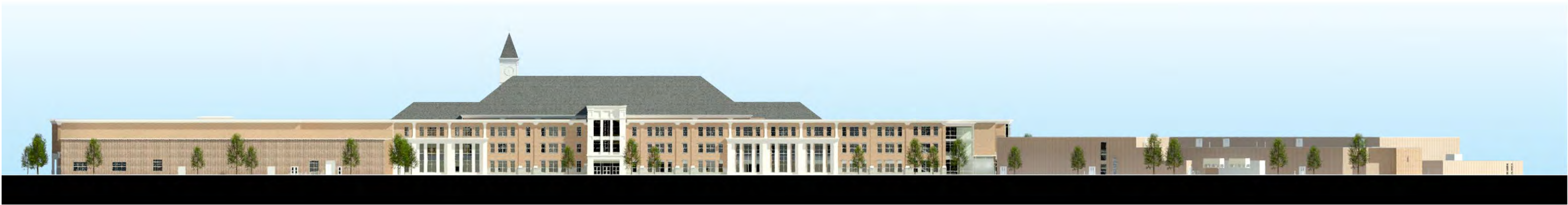
EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION

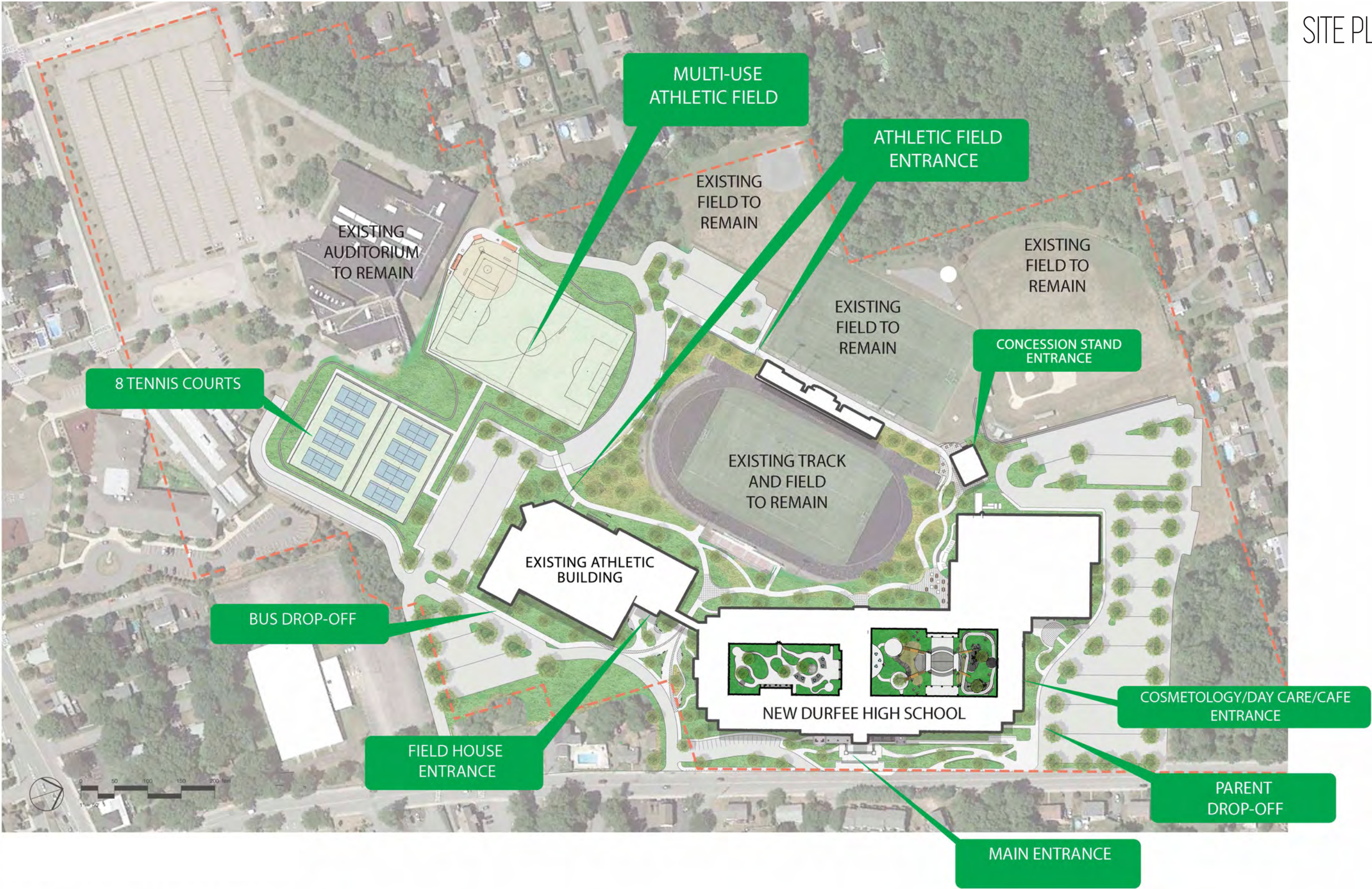


WEST ELEVATION





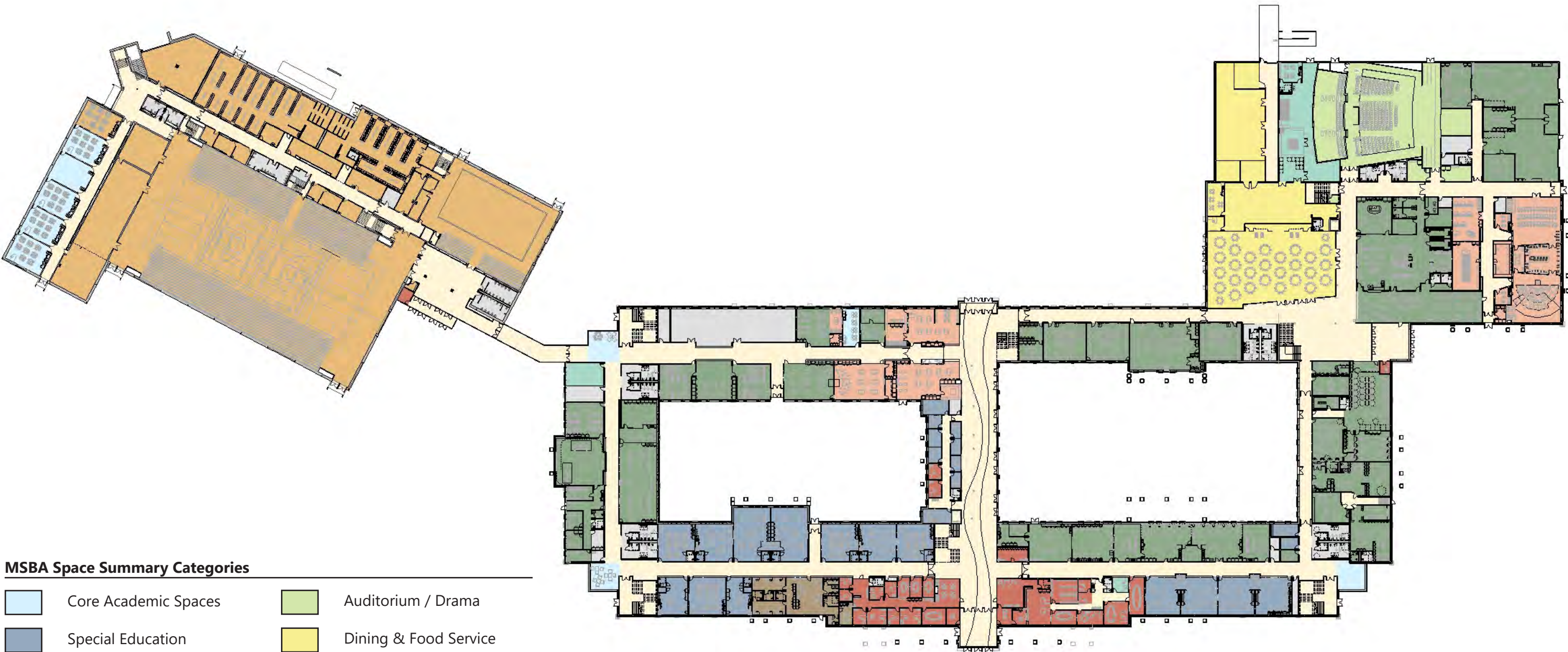
SITE PLAN


















FIRST FLOOR PLAN



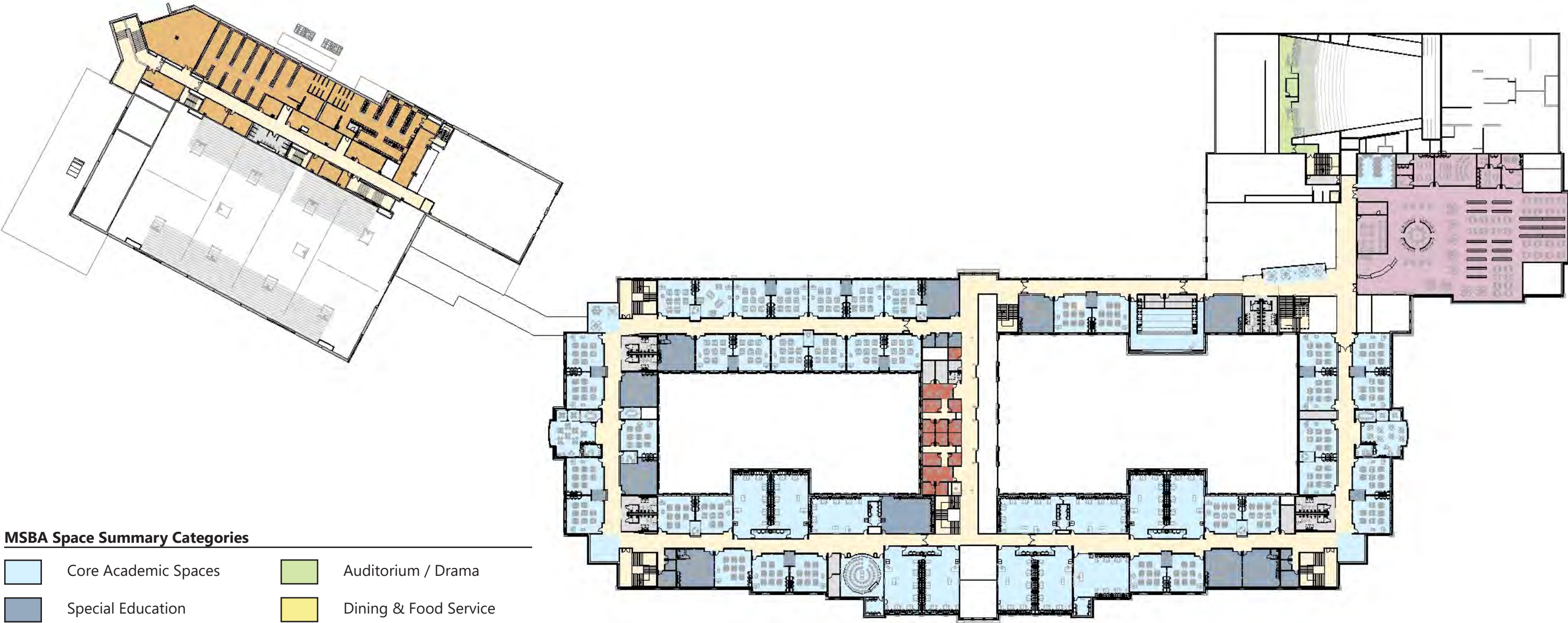
**MSBA Space Summary Categories**

	Core Academic Spaces		Auditorium / Drama
	Special Education		Dining & Food Service
	Art & Music		Medical
	Vocations & Technology		Administration & Guidance
	Health & Physical Education		Custodial & Maintenance
	Media Center		
















SECOND FLOOR PLAN



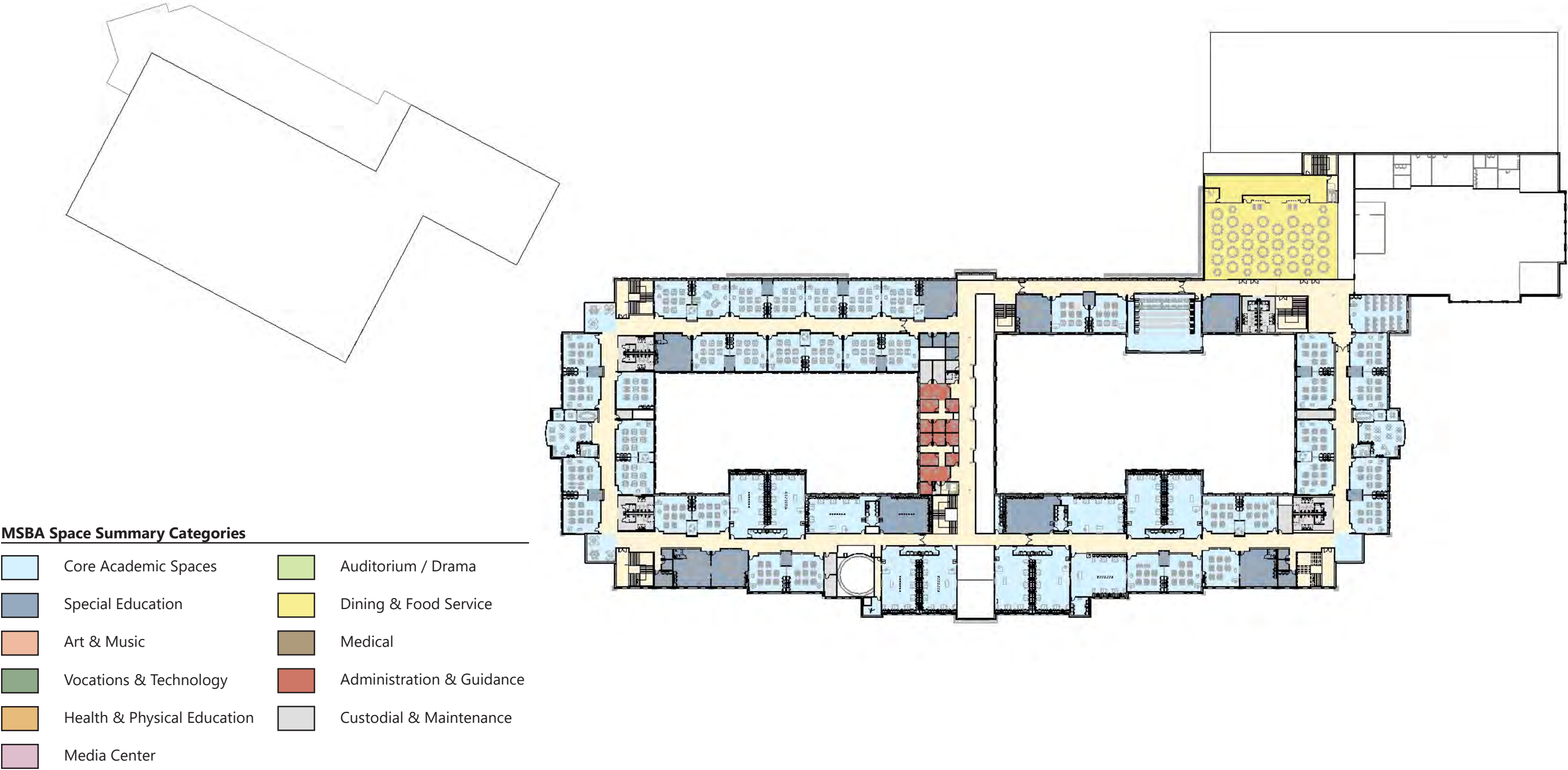
**MSBA Space Summary Categories**

	Core Academic Spaces		Auditorium / Drama
	Special Education		Dining & Food Service
	Art & Music		Medical
	Vocations & Technology		Administration & Guidance
	Health & Physical Education		Custodial & Maintenance
	Media Center		





THIRD FLOOR PLAN







# MSBA PREFERRED SCHEMATIC REPORT REVIEW AND DISTRICT RESPONSE

## Introduction

**Professional Team Responses dated 8.18.17**

### ATTACHMENT A MODULE 3 – PREFERRED SCHEMATIC REPORT REVIEW COMMENTS

**District:** City of Fall River  
**School:** BMC Durfee High School  
**Owner's Project Manager:** Leftfield, LLC  
**Designer Firm:** Ai3 Architects, LLC  
**Submittal Due Date:** June 29, 2017  
**Submittal Received Date:** June 29, 2017  
**Review Date:** June 30 – August 1, 2017  
**Reviewed by:** A. Waldron, C. Alles, J. Jumpe

#### MSBA REVIEW COMMENTS

The following comments<sup>1</sup> on the Preferred Schematic Report submittal are issued pursuant to a review of the project submittal document for the proposed project presented as a part of the Feasibility Study submission in accordance with the MSBA Module 3 Guidelines.

#### 3.3 PREFERRED SCHEMATIC REPORT

Overview of Preferred Schematic Submittal	Complete	Provided; <i>Refer to comments following each section</i>	Not Provided; <i>Refer to comments following each section</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
OPM Certification of Completeness and Conformity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Table of Contents	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.1 Introduction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.2 Evaluation of Existing Conditions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.3 Final Evaluation of Alternatives	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.4 Preferred Solution	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.5 Local Actions and Approval Certification	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<sup>1</sup> The written comments provided by the MSBA are solely for purposes of determining whether the submittal documents, analysis process, proposed planning concept and any other design documents submitted for MSBA review appear consistent with the MSBA's guidelines and requirements, and are not for the purpose of determining whether the proposed design and its process may meet any legal requirements imposed by federal, state or local law, including, but not limited to, zoning ordinances and by-laws, environmental regulations, building codes, sanitary codes, safety codes and public procurement laws or for the purpose of determining whether the proposed design and process meet any applicable professional standard of care or any other standard of care. Project designers are obligated to implement detailed planning and technical review procedures to effect coordination of design criteria, buildability, and technical adequacy of project concepts. Each city, town and regional school district shall be solely responsible for ensuring that its project development concepts comply with all applicable provisions of federal, state, and local law. The MSBA recommends that each city, town and regional school district have its legal counsel review its development process and subsequent bid documents to ensure that it is in compliance with all provisions of federal, state and local law, prior to bidding. The MSBA shall not be responsible for any legal fees or costs of any kind that may be incurred by a city, town or regional school district in relation to MSBA requirements or the preparation and review of the project's planning process or plans and specifications.

### 3.3.1 INTRODUCTION

Provide the following Items		Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Overview of the process undertaken since submittal of the Preliminary Design Program that concludes with submittal of the Preferred Schematic Report, including any new information and changes to previously submitted information	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Summary of updated project schedule, including				
	a) Projected MSBA Board of Directors Meeting for approval of Project Scope and Budget Agreement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Projected Town/City vote for Project Scope and Budget Agreement	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	c) Anticipated start of construction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) Target move in date	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Summary of the final evaluation of existing conditions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Summary of final evaluation of alternatives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Summary of District's preferred solution	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	A copy of the MSBA Preliminary Design Program project review and corresponding District response	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### MSBA Review Comments:

2a) *It should be noted that the District is targeting a February 2018 Board of Directors meeting for approval of the project, scope, and budget. Please be advised that the MSBA's Board of Directors meeting schedule is subject to change. MSBA staff will keep the District informed of any adjustments going forward.*

**Response:** It is understood that the 2018 MSBA Meeting Calendar has not been published and that the date targeted by the District for the MSBA Board of Director's vote on the Durfee High School's Project, Scope and Budget will need to be coordinated with the 2018 calendar once available. This is noted in Section I b Project Schedule Update.

2b, d) *This information is found in the actual project schedule provided in Section IV, however, not found in the narrative. Please revise and resubmit in response to these comments.*

**Response:** Please refer to Attachment 1 - Revised Section I b Project Schedule Update Narrative where the projected date for the City Election to vote on the Project Scope and Budget Agreement and the targeted move-in date for students is indicated. The City Election is currently planned for March 6, 2018 and the targeted student move-in date for the school is no later than August 23, 2021.

*No further review comments for this section.*

### 3.3.2 EVALUATION OF EXISTING CONDITIONS

Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
1	A narrative of any changes resulting from new information that informs the conclusions of the evaluation of the existing conditions and its impact on the final evaluation of alternatives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	If changes are substantive, provide an updated Evaluation of Existing Conditions and identify as final. Identify additional testing that is recommended during future phases of the proposed project and indicate when the investigations and analysis will be completed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### MSBA Review Comments:

2) As discussed at the July 27, 2017 Facilities Assessment Subcommittee meeting, please keep the MSBA informed related to the results of additional subsurface conditions exploration and the associated cost impact to the estimated cost provided in this submittal. Updated information should be provided to the MSBA prior to the submission of the schematic design.

**Response:** The Schematic Design Submission will analyze and outline all design and cost impacts resulting from the subsurface conditions in the area of the new construction. Should we anticipate a significant cost increase in the estimated costs presented in the PSR at any point during the development of the Schematic Design, we will notify the MSBA in advance of the Schematic Design Submission.

*No further review comments for this section.*

### 3.3.3 FINAL EVALUATION OF ALTERNATIVES

Include at least three potential alternatives, with at least one renovation and/or addition option. Include the following for each alternative where appropriate:

Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
1	An analysis of each prospective site including:				
	a) Natural site limitations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Building footprint(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) Athletic fields	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
	d) Parking areas and drives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e) Bus and parent drop-off areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f) Site access and surrounding site features.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Evaluation of the potential impact that construction of each option will have on students and measures recommended to mitigate impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Conceptual architectural and site drawings that satisfy the requirements of the education program	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	An outline of the major building structural systems	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	The source, capacities, and method of obtaining all utilities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	A narrative of the major building systems	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	A proposed total project budget and a construction cost estimate using the Uniformat II Elemental Classification format (to as much detail as the drawings and descriptions permit, but no less than Level 2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Permitting requirements and associated approval schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Proposed project design and construction schedule including consideration of phasing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Completed Table 1 – MSBA Summary of Preliminary Design Pricing spreadsheet	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**MSBA Review Comments:**

2) *Although a description of anticipated measures was provided, please provide additional information associated with how the existing spaces to be renovated will be impacted and utilized during construction in the schematic design submittal.*

**Response:** As part of the Schematic Design Submittal, the professional team will expand on the information provided in the Preferred Schematic Report (PSR) submission relative to the potential impact that the new construction and renovation of the existing athletic building will have on faculty, staff, and students as well as the general day-to-day operation of the educational environment.

5) *Please further describe the current and proposed utility connections between the existing buildings. Specifically, please confirm if utilities between the renovated and newly constructed portion of the building and the existing performance arts building exist, and if so, are modifications and ongoing maintenance anticipated as part of this project.*

**Response:** It appears, at this point in the process, that the separation of the existing performing arts building from the core academic building will be relatively efficient due to the arrangement of the

existing services. The existing utilities (Gas, Electric, Water & Sewer) are fed from various locations around the perimeter of the site via Elsbree Street, Weetamoe Street, Ray Street, and Hood Street.

Gas: There are four existing connections, one to each of the existing buildings, and the feed is systematically routed around the north side of the site. The gas is currently metered individually to each building.

Electric: The existing Performing Arts Building has an existing interior 1000kVA district owned transformer which feeds the existing switchboard in the building. This existing interior 1000kVA district owned transformer is fed from the Owner's existing campus primary loop, with the loop feeding other existing transformers on the campus. The Owner's existing campus primary loop and transformers will be removed as part of the new school project. When existing Building No. 1 is severed from the existing school, the existing switchboard will be provided with a new electric utility company electric service, which will include an electric utility company transformer.

Water: There are numerous existing water service lines fed into the site from Hood Street, Weetamoe Street, and Elsbree Street ranging in size from 10-inch to 4-inch diameter. The existing Performing Arts Building is currently fed from a dedicated 10-inch diameter water service main traveling from Hood Street. This water service line will remain intact to service the Performing Arts Building when removed from the project.

Sewer: There are two primary service lines, one on the north (athletic building) and one on the south (performing arts building) sides of the building. The existing 10-inch line that services the south side of the building would remain intact to service the existing Performing Arts Building when removed from the project.

It is anticipated that the existing performing arts building will be separated from the BMC Durfee High School project and that ongoing maintenance of the performing arts building will be the responsibility of the City/District.

Modification of the existing utilities feeding the performing arts building will likely be required to some degree. The District and professional team will continue to review the existing utilities and performing arts building to better understand the specific modifications necessary, and will continue to update the MSBA with new information.

*10) Since receiving the preliminary design pricing spreadsheet, MSBA staff has forwarded a math-check spreadsheet identifying inaccuracies. Please resubmit a corrected spreadsheet within seven days upon receipt of these comments.*

Response: The revised Preliminary Design Pricing Spreadsheet and the Match-Check Spreadsheet were submitted to MSBA on July 28, 2017 and have been included with these responses as Attachment 2 and Attachment 3, respectively.

*No further review comments for this section.*

### 3.3.4 PREFERRED SOLUTION

Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
1	Educational Program				
	a) Summary of key components and how the preferred solution fulfills the educational program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Design responses including desired features and/or layout considerations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) Proposed variances to, and benefits of, any changes to the current grade configuration (if any) and a related transition plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Preferred Solution Space Summary				
	a) Updated MSBA Space Summary spreadsheet	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Itemization and explanation of variations from the initial space summary (and MSBA review) included in the Preliminary Design Program	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Preliminary NE-CHPS or LEED-S scorecard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Conceptual floor plans of the preferred solution, in color that are clearly labeled to identify educational spaces	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Clearly labeled site plans of the preferred solution including, but not limited to:				
	a) Structures and boundaries	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Site access and circulation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) Parking and paving	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) Zoning setbacks and limitations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e) Easements and environmental buffers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f) Emergency vehicle access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g) Safety and security features	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	h) Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	i) Athletic fields and outdoor educational spaces (existing and proposed)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	j) Site orientation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	An overview of the Total Project Budget and local funding including the following:				
	a) Estimated total construction cost	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Estimated total project cost	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) Estimated funding capacity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) List of other municipal projects currently planned or in progress	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
	e) District's not-to-exceed Total Project Budget	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f) Brief description of the local process for authorization and funding of the proposed project	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g) Estimated impact to local property tax, if applicable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	h) Completed MSBA Budget Statement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Updated Project Schedule including the following projected dates:				
	a) Massachusetts Historical Commission Project Notification Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) MSBA Board of Directors meeting for approval to proceed into Schematic Design	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) MSBA Board of Directors meeting for approval of project scope and budget agreement and project funding agreement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) Town/City vote for project scope and budget agreement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e) Design Development submittal date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f) MSBA Design Development Submittal Review (include required 21-day duration)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g) 60% Construction Documents submittal date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	h) MSBA 60% Construction Documents Submittal Review (include required 21-day duration)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	i) 90% Construction Documents submittal date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	j) MSBA 90% Construction Documents Submittal Review (include required 21-day duration)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	k) Anticipated bid date/GMP execution date	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	l) Construction start	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	m) Move-in date	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	n) Substantial completion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**MSBA Review Comments:**

*1a) As discussed at the July 27, 2017 Facilities Assessment Subcommittee meeting, please address the following related to the educational program:*

- Provide further clarify the District's proposed class size policy, including Science Labs, as the information provided suggests maximum and ideal figures. It is unclear what is anticipated in the proposed project;*

**Response:** Class sizes vary based on the type of class. Currently we try to keep freshman classes at lower class sizes. Within Science Labs we aim to keep classes with strong lab requirements (i.e. Chemistry) at a class size of 24. Other classes that have less of a lab requirement (i.e. Human Reproduction) can have slightly larger class sizes.

- *Confirm if any adjustments to proposed scheduling blocks are not anticipated to be delivered under sixty minutes;*

**Response:** The new schedule is a six-period schedule where each class period is approximately 60 minutes in length. This schedule is designed to give students maximum amount of course and curriculum options while providing blocks that are long enough in length to support the workshop model.

- *Further describe the proposed locations and utilization of spaces that will be used for teacher planning and preparation; and,*

**Response:** Teacher planning and preparation that occurs outside of the individual classroom will take place in two different locations. For individual planning, teachers will be provided with a shared space and location that is also associated with a few private rooms where they can meet with students and parents. They can also use these rooms when they need a more quiet and secluded environment for planning. These rooms will be shared with the departments and not assigned to specific teachers. When teachers meet as teams for Professional Learning Community meetings, they will meet in a common area in proximity of their academic Dean/Director that can accommodate at least 15 teachers at one time. These Professional Learning Community Rooms will be situated so that student work and other sensitive information can be posted without violating any privacy rights. Deans and Administrators will be accessing the Professional Learning Community rooms but not the shared and individual planning areas.

- *Further describe the proposed staffing of the Library/Media Center.*

**Response:** The Library/Media center will be staffed by a Librarian Media specialist as well as a Paraprofessional. In addition, teachers will rotate through the Library/Media center as part of their assigned duty periods.

2a) Please refer to detailed comments in “Attachment B”.

3) A designer statement and completed scorecard for both the proposed project was provided. It is anticipated that the proposed school will achieve a minimum required level of sustainability, but should be noted that the District’s base reimbursement rate is accurately reflected in the District’s submittal and is anticipated to be 80% and will not be eligible to receive additional incentives for sustainability. No further action required.

4) As discussed at the July 27, 2017 Facilities Assessment Subcommittee meeting, please address the following related to the proposed concept:

- *Provide a brief narrative that describes the utilization of the proposed courtyard spaces including specific utilization and intent of separation of particular programmatic use.*



*Also, please include a description of how this area is to be accessed by large equipment and maintained, specifically associated with snow removal;*

**Response:** The courtyard is a secure natural environment for use by students, teachers, and staff. In addition to providing natural light to all the spaces at the perimeter of the courtyard, conceptually, the courtyard is also intended to serve a variety of educational functions that provide a change in environment and alternate opportunities from teaching inside the school building.

The two proposed courtyard spaces have immediate adjacencies to educational programmatic uses. A portion of one courtyard (north side) will serve as a secure playground area for the Early Childhood Education classes, with remaining space for usage by Engineering technology and outdoor instructional space. The courtyard will also include history of Durfee and Fall River installations as a continuation of the Durfee PRIDE atrium.

The second courtyard (south side) will have adjacency to Fine Arts and CVTE Graphic Design and Communication, allowing for an outdoor classroom and studio/gallery concepts.

It is understood that a commitment to maintaining the courtyards is vital to the long-term effectiveness and successful use of the space as an educational tool. There are many design and material choices that have an impact on the educational usefulness and required level of maintenance in a courtyard. Some examples include the proper balance of hardscaping vs. landscaping, use of native planting materials, balance of stone vs. grass, traffic patterns and level of activity influencing the selected patio and/or walking surface material, man-made vs. natural shading devices, variation in topography to define zones, seating material selection (i.e., wood, concrete, steel, rock), etc. All of these topics, along with many others, will be defined in greater detail as we continue through the design process.

Continued discussions with the District will occur through the Schematic Design phase to help further define the opportunities within the courtyard space, its direct coordination with the educational curriculum, and required maintenance program.

Both courtyards will have access for 'large equipment' (i.e snowblower, lawnmower, etc.) via oversized double doors.

Please reference the attached sketch (Attachment #6) for a visual depiction of the description above.

- *Provide sketches and a brief narrative that incorporates shelter from the elements at some point between the street curb and the entrance to the building when considering how a disabled individual enters the proposed building;*

**Response:** The preliminary design of the main entrance plaza and approach along Elsbree Street includes an accessible drop-off area and ADA accessible parking on both

the north and south side of the main entrance, and within the code required 200' of the main entrance. The site grading allows for an accessible pathway from the accessible parking area to the main entrance without the necessity of a handicap ramp. The accessible pathway is also covered and protected from the elements for over 80'-0" of the pathway.

Please reference the attached sketch (Attachment #5) for a visual depiction of the description above.

- *Please provide a description of how certain grade levels will be distributed per floor, while considering how and when students in the upper grades will be arriving at school in association with potential disruptions.*

**Response:** Besides the 'Freshman Academy' classes, other grade levels will have a blend of geographic grade-level groupings and mixed-grade level offerings. Disruption due to arrivals/departures for students with flexible schedules will be minimized via internal and end-point stairwells near entrances and at the perimeter of the organized neighborhoods and common spaces.

5g, h) *Not indicated on plans. Please incorporate and resubmit.*

**Response:** The rendering of Option 1E includes the approximate layout of utility locations throughout the site. The approximate routings have been added for both electric and gas lines. These routings and connections will be further developed as the project continues through Schematic Design.

5j) *Provide a brief narrative that explains the advantages and disadvantages of the proposed building orientation, and describe how the design team will work to develop elements that take advantage of north-south sun orientation;*

**Response:** The placement and orientation of the proposed new core academic building has many advantages and responds to all of the educational and visioning goals. The following is a sampling of the advantages due to building placement and orientation:

- Provides a formal presence of the main entrance and core academic building along Elsbree Street.
- Provides a clearly identifiable approach and main entrance.
- Allows for early morning and late morning sun exposure on the main entrance plaza.
- Maintains the existing site amenities the City invested in within the last 10 years (athletic stadium, practice field, and concessions building).
- Southern exposure for the outdoor student dining area, greenhouse, and urban farming program.
- Durfee PRIDE atrium is primarily north facing, thereby providing natural daylighting without direct glare sunlight.

There will also be a few minor challenges associated with the current north-south solar orientation. Direct glare sunlight in the early morning along the east facing classrooms will need to be addressed as

part of a design solution. There are numerous solutions that can mitigate and resolve this condition, including: the strategic placement of windows, the use of exterior vertical solar fins, overhangs, placement of the glazing relative to the exterior wall surface (depth of the window opening), manipulation of the exterior wall surface to provide shading, etc.

Also, the selection of the appropriate window glazing will be important to optimize visible light transmittance (VT) and natural daylighting, while reducing potential solar heat gain. In recent years, the development of numerous high-performance glazing products has made it possible to finetune the optimal natural daylighting and the solar heat gain (winter and summer conditions), resulting in a highly energy efficient system directly related to site specific and building specific conditions.

*6a) As discussed at the July 27, 2017 Facilities Assessment Subcommittee meeting, please keep the MSBA informed related to any adjustments in the estimated construction cost as compared to the estimated cost provided in this submittal. Updated information should be provided to the MSBA prior to the submission of the schematic design. Please acknowledge.*

**Response:** Please find this response as acknowledgement that the District and professional team will update the MSBA with any information related to any adjustments in the estimated construction cost as compared to the information included within the Preferred Schematic Report (PSR) submittal. Updated project and construction cost information will also be provided as part of the next submittal, Schematic Design, currently scheduled for January 2018.

*6d) Not found. Please clarify.*

**Response:** Please refer to Attachment 4 - Municipal Projects Debt Service, which indicates all municipal projects and their respective debt service. (Also, please reference the “Preferred Solution Budget Statement” section of the PSR submission for additional information – Pages 233 thru 262.)

*6e) Although a funding limit has been identified based on the estimated project cost, a not-to-exceed limit was not identified. Please clarify.*

**Response:** The City’s not-to-exceed share of costs is in the range of \$80 - \$85 million. This is based on the City being able to fund \$40- \$45 million out of its existing debt service capacity and asking the tax payers to fund a maximum of \$40 million through a debt exclusion vote.

*7a) It is understood that a project notification form has not yet been filed with the MHC, but is anticipated during the schematic design phase. Please forward a copy of this notification upon transmittal and forward any approval letters or associated correspondence subsequent to MHC’s review. Please note the District should keep the MSBA informed of any decisions and/or proposed actions and should confirm that the proposed project is in conformance with Massachusetts General Law 950, CRM 71.00.*

**Response:** The District and professional team will provide the MSBA with a copy of the Project Notification Form (PNF) filing with the MHC when it has been issued. Any and all related correspondence will also be forwarded to the MSBA for your records.



7m) Not specifically indicated in the schedule provided. Please clarify.

**Response:** The currently planned student move-in date is indicated on the Preliminary Project Schedule as August 23, 2021. Attachment 1 – Revised Project Schedule Update Narrative now includes this date as well.

No further review comments for this section.

### 3.3.5 LOCAL ACTIONS AND APPROVALS

Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
1	Certified copies of the School Building Committee meeting notes showing specific submittal approval vote language and voting results, and a list of associated School Building Committee meeting dates, agenda, attendees and description of the presentation materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Signed Local Actions and Approvals Certification(s):				
	a) Submittal approval certificate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Grade reconfiguration and/or redistricting approval certificate (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Provide the following to document approval and public notification of school configuration changes associated with the proposed project:				
	a) A description of the local process required to authorize a change to the existing grade configuration or redistricting in the district	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) A list of associated public meeting dates, agenda, attendees and description of the presentation materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) Certified copies of the governing body (e.g. School Building Committee) meeting notes showing specific grade reconfiguration and/or redistricting, vote language, and voting results if required locally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) A certification from the Superintendent stating the District's intent to implement a grade configuration or consolidate schools, as applicable. The certification must be signed by the Chief Executive Officer, Superintendent of Schools, and Chair of the School Committee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**MSBA Review Comments:**

*No review comments for this section.*

**Additional Comments:**

*As previously indicated in the Preliminary Design Program review comments, both the MSBA's enabling legislation, M.G.L. c. 70B, and the MSBA's regulations, 963 CMR 2.00 et seq. specifically address the issue of past projects. MSBA records show a total MSBA payment of \$6,440,827 for the BMC Durfee High School HVAC Replacement Project #W20034351 completed in 2003. Pursuant to these requirements and depending on the School District's ultimate plan for the School, the MSBA may recover a pro-rated portion of the financial assistance that the School District has received for previous renovation grants. Based on preliminary information provided in the District's Preferred Schematic Report, the MSBA estimates the cost recovery to be approximately \$650,000. However, the exact amount to be recovered will be established at the conclusion of the Schematic Design / Total Project Budget phase. Please see the MSBA website to view the MSBA's regulations, statute and closed school bulletin for additional information.*

**Response:** The City, District, and Project Team understand the MSBA's regulations regarding past projects and past MSBA participation/reimbursement of project costs at the current Durfee High School and the potential for ineligibility or pro-rated recovery of these costs.

**End**

**List of Attachments:**

- [Attachment 1](#) – Revised Project Schedule Update Narrative (PSR Section I b)
- [Attachment 2](#) – Preliminary Design Pricing Spreadsheet
- [Attachment 3](#) – Match-Check Spreadsheet
- [Attachment 4](#) – Municipal Projects Debt Service
- [Attachment 5](#) – Main Entry Plaza Conceptual Sketch (ADA path coverage)
- [Attachment 6](#) – Conceptual Courtyard programming and uses
- [Attachment 7](#) – Durfee Site Utility Diagram
- [Attachment 8](#) – Revised Proposed Space Summary dated 8.17.17

**Professional Team Responses dated 8.18.17****ATTACHMENT B  
MODULE 3 – PREFERRED SCHEMATIC SPACE SUMMARY REVIEW**

**District:** City of Fall River  
**School:** BMC Durfee High School  
**Owner's Project Manager:** Leftfield, LLC  
**Designer Firm:** Ai3 Architects, LLC  
**Submittal Due Date:** June 29, 2017  
**Submittal Received Date:** June 29, 2017  
**Review Date:** June 30 – August 1, 2017  
**Reviewed by:** A. Waldron, C. Alles, J. Jumpe

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The Massachusetts School Building Authority (the “MSBA”) has completed its review of the proposed space summary of the preferred alternative as produced by Ai3 Architects and its consultants. This review involved evaluating the extent to which the BMC Durfee High School’s proposed space summary conforms to the MSBA guidelines and regulations.

The MSBA considers it critical that the Districts and their Designers aggressively pursue design strategies to achieve compliance with the MSBA guidelines for all proposed projects in the new program and strive to meet the gross square footage allowed per student and the core classroom space standards, as outlined in the guidelines. The MSBA also considers its stance on core classroom space critical to its mission of supporting the construction of successful school projects throughout the Commonwealth that meet current and future educational demands. The MSBA does not want to see this critical component of education suffer at the expense of larger or grander spaces that are not directly involved in the education of students.

MSBA recognizes the benefits and the challenges associated with saving or renovating existing spaces, and may consider variations in the guidelines for renovation projects beyond those included below. Please note that any spaces in new construction or substantially renovated spaces must be compliant with MSBA space standards for both allotted area and room quantity unless otherwise approved in writing by the MSBA.

The following review is based on the submitted new construction with renovation to the existing athletic facility option with an agreed upon design enrollment of 2,570 students in grades 9-12.

**The MSBA review comments are as follows:**

- **Core Academic** – The District is proposing to provide a total of 123,245 net square feet (nsf) which exceeds the MSBA guidelines by 1,315 nsf. The proposed area in this category has decreased by 270 nsf since the Preliminary Design Program submittal. Based on the response to the Preliminary Design Program review comments and information provided in the Preferred Schematic Report,



the MSBA accepts this variation to the guidelines. However, as previously indicated, the MSBA does not object to the District including a greenhouse in the proposed project, but will consider associated costs ineligible for reimbursement.

**Response:** The District understands the MSBA's position that the costs associated with the greenhouse will be considered ineligible for reimbursement.

- **Special Education** – The District is proposing to provide a total of 36,415 net square feet (nsf) which exceeds the MSBA guidelines by 11,235 nsf. The proposed area in this category has increased by 3,425 nsf since the Preliminary Design Program submittal. Please note that the Special Education program is subject to approval by the Department of Elementary and Secondary Education (DESE). The District should provide this information with the Schematic Design submittal. Formal approval of the District's proposed Special Education program by the DESE is a prerequisite for executing a Project Funding Agreement with the MSBA.
- **Art and Music** – The District is proposing to provide a total of 11,600 nsf which exceeds the MSBA guidelines by 250 nsf. The proposed area in this category has decreased by 2,150 nsf since the Preliminary Design Program submittal. Based on the response to the Preliminary Design Program review comments and information provided in the Preferred Schematic Report associated with the utilization of the proposed "MIDI Lab" and "Piano Lab", the MSBA accepts this variation to the guidelines. No further action required.
- **Voc-Tech** – The District is proposing to provide a total of 43,420 nsf which exceeds the MSBA guidelines by 14,620 nsf. The proposed area in this category has decreased by 227 nsf since the Preliminary Design Program submittal. As previously indicated, and based on DESE's review of the District's Chapter 74 submission, the MSBA accepts this variation to the guidelines and will continue to monitor the proposed square footage in the schematic design submittal.
- **Health and Physical Education** – The District is proposing to retain and renovate a total of 62,048 nsf of existing space, which exceeds the MSBA guidelines by 31,456 nsf. The proposed area in this category has increased by 180 nsf since the PDP submittal due to a correction in the existing square footage measurements. The MSBA requests that the existing 8,046 nsf associated with the Natatorium be relocated to the "Other" category, as this entire space will be considered ineligible for reimbursement. The MSBA does not object to the District's proposal to renovate the existing athletic complex, however, the MSBA will establish an acceptable square footage based on the curriculum needs of the proposed project District. In order to do so, the MSBA requests that the following information be provided:
  - Information associated with the existing conditions and current scheduling of physical education spaces has been provided, however, please submit

information associated with the proposed design solution in order for the MSBA to further understand the spatial requirements.

**Response:** Please reference the response below.

- A detailed narrative that describes the anticipated scope associated with renovating the existing complex and that demonstrates how this work addresses the deficiencies identified in the educational program.

**Response:** The District's preferred schematic option (Option 1E) involves, in part, the renovation of the existing athletic building. The athletic building's programmed spaces include a gymnasium, natatorium, fitness rooms, wrestling room, health classrooms, wellness center / dance studio, locker and shower facilities, and support spaces (ie. offices, storage, etc.). The spaces are constantly used by several programs such as ROTC, CVTE, Special Education, Adaptive PE (APE), Physical Education, Athletics, Health, etc., resulting in a high utilization rate.

The educational program highlighted many deficiencies and shortcomings of the existing spaces within the athletic building, some of which are:

- Existing Health Classrooms are located too far from the athletic gymnasium and athletic spaces.
- Adapted PE space intermingled with numerous teaching spaces within the gymnasium, without extra space for appropriate movement. (Some students have sensory disabilities, use walkers or wheelchairs, and need the additional space for safe, comfortable movement.)
- Athletic building's poor functionality
  - Ineffective curtain dividers (privacy and acoustics)
  - Inoperable curtain dividers, basketball hoops, and bleachers
  - Ineffective heating and ventilation system
  - Inadequate gymnasium flooring system
  - Inefficient/inadequate building circulation
- Inadequate wrestling room
- Compromised Project Adventure Indoor Ropes Course room
- Disconnected wellness center / dance studio space from remaining teaching spaces.

Preliminary discussions with the district administration, faculty, and staff related to the educational program and proposed design solution for the athletic building has resulted in identifying the following goals to address the building's current shortcomings:

- Relocation of the health classrooms from the current academic building and placing them adjacent to and easily accessible from the athletic spaces.

- Re-configuration of the dividing curtains and dividing partitions to better organize and acoustically separate the teaching stations within the existing fieldhouse.
- Relocation of the Wellness Center / Dance Studio to provide more integrated teaching station.
- Re-configuration of the boys' and girl's locker rooms, storage, offices, etc. to provide an improved building circulation.
- Replace the inadequate building systems.

In addition to discussing the most appropriate design solution, the professional team will continue to work closely with the district administration, faculty, and staff to coordinate and develop a construction phasing plan that has the least possible disruption to the physical education and athletic schedules and students' daily schedule. In fact, the team is currently discussing ideas that would use the construction as an educational opportunity and learning experience for the faculty, staff, and students.

- **Media Center** – The District is proposing to provide a total of 15,963 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preliminary Design Program submittal. Please provide an updated space summary indicating a breakdown of the individual spaces within this category.

**Response:** The Media Center layout will be comprised of space for collaboration for groups of varying sizes, research stations/computer labs, quiet areas for independent study, librarian station, student cafe area, and a student-staffed tech help desk. Please reference the attached revised proposed space summary for more detail.

- **Auditorium/ Drama** - The District is proposing to provide a total of 10,400 nsf which meets the MSBA guidelines. The proposed area in this category has decreased by 11,573 nsf since the Preliminary Design Program submittal as a result of proposing new auditorium/ drama spaces in lieu of renovating the existing performing arts building. No further action required.
- **Dining and Food Service** – The District is proposing to provide a total of 22,463 nsf which exceeds the MSBA guidelines by 3,457 nsf. The proposed area in this category has increased by 3,457 nsf since the Preliminary Design Program submittal. The proposed square footage includes 4,100 nsf of District-wide spaces for “Dry Food Storage”, “Food Storage Office” and a full-service “Kitchen” which exceeds the MSBA guidelines by 793 nsf. It should be noted that the District intends to maintain central food services at the proposed high school and will continue to serve the other schools within the District. In order for MSBA to complete review of the proposed and establish an agreeable square footage, please indicate which schools will be served through the proposed central food services.

**Response:** The Durfee High School has a District Kitchen which prepares and packages approximately 900 meals a day in addition to the meals prepared for



the Durfee High School. These meals are sent to the James Tansey Elementary School, a K-5 school with approximately 315 students, and the Spencer Borden Elementary School, a PK-5 school with approximately 532 students. Both Schools are within walking distance of the Durfee High School. Whitsons Food Service runs the District Kitchen.

- **Medical** – The District is proposing to provide a total of 2,010 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preliminary Design Program submittal. No further action required.
- **Administration and Guidance** – The District is proposing to provide a total of 10,901 nsf which exceeds the MSBA guidelines by 2,722 nsf. The proposed area in this category has decreased by 1,343 nsf since the Preliminary Design Program submittal. The information provided indicates the need for additional administrative support spaces associated with a large high school and based on the District’s specialized administrative team structure for each grade. the population, including house offices, additional assistant principals, Social Workers, and a Student Support Office. Based on the information provided and the reduced area in this category, the MSBA accepts this variation to the guidelines. No further action required.
- **Custodial and Maintenance** – The District is proposing to provide a total of 3,553 nsf which meets the MSBA guidelines. The proposed area in this category not changed since the Preliminary Design Program submittal. No further action required.
- **Other** - The MSBA requests that 8,046 nsf associated with the existing Natatorium be relocated from “Health and Physical Education” category to this category. As noted above, square footage associated with the Natatorium will be considered ineligible for reimbursement.

**Response:** The square footage associated with the existing Natatorium has been relocated from the “Health and Physical Education” category to the “Other” category as requested and noted above. (Please reference the attached revised Proposed Space Summary dated August 17, 2017.)

- **Total Building Net Floor Area** – The District is proposing to provide a total of 342,018 nsf which exceeds the MSBA guidelines by 65,057 nsf. The proposed area has decreased by 9,933 nsf since the Preliminary Design Program submittal. It should be noted that 62,048 nsf is associated with the existing athletic complex that is proposed to be renovated. In the response to these review comments, the District should address the items in the “Health and Physical Education”, “Dining and Food Services”, and the “Other” categories as noted above. Based on the responses to these comments, the MSBA will review the proposed project for programmatic needs that vary from the MSBA guidelines and areas that exceed programmatic needs in conjunction with the eligibility for funding.

- **Total Building Gross Floor Area** – The District is proposing to provide a total of 501,330 gsf which exceeds the MSBA guidelines by 97,840 gsf. The proposed area has decreased by 19,557 gsf since the Preliminary Design Program submittal. Based on the comments provided above, the MSBA will continue to work with the District and its consultants to establish an acceptable square footage that will be used to determine the limits of MSBA's participation.

Please note that upon moving forward into subsequent phases of the proposed project, the Designer will be required to provide, with each submission, a signed, updated space summary that reflects the design and demonstrates that the design remains, except as agreed to in writing by the MSBA, in accordance with the guidelines, rules, regulations and policies of the MSBA. Should the updated space summary demonstrate changes to the previous space summary include a narrative description of the change(s) and the reason for the proposed changes to the project.

## UPDATED PROJECT SCHEDULE

The Projected Meetings and Milestones Schedule included in Section IV h has been updated and included to indicate all meetings and milestones that have been achieved or are currently planned or projected. The Preliminary Project Schedule also included in Section IV h has been updated to reflect the changes in the Facilities Assessment Subcommittee meeting dates, to include the planned schedule for submission of the Massachusetts Historical Commission Project Notification Form and to postpone the decision on the construction delivery method.

With the submission of the Preferred Schematic Report (PSR), the BMC Durfee High School Project remains on track with the previously submitted Preliminary Project Schedule. The Schematic Design Submission (SD) is scheduled to be submitted on January 3, 2018 for a February 14, 2018 MSBA Board Meeting. The SD dates are anticipated dates and will be adjusted as required once the 2018 MSBA Meeting Calendar is published. **The City is currently projecting an Election date of March 6, 2018 to vote on the Project Scope and Budget Agreement for the BMC Durfee High School Project.**

The **targeted SD Submission date and MSBA Board PSBA approval date along with the projected City Election date** allow for construction to begin in the spring of 2019 if a Design-Bid-Build construction delivery is chosen or on a similar or accelerated start if a CM at Risk construction delivery is chosen. The decision on the construction delivery method has been postponed until after the PSR so that the advantages and disadvantages of both in comparison to anticipated project costs can more fully be explored for the BMC Durfee High School Project. The Preliminary Project Schedule indicates a timeline for CM at Risk procurement due to the more extensive time commitment for the process. A Design-Bid-Build construction delivery would start at the same timeline as the Bidding of the Main Bid Package indicated on the schedule. **The BMC Durfee High School is anticipated to open no later than August 23, 2021. Depending on the construction delivery method implemented, this date could be accelerated by 6-8 months but will be confirmed once a decision on the delivery method has been made.**

The Massachusetts Historical Commission Project Notification Form submission and approval timeline has been added to the schedule. Ample time is provided to allow approval from the Massachusetts Historical Commission prior to completion of the Construction Documents.



Table 1 - Summary of Preliminary Design Pricing

7/28/2017

	Total GSF	SF of Renovated Space (Cost*/SF)	SF of New Construction (Cost*/SF)	Site, Building Takedown, Haz Mat. Cost, Swing Space, Takings*	Estimated Total Construction ** (Cost*/SF)	Estimated Total Project Costs
<b>Base Repair OPTION 1</b> Code Required Upgrades ONLY	573,210	573,210 \$98.50/sf	0	\$1,710,000	\$58,169,531 \$101.48/sf	\$73,072,371 \$127.48/sf
<b>OPTION 1A</b> Renovation (Athletics & Performing Arts) / New Construction (Within Exist. Bldg. footprint)	526,044	189,523 \$253/sf	336,521 \$366.41/sf	\$29,761,823	\$201,015,521 \$382.13/sf	\$243,831,826 \$463.52/sf
<b>OPTION 1B</b> Renovation (Athletics & Performing Arts) / New Construction	526,044	189,523 \$248.38/sf	336,521 \$355.38/sf	\$29,199,612	\$195,871,340 \$372.34/sf	\$237,591,935 \$451.66/sf
<b>OPTION 1C</b> Renovation (Athletics & Performing Arts) / New Construction	526,044	189,523 \$257.99/sf	336,521 \$368.99/sf	\$24,259,847	\$197,333,168 \$375.12/sf	\$239,365,132 \$455.03/sf
<b>OPTION 1D</b> Renovation (Athletics & Performing Arts) / New Construction (Within Exist. Bldg. footprint)	526,044	189,523 \$279.73/sf	336,521 \$397.73/sf	\$16,032,807	\$202,893,942 \$385.70/sf	\$246,110,351 \$467.85/sf
<b>OPTION 1E***</b> Renovation (Athletics Building) / New Construction (with portion Pre-fab)	501,330	98,523 \$259.26/sf	402,807 \$386.02/sf	\$16,032,807	\$197,067,802 \$393.09/sf	\$239,043,243 \$476.82/sf
<b>OPTION 2A</b> New Construction - No Pool	476,296	0	476,296 \$355.88/sf	\$32,923,838	\$202,425,800 \$425/sf	\$245,542,495 \$515.53/sf
<b>OPTION 2B</b> New Construction with Pre-Engineered Building	489,966	0	489,966 \$389.13/sf	\$21,248,283	\$211,912,657 \$432.50/sf	\$257,050,052 \$524.63/sf

\*Marked up construction costs

\*\*Does not include construction contingency

**Construction Start for ALL options is scheduled for April 2019**

\*\*\*District's Preferred Solution

**Preliminary Design Pricing Table Math Check Review Template**

         =calculation, do not overwrite

	Total Gross (sf)	SF of Renovated Space (\$/sf)	SF of New Construction (\$/sf)	Site, Building Takedown, Haz Mat Etc. (\$)	Estimated Total Construction (\$)	Estimated Total Project Costs (\$)	
Option Base	573,210 sf	573,210 sf	- sf	\$ 1,710,000	\$ 58,169,531	\$ 73,072,371	126%
Repair		\$ 101.48 \$/sf	\$ - \$/sf		\$ 101.48 \$/sf		
Option 1	573,210 sf				\$ 59,879,351		
Check					\$ 104.46 \$/sf		
	0				\$ (1,709,820)		
					\$ (2.98)		
Option 1A	526,044 sf	189,523 sf	336,521 sf	\$ 29,761,823	\$ 201,015,521	\$ 243,831,826	121%
Add/reno		\$ 310.00 \$/sf	\$ 423.00 \$/sf		\$ 382.13 \$/sf		
Check	526,044 sf				\$ 230,862,336		
					\$ 438.87 \$/sf		
	0				\$ (29,846,815)		
					\$ (56.74)		
Option 1B	526,044 sf	189,523 sf	336,521 sf	\$ 29,199,612	\$ 195,871,340	\$ 237,591,935	121%
Add/reno		\$ 304.00 \$/sf	\$ 411.00 \$/sf		\$ 372.34 \$/sf		
Check	526,044 sf				\$ 225,124,735		
					\$ 427.96 \$/sf		
	0				\$ (29,253,395)		
					\$ (55.62)		
Option 1C	526,044 sf	189,523 sf	336,521 sf	\$ 24,259,847	\$ 197,333,168	\$ 239,365,132	121%
Add/reno		\$ 304.00 \$/sf	\$ 415.00 \$/sf		\$ 375.12 \$/sf		
Check	526,044 sf				\$ 221,531,054		
					\$ 421.13 \$/sf		
	0				\$ (24,197,886)		
					\$ (46.01)		
Option 1D	526,044 sf	189,523 sf	336,521 sf	\$ 16,032,807	\$ 202,893,942	\$ 246,110,351	121%
Add/reno		\$ 310.00 \$/sf	\$ 428.00 \$/sf		\$ 385.70 \$/sf		
Check	526,044 sf				\$ 218,815,925		
					\$ 415.97 \$/sf		
	0				\$ (15,921,983)		
					\$ (30.27)		
Option 1E	501,330 sf	98,523 sf	402,807 sf	\$ 16,032,807	\$ 197,067,802	\$ 239,043,243	121%
Add/reno		\$ 292.00 \$/sf	\$ 418.00 \$/sf		\$ 393.09 \$/sf		
Check	501,330 sf				\$ 213,174,849		
					\$ 425.22 \$/sf		
	0				\$ (16,107,047)		
					\$ (32.13)		
Option 2A	476,296 sf	- sf	476,296 sf	\$ 32,923,838	\$ 202,425,800	\$ 245,542,492	121%
New		\$ - \$/sf	\$ 425.00 \$/sf		\$ 425.00 \$/sf		
Check	476,296 sf				\$ 235,349,638		
					\$ 494.12 \$/sf		
	0				\$ (32,923,838)		
					\$ (69.12)		
Option 2B	489,966 sf	- sf	489,966 sf	\$ 21,248,283	\$ 211,912,657	\$ 257,050,052	121%
New		\$ - \$/sf	\$ 432.50 \$/sf		\$ 432.50 \$/sf		
Check	489,966 sf				\$ 233,158,578		
					\$ 475.87 \$/sf		
	0				\$ (21,245,921)		
					\$ (43.37)		

**City of Fall River, Massachusetts**  
**Gross and Net Long Term Debt Service for FY2016 - FY2039 (after 2016 Refunding Bonds & MCWT Swap 12/16/2016)**

[illegible]





[illegible][illegible]





[illegible]



- ADA accessible parking is providing less than 200' on both the north and south side of the main entrance.
- Grading provides accessible walks from exposed 100' to the elements and 80' protected from the elements under the proposed porte cochere
- Accessible walk are accessed into the site to the main entrance from both the north and the south.
- The entrance will feature a large plaza and grand staircase.

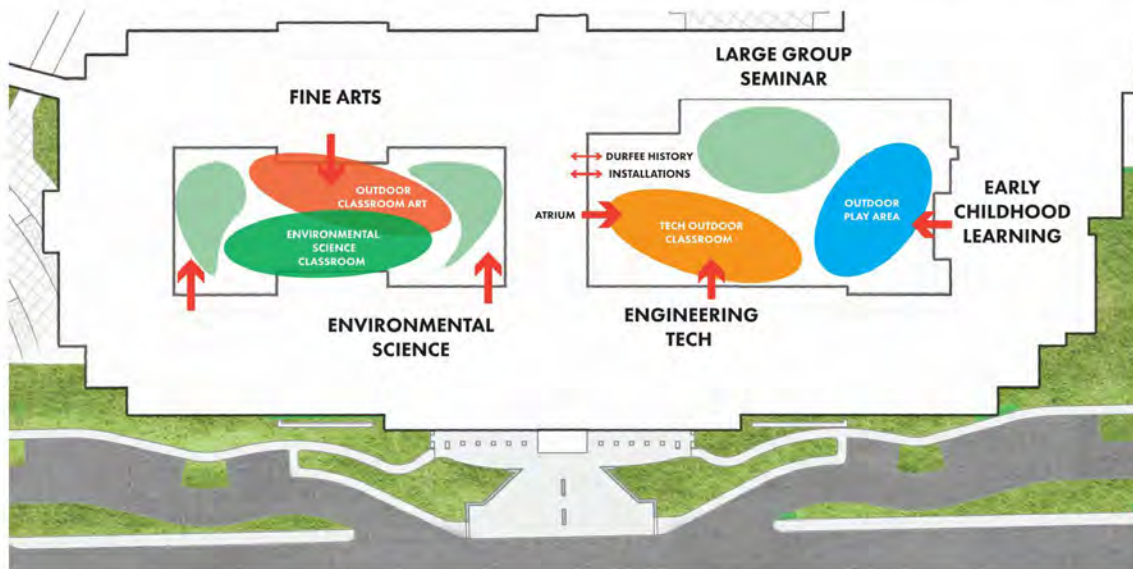


BMC **DURFEE**

FRONT ENTRANCE DIAGRAM

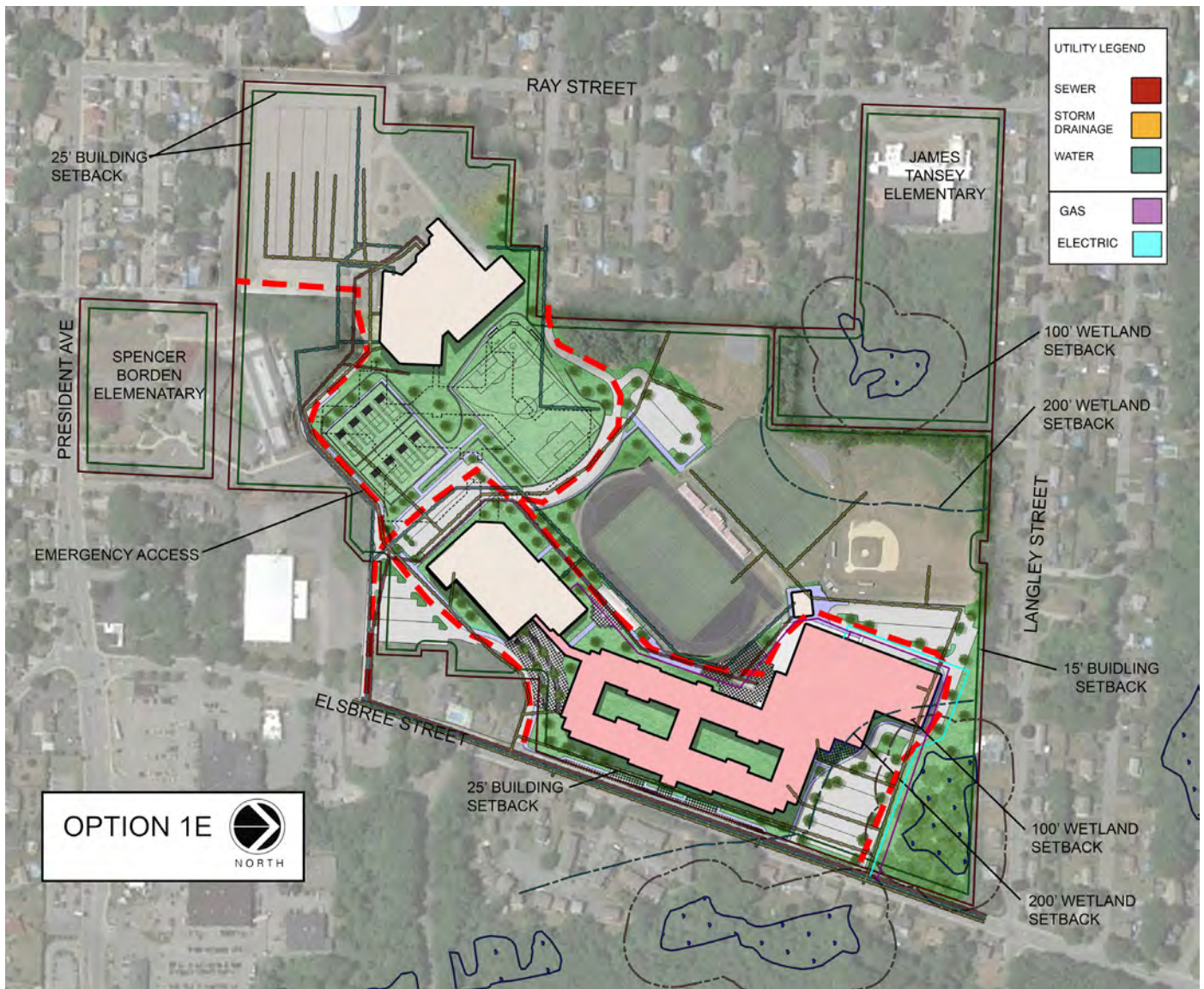


- Providing multi-functional spaces to serve multiple programming requirements.
- Variable scale of spaces to accommodate both large and small scale learning.
- Typical hardscape and softscape allow for limited snow removal accomplished manually (shovel) or mechanically (snow blower) based on programatic needs.



**DURFEE**

COURTYARD DIAGRAM







Proposed Space Summary - BMC Durfee High School

Revised 8.17.17

OPTION 1E  
NC with Athletic Building Renovation

BMC Durfee High School		Existing Conditions				MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)				
ROOM TYPE	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES <i>(List classrooms of different sizes separately)</i>										
Classroom - General			118,567			4,075		119,170		121,830
English	1,023	1	1,023							
English	1,248	1	1,248							
English	1,818	1	1,818							
English	422	1	422							
English	820	4	3,280							
English	826	2	1,652							
English	844	4	3,376							
English	646	2	1,292							
English	858	1	858							
Freshman Academy										
English	705	1	705							
English	698	1	698							
English	764	1	764							
English	858	1	858							
English	805	2	1,610							
English	602	1	602							
English	851	1	851							
English Dean Office	149	1	149				200	1	200	
English Small Conference	135	1	135							
Math										
Math	814	2	1,628							
Math	820	3	2,460							
Math	620	2	1,240							
Math	756	2	1,512							
Math	772	2	1,544							
Math	632	2	1,264							
Math	826	1	826							
Math	659	1	659							
Math	852	1	852							
Freshman Academy										
Math	765	2	1,530							
Math	698	1	698							
Math	746	2	1,492							
Math	1,222	1	1,222							
Math Dean Office	174	1	174				200	1	200	
Computer Lab	836	1	836							
Computer Lab	861	1	861							
Science Computer Lab	772	1	772							
			0							
World Language	645	1	645							
World Language	838	7	5,866							
World Language	825	2	1,650							
World Language	853	1	853							
World Language	964	1	964							
World Language	951	1	951							
World Language	838	1	838							
World Language Lab	1,345	1	1,345							
World Language Dean Office										
History										
History	843	1	843							
History	742	1	742							
History	806	3	2,418							
History	606	3	1,818							
History	755	2	1,510							
History	861	1	861							
History	705	1	705							
History Lab	852	1	852				825	1	825	
Freshman Academy										
History	705	2	1,410							
History	765	2	1,530							
History Dean Office	283	1	283				200	1	200	
Teacher Planning			0							
Teachers Room (A1)	233	1	233							
Teachers Room (A4b)	570	1	570							
Teachers Room (A41)	577	1	577							
Teachers Room (A43)	373	1	373							
Teachers Room (A48)	432	1	432							
Teachers Room (A46)	348	1	348							
Teachers Room (A47&48)	533	2	1,066							
Teachers Room (A42)	400	1	400							
Teachers Room (A91)	188	1	188							
Small Group Support										
							100	12	1,200	
Science Classroom / Lab							1,440	14	20,160	
Science										
Science	1,306	1	1,306							
Science	1,618	1	1,618							
Science	1,455	1	1,455							
Science	1,219	1	1,219							
Science	1,385	1	1,385							
Science	1,022	2	2,044							
Science	645	1	645							
Science	806	1	806							
Science	602	2	1,204							
Science	836	1	836							
Science	856	1	856							
Science	1,287	2	2,574							
Science	757	2	1,514							
Science	1,376	2	2,752							
Science	2,126	2	4,252							
Freshman Academy							1,440	9	12,960	
Science	963	2	1,926							
Science	987	2	1,974							
Science	616	1	616							
Science	862	1	862							
Science	705	1	705							
Science	848	1	848							
Science	765	1	765							
Science Dean Office	150	1	150							
Greenhouse										
Planetarium	500	1	500				200	1	200	
Planetarium Storage	941	1	941							
Planetarium Office	76	1	76							
Observatory	900	1	900							
Prep Room	351	1	351							
Prep Room	567	2	1,134							
Prep Room	133	2	266							
Prep Room	269	1	269							
Prep Room	263	1	263							
Prep Room	362	1	362							
Prep Room	500	1	500							
Prep Room	445	1	445							
Central Chemical Storage Rm										
Central Chemical Storage Rm	351	2	702				200	1	200	
	154	2	308							
			0							
Large Group Seminar #1	868	1	868							
Large Group Seminar #2	868	1	868				2,500	1	2,500	
Large Group Seminar #3	868	1	868							
Large Group Seminar #4	868	1	868							
Independent Study										
Health Classroom	422	1	422							
Health Classroom	925	1	925							
Health Classroom	1,004	3	3,012							
Health Storage	169	1	169							
	815	5	4,075							
										</



Proposed Space Summary - BMC Durfee High School

Revised 8.17.17

OPTION 1E

NC with Athletic Building Renovation

Existing Conditions				New		Total		
ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals
Self-Contained SPED	964	1	964			964	1	964
Self-Contained SPED	953	1	953			953	1	953
SPED OT/PT	837	1	837			837	1	837
SPED OT/PT Severe Disabilities	1,449	1	1,449			1,449	1	1,449
SPED OT/PT Severe Disabilities	1,141	1	1,141			1,141	1	1,141
SPED Severe Disabilities- Storage	157	1	157			157	1	157
SPED ESL	1,117	1	1,117			1,117	1	1,117
SPED ESL	1,069	1	1,069			1,069	1	1,069
SPED ESL	1,012	1	1,012			1,012	1	1,012
SPED Science Sub-Separate Classroom	870	2	1,740			870	2	1,740
SPED Science Sub-Separate Classroom	807	1	807			807	1	807
SPED Math Sub-Separate Classroom	852	1	852			852	1	852
SPED Math Sub-separate Classroom	692	1	692			692	1	692
SPED History Sub-separate Classroom	662	1	662			662	1	662
SPED History Sub-separate Classroom	702	1	702			702	1	702
SPED English/Reading Classroom	678	1	678			678	1	678
SPED English/Reading Classroom	838	1	838			838	1	838
SPED English/Reading Classroom	634	1	634			634	1	634
SPED Classroom	702	1	702			702	1	702
SPED Book Room	279	1	279			279	1	279
<b>Bridge Program</b>								
SPED Behavior Self-Contained Classroom	1,080	1	1,080			1,080	1	1,080
SPED Behavior Self-Contained Classroom	856	3	2,568			856	3	2,568
SPED Behavior Self-Contained Classroom	825	1	825			825	1	825
SPED Behavior Self-Contained Classroom	1,724	1	1,724			1,724	1	1,724
Adjustment Counselor Office								
<b>Autism Spectrum Disorder Program (ASD)</b>								
SPED Behavior Self-Contained Classroom (Autism)	803	1	803			803	1	803
Self-Contained SPED Toilet								
Resource Room								
Small Group Room								
SPED Dean Office	1,109	1	1,109			1,109	1	1,109
SPED Offices	330	1	330			330	1	330
SPED Office	287	1	287			287	1	287
SPED Team Chair Office	166	1	166			166	1	166
SPED Team Chair Office	224	1	224			224	1	224
SPED Conference Room	232	1	232			232	1	232
SPED Conference Room	236	1	236			236	1	236
SPED Conference Room	702	1	702			702	1	702
SPED Speech	152	1	152			152	1	152
SPED Speech	83	1	83			83	1	83
SPED Speech Training	54	6	324			54	6	324
SPED Speech Observation	83	1	83			83	1	83
SPED School Psychologist Office	120	1	120			120	1	120
SPED Speech Therapy Office	148	1	148			148	1	148
SPED Testing	152	1	152			152	1	152
SPED Testing	200	1	200			200	1	200
d. Parenting Center K-6	721	1	721			721	1	721
d. Parenting Center K-8	673	1	673			673	1	673
d. Early Childhood Pre-K	678	1	678			678	1	678
d. District SPED (A49)	6,236	1	6,236			6,236	1	6,236
<b>ART &amp; MUSIC</b>								
Art Classroom - 25 seats								
Art Classroom: Sculpture (Art1&2)	1,384	1	1,384			1,384	1	1,384
Art Classroom: Ceramics	2,025	1	2,025			2,025	1	2,025
Art Classroom: 1&2 History	854	1	854			854	1	854
Art Storage	111	1	111			111	1	111
Art Storage	154	1	154			154	1	154
Art Material Storage	263	1	263			263	1	263
Art Workroom w/ Storage & kin	500	1	500			500	1	500
Art Storage	230	1	230			230	1	230
Sculpture Storage	230	1	230			230	1	230
Darkroom	121	1	121			121	1	121
Band - 50 - 100 seats	1,730	1	1,730			1,730	1	1,730
Chorus - 50 - 100 seats (Orchestra)	1,923	1	1,923			1,923	1	1,923
MDI Lab	868	1	868			868	1	868
Piano Lab	654	1	654			654	1	654
Ensemble								
Music Practice	268	1	268			268	1	268
Music Practice	286	1	286			286	1	286
Music Practice	138	2	276			138	2	276
Music Practice	316	1	316			316	1	316
Music Storage	236	1	236			236	1	236
Music Storage	404	1	404			404	1	404
Music Storage	75	3	225			75	3	225
Instrument Repair/Storage	291	1	291			291	1	291
Music Office	238	1	238			238	1	238
Music Office	163	1	163			163	1	163
<b>VOCATIONS &amp; TECHNOLOGY</b>								
Tech Cnrm. - (E.G. Drafting, Business)								
Tech Shop - (E.G. Consumer, Wood)								
<b>CH 74 Programs</b>								
Environmental Science & Technology (150507)	3,190	1	3,190			3,190	1	3,190
Environmental Science & Technology - Offices								
Environmental Science & Technology - Storage	298	1	298			298	1	298
Design & Visual Communications (500401)	1,273	1	1,273			1,273	1	1,273
Design & Visual Communications (500401): Digital Photography	1,330	1	1,330			1,330	1	1,330
Design & Visual Communications (500401): Fashion Design	276	1	276			276	1	276
Design & Visual Communications (500401): Interior Design/Architecture	341	1	341			341	1	341
Design & Visual Communications (500401): Graphic Arts Classroom	2,108	1	2,108			2,108	1	2,108
Design & Visual Communications (500401): Offices								
Design & Visual Communications (500401): Graphic Arts Storage	228	1	228			228	1	228
Cosmetology (120401): Classroom	700	1	700			700	1	700
Cosmetology (120401): Hair	872	1	872			872	1	872
Cosmetology (120401): Facials	802	1	802			802	1	802
Cosmetology (120401): Nails	305	1	305			305	1	305
Cosmetology (120401): Prep Room	266	1	266			266	1	266
Cosmetology (120401): Waiting	263	1	263			263	1	263
Cosmetology (120401): Lockers	267	1	267			267	1	267
Cosmetology (120401): Storage	292	1	292			292	1	292
Cosmetology (120401): Storage	91	1	91			91	1	91
Early Education & Care (131210): Preschool Lab	1,000	1	1,000			1,000	1	1,000
Early Education & Care (131210): Youth Parents Learning Center	827	1	827			827	1	827
Early Education & Care (131210): Youth Parents Learning Center	427	1	427			427	1	427
Early Education & Care (131210): Toilet Rooms								
Early Education & Care (131210): Observation	60	1	60			60	1	60
Early Education & Care (131210): Kitchen	103	1	103			103	1	103
Health Assisting (610000): Classroom	1,129	1	1,129			1,129	1	1,129
Health Assisting (610000): Classroom	1,362	1	1,362			1,362	1	1,362
Health Assisting (610000): Skills Room	569	1	569			569	1	569
Health Assisting (610000): Skills Room	446	1	446			446	1	446
Health Assisting (610000): Storage	162	1	162			162	1	162
Health Assisting (610000): Storage	100	1	100			100	1	100
Health Assisting (610000): Kitchen	52	1	52			52	1	52
Culinary Arts (120500): Tradewinds Restaurant	2,191	1	2,191			2,000	1	2,000
Culinary Arts (120500): Tradewinds Classroom	890	1	890			825	1	825
Culinary Arts (120500): Kitchen	1,770	1	1,770			1,200	1	1,200
Culinary Arts (120500): Dishwashing						350	1	350
Culinary Arts (120500): Laundry						150	1	150





Proposed Space Summary - BMC Durfee High School

Revised 8.17.17

OPTION 1E

NC with Athletic Building Renovation

Existing Conditions				New				Total			
ROOM NFA <sup>1</sup>	# OF RMS	area totals		ROOM NFA <sup>1</sup>	# OF RMS	area totals		ROOM NFA <sup>1</sup>	# OF RMS	area totals	
Culinary Arts (120500): Lockers/Storage	296	1	296		450	1	450	450	1	450	
Culinary Arts (120500): Bakery	1,817	1	1,817		1,200	1	1,200	1,200	1	1,200	
Culinary Arts (120500): Storage	358	1	358		600	1	600	600	1	600	
Culinary Arts (120500): Office	97	1	97		100	1	100	100	1	100	
Culinary Arts (120500): Refrigerator/ Freezer	140	1	140								
Radio and Television Broadcasting (090701): Classroom	781	1	781		825	1	825	825	1	825	-
Radio and Television Broadcasting (090701): (FRED TV): Studio	840	1	840		1,500	1	1,500	1,500	1	1,500	
Radio and Television Broadcasting (090701): (FRED TV): Control Room	174	1	174		200	1	200	200	1	200	
Radio and Television Broadcasting (090701): (FRED TV): Office	103	1	103		100	4	400	100	4	400	
Engineering Technology (150000)	1,277	3	3,831		1,200	4	4,800	1,200	4	4,800	-
Engineering Technology (150000)	1,232	1	1,232		300	1	300	300	1	300	
Engineering Technology (150000): Offices					450	1	450	450	1	450	
Engineering Technology (150000): Storage											
Marketing (190203): Compass Bank					250	1	250	250	1	250	-
Marketing (190203): Campus Store	200	1	200		350	1	350	350	1	350	
Construction Craft Laborer (489999)	3,154	1	3,154		2,500	1	2,500	2,500	1	2,500	-
Construction Craft Laborer (489999)	2,450	1	2,450		2,500	1	2,500	2,500	1	2,500	
Construction Craft Laborer (489999): Design Build Studio	831	1	831		825	1	825	825	1	825	
Construction Craft Laborer (489999): Storage	258	2	516		250	2	500	250	2	500	
Construction Craft Laborer (489999): Finishing Room	201	1	201		200	1	200	200	1	200	
ROTC: Classroom	867	2	1,734		825	2	1,650	825	2	1,650	-
ROTC: Storage	375	1	375		500	1	500	500	1	500	
ROTC: Office/ Kitchen	448	1	448		125	3	375	125	3	375	
Aviation (PLTW - Aerospace)	3,154	1	3,154								-
CTVE: Career Tech Office	268	1	268		250	2	500	250	2	500	
CTVE: Career Tech Office	217	1	217								-
CTVE: Career Tech Office - Storage	439	1	439		150	1	150	150	1	150	
HEADLTH & PHYSICAL EDUCATION			54,002			0				30,592	
Teaching Station #1-4 (Gymnasium)	13,477	1	13,477		13,477	1	13,477	13,477	1	13,477	
Teaching Station #5	3,000	1	3,000		3,000	1	3,000	3,000	1	3,000	
Teaching Station #6	3,000	1	3,000		3,000	1	3,000	3,000	1	3,000	
Teaching Station #7	3,000	1	3,000		3,000	1	3,000	3,000	1	3,000	
Teaching Station #8	3,000	1	3,000		3,000	1	3,000	3,000	1	3,000	
Teaching Station #9 (Weight Room 1)	2,300	1	2,300		2,300	1	2,300	2,300	1	2,300	
Teaching Station #10 (Weight Room 2)	1,116	1	1,116		1,116	1	1,116	1,116	1	1,116	
Teaching Station #11 (Wrestling Room)	905	1	905		905	1	905	905	1	905	
Teaching Station #12 (Wellness Center - Dance Studio)	2,304	1	2,304		2,304	1	2,304	2,304	1	2,304	
PE Alternatives											
Training Room	222	1	222		222	1	222	222	1	222	
Athletic Trainers Office	276	1	276		276	1	276	276	1	276	
Gym Storage	1,093	1	1,093		1,093	1	1,093	1,093	1	1,093	
Gym Storage #1	400	1	400		400	1	400	400	1	400	
Gym Storage #2	403	1	403		403	1	403	403	1	403	
Gym Storage #3	794	1	794		794	1	794	794	1	794	
Gym Storage #4	96	1	96		96	1	96	96	1	96	
Locker Rooms - Boys / Girls w/ Toilets											
Boys Lockers	3,427	1	3,427		3,427	1	3,427	3,427	1	3,427	
Boys Showers & Drying Area	2,370	1	2,370		2,370	1	2,370	2,370	1	2,370	
Girls Lockers	1,464	1	1,464		1,464	1	1,464	1,464	1	1,464	
Girls Showers & Drying Area	6,921	1	6,921		6,921	1	6,921	6,921	1	6,921	
Phys. Ed. Storage	932	1	932		932	1	932	932	1	932	
Phys. Ed. Storage	803	1	803		803	1	803	803	1	803	
Phys. Ed. Storage	403	1	403		403	1	403	403	1	403	
Phys. Ed. Storage	184	1	184		184	1	184	184	1	184	
Coaches Office #1	96	1	96		96	1	96	96	1	96	
Coaches Office #2	107	1	107		107	1	107	107	1	107	
Coaches Office #3	262	1	262		262	1	262	262	1	262	
Coaches Office w/ Toilet/Shower #4	303	1	303		303	1	303	303	1	303	
PE Office w/ Toilet/Shower #1	350	1	350		350	1	350	350	1	350	
PE Office w/ Toilet/Shower #2	306	1	306		306	1	306	306	1	306	
PE Office #3	142	1	142		142	1	142	142	1	142	
PE Office #4	256	1	256		256	1	256	256	1	256	
Laundry	290	1	290		290	1	290	290	1	290	
Athletic Director's Office											
Health Instructor's Office w/ Shower & Toilet											
MEDIA CENTER			23,440		15,963	1	15,963	15,963	1	15,963	
Media Center / Reading Room	18,449	1	18,449		15,963	1	15,963	15,963	1	15,963	
Computer Lab	1,080	1	1,080								
Instructional Media Classroom 1	685	1	685								
Instructional Media Classroom 2	840	1	840								
Instructional Media Classroom 3	849	1	849								
Assessment Center	760	1	760								
Professional Library	325	1	325								
Audio/Visual Storage	226	1	226								
Library Media Office	226	1	226								
AUDITORIUM / DRAMA			21,142		10,400		10,400	7,500		10,400	
Auditorium	14,123	1	14,123		7,500	1	7,500	7,500	1	7,500	
Stage	3,250	1	3,250		1,600	1	1,600	1,600	1	1,600	
Auditorium Storage	165	1	165		500	1	500	500	1	500	
Auditorium Storage	70	1	70								
Auditorium Storage	100	3	300								
Costume Storage Room	527	1	527								
Make-up / Dressing Rooms	281	2	562		275	2	550	275	2	550	
Controls / Lighting / Projection	135	3	405		200	1	200	200	1	200	
Blackbox Theater	1,675	1	1,675								
Ticket Office	65	1	65		50	1	50	50	1	50	
DINING & FOOD SERVICE			26,201		6,425	2	12,850	6,425	2	12,850	
Cafeteria / Student Lounge / Break-out	16,420	1	16,420								
Chair / Table Storage			0								
Dry Food Storage	1,610	1	1,610		1,600	1	1,600	1,600	1	1,600	
District Kitchen Storage	2,398	1	2,398		2,400	1	2,400	2,400	1	2,400	
Food Service Office	90	3	270		100	1	100	100	1	100	
Locker Area	107	1	107								
Scramble Serving Area											
Kitchen	5,119	1	5,119		300	2	600	300	2	600	
Staff Lunch Room					4,663	1	4,663	4,663	1	4,663	
Kitchen Break Room	277	1	277		250	1	250	250	1	250	
MEDICAL			2,375								
Medical Suite / Toilet	54	3	162		60	1	60	60	1	60	
Nurses' Office / Waiting Room	747	1	747		250	1	250	250	1	250	
Interview Room	45	1	45		100	6	600	100	6	600	
Examination Room / Resting Storage	130	3	390		100	11	1,100	100	11	1,100	
	352	1	352								
Nurse, Supervisor Office	329	1	329								
Nurse, Supervisor Kitchen	160	1	160								
Nurse, Storage	190	1	190								
ADMINISTRATION & GUIDANCE			14,020								
General Office / Waiting Room / Toilet	1,596	1	1,596		1,285	1	1,285	1,285	1	1,285	
Teachers Mail and Time Room					100	1	100	100	1	100	
Duplicating Room					200	1	200	200	1	200	
Records Room (Sale)	163	1	163		200	1	200	200	1	200	
Principal's Office w/ Conference Area	574	1	574		375	1	375	375	1	375	
Principal's Secretary / Waiting	200	1	200		125	1	125	125	1	125	
Administration Conference Room 1	211	1	211		250	1	250	250	1	250	
Administration Conference Room 2	718	1	718		425	1	425	425	1	425	
Director of Operations Office	178	1	178		250	1	250	250	1	250	
School Psychologist Office	152	1	152		125	1	125	125	1	125	
School Psychologist Office	120	1	120		125	1	125	125	1	125	









# DESIRED ARCHITECTURAL CHARACTERISTICS

## Final Design Program

The new BMC Durfee High School will be 501,330gsf serving 2,750 students in grades 9-12. The District's educational vision and program identified a variety of needs for the proposed new building, including;

1. The building should be warm and welcoming upon arrival.
2. The building should display the activity occurring within.
3. The building should also scale appropriately along Elsbree Street.
4. The building should include references to the 1887 Rock Street Durfee with the use of the existing historic bells and telescope.
5. Entry Experience – Welcoming, inspirational, motivational, with a personalized experience that provides a feeling of “pride in appearance” and “importance of place”. A space that showcases the History of Fall River and BMC Durfee High School.
6. The building should have a simplified organization and circulation.
7. The building should provide a variety of student socialization experiences and opportunities.
8. The CVTE spaces should be fully integrated and easily accessible by the community.
9. Maintain the existing athletic stadium and practice fields.

The new building will be located on the existing High School site at 380 Elsbree Street, with the new building having a formal placement along Elsbree Street; located parallel to and fronting Elsbree Street and connected to the existing athletic building.

The formal, classical presence along Elsbree Street includes a linear, symmetrically-organized main façade with a clearly distinguishable center entrance. The building is organized with a three-story academic core that includes stacking of the academic neighborhoods within a compact plan to maintain the existing athletic building and athletic football stadium and fields.

As noted, the main entry of the proposed building is located along Elsbree Street, including a three-story atrium, designed with a formal organization and material references to the local historic mill buildings. Adjacent to the entry and atrium is the administration with an appropriate amount of glass providing visual and physical access, which will serve as the main entry and control point during the school day. Flanking the main entrance and atrium are two towers, a bell/clock tower to the right and an observatory tower to the left; re-using and thoughtfully integrating the historic bells and Warner & Swasey telescope. The three elements along the main entry façade set up a functional and architecturally appropriate colonnade on the first floor, anchoring the building to the base and ground, while providing a visitor protection from inclement weather when approaching and entering the building.

The after-hours community components related to athletics are located within the athletic building to the south of the core academic building and in close proximity to the athletic fields. The performing arts - inclusive of the band, choral, and auditorium - are all located to the north of the core academic building, adjacent to the secondary building entrance.

The new BMC Durfee High School exterior will be composed of traditional low-maintenance and readily available materials, including: a natural stone base, traditional brick, pre-cast concrete, and fiberglass trim. The goal is to create a traditional aesthetic with some architectural references (bell tower and observatory) to the 1887 BMC Durfee on Rock Street, while simultaneously being long-lasting and easy to maintain.

The design solution creates a warm, inviting building that retains the human scale in building mass, respects the traditional aesthetics, and maximizes the efficiency, reduces the building's footprint, and responds to the educational vision and goals with the three-story building.





# EDUCATIONAL SPACE SUMMARY AND SPACE MEASUREMENT ANALYSIS

## Final Design Program

As a result of further development and programming with the Administration, faculty and staff there have been a few minor deviations in the Educational Space Summary than was originally submitted in the Preferred Schematic Report (PSR).

### CORE ACADEMIC SPACES:

**The overall square footage for the Core Academic Spaces category remains at 123,245sf.**

#### Teacher Planning

In the PSR, a quantity of 8 Teacher Planning rooms at 600sf and 5 Dean Offices at 200sf were identified. During Schematic Design, programming meetings with the administration, deans, faculty and staff provided a better understanding how the professional learning communities collaborate, the spaces were redistributed to include the following:

- Dean Office: 5 at 120sf
- Professional Learning: 5 at 150sf
- Small Conference: 8 at 80sf
- Teacher Planning: 4 at 850sf
- Teacher Planning: 1 at 410sf

#### Science Prep

The quantity and size Science Prep Rooms were redistributed from 13 Prep Rooms at 200sf to 14 Prep Rooms at 180sf in order to provide every Science Classroom (including SPED) with a prep room.

#### Central Chemical Storage

The size of the Central Chemical Storage room was revised from 200sf to 280sf to meet the Storage/Central Prep needs.

### SPECIAL EDUCATION:

**The overall square footage for the Special Education category remains at 36,415sf.**

In the PSR, a quantity of 6 Community Based Program Self-Contained SPED classrooms at 825sf, a SPED Book Room at 250sf, 6 SPED Behavior Self-Contained Classrooms at 825sf, 4 SPED Behavior Self-Contained Classrooms (Autism) at 825sf, 4 SPED Offices at 150sf, 4 SPED Conference Rooms at 250sf, 8 SPED Speech Rooms at 100sf, 8 SPED Testing Rooms at 100sf and 1 SPED School Psychologist at 125sf.

During the Schematic Design, after more programming meetings with administration, Director of Special Education, Special Education Supervisor, SPED faculty and staff and a more detailed understanding of the District's Special Education programs and methodology, these spaces were redistributed. Please review the DESE submittal and proposed space summary for further explanation and delineation of spaces and square footages.

### ART & MUSIC:

**The overall square footage for the Art & Music category remains at 11,600sf.**

#### Music

The PSR identified a quantity of 3 Music Practice rooms at 100sf each, Instrument Repair/Storage at 250sf and 2 Music Offices at 125sf each. As a result of programming meetings with the Music Department and a better understanding of the utilization, quantity and size the required for the spaces within this category the areas were redistributed as follows:

- Music Practice: 1 at 250sf
- Instrument Storage/Repair: 1 at 120sf
- Music Office: 1 at 430sf

## VOCATIONS & TECHNOLOGY:

**The overall square footage for the Vocations & Technology category remains at 43,420sf.**

The square footage in the Schematic Design shows a redistribution of the spaces as a result of programming meetings with staff, a better understanding of how the Chapter 74 programs function and alignment with the Massachusetts Career Vocational Technical Education (CVTE) space standards. The following is a breakdown of the redistribution:

- Environmental Science & Technology: Reduced by 550sf
- Design & Visual Communications: Reduced by 325sf
- Cosmetology: Increased by 580sf
- Early Education & Care: Increased by 335sf
- Health Assisting: Reduced by 25sf
- Culinary: Reduced by 40sf
- Radio and Television Broadcasting: Increased by 175sf
- Engineering Technology: Unchanged
- Marketing: Unchanged
- Construction Craft Labor: Unchanged
- CVTE Office and Storage: Reduced by 150sf

## HEALTH & PHYSICAL EDUCATION:

**The overall square footage for the Health & Physical Education category remains at 54,002sf.**

During Schematic Design phase, we with met administration, staff and athletics to review how they currently function in the highly utilized Athletic Building. As a result of these discussions it became very clear that the current configuration for the locker rooms and related support spaces was highly inefficient and challenging to safely supervise. To address these current issues the locker rooms were reconfigured to allow for better supervision and meet the current and future needs of the physical education and athletics program within the same square footage of current Athletic Building. The updated square foot distribution of the locker, and related support spaces, can be found in the Space Summary at the end of this section.

## MEDIA CENTER:

**The overall square footage for the Media Center category remains at 15,963sf.**

In the PSR, an Assessment Center at 800sf and Presentation Room at 500sf were identified. As a result of programming meetings with administration and the school librarian, a minor redistribution of square footage was done to create a larger Presentation Room that would accommodate for the instruction of a full size class. An

additional storage room was added to provide a separate and secure location for storage of assessment materials. The following is a breakdown of the program space redistribution:

- Presentation Room: 1 at 800sf
- Assessment Center: 1 at 400sf
- Assessment Storage: 1 at 100sf

## AUDITORIUM/DRAMA:

**No modifications were made to the Auditorium/Drama category. The overall square footage for the Auditorium/Drama category remains at 10,400sf.**

## DINING & FOOD SERVICE:

**The overall square footage for the Dining & Food Service category remains at 22,463sf.**

In the PSR, the program identified one Kitchen at 4,663sf. To better align with discussions that occurred during the educational visioning sessions related to distributed dining the Student Dining spaces have been changed from both being on the first floor to one on the first and one on the third floor. This provides a better connection to the academic core and a smaller population, more manageable, to supervise at one time. As a result of this shift, the square footage for the kitchen has been redistributed to be two kitchens to support the two separate Student Dining spaces. The kitchen on the first floor is intended to function as a full service kitchen while the kitchen on the third floor would serve as a warming kitchen.

## MEDICAL:

**The overall square footage for the Medical category remains at 2,010sf.**

In the PSR, a Nurses' Office at 250sf, a toilet room at 60sf, 6 Interview Rooms



at 100sf and 11 Exam/Resting Rooms at 100sf were identified. As a result of programming meetings with the nursing staff and better understanding how they operate, efficiently supervise and serve the population, the spaces were redistributed to include the following:

- Nurses' Office and Waiting: 1 at 800sf
- Resting Rooms: 2 at 275sf
- Interview Room: 1 at 100sf
- Toilets: 4 at 60sf
- Private Conference: 1 at 150sf
- General Storage: 1 at 110sf
- Medicine Storage: 1 at 60sf

#### **ADMINISTRATION & GUIDANCE:**

**The overall square footage for the Administration & Guidance category remains at 10,901sf.**

As a result of meetings with school administrators and their continued input related to how they see their operations functioning, entry security and sequencing, and space needs, the square footages of a few spaces were adjusted and/or renamed as follows:

#### **Main Administration**

The Records Room in Guidance has been combined with the Records Room in Main Administration to create a centrally located Records storage room. A Counselor Office has been redesignated to be Attendance Clerk.

#### **Class Offices**

A Counselor Office has been renamed to accommodate the need for a Sophomore Student Support Specialist.

#### **Guidance**

A Guidance Office has been renamed as the BCC/Conference Room and Office. In order to create a Career Center large enough to accommodate the regular population needs the square footage of a Class Conference Room was re-

assigned to the Career Center and 2 Guidance Offices at 125sf each were reduced 100sf, with that additional 50 square feet also being designated to the Career Center.

#### **CUSTODIAL & MAINTENANCE:**

**The overall square footage for the Custodial & Maintenance category remains at 3,553sf.**

The overall size of the Custodial & Maintenance program remains at 3,553. The custodial staff requested a single large central storage space. The Receiving and General Supply and Storeroom were combined to accommodate this request. A portion of the Storeroom square footage was redistributed to Custodian's Storage increasing the size from 375sf to 450sf.

#### **OTHER:**

**No modifications were made to the Other category. The overall square footage for the Other category remains at 8,046sf.**

The following pages contain the signed Educational Space Summary and Designer's Certification which confirm the previously reported area calculations are identical to the Preferred Schematic Report area calculations previously submitted, the overall square footage of the new facility remains 501,330 square feet.



[illegible]





## Proposed Space Summary - BMC Durfee High School

[illegible]













Proposed Space Summary - BMC Durfee High School

BMC Durfee High School	Existing Conditions	
	ROOM NFA <sup>1</sup>	# OF RMS area totals
ROOM TYPE		
Grossing factor (GF/NFA)		1.49

PROPOSED					
Existing to Remain/Renovated			New		Total
ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals
		1.49			1.46
					1.47

Date: 1.3.2018      Schematic Design Submittal				
MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)				
ROOM NFA <sup>1</sup>	# OF RMS	area totals	Comments	
		1.46		

- 1

Individual Room Net Floor Area (NFA)

Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.
- 2

Total Building Gross Floor Area (GFA)

Includes the entire building gross square footage measured from the outside face of exterior walls
- 3

Remaining


Includes exterior walls, interior partitions, chases, and other areas not listed above. Do not calculate this area, it is assumed to equal the difference between the Total Building Gross Floor Area and area not accounted for above.

Architect Certification

I hereby certify that all of the information provided in this "Proposed Space Summary" is true, complete and accurate and, except as agreed to in writing by the Massachusetts School Building Authority, in accordance with the guidelines, rules, regulations and policies of the Massachusetts School Building Authority to the best of my knowledge and belief. A true statement, made under the penalties of perjury.

Name of Architect Firm: A3 Architects

Name of Principal Architect: Tyler F. Gossall, Partner

Signature of Principal Architect: 

Date: 1.3.18





# DISTRICT'S EDUCATIONAL PROGRAM NARRATIVE

## Final Design Program

The design team has been working closely with the working group, district administration, high school faculty and staff, elementary school (5th grade) faculty, and the School Building Committee to develop a building layout that supports the District's educational plan and educational vision. Many of the individuals who participated (local officials, district administrators, faculty and staff, and students) in the visioning sessions, which were conducted early in the feasibility study phase, remain involved during working group meetings, user group programming meetings, and School Building Committee meetings.

As part of the review of the Schematic Design process, the design team along with the Building Committee re-visited the desired design concepts that were inherent in the bubble diagrams generated during the educational visioning and educational programming sessions. The School Building Committee recently re-confirmed their support of the preferred "all new" construction with the renovation/re-use of the existing athletic building option and the evolving schematic plan reinforcing and enhancing the connection between the building floor plans and the educational goals described within the educational program and below:

### THE ENTRY EXPERIENCE

Although this might not immediately come to mind as a top priority when thinking about the design of a school environment, it repeatedly floated to the top as a guiding principle throughout all of the educational

visioning workshops. The large and diverse student body at Durfee High School results in an equally large and diverse range of experiences that students encounter outside of school. They enter the campus carrying a wide range of burdens, emotions, and challenges. The school should represent an opportunity to shed these burdens and challenges. The appearance upon entry to the campus should be welcoming, inspirational, motivational, and should produce a sense of pride. It should be a place students want to be. Students should be made to feel important, and the facility they enter represents that importance. This "pride in appearance" and "importance of place" was fully inherent in the original 1887 BMC Durfee High School facility, but is completely absent in the 1978 Durfee High School building. Students should be proud to enter the new BMC Durfee High School and should feel a welcoming, personalized experience. There should be a strong sense of history reminding them of the greatness that has passed through Fall River and the alumni of Durfee High School. There should be an obvious pride in the current success of Durfee High School through the exhibit of student work, activities, and successes. Additionally, the interaction of community members and parents, as well as the impression they receive during their visit to the school, is important. Most of the visitors will not have the opportunity to tour throughout all areas of the school, and certainly will not have the opportunity to observe the activities and products of student academic work. The ability for key public areas of the building to exhibit this work, not just statically but also dynamically, is a key component in allowing visitors to experience the amazing work that is going on throughout the building, without the need to tour deep into the academic zones, which is obviously not practical. The building should place "education and student activity on display for all to absorb". This instills student pride through the exhibit of their work, which can easily be done by providing opportunities for fixed exhibits, video display, and any other practical and functional means. This kind of exhibit opportunity should not be limited to just the displays at entry points accessible to visitors, but should also be inherent within the academic zones, allowing students to present and exhibit their project work to other students.

It is also important that entry areas exhibit the history and flavor of the City and School Department through the presentation of artifacts, information, and exhibits. Fall River has a rich and amazing history, yet there is no sense of this in the current building. The staff and administration feel it is very important that

visitors have the same sense of pride and history that they desire for the students.

### **CLASSROOM NEIGHBORHOODS**

Although the term “neighborhood” is often reserved for the discussion of a middle school environment, it repeatedly evolved during the visioning sessions as a term which represents the need to divide the enormous student body (2,600 pupils) into manageable, personalized, smaller schools within the school. This need is identified throughout the priority goals and guiding principles with terms like “small school feel, large school pride” and “classroom neighborhoods”. After many discussions about the appropriate size for these “smaller schools within the school” or “classroom neighborhoods”, it was generally agreed that if the student body could be divided into smaller schools of about 650 students, and then these schools be further subdivided into a humanities neighborhood and a math/science neighborhood, this could achieve the desired learning neighborhoods. It also allows each 650-pupil school to focus more specifically and easily on cross-discipline instruction, as each discipline would be equally represented within the smaller school. The size and configuration of interdisciplinary teams and their need to collaborate with vocational applications changes routinely as the curriculum evolves, therefore the visioning team concluded that a large number of flexible (identically designed) classrooms within each school or neighborhood could be used interchangeably for history, English, language, or math. The science classrooms/labs would be more specific, but should be equally divided among the smaller schools. These interchangeable classrooms would increase flexibility and allow for multiple team sizes and configurations.

### **A COLLABORATIVE ENVIRONMENT FOR TEACHERS**

Each of these smaller schools must contain spaces that support teachers in their efforts to collaborate, plan, and work. The diverse student body at Durfee High School, and its equally diverse needs, require that teachers be able to plan specific strategies to support each individual student’s needs. Additionally, cross-discipline instruction can only succeed if teachers have appropriate space for curriculum planning and discussion. Technology has greatly assisted collaboration amongst teachers and staff; however, the power of face-to-face interaction has yet to be replicated by technology. Human interaction is everything, especially in a creative, innovative, and knowledge-intensive sector such as education. The strength of any creative organization is shaped as much by the day-to-day chance contact of its members as it is by formal gatherings such as scheduled conferences and collaborative meetings. Critical information leading to educational innovation and an in-depth understanding of student needs often comes from informal encounters between teachers from varying disciplines and backgrounds. The design of the Durfee High School should include spaces and strategies which

promote this interaction while also supporting a variety of professional activities. Additionally, these spaces avoid isolating teachers at their desks by giving them a secondary ‘home’ in the workplace where they are able to organize their activities and instruction across a variety of disciplines, a range of ideas and strategies which they share with their colleagues.

### **FLEXIBLE AND VARIED LEARNING SPACES**

21st Century learning is underpinned by varying and flexible teaching methods and spaces that are engaging, motivational, and that allow teachers to tailor instruction to specific student needs. Flexible learning spaces complement current and evolving pedagogies and provide creative and energised learners and teachers. Flexible learning spaces enable social and collaborative learning, integrated curriculum delivery, mix of teacher-directed and student-directed teaching and learning, independent learning, project work, direct instruction, innovative and creative thinking, relationship building, and problem-solving skills. Flexible and varied spaces also allow for a more productive integration of special education students into the general academic environment. The staff and administration at Durfee High School are particularly sensitive to the distinct difference between “flexible learning spaces” and “open learning environments” and want to define them accordingly. The current Durfee High School originally included open learning environments, and this type of organization has been an enormous challenge to the staff and administration. Flexible learning spaces are different in that they provide a variety of spaces that can be used for specific learning tasks and activities. Available support spaces of varying sizes in a flexible learning environment

can be utilized to suit learning styles and abilities, while simultaneously generating engaging and exciting learning opportunities. Open learning environments on the other hand are completely open and provide the necessary variety of learning spaces. Attempting to configure them into smaller or varied spaces is not feasible, and the required noise separation and privacy is non-existent. In open learning environments, students are only able to do one form of learning in a large space, reducing the ability to create small group space or quiet areas and spaces tailored for specific tasks.

Small group support spaces or "breakout spaces" directly adjacent to the flexible classrooms allow teachers to tailor the learning to suit the students and the learning outcomes. These spaces should be separated from the main learning space with glazing or sliding glass doors so that the teacher in the main learning space can passively supervise the space. Students who need a quiet space can be given this opportunity in an adjacent and visible small workroom which accommodates quiet work. If collaborative group discussion is desired, flexible and interchangeable general classrooms which are appropriately sized can accommodate this need. Flexible classrooms with adjacent support spaces also allow teachers to use their available space more effectively than a traditional inflexible classroom with no small group support space. Additionally, flexible learning spaces allow adults and support staff to work within the space, meaning both general education and special education students have access to support more readily. In addition to these small breakout spaces, slightly larger independent study spaces strategically located throughout the classroom neighborhoods can aide in supporting the need for cross-discipline instruction

where a small group of students representing multiple disciplines is allowed to work independently outside of the classroom. These spaces, identified as "independent study", were determined by staff and administration to be much more valuable and more highly utilized than a larger group space. They satisfy a strong need for small group work among 10-12 students who are completing cooperative work by teachers and students across classes and disciplines. They also allow a group of students from a single classroom to complete independent study where such need is warranted due to varying learning styles and abilities. The enormous size and variety of spaces within the current Durfee High School have given staff and administration many opportunities to evaluate the size, configuration, and organization of learning space, and to determine which spaces best support varying learning styles and student needs. We feel strongly that small group rooms shared by interchangeable classrooms (perhaps one small group room for every two classrooms) combined with larger group rooms (perhaps two per neighborhood) that support independent study by 10-12 students is an outstanding formula for a flexible and varied learning environment. Note that most of the staff and administration have experienced classrooms with moveable walls, and they have determined that this arrangement is much less effective for a variety of reasons. Therefore, there is no request for such herein.

### **INDOOR/OUTDOOR CONNECTIONS**

The connection of indoor and outdoor spaces is important to creating a vibrant and energized educational environment. Students can become more engaged in utilizing outdoor space if an effort is made to ensure the appropriate visual and physical connections. Outdoor space can go beyond recreational playfield use and can provide project space, social space, classrooms, study areas, and other support areas for the educational environment. It has a natural integration to many sciences and should not be ignored as part of a 21st Century educational environment. Participants in the educational visioning sessions identified indoor/outdoor connections as both a guiding principle and a priority goal. They all realized that an efficient and compact facility for 2,600 pupils would likely be multiple stories; however, they did not feel this in any way compromises the ability to provide the necessary indoor/outdoor connections. Outdoor connectivity does not mean having to walk directly outdoors from a classroom; in fact, in most cases, this would be impractical and defeat security goals. The current 1978 facility rarely exceeds two stories, and yet one can travel through the building for great distances without ever seeing the outdoors, without ever experiencing any indoor/outdoor connectivity. The current facility also includes an outdoor amphitheater, but it is poorly located/designed and remains in shadow throughout most of the day. The staff and administration want to be actively involved in a thoughtful design process that continually considers convenient outdoor access for students

and that also incorporates multiple organizational strategies that keep natural light pouring into all areas of the building. Outdoor learning areas should be developed in convenient and usable locations which receive maximum sunlight throughout the day.

### **BRANDING, IDENTITY, AND A SENSE OF SCHOOL COMMUNITY**

The personalization and pride desired as part of the “entry experience” goes beyond the entry sequence into the facility and should extend throughout the entire school. One of the most critical measures of any high school is the strength of its internal school community. The educators at Durfee High School have worked enthusiastically and collaboratively for decades to overcome the challenges associated with the existing high school facility. The organizational attributes of a 21st Century high school environment can foster school community by creating a learning environment that promotes safety, identity, personalization, pride, belonging, support, and confidence. The facility must be organized so that it accommodates student needs from morning arrival until end-of-day departure. The student must feel a personal connection to the staff and students of their community, and such connection begins at arrival. The need for student exhibition of work and personalization of space is also a key ingredient in strengthening the sense of school community. The entire building should become a dynamic canvas for the display of learning and student activity. Students and teachers must see the fruits of their efforts surrounding them at all times, reinforcing their sense of purpose and personalizing the school environment. This pride of school environment should extend to the greater community through pride in City and community history. The school environment can incorporate numerous business, community, and historical references and artifacts that engage students in the achievements and the pride of previous generations and give them a powerful sense of place within their school community and their role within the greater community.

### **REAL WORLD CONNECTIONS**

There are many important elements in creating a successful school environment where civic engagement and community responsibility become an integral part of the program and function. One strategy for fostering this connectivity involves the evaluation of academic and vocation-based activity that can be visually and physically integrated into the core of the school while simultaneously opening itself to community involvement. It requires re-thinking the “core” or “commons” of the school, the definition of “entry”, and all of the necessary aspects of security. The school greatly desires to operate the appropriate vocational programs very much like a business and/or business incubator, promoting the desired collaboration with the outside community while simultaneously creating the necessary boundaries for staff, administrators, parents, and students. Programs that may potentially fit within this desired connectivity include the

culinary restaurant, cosmetology, early education and care, health assisting, environmental science and technology, design and visual communications, and construction crafts. As the design for the Durfee High School evolves, the placement of each of these programs should strike a delicate balance between connectivity to the academic core and connectivity to the greater community and public.

### **STUDENT SOCIALIZATION AND OBSERVATION**

Social skills and the need to communicate outside of the project/instructional environment are key elements in promoting positive student development. Students must have the opportunity to socialize with their peers without being restricted to an enormous cafeteria or crowded hallway. It is also critical that these student socialization zones be located in a manner that includes passive observation by administration and teachers at all times. The current building includes large open areas that were intended for student socialization, but they are isolated from observation by the staff. This makes them a safety and security threat and requires that school policy include no congregating in these areas. The staff and administration feel strongly that the student dining experience should occur in multiple areas as the current enormous cafeteria is a failure on many levels. The boundaries of the dining experience can also be explored, and although student supervision will continue to be a critical component of a well-designed dining space, allowing the dining experience to flow into an adjacent lobby area or to an outdoor patio should be considered as part of the planning effort. The student dining area can also play a significant role in parent and community interaction within the school by providing flexible space which supports presentations,



programs, and events. It can serve as one of the primary social hubs of not only the school, but also the entire Fall River community. There is also a strong desire for student-run cafes located throughout the building, as this could improve student socialization and the overall school environment while simultaneously offering multiple opportunities for the Culinary, Marketing, and Visual Communications programs.

### **SIMPLIFIED ORGANIZATION AND CIRCULATION**

The current Durfee High School floor plan is a sprawling, confusing maze of over 575,000sf. Navigation throughout the school is extremely confusing and both visitors and students are easily lost. The challenges of the current plan organization are significant and provide a constant burden to teachers and students. As a result of decades of frustration in the existing building, there was a strong message from the educational visioning team regarding the desire for simplified plan organization and the development of a single circulation spine around which all programs and activities are organized.

### **VOCATIONAL AND ACADEMIC INTEGRATION**

The integration and collaboration of academic and vocational learning are important goals of the staff and administration at Durfee High School. The school schedule allows all students to participate in both academic and vocational lab opportunities. It also eliminates any stigma traditionally associated with pursuing either of these two paths. Ideally, students learn the application of academic study within real-world trades, design, and engineering problems and challenges. Unfortunately, one of the biggest obstacles currently facing Durfee High School is the physical separation of certain vocational programs that could

be much more closely integrated to the academic and social core of the school. This physical separation creates significant boundaries and does not allow for the timely movement of students to their respective destinations. The current layout also does not include appropriate collaboration and planning areas for staff and administration. The newly proposed design should resolve these obstacles by locating the appropriate vocational opportunities within the core of the building. For example, the culinary program includes both a restaurant and a bakery that should be in close proximity to the students. The proximity of these programs does not have to include direct adjacency, as this would be impractical in many instances. However, good proximity can strengthen the educational relationships between vocational and academic. As programs in the construction trades evolve with advancements in science and technology, they will continue to have a strong correlation with the academic science classrooms. Therefore, these large-scale spaces will be designed to be flexible and incorporate evolving technologies. These application labs are unlike a project-based lab in a purely academic high school, as they will always involve the large-scale building, design, and engineering of full-scale projects with real-world applications. They require large open spaces that can accommodate design, assembly, and production equipment. Their placement within the floor plan involves a delicate balance between keeping them integrated within the academic classrooms and providing the necessary separation to avoid the disruption that may be caused by activities (noise) within the space. The educational program and visioning also place an additional burden on these spaces; they must be located on the first floor and allow for easy access to the public and community.

Several of the CVTE programs are identified in the educational program as "stand alone" programs; these include programs like Cosmetology, Design & Visual Communications, Early Education & Care, Health Assisting, Radio & Television, and Engineering. Each of these programs has a specific set of adjacencies, connections, and integrations with various academic disciplines and other related programs. For example, Early Education & Care must be near a primary access point for easy access by the preschool students, but also must maintain some key adjacencies to Medical Assisting and the academic classrooms. Medical Assisting must maintain a connection to Early Education, but also has a strong connection to Science. The Cosmetology program would benefit from access to the public, and therefore would need a direct connection to an identifiable public entry. However, as a rapidly evolving field, Cosmetology also has key connections to Medical Assisting.

The modern comprehensive high school environment must maintain large vocational labs which are flexible enough to evolve with changes in science, technology, and the required workforce. However, they do include specialized sound, acoustic,

and equipment needs which require specialized components and some specific attributes such as sound separation from academic classrooms. The key to a successful Durfee High School is to create labs which have enough separation, but avoid the isolation which exists at the current building.

### **LEARNING BEYOND THE SCHOOL DAY**

As students become involved in more activities, the time they spend on the academic campus expands. These activities include music, performances, athletics, research, science, academics, and more. Many students study after school as they await upcoming practices, performances, or activities which involve them and their friends. Providing appropriate spaces for such activities is a key component of the 21st Century academic environment.

### **COMMUNITY USE**

In Fall River, the Durfee High School has truly become the center of community use. Gymnasiums, performance theaters, lecture halls, media labs, etc. all become highly utilized community and educational resources. These facilities are not "extras" to be added if funding allows, but are inherent resources that will serve the students, teachers, administrators, and members of the community for decades to come. Their careful planning and inclusion, as well as their integration into the community-wide environment, are critical to supporting community interaction with the educational community. The current high school is a great example - local organizations utilize the gymnasiums, meeting rooms, and auditorium for events and functions. The City currently lacks adequate community spaces and educational resources.

# INSTRUCTIONAL TECHNOLOGY

## Final Design Program

The technology labs will be capable of accommodating an entire class of students (28). Network access in the technology labs will be hard wired. Four ceiling data jacks shall be provided, and wireless access points will be provided. In addition, the equipment specified below for a typical classroom shall be included in each lab.

### **271000 STRUCTURED CABLING**

The new network design will support up to a 100GHZ backbone over single mode and/or multi-mode fiber and up to 10GHZ over Category 6A to the desktop.

Twelve (12) pairs of single mode fiber and twelve (12) pairs of multi mode fiber will be provided from the MDF to each IDF, to be utilized for data, voice, security systems, etc.

Category 6A cabling will be provided for data, voice, CCTV, and wireless access points (four data drops at each wireless access point location). Wireless access point outlet placements are intended to provide the capability for complete wireless coverage throughout the school.

Each teacher location will be wired with 4 data ports and one voice port. Category 6A cabling will be provided for the owner provided phone system (support for Voice over IP).

### **272100 NETWORK SWITCHES**

Network electronics (switches) shall be provided and installed by the Owner.

### **272133 WIRELESS ACCESS POINTS**

Wireless access points, and a controller

if applicable, will be provided; one access point in each classroom, and three in each large group space. Office suites shall have an access point. Access points will be proprietary, Meraki, to ensure compatibility with existing district infrastructure.

### **273000**

The phone system and handsets shall be provided and installed by the owner. The building shall be cabled to support a voice over IP phone system using Cat 6A.

### **274000**

Classrooms and Science Labs: video and audio presentation equipment (wall mounted 80"-84" interactive display (Cleartouch or equal), voice lift system with microphones and amplifier, and up to 4 ceiling speakers) will be permanently installed in classrooms, labs and designated rooms. The PC/laptop in each classroom shall be provided by the owner. A presentation camera will be provided in each interactive classroom and in designated spaces.

The Auditorium shall have a high lumen (min 14k lumen) theater level projector provided. A sound system, assistive listening system, video recording system, and mixer board shall be provided. An intuitive touch screen control system shall be provided. Wired and wireless microphones shall be provided.

A sound system shall be provided in the Gym. An assistive listening system shall be provided. Wired and wireless microphones shall be provided. Two LED HD panels, min 10'x6', shall be provided. A similar LED HD panel may be provided in the pool area.

Student dining, two locations, shall contain a sound system, min 14k lumen projector and assistive listening system.

The Seminar room shall have an IP based teleconference system, sound system and 10k lumen projector. An assistive listening system shall be provided.

### **275000**

A public address system shall be provided. Digital messaging clocks synchronized with a master clock shall be provided in every classroom and conference room, and where designated on the drawings. The PA system shall be ethernet based, integrated with the owner provided phone system to allow the use of the phone system for paging within the building. A call button with plastic

guard cover shall be placed at the back of each room for emergency notification purposes. The PA system shall be supervised, and emergency notification software shall be included. The system shall be proprietary, Telecor E-Series, by Telecor, with AssureCom.

**277000**

A high definition, 1080p, 9 channel IPTV system shall be provided. TVs with set top boxes shall be provided at designated locations. Coax shall not be run for video distribution purposes within the school. The capability and devices necessary to broadcast three (3) high definition "live" video streams to the IPTV system from any data port within the school shall be provided. A video on demand system shall be provided. A set top box shall be included in every classroom.

A digital signage package shall be included. Digital signage shall be proprietary, Carousel by Tightrope.

**280000**

An access control system shall be provided. Card readers shall be located as designated on the drawings. Main entries shall be equipped with a video entry system.

Intrusion detection system and related components shall be provided. Every first floor room with a window shall have a motion sensor. Motion sensors shall also be placed within the hallways and in vestibules.

An indoor/outdoor CCTV system (IP based) will be provided. Coverage shall include entrances, hallways, stairwells, building perimeter, and parking (parking surveillance shall utilize both building mounted cameras as well as pole mounted cameras). Other areas, such as the gym, auditorium, café, and admin area and press box shall be included. The system shall be proprietary, Meraki. All cameras shall be outdoor models, MV71.



# FUNCTIONAL RELATIONSHIPS AND CRITICAL ADJACENCIES

## Final Design Program

The functional diagram of the new building places the main entry plaza and primary building entrance along Elsbree Street in a linear building organization. The main entry lobby and atrium, oriented perpendicular to Elsbree Street, is flanked by Administration, Special Education (Bridge Program), Health Assisting, Early Education, and Cosmetology to the north and Guidance, Health Suite, Special Education (Attain), and FRED TV to the south. The Administration suite functions as the primary control point into the school.

The atrium, beginning on the east side of the building, is a primary circulation spine that connects the main entry lobby through the center of the new building, connecting on the opposite side of the building to the exterior, outdoor dining, and football stadium to the west. The highly utilized three-story atrium is the 'heart' of the building and will display artifacts, banners, photos, and digital media related to the rich history of Fall River and BMC Durfee High School, as well as serve as a place to display ongoing student work. The three-story atrium also acts as an organizing element and is flanked on either side by "circular shaped" simplified circulation pathways on all three floors, creating the core academic neighborhoods. The outside corners of the circulation pathways incorporate independent study spaces with a significant amount of transparency to the exterior, which as a result provides an abundance of filtered natural daylighting and views, and serves as a natural wayfinding strategy.

The three-story academic core is centrally located along the atrium and "circular shaped" circulation spine and divided into two neighborhoods on each level. Each neighborhood includes flexible and varied educational space, promoting student socialization and collaboration, small group breakout spaces, large group seminar, and independent study spaces. The teacher planning/work spaces are centrally located within each neighborhood, adjacent to the circulation spine.

The highly utilized and integrated career vocational technical education (CVTE) spaces, such as Cosmetology, Early Childhood & Care, and Culinary Arts ('Tradewinds' restaurant) are located on the first floor in order to provide the community with convenient, direct access from the secondary entry plaza. The access points are positioned to provide direct access by the community into the spaces, while maintaining clear daily separation between students and visitors.

The existing athletic building, including the fieldhouse and pool, will be re-used and renovated. A new entrance lobby and corridor will connect the existing athletic building to the new building located to the north.

On the opposite side of the core academic building from the athletic building, the student commons and kitchen area is adjacent to the outdoor dining space and urban farming program area (raised planting beds and greenhouse), thereby providing a strong indoor/outdoor connection so activities within the student commons space could easily spill outdoors when appropriate. The dining space is distributed on the first and third floors to provide a direct connection to the academic neighborhoods.

The mechanical room, electrical room, and MDF room are consolidated and located on the first floor, centrally located within the building, and in close proximity to the primary utility feeds entering the site from Elsbree Street. The positioning of these spaces will allow for efficient distribution of systems within the building and easy access for building custodial and maintenance staff.



# SECURITY AND VISUAL ACCESS REQUIREMENTS

## Final Design Program

The new BMC Durfee High School will have a main entrance with multiple secured door sets to direct visitors into the security office without allowing unsecured direct access to the building proper without card access.

Access to the Cafeteria and Auditorium will be provided through a secondary entry with two sets of secured doors. Between these doors is another security office. Access to the Gym and Pool areas will also have two sets of secured doors, with a security office between them.

All others doors, including stair egress doors, at the exterior of the school will be egress only and will be locked at all times. All exterior doors will have door contacts tied into both the access control system and intrusion detection system for extra security awareness during building occupation.

As a comprehensive high school, Durfee has several Career Vocational and Technical Education (CVTE) program spaces that serve the public as part of the curriculum. The building design allows for direct community access to programs areas such as the Tradewinds Restaurant, Cosmetology, Early Education & Care, and FRED TV via secure, direct entrance point directly adjacent to an entry plaza and designated parking area. The community entrances also allow the school to separate community visitors from the general student population.

The building's indoor/outdoor security monitoring system will allow staff to monitor the majority of the parking

areas (and pedestrian pathways) within the 63.68-Acre campus from multiple locations. Key entry location points, which typically would be egress only, will be strategically located to not allow access from the exterior without the use of a programmable card swipe tied into the access control system.

The Main Office is designed such that once a visitor is near the main entry, a voice and video display system (monitored by a member of the Security and/or Main Office) allows individual access to the building's entry vestibule during school hours. The vestibule serves as a check point for visual recognition and sign in. Once permission is granted to enter the building, the second set of control doors is electronically unlocked to allow visitors to gain access into the Security Office and Waiting Area. In the event of a security breach, the security system can be used to initiate a lock down within the school via strategically located panic buttons. The Main Office is designed to provide maximum visual connection to the main lobby/atrium and the exterior entry approach to the school.





# SITE DEVELOPMENT REQUIREMENTS

## Final Design Program

The BMC Durfee High School complex consists of one building originally constructed in 1978. The site is located at 360 Elsbree Street, Fall River, MA on 63.86± acres of land according to the City of Fall River ("City") Assessors Database (Parcel P-28-0001). The High School currently accommodates approximately 2,570 students. The site is accessed via six two-way drives, including three off Elsbree Street and one each off Chestnut Street, Hood Street, and Weetamoe Street. The site is furnished with school buildings, athletic facilities, parking facilities, landscaping, utilities, and associated site features

The site is bound by residential properties and Langley Street to the north and Elsbree Street to the east. The Site is bound to the south by Stanley Street and the Spencer Borden School, which falls partially within the site. The site is bound to the west by Chestnut Street, residential properties, and wooded wetlands behind James Tansey Elementary School.

The Spencer Borden Elementary School is located partially within the High School Property. The Spencer Borden School is an inventoried historical site on MACRIS and the Fall River Register of Significant Structures, but not on the national register. Based on pictures, the old historic building was demolished and replaced with a new school building.

### ZONING REGULATIONS

According to the "Zoning Map of the City of Fall River" updated March, 1 2013, the Site is located in an area zoned Single-Family Residence District

(S) with no overlay districts. Educational facilities are noted to be allowed within a zone S according to Chapter 86: Fall River Zoning Ordinance (Ordinance Number 2013-18). The Zoning Ordinance indicates the following dimensional requirements that may affect the development of this site:

#### S – Single-Family Residence District:

- 12,000 square feet minimum area
- 100 feet minimum lot frontage
- 25 feet minimum front yard setback
- 15 feet minimum side yard setback
- 25 feet minimum rear yard setback
- 35 feet maximum building height
- 25% maximum lot area coverage\*

\*defined as all impervious area

The parking capacity requirements for an educational facility are one (1) space for each full time equivalent employee and one (1) loading space each building. There are no required parking spaces for students based on the Fall River Zoning Regulations; however, one (1) space for every five (5) seats for both the performing arts building and the football stadium are required. The future development is schematically programmed to employ 150 full-time staff and 60 part-time, which equals 180 full-time equivalency staff, and to have a total of 4,061 seats in the combined existing and proposed auditorium and sports facility spaces. This would require a minimum of 993 parking spaces by Zoning. The Schematic Design Plans propose a total of 1,159 parking spaces.

### NATURAL ENVIRONMENT

#### Topography

The topography of the site generally pitches downgradient from the southwest to the northeast. The highest elevations on site are at the southwest corner of the property at elevation 235ft. The lowest elevation appears to be along the eastern property line along Elsbree Street at elevation 155ft. There are a number of steep slopes throughout the site. Record topographic maps (dated 1967) indicate that a low-lying wetland area once existed on the east side of the site near Elsbree Street at the northeast corner of the existing building. The most recent topographic maps (dated 1979 and 1985) indicate that this area has since been

developed and mostly filled.

## Soils

Existing soils were evaluated based on the USDA Natural Resource Conservation Services Web Soil Survey. Below is a description of the soils that are shown throughout the site as shown on the web soil survey (attached NRCS Soil Survey).

Within the parking lots and the athletic fields on the northern portion of the site, the on-site soils consist of Udorthents, smoothed rated Type A (Map Unit 651). This map unit consists of excessively drained sands and gravelly sands.

Within the footprint of the existing school and surrounding walks, drives, and parking lots, the soils consist of unrated Urban Land (Map Unit 602). This map unit consists of areas where 85 percent or more of the land is covered with impervious surfaces, such as buildings, pavement, etc.

Within the parking lot to the southwest of the site, the soils consist of Paxton fine sandy loam rated type C (Map Units 307B and C). These map units consist of areas with well drained, although extremely stony soil. The depth to the water table is approximately 18-37 inches within the Paxton soils.

For purposes of investigating subsurface soil conditions in the vicinity of the proposed building, a preliminary geotechnical program was completed by Lahlaf Geotechnical Consulting, Inc. (LGCI). The program included excavation of test pits, borings, and preparation of a geotechnical report. In 2005, for purposes of investigating the subsurface conditions under the stadium, pavement, and athletic field footprints, a preliminary site-specific soil boring and test pit investigation program was completed by McArdle Gannon Associates, Inc. (MGA). The geotechnical programs confirmed the following general soil strata: topsoil/subsoil, over a fill layer with numerous boulders, over sand and gravel, and bedrock ranging from a depth of  $2.5\pm$  to  $17\pm$  feet beneath the existing surface. Groundwater was measured between depths of  $2.3\pm$  and  $11.0\pm$  beneath the ground surface. Groundwater is subject to fluctuations with the seasons, therefore groundwater should be continued to be monitored in monitoring wells as the design progresses.

Additional test pits within the locations of the proposed stormwater management systems are recommended to provide soil information necessary for design.

## Wetlands

Review of the available Massachusetts GIS data layers (MassGIS)

indicates there are wetlands located in the northeast and northwest corners of the site in wooded areas. Based on Pare's field review, these areas appear to be jurisdictional wetlands, and will have a minimum 100-foot regulatory buffer zone. There is an unnamed perennial stream running through the wetland at the northeast corner of the site. This stream is protected as an Outstanding Resource Water (314 CMR 4.05(3)(a)) and has a 200-foot riverfront area. Both the wetland and the stream do not prohibit proposed work, but will require a permit through the Conservation Commission.

After review of the MassGIS layers, the Site does not appear to have any potential or certified vernal pools as defined by the Natural Heritage and Endangered Species Program (NHESP). If it is determined in an environmental review that a vernal pool exists on the site, the local regulations require a 100-foot No-Disturbance Zone around the upland area edge or the wetland area edge that encompasses the vernal pool.

According to the Flood Insurance Rate Maps available through FEMA (Federal Emergency Management Agency), this Site is located entirely outside of the 0.2% annual chance flood.

Additionally, the site is within the Zone C Surface Water Supply Protection Area and, therefore, stormwater is required to be treated and attenuated prior to discharge.

## Rare Species & Cultural Resources

Information regarding rare species was obtained from the MassGIS Rare Species and Priority Habitat data layer showing data recorded by the NHESP in the State Registry. Review of this information indicates that there are no known significant habitat areas within the Site.

## INFRASTRUCTURE

### Roadways and Parking Lots

The existing site is accessible via six two-way driveways, one off Elsbree Street, and one each off Chestnut Street, Hood Street, and Weetamoe Street. All streets adjacent to the site are under the city's jurisdiction and therefore will require only local approval for future modifications.

The site is furnished with the existing school buildings, paved parking areas, driveways, pedestrian walks, athletic facilities, and associated structures. The existing paved parking and drives are in poor condition with deep surface cracks, pot holes, low points, and pavement patches throughout.

The schematic plans orient the main building on a north-south axis along the east property line such that the main entrances for both parents and busses are off Elsbree Street. The access roads off President Avenue (Route 6), Ray Street, Hood Street, and Weetamoe Street are maintained as alternate entrances. Parent traffic from Elsbree is directed to a drop-off loop around a proposed northeast parking lot. The parent drop-off loop enters at the north of the parking lot to prevent traffic back up in Elsbree Street and loops around the perimeter of the lot to drop students on the north-facing entrance of the school. Parent traffic entering from the south and west limits of the property is directed to the southwest-facing entrance of the school. Bus traffic is directed to a separate drop-off loop at the east-facing main entrance to the building.

Schematic plans propose to maintain the south lot and construct six new parking lots distributed throughout the site. The new primary parking lot is north of the new school. There are

also five smaller alternate lots located one each southwest of the existing athletic building, east of the existing athletic building, southwest of the existing track and field, west of the existing track and field, and east of the proposed school along Elsbree St.

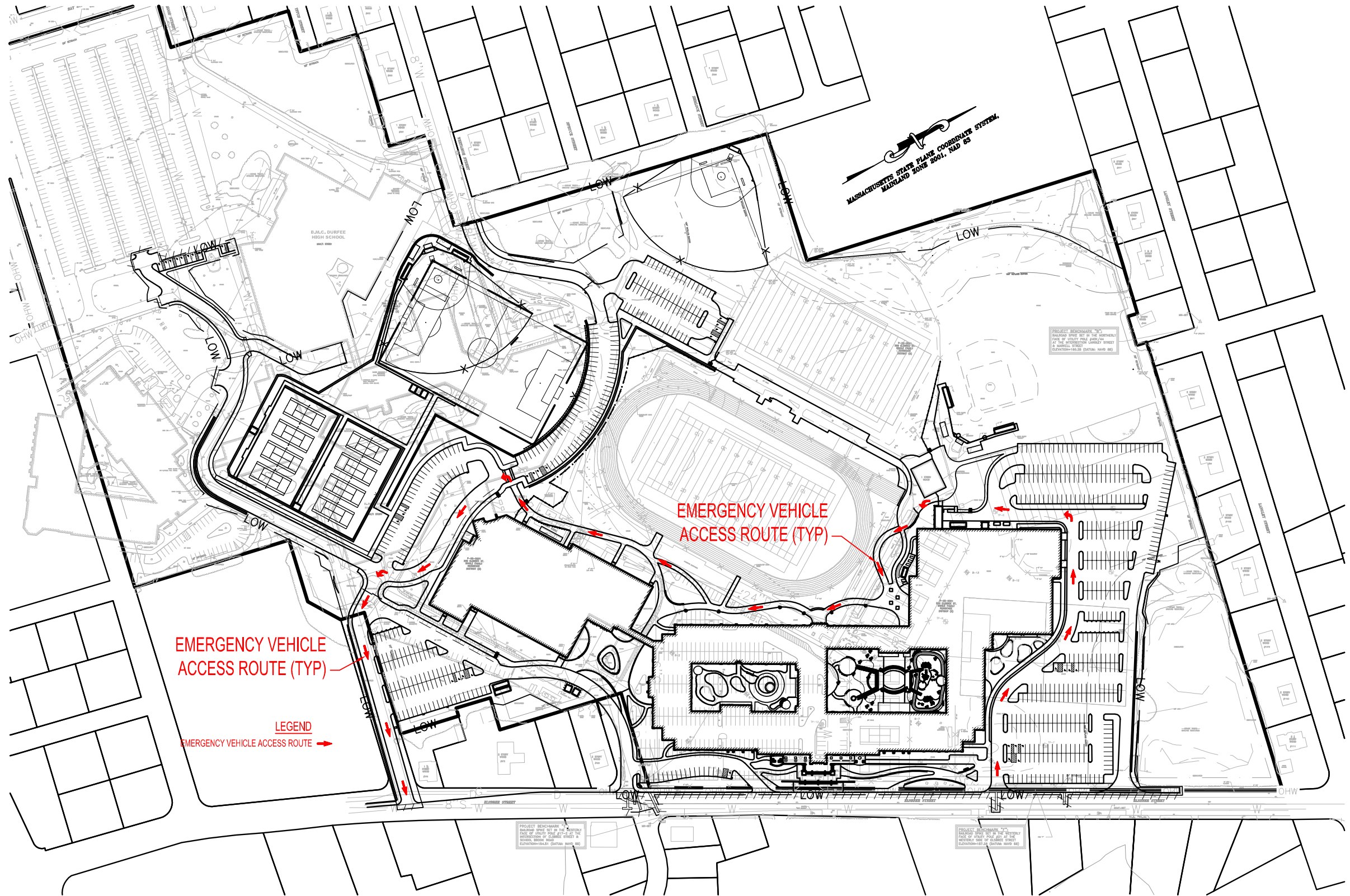
Schematic plans include an emergency vehicle access route starting at the south entrance of the north parking lot. The emergency vehicle access route is proposed to loop around the building east of the existing track and field, through the southwest parent drop off area, and out to Elsbree Street.

### SUMMARY

There are no site constraints that prohibit the development of the existing Durfee High School Complex. Design considerations should include further soil exploration in relation to the attenuation and placement of stormwater treatment systems. Development within wetland resource areas shall be avoided and consideration for buffer zones should be included in future design development. However, we do not believe there are any constraints that limit the future school development.







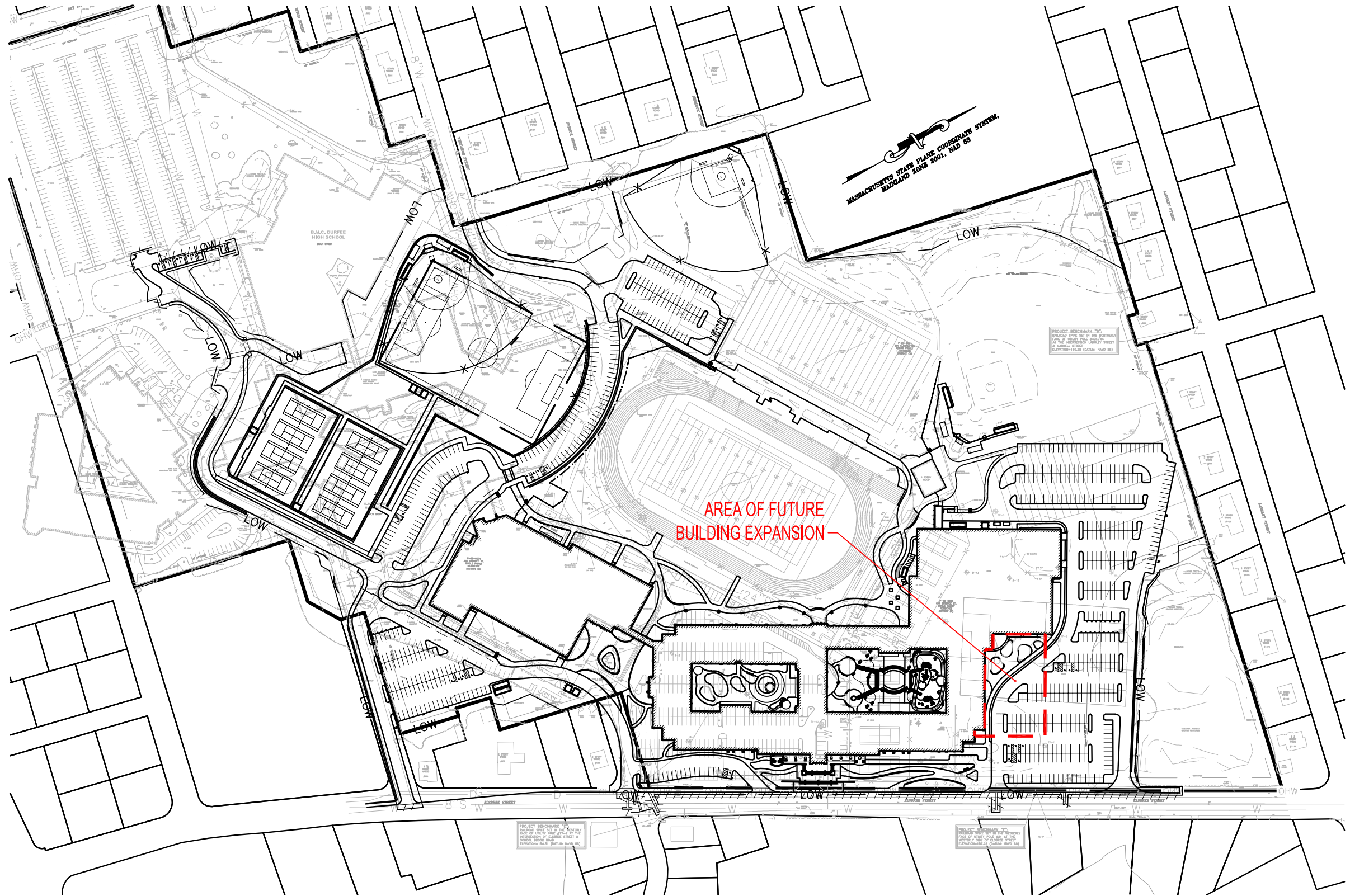
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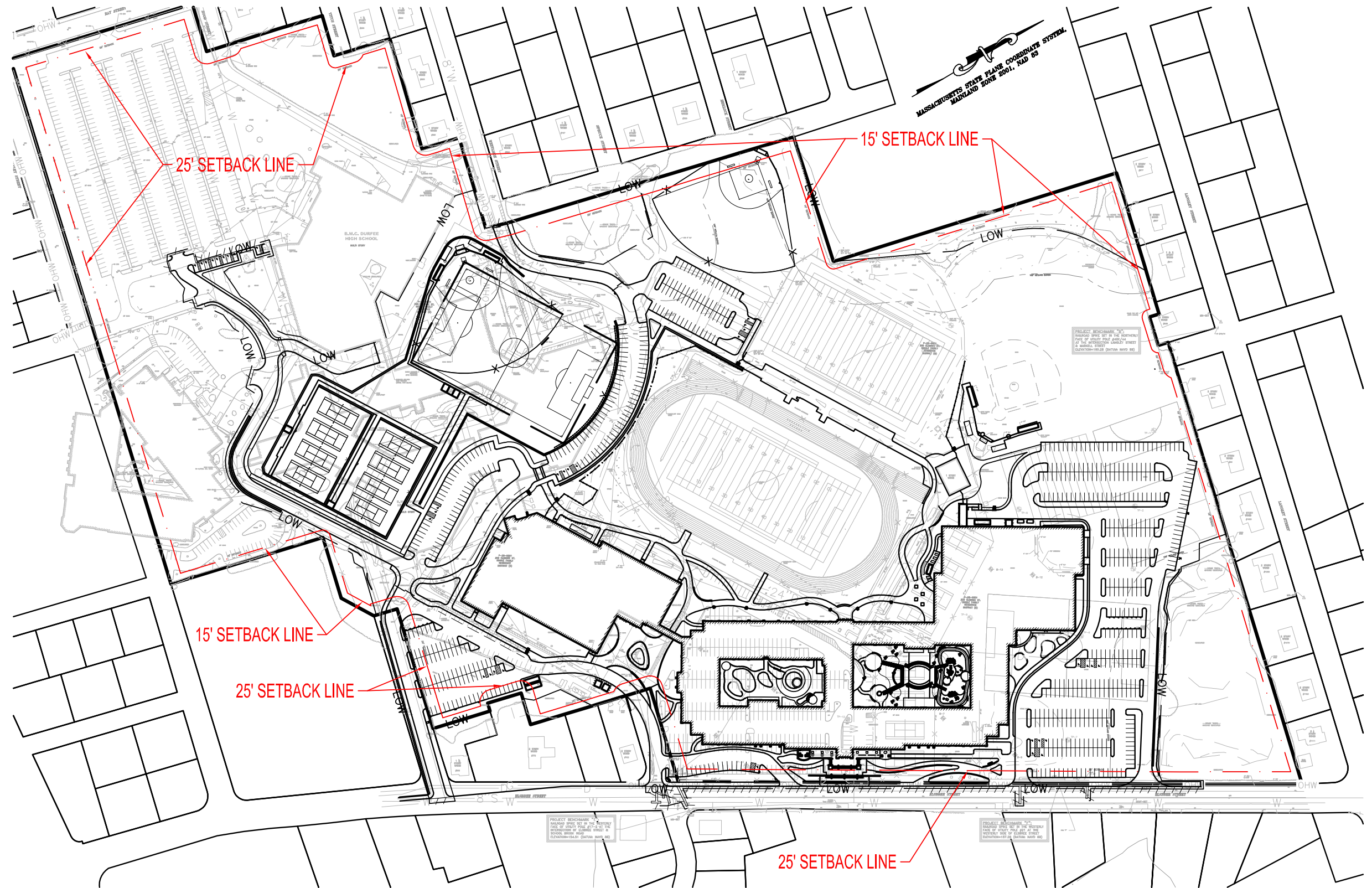
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1"=200'









Graphic Scale

1"=200'





# SITE PERMITTING REQUIREMENTS

## Final Design Program

Based on the Schematic Design Plans for the project site, there are multiple permits that will be required at the local, state, and federal level for site construction. The local permitting information was compiled from the Revised Ordinances of the City of Fall River, the Planning Board Rules and Regulations, and the Chapter 86: Fall River Zoning Ordinance (Ordinance Number 2013-18) which replaces the chapter relating to Zoning in its entirety. According to the "Zoning Map of the City of Fall River" revised March 2013, the Site is located in an area zoned Single Family Residence District (S) with no overlay districts. Educational facilities are a permitted use within a zone S as stated in the table of uses Section 86-36. The following is a list of anticipated permits:

### **Zoning Board of Appeals**

The project is considered an educational use and is a permitted use within a zone S as stated in the table of uses Section 86-36.

The project will require a variance from the Zoning Board of Appeals because the proposed building infringes on the dimensional regulations set forth in Section 86-35 of the Revised Zoning Ordinance. Zoning relief will be required for the proposed building height. The allowable height in a zone S is 35'. The height of the building in the schematic design plans is approximately 122' at the highest point. It is also anticipated that zoning relief will be necessary for lot coverage. The maximum allowed lot coverage is 25%. The lot coverage on the schematic design plans is 56%.

Existing lot coverage is 44%. Zoning relief is not anticipated for the dimensional yard setbacks. The minimum front and rear yard setback is 25' and the minimum side yard setback is 15', and the proposed building does not fall within those setbacks.

A Special Permit for reduced or modified parking service for the facility is anticipated for this project because the proposed parking areas are located within the front yard setback. The Special Permit will not include a request for reduction in parking space count requested from the Zoning Board of Appeals. Further review of the parking needs will be evaluated as the design progresses.

Applications shall be submitted to the Planning Department by the fourteenth of the month to be included in the agenda heard the following month. Upon submission of a complete application, the Planning Department sends notifications to all abutting property owners and the public hearing agenda is posted in the local newspaper. After the public hearing, a decision shall be issued 14 days after the public hearing. The review period may be extended if the hearing is stretched over multiple meetings. Based upon discussions and similar experience, the total anticipated review period for a Special Permit is between 3 to 5 months.

### **Planning Board**

Planning Board Approval under the Subdivision Control Law is not anticipated for this project since the project does not include a subdivision of land. Site plan review will be conducted by the Planning Board by referral of plans submitted to the Planning Department for Zoning Variance and Special Permit Applications. A permit application or plan submission is not anticipated to be submitted directly to the Planning Board.

### **Conservation Commission**

Pare completed a review of available Massachusetts GIS data and conducted a preliminary review of the wetlands on-site. During the field investigation, wetlands resource areas were preliminarily identified on the site, though not flagged. The resources areas identified include Bordering Vegetated Wetlands, Isolated Vegetated Wetland, and a perennial stream with a 200' Riverfront Area. According to the MADEP Wetlands Protection Act, the wetlands on-site have minimum 100-foot regulatory buffers. The stream within the site is protected as an Outstanding Resource Water. Work is anticipated within the buffers and within

the Riverfront Area, and further review of the wetlands will be conducted in future phases of the project.

Based on the scope of the work, a Notice of Intent will be submitted to the Fall River Conservation Commission and the Massachusetts Department of Environmental Protection. After a Notice of Intent is filed, a public hearing will be held. Based on the Fall River events calendar, hearings are not held monthly, but on an as-needed basis. Based upon past experiences, we anticipate attendance at multiple hearings prior to closing the public hearing. The determination will be issued by the Commission within 30 days of the close of the hearing. It is anticipated that the permitting process with the Commission would take approximately 2-3 months.

### **Engineering Department Applications**

The Contractor awarded the contract will be responsible for making all constructing notifications and obtaining all necessary permits. These include the following:

#### *Demolition Permit*

The Contractor awarded the contract will be responsible for attaining letters from the Engineering Division, Water Division, Electric Company, and Gas Company for disconnecting utility services.

#### *Engineering Department*

The project will also require permitting through the Engineering Department for construction related permits including, but not limited to: a trench permit, a street opening permit, and a curb cut permit.

#### *Fire Department*

The project will require coordination with the Fall River Fire Department to review emergency vehicle accessibility.

#### *Inspectional Services*

The Contractor awarded the contract will be responsible for obtaining a building permit through Inspectional Services prior to beginning construction activity. Upon substantial completion of the project, the Contractor shall submit certification from the Professional Engineer who prepared the Final Site Plan to the Building Inspector for approval. Upon approval, the Building Inspector will issue a Certificate of Occupancy.

### **Historical Commission**

There are no historical buildings or monuments on the site listed in the National Historical Registry or in the Massachusetts Cultural Resource Information System (MACRIS). However, the Fall River

Register of Historic Structures lists the Old Durfee High School Telescope and Durfee Bells as historical monuments. Further coordination will be necessary with the Fall River Historical Commission to determine if a permit will be required.

### **Massachusetts Department of Environmental Protection (MassDEP)**

The project will be designed to meet the requirements of the 2008 MADEP Stormwater Management Standards Handbook and appropriate submissions will be made to the Fall River Conservation Commission and MassDEP, the jurisdictional entity for these guidelines.

An Underground Injection Control Registration will need to be filed for any stormwater systems proposed to infiltrate into the ground. The registration would be submitted to the Fall River Board of Health, Conservation Commission, and MassDEP. The review of the registration required typically is complete within 48 days of submission.

### **National Pollutant Discharge Elimination System (NPDES)**

The proposed project will require filing a NPDES construction general permit with the EPA for disturbance of an area of more than one acre of land. The Contractor awarded the contract is responsible for filing for the NPDES General Permit and preparing a project specific Stormwater Pollution Prevention Plan. The Contractor must submit a Notice of Intent 14 days prior to any earth disturbing activities.



## **Massachusetts Environmental Policy Act (MEPA)**

The scope of work for the schematic plans does not appear to trigger MEPA thresholds at this time. However, the following are potential triggers that we will continue to monitor as the design progresses. In the category of land, creation of ten (10) or more acres of impervious area would require a MEPA review. Creation of ten (10) or more acres of impervious area is not anticipated. As the schematic plans are defined further, the increase in impervious area over the existing conditions will be monitored. In the category of wetlands, waterways, and tidelands, the alteration of 5,000 or more square feet of bordering or isolated vegetated wetlands would require a MEPA review. As the design progresses, the alteration of wetlands will be checked. In the category of transportation, the construction of 300 or more new parking spaces at a single location would require MEPA review. The project includes construction of 287 new parking spaces which is less than the MEPA threshold. As the plans are defined further, the parking space count will be monitored.

If MEPA review is required, MEPA requires applications to be submitted one (1) year prior to construction.



# DESIRED VISUAL/AESTHETIC FOCAL POINTS AND FEATURES OF THE SCHOOL

## Final Design Program

**SITE:** The new BMC Durfee High School is classically and traditionally organized on the site, with the main façade positioned parallel to Elsbree Street, the building elevated on a “plinth” as a result of the natural topography, and the main entry plaza formally organized with a series of stairs and platform “zones” that are detailed with use of granite, stone pavers, and a traditional railing system. The main entry plaza is designed to be very pedestrian-friendly with minimal vehicular activity in response to the high percentage of “walkers” that attend the school.

### EXTERIOR:

The new BMC Durfee High School’s exterior will be composed of low-maintenance and readily available materials, including; a natural stone base, traditional brick, pre-cast concrete, and fiberglass trim. The goal is to create a traditional aesthetic with some architectural references (bell tower and observatory) to the 1887 BMC Durfee on Rock Street, while simultaneously being long-lasting and easy to maintain. It is a well-balanced symmetrical façade, appropriate in its scale and relationship of solid-void surfaces. The primary entrance, centrally located along the façade, is the beginning of the three-story atrium and is flanked by a clock/bell tower to the right and an observatory tower to the left. The main entrance is further emphasized by a flanking protected colonnade, the introduction of a series of two-story arched windows which connect the two towers along the elevation, and capped by a sloped hipped roof with use of 50-year architectural asphalt shingles with a slate appearance.

### INTERIOR:

Focal points and visual features are

created within the school as well. The main entrance and three-story atrium is the primary organizing ‘spine’ traveling through the core of the building and begins the students’ and visitors’ experience and first impression of the school. As such, this warm, inviting, and grand space will display artifacts, banners, photos, and digital media related to the rich history of Fall River and BMC Durfee High School. The design of the atrium space is heavily influenced by the numerous precedent mill buildings that had a significant impact on the history of Fall River (over 200 mills located in Fall River in the turn of the century). The mill buildings’ use of inherent materials such as timber framing, arched windows, stone, and steel influenced the composition of materials in the new atrium space. In addition to the materials selection, the space will be well lighted with northern light via a glass wall alongside the north courtyard.

The three-story atrium is flanked on either side by a “circular shaped” simplified circulation pattern on all three floors, creating the core academic neighborhoods. The outside corners of the circulation pathways incorporate independent study spaces with a significant amount of transparency to the exterior and, as a result, provide an abundance of filtered natural daylighting and views, and serves as a natural wayfinding strategy.

The two-story secondary lobby, located and accessed from the north side of the new building, connects the student commons (distributed on the first and third floors), the culinary restaurant (Tradewinds), café, cosmetology, and the Auditorium space.

The design solution integrates many of the design features identified in the educational visioning sessions, including (as examples): 1) historic reference to the “old” Durfee; 2) an entrance that celebrates the history of Fall River & BMC Durfee High School; 3) use of low maintenance, durable materials; 4) simplified organization of the building floor plans; 5) integrated BMC Durfee branding and student work; and 6) integration of CTVE community spaces as focal points within the building.





# TRAFFIC ANALYSIS

PARE PROJECT NO. 17008.03  
DRAFT REPORT

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**DRAFT TRAFFIC IMPACT ASSESSMENT FOR THE  
B.M.C. DURFEE HIGH SCHOOL  
FALL RIVER, MASSACHUSETTS**

**SUBMITTED TO:**  
**Ai3 ARCHITECTS, LLC**  
**526 BOSTON POST ROAD**  
**WAYLAND, MA 01778**

**SUBMITTED BY:**  
**PARE CORPORATION**  
**10 LINCOLN ROAD, SUITE 210**  
**FOXBOROUGH, MA 02035**

**NOVEMBER 2017**



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Appendix I	Traffic Signal Warrant Analysis



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## **INTRODUCTION**

Pare Corporation (Pare) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts to the transportation network associated with the proposed construction of a new B.M.C. Durfee High School (the School) in Fall River, Massachusetts. It is being proposed to demolish a majority of the existing school buildings, replace with new School buildings, and reconfigure the site with new athletic fields, parking lots, and driveways. All proposed work will be conducted within the existing School property at 360 Elsbree Street.

This study was performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. The study includes an assessment of the existing conditions of the study area including an inventory of roadway and intersection geometrics, collection of daily and peak period traffic counts, and an analysis of the crash history of the study area.

Future traffic conditions with and without the proposed School construction were projected and analyzed. The future (2024) conditions analyzed were projected seven (7) years from the existing (2017) conditions in conformance with MassDOT's *TIA Guidelines*. Morning, school afternoon, and commuter evening peak periods for Existing (2017), Future (2024) No-Build, and Future (2024) Build conditions were analyzed.

Finally, the study evaluates the results of the Future (2024) Build condition analysis to determine the impact of the proposed development on the adjacent transportation network. Conclusions and recommendations are provided based on the results of the study.

## **Project Description**

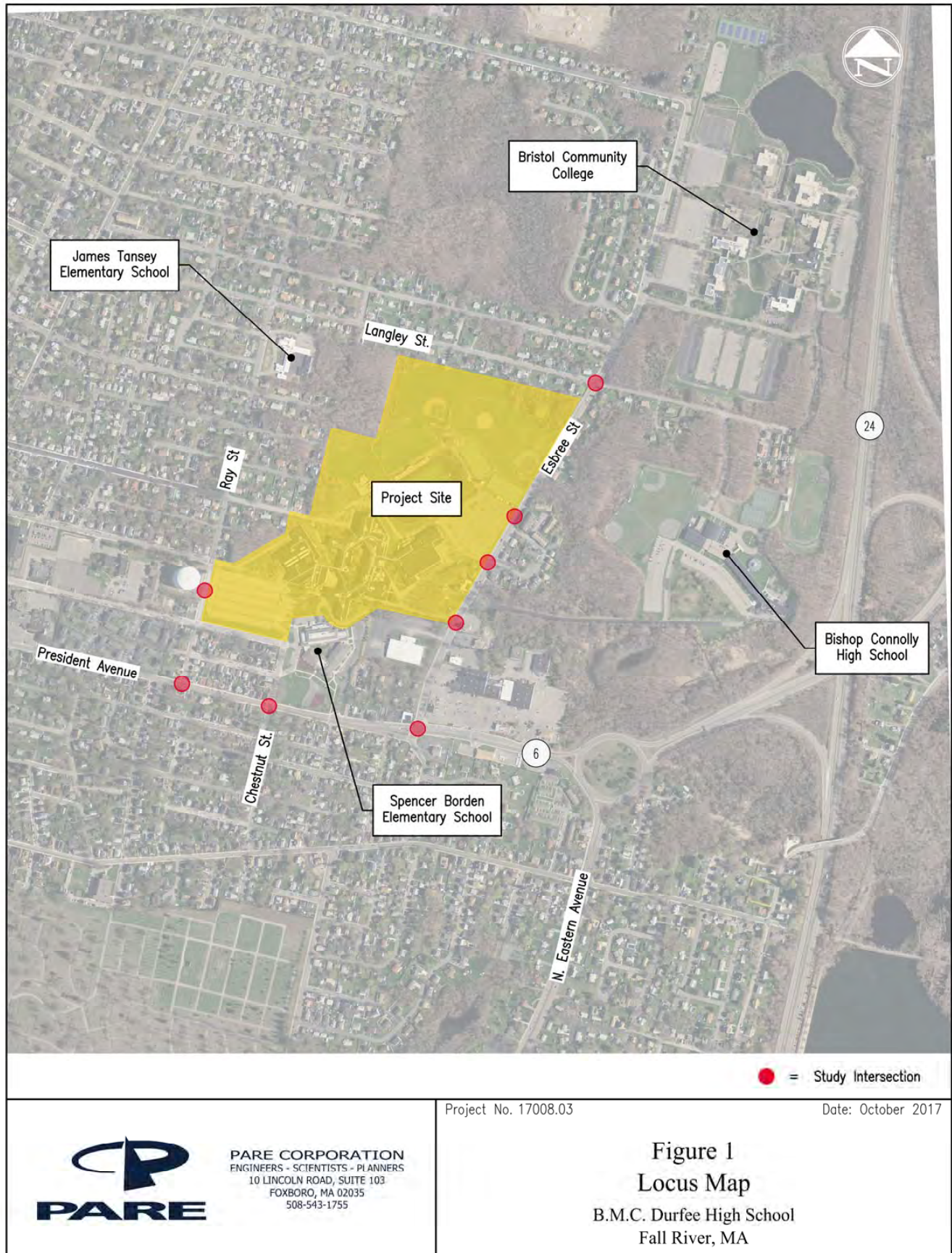
The School construction will include demolition of the majority of the existing School buildings, construction of new school buildings, and reconfiguration of the School's athletic fields, parking lots, and driveways. Several aspects of the existing site will remain in place, including the field house, auditorium, football stadium, and large parking lot on the western side of the campus. The proposed buildings will be situated on the eastern portion of the site. The School currently serves a population of 2,570 students in grades 9 through 12. Based on coordination with the School, the existing student population is expected to be maintained under the proposed site reconstruction.

The School's site circulation will change under the proposed reconstruction and several new driveways will be added. The existing large student parking lot on the western side of the campus will remain. The two southern most curb cuts on Elsbree Street will remain while three additional curb cuts are proposed along the northern end of the site. A new large parking lot will be provided on the northern end of the site while several smaller lots will be located on the southern end of the site.

Figure 1 provides a study area map. The proposed site plan is provided in Figure 2.









**BMC DURFEE  
HIGH SCHOOL**  
300 E. DURFEE STREET  
WALLINGTON, VA 22094

SCHEMATIC DESIGN

NOT FOR CONSTRUCTION

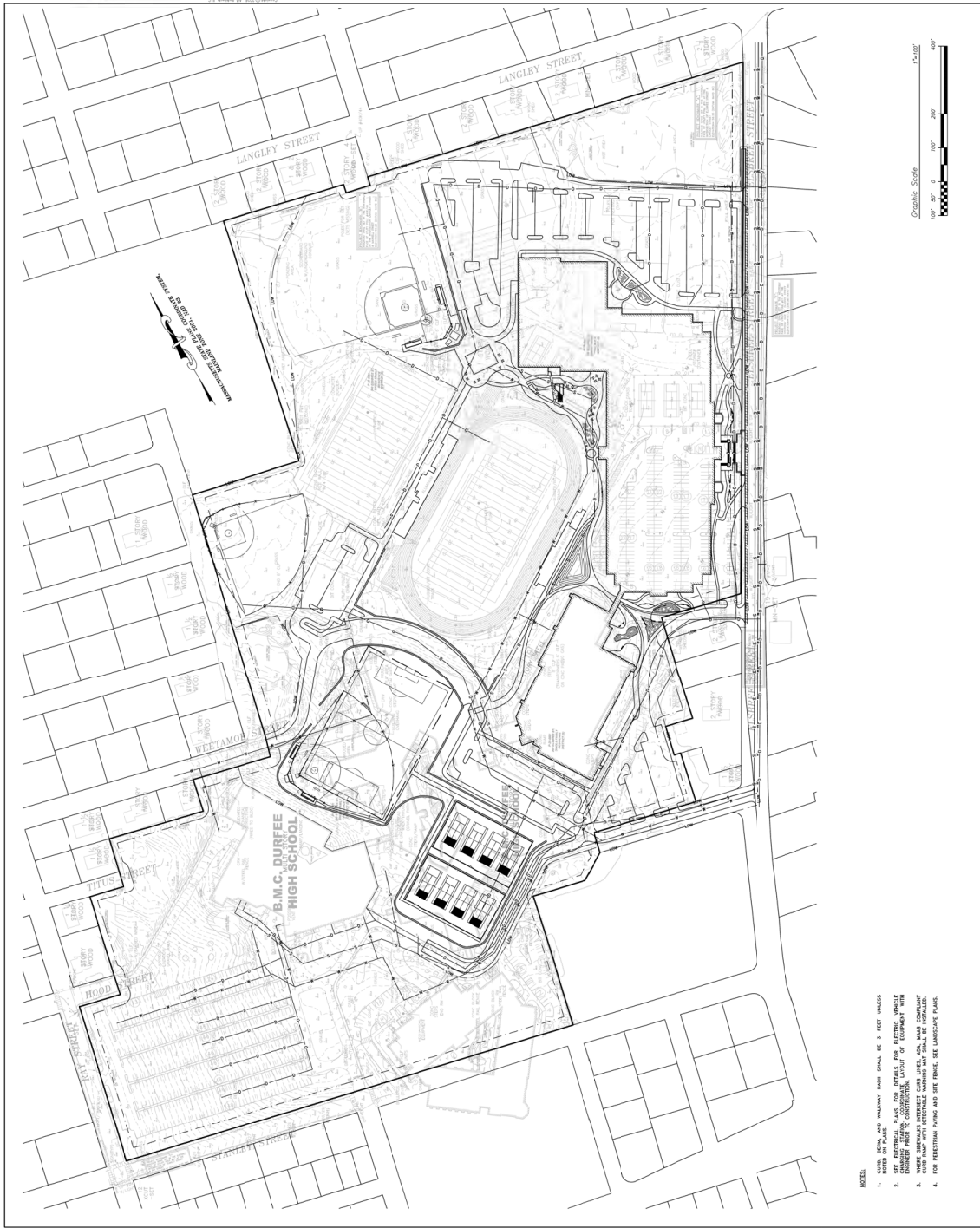
WORTH GROUP



WORTH GROUP



OVERALL SITE IMPROVEMENTS PLAN	
DRAWN BY:	DATE:
REVIEWED BY:	DATE:
SCALE:	1"=50'
DATE:	12/20/2017
PROJECT NUMBER:	C2.0



- NOTES:**
1. ALL NEW AND EXISTING PAVEMENT SHALL BE 3 FEET UNLESS NOTED OTHERWISE.
  2. SEE ELECTRICAL PLANS FOR DETAILS FOR ELECTRIC VEHICLE CHARGING STATIONS AND LIGHTING.
  3. SEE LANDSCAPE PLANS FOR DETAILS FOR LANDSCAPE AND PLANTING.
  4. FOR PESTERMAN PARKING AND SITE FENCE, SEE LANDSCAPE PLANS.



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## **EXISTING CONDITIONS**

A field inventory of the existing conditions within the study area was conducted in October 2017. The study area is defined as the significant roadways and intersections in the vicinity of the proposed site that may be impacted by traffic generated by the construction of the proposed construction of a new School. The following intersections are included in the study area and are illustrated on Figure 1:

- 1) President Avenue (Rte. 6) & Elsbree Street
- 2) President Avenue (Rte. 6) & Chestnut Street
- 3) President Avenue (Rte. 6) & Ray Street
- 4) Elsbree Street & Langley Street
- 5) Ray Street & the Student Parking Lot Driveway
- 6) Elsbree Street & the Southern School Driveway
- 7) Elsbree Street & the Central School Driveway
- 8) Elsbree Street & the Northern School Driveway

### **Study Intersections**

#### **President Avenue (Rte. 6) & Elsbree Street**

The intersection of President Avenue (Rte. 6) and Elsbree Street forms a four-legged signalized intersection. Elsbree Street forms the north and south legs of the intersection while President Avenue (Rte. 6) forms the east and west legs of the intersection. The southern leg of the intersection on Elsbree Street operates as one-way exiting the intersection. All other approaches operate as two-way.

The north leg of the intersection on Elsbree Street consists of an 11-foot wide left-turn lane, an 11-foot wide shared through/right lane, and a 1-foot shoulder southbound entering the intersection. Two 11-foot wide travel lanes with a 1-foot wide shoulder exit the intersection to the north on Elsbree Street. The south leg of Elsbree Street consists of one approximately 24-foot wide southbound travel lane.

The east leg of the intersection on President Avenue consists of an 11-foot wide right-turn lane, two 11-foot wide through lanes, an 11-foot wide left-turn lane, and a 1-foot shoulder entering the intersection. Departing the intersection, President Avenue (Rte. 6) consists of two 11-foot wide travel lanes with a 1-foot shoulder.

The west leg of the intersection on President Avenue (Rte. 6) consists of a 11-foot wide left-turn lane, and two 11-foot wide travel lanes entering the intersection. An eastbound right turn lane is separated from the eastbound through lanes by a landscaped island and is controlled by a stop-sign. Departing the intersection to the west, President Avenue consists of two 11-foot wide travel lanes with a 1-foot wide shoulder.

The signal operates under four phases. The first phase allows protected eastbound and westbound left-turn movements from President Avenue (Rte. 6) onto Elsbree Street. The second phase serves eastbound and westbound through movements on President Avenue (Rte. 6). The third phase allows southbound movement from Elsbree Street and includes a right-turn overlap for the westbound right turn lane. The fourth phase is an exclusive pedestrian phase.



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Sidewalks are located on each corner of the intersection. Additionally, marked crosswalks are provided across each intersection leg. Pushbutton activated pedestrian crossing signals are provided for the crossing on the north, east, and west intersection legs.

President Avenue (Rte. 6) is classified as an urban principal arterial and has a posted speed limit of 30 miles-per-hour. Elsbree Street is classified as an urban collector and has a posted speed limit of 30 miles-per-hour. Land use in the vicinity of the intersection consists mostly of commercial establishments, including a large shopping center on the northeast corner of the intersection.

#### **President Avenue (Rte. 6) & Chestnut Street**

The intersection of President Avenue (Rte. 6) and Chestnut Street forms a four-legged unsignalized intersection. President Avenue (Rte. 6) forms the east and west legs of the intersection while Chestnut Street forms the north and south legs. The eastbound and westbound approaches from President Avenue (Rte. 6) are uncontrolled while the northbound and southbound approach from Chestnut Street are stop-controlled. Chestnut Street is a local roadway with no posted speed limit.

At the intersection, President Avenue (Rte. 6) consist of one 16-foot wide eastbound travel lane and one 16-foot wide westbound travel lane. The north leg of the intersection on Chestnut Street has a curb-to-curb width of 33 feet with no lane striping. South of the intersection, Chestnut Street has a curb-to-curb width of 24 feet with no lane striping.

Sidewalks are located on each corner of the intersection and crosswalks run across all four intersection legs. Spencer Borden Elementary School is located in the northeast corner of the intersection and a school zone is located on President Avenue (Rte. 6) at the intersection. A 20 mile-per-hour school speed limit is posted and crosswalk warning signs accompany the President Avenue (Rte. 6) crossings.

#### **President Avenue (Rte. 6) & Ray Street**

The intersection of President Avenue (Rte. 6) and Ray Street forms a three-legged unsignalized intersection. President Avenue (Rte. 6) forms the east and west legs of the intersection while Ray Street forms the north leg. The eastbound and westbound approaches from President Avenue (Rte. 6) are uncontrolled while the southbound approach from Ray Street is stop-controlled. Ray Street is a local roadway with no posted speed limit.

At the intersection, President Avenue consist of one 16-foot wide eastbound travel lane and one 16-foot wide westbound travel lane. The north leg of the intersection on Ray Street has a curb-to-curb width of 32 feet with no lane striping. Sidewalks are located on each corner of the intersection and a crosswalk is located across the north leg.

#### **Elsbree Street & Langley Street**

The intersection of Elsbree Street and Langley Street forms a four-legged unsignalized intersection. Langley Street forms the east and west legs of the intersection while Elsbree Street forms the north and south legs. The eastbound and westbound approaches from Langley Street are stop-controlled while the northbound and southbound approach from Elsbree Street are uncontrolled. Langley Street is a local roadway with a posted speed limit of 30 miles-per-hour.





At the intersection, Elsbree Street consist of one 13-foot wide northbound travel lane and one 13-foot wide southbound travel lane. Parking lanes, 10 feet in width, are located along both sides of Elsbree Street. The east leg of the intersection on Langley Street has a curb-to-curb width of 26 feet with no lane striping. West of the intersection, Langley Street has a curb-to-curb width of 32 feet with no lane striping.

Sidewalks are located on each corner of the intersection and crosswalks run across all four intersection legs. Bristol Community College is located just north of the intersection while single family homes surround the intersection.

#### **Ray Street & the Student Parking Lot Driveway**

The intersection of Ray Street and the Student Parking Lot Driveway forms a three-legged unsignalized intersection. Ray Street forms the north and south legs of the intersection while the Student Parking Lot Driveway forms the east leg. The northbound and southbound approaches from Ray Street are uncontrolled while the westbound approach from the Student Parking Lot Driveway operates as stop-controlled.

At the intersection, Ray Street consists of a 32-foot curb-to-curb width with no lane striping. The Student Parking Lot Driveway, which operates as a two-way drive, has a total width of 32 feet. The Student Parking Lot Driveway has a chain link gate which can be used to close to prevent entry and exit.

#### **Elsbree Street & the Southern School Driveway**

The intersection of Elsbree Street and the Southern School Driveway forms a three-legged unsignalized intersection. Elsbree Street forms the north and south legs of the intersection while the Southern School Driveway forms the west leg. The northbound and southbound approaches from Elsbree Street are uncontrolled while the eastbound approach from the Southern School Driveway operates as stop-controlled.

At the intersection, Elsbree Street consists of two 11-foot wide northbound travel lanes with a 1-foot wide shoulder and two 11-foot wide southbound travel lanes with a 1-foot wide shoulder. The Southern School Driveway has a total width of 24 feet. Marked crosswalks are located across the north and south legs of the intersection while sidewalks are located along both sides of Elsbree Street.

#### **Elsbree Street & the Central School Driveway**

The intersection of Elsbree Street and the Central School Driveway forms a three-legged unsignalized intersection. Elsbree Street forms the north and south legs of the intersection while the Central School Driveway forms the west leg. The northbound and southbound approaches from Elsbree Street are uncontrolled while the eastbound approach from the Central School Driveway operates as stop-controlled. Sidewalks are located along both sides of Elsbree Street.

Elsbree Street consists of two 11-foot wide northbound travel lanes with a 1-foot wide shoulder and two 11-foot wide southbound travel lanes with a 1-foot wide shoulder south of the intersection. North of the intersection, Elsbree Street consist of one 13-foot wide travel lane in each direction with 10-foot parking lanes on both sides of the roadway. The Central School Driveway has a total width of 24 feet.



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### **Elsbree Street & the Northern School Driveway**

The intersection of Elsbree Street and the Northern School Driveway forms a three-legged unsignalized intersection. Elsbree Street forms the north and south legs of the intersection while the Northern School Driveway forms the west leg. The northbound and southbound approaches from Elsbree Street are uncontrolled while the eastbound approach from the Northern School Driveway operates as stop-controlled.

At the intersection, Elsbree Street consist of one 13-foot wide travel lane in each direction with 10-foot parking lanes on both sides of the roadway. The Northern School Driveway has a total width of 25 feet. Sidewalks are located along both sides of Elsbree Street.

### **Existing School Traffic Operations**

Traffic observations at the School were conducted during the morning arrival and afternoon dismissal periods. These observations were performed to gather information regarding the school arrival and dismissal operations and establish existing conditions on the current site. The following summarizes the most significant observations:

#### **Morning Arrival Period**

- Traffic on Elsbree Street near the School was generally busy and congested from around 7:30 a.m. to approximately 7:50 a.m. By 8:00 a.m., traffic on Elsbree Street was cleared and it was operating without congestion.
- Fall River Police Department crossing guards/traffic controllers were observed at three locations on Elsbree Street:
  - One crossing guard was observed at the crosswalk on Elsbree Street just north of Driscoll Arena between the School property and the Dunkin Donuts. This guard would stop traffic on Elsbree Street for students crossing the roadway. This crossing was active as many students were observed walking between the School and the Dunkin Donuts prior to school starting. Northbound traffic was observed backing up from this location all the way to President Avenue around 7:35 a.m.
  - Another crossing guard was observed at the Central School Driveway. This crossing guard appeared to primarily enforce the School's traffic pattern, preventing parents from using this loop to drop off students.
  - A traffic control officer was located at the Northern School Driveway on Elsbree Street. This individual controlled traffic entering and exiting the site, including stopping traffic on Elsbree Street to allow vehicles to turn in and out of the School.
- The traffic observed traveling on Elsbree Street appeared to consist primarily of vehicles generated by B.M.C. Durfee High School, Bishop Connolly High School (BCHS) and Bristol Community College (BCC).
- BCHS first period starts at 8:00 a.m. and arrival time coincides with that of B.M.C. Durfee High School. Vehicles were observed entering and exiting BCHS throughout the B.M.C. Durfee High School arrival operations.
- BCC's first classes start at 8:00 a.m. A significant number of vehicles were observed traveling up Elsbree Street to the BCC campus during the DHS arrival period. However,



the greatest queue observed in the vicinity of the BCC driveways was around 7:50 a.m. after the B.M.C. Durfee High School peak began to taper off.

- Traffic at the President Avenue (Rte. 6) /Elsbree Street traffic signal had significant queuing on several approaches.
- The westbound right turn from President Avenue onto Elsbree Street NB was observed with a queue extending almost to the rotary around 7:30 a.m. to 7:40 a.m.
- During this time, vehicles travelling in the westbound right through lane at the traffic signal (between the right-turn lane and the left through lane) were observed making a right turn on Elsbree Street. They essentially used the right through lane to form a second right turn lane. The northbound direction on Elsbree Street has two travel lanes.
- The eastbound left-turn lane from President Avenue (Rte. 6) onto Elsbree Street northbound was backed-up approximately 650 feet around 7:45 a.m. This queue extended well beyond the limits of the left-turn lane. The queue was observed extending beyond Charlotte Street and would block eastbound traffic traveling on President Avenue (Rte. 6) as there is only one eastbound travel lane west of Charlotte Street.
- Traffic near the Ray Street parking lot was also observed. This parking lot appeared to primarily serve student parking, however, parent drop-off was also observed.
- Parents were observed forming two drop-off rows along the east side of the parking lot in the two paved rows near the school.
- The parking lot entrance at Chestnut Street was gated closed.
- The student lot was approximately half-full at approximately 8:05 a.m.
- No significant backups were observed entering or exiting this lot.
- Students were observed being dropped off by South Coast Regional Transit Authority (SRTA) buses at the intersection of Stanley Street and Ray Street on multiple occasions.
- Arrival operations at the nearby Spencer Borden Elementary School (SBES) and James Tansey Elementary School (JTES) were also observed during this period.
- At the SBES, crossing guards were stationed on President Avenue at Chestnut Street and Charlotte Street. A flashing beacon school speed limit sign of 20 mph was in effect throughout the duration of the observations on President Avenue (Rte. 6).
- Parents were observed dropping off for the SBES along Chestnut Street and Stanley Street. Buses were observed dropping off in the onsite traffic loop across from Chestnut Street.
- Parents were observed dropping students off along Ray Street at the JTES.
- Both the JTES and the SBES arrival process began well after the B.M.C. Durfee High School arrival operations had ended.



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### Afternoon Dismissal Period

- Afternoon traffic observations for the area surround the DHS were conducted from approximately 2:20 p.m. to 3:20 p.m. It should be noted that the weather during this time period was light rain and drizzle. The weather did not appear to have a significant impact on typical traffic behavior as many students were observed walking from school.
- The DHS dismissal time is 2:40 p.m.
- Prior to the dismissal, several SRTA buses (approx. 10) were observed entering and waiting in the bus loop at DHS. Several traditional school buses were also observed however the majority of buses serving students appeared to be SRTA buses.
- Several parents were observed waiting in the parking lot adjacent to Elsbree Street for students.
- Several parents were also observed in the student parking lot, forming two lanes in the paved driveway area similar to the morning condition. Other parents were observed parked on-street near the intersection of Ray Street and Weetamoe Street.
- Some parents were observed waiting at the Driscoll Arena parking lot area waiting for students.
- In general, parent traffic appeared to be significantly less during the afternoon period than the morning period.
- Traffic on Elsbree Street was somewhat congested between the Southern School Driveway and President Avenue (Rte. 6), however, congestion did not reach the same level observed during the morning peak.
- Traffic control officers were observed in the area of the Southern School Driveway only. They were observed directing traffic, stopping traffic on Elsbree to allow for buses to exit. Additionally, they would stop traffic for pedestrians crossing in the vicinity of the Dunkin Donuts.
- Large numbers of student walkers were observed on both Ray Street and Elsbree Street.
- No significant queuing was observed at the Student Lot on Ray Street. However, a substantial queue (approx. 1,000 feet) was observed southbound on Ray Street, approaching President Avenue (Rte. 6) around 3:00 p.m. This appeared to be a combination of traffic from the School, JTES and SBES.
- Students at the JTES and the SBES appeared to be released at the approximate same time as DHS.
- At SBES, parents were observed queuing on Chestnut Street, Stanley Street and Hudson Street waiting for students to be released. Buses were observed waiting in the bus loop on the east side of the SBES Site.
- Parents picking up students at SBES were observed utilizing the DHS student parking lot. They would park in the southeast corner of the lot and walk to SBES to pick-up their child. This was occurring at the same time students from DHS were getting into their cars and leaving the site.
- Crossing guards were located at Chestnut Street and Charlotte Street.
- At JTES, parents were observed parking along Ray Street, Florence Street, Kane Street, Renwood Street, and Langley Street, waiting to pick up their child. This was also occurring generally at the same time of the DHS dismissal.





- It should be noted that BCHS and BCC traffic appeared to be much lower than during the morning arrival period. While traffic was observed traveling south on Elsbree Street from BCC, the level of congestion that was experienced during the morning arrival period was not observed. BCHS classes end at 2:30 p.m. so it is possible that this traffic has less of an impact on DHS traffic which peaked slightly later.
- Traffic queues heading eastbound on President Avenue were observed backing-up from the North Eastern Avenue rotary almost to Elsbree Street.

### **Existing Traffic Volumes**

Existing traffic volume data was collected through turning movement counts (TMCs) at each of the study intersections. TMC's were performed during the morning (7:00 to 9:00 a.m.) and afternoon (2:00 to 6:00 p.m.) peak periods on September 13, 2017 and September 14, 2017. These time periods were selected as they represent the traffic peaks associated with the School arrival and dismissal schedule and commuter peak periods of traffic in the study area.

Three peak hour periods were identified throughout the count data. These included an a.m. peak hour, school p.m. peak hour, and a commuter p.m. peak hour. The a.m. peak hour includes both morning commuter traffic and traffic associated with the arrival of students to the School. The school p.m. peak hour includes the traffic generated by the school dismissal but does not generally coincide with the p.m. commuter peak hour, which typically occurs after school dismissal. The commuter p.m. peak hour includes some traffic associated with after-school activities at the School but targets typical p.m. commuter traffic. Copies of all count data are provided in Appendix A.

The TMC data collected in September of 2017 was evaluated for the potential of seasonal traffic volume fluctuation. The month of September was compared to the 2011 MassDOT Weekday Seasonal Factor Group 6 (urban arterials, collectors, and rural arterials) data. This data indicates that traffic volumes during the month of September are typically 7% higher than the annual average. The September count data was not adjusted downward to provide a generally conservative analysis. Appendix B provides the appropriate seasonal adjustment data. The Existing (2017) traffic volumes are provided in Figure 3.

### **Bicycle Facilities**

Shared lane markings (SLM) are located in several locations within the study area. SLMs are located on Elsbree Street southbound and appear coincide with local bike route signs. The SLM is located within the parking lane on Elsbree Street. An additional SLM is located on President Avenue eastbound, just west of Elsbree Street.

### **Public Transportation**

The study area falls within the service area of the Southeastern Regional Transit Authority (SRTA). Route 8 serves that study area, providing service to downtown Fall River and the SRTA Terminal. The Complete SRTA Route 8 schedule is included in Appendix D.



## Speed Studies

Spot speed data was collected on Elsbree Street and Ray Street in the vicinity of the School driveways. It should be noted that a school speed limit of 20 miles per hour is posted in the vicinity of the School on Elsbree Street. Table 1 and Table 2 summarizes the vehicle travel speed results.

**Table 1: Elsbree Street Speed Study**

<b>Direction</b>	<b>Posted Speed Limit</b>	<b>Average Speed</b>	<b>Median Speed</b>	<b>85<sup>th</sup> Percentile Speed</b>	<b>10 mph Pace Speed</b>
<i>Northbound</i>	30	37	36	42	34-43
<i>Southbound</i>	30	36	35	39	30-39

1. All speed data reported in miles per hour (mph).

**Table 2: Ray Street Speed Study**

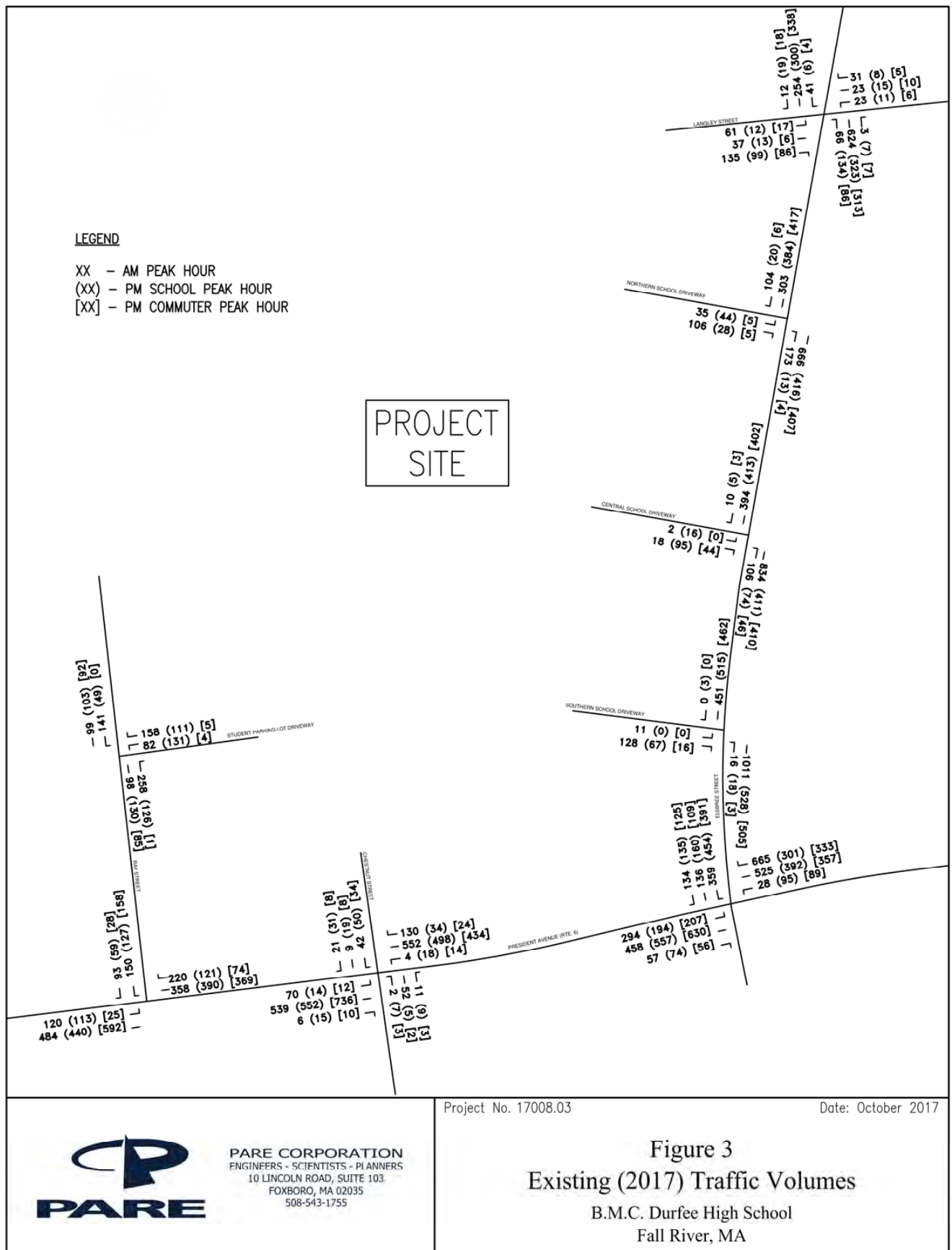
<b>Direction</b>	<b>Posted Speed Limit</b>	<b>Average Speed</b>	<b>Median Speed</b>	<b>85<sup>th</sup> Percentile Speed</b>	<b>10 mph Pace Speed</b>
<i>Northbound</i>	NA	24	25	26	18-27
<i>Southbound</i>	NA	24	24	26	17-26

1. All speed data reported in miles per hour (mph).

2. NA – Not Available

The 85<sup>th</sup> percentile speed is typically used in the engineering evaluation of sight distances and establishing posted speed limits. The complete speed study results are provided in Appendix E.





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Date: October 2017

**Figure 3**  
**Existing (2017) Traffic Volumes**

B.M.C. Durfee High School  
Fall River, MA

## Crash History

Vehicle crash data for the study area was gathered from the MassDOT Crash Portal for the most recent available three years of 2013 thru 2015. The data was used in the calculation of crash rates at the study area intersections and roadways utilizing the standard MassDOT procedures. The MassDOT Statewide and the District 5 average crash rates for unsignalized, signalized intersections, and urban collectors are provided in Table 3. The crash rates for intersections are provided in crashes per million entering vehicles while the crash rate for urban collectors is provided in crashes per million vehicle miles traveled.

It should be noted that the crash for Elsbree Street were analyzed as a roadway segment as opposed to individual intersections due to limitation in the MassDOT Crash Portal data. The inability to accurately locate intersections along Elsbree Street where each crash occurred caused this method to be used.

Appendix C includes crash data summary and crash rate calculations. The crash data summary for study area intersections and segments is described in Table 4. It should also be noted that crash data has been requested from the Fall River Police Department but has yet to be received. This section of the report will be modified upon the receipt of the Fall River Police Department data.

**Table 3: Crash Rate Averages**

	Unsignalized Intersections	Signalized Intersections	Urban Collectors
Statewide	0.58	0.77	3.62
District 5	0.58	0.76	3.62

**Table 4: Crash Summary for Study Area Intersections**

Intersection	Total Crashes	Non- Fatal Injuries	Fatal Injuries	Angle	Rear End	Head On	Side- Swipe	Pedestrian	Unknown/ Other	Crash Rate <sup>1</sup>
President Avenue (Rte. 6) & Elsbree Street	9	3	0	3	3	0	1	1	1	0.28
President Avenue (Rte. 6) & Chestnut Street	7	4	0	3	4	0	0	0	0	0.40
President Avenue (Rte. 6) & Ray Street	3	0	0	2	1	0	0	0	0	0.17
Elsbree Street & Langley Street	6	1	0	5	1	0	0	0	0	0.38
Ray Street & the Student Parking Lot Driveway	0	0	0	0	0	0	0	0	0	0.00
Elsbree Street between President Avenue & Langley Street	38	6	0	15	15	1	2	1	4	<b>4.63</b>

1. Bolded crash rates fall above Statewide and District Averages.





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A total of nine (9) crashes occurred at the intersection of President Avenue (Rte. 6) and Elsbree Street. These crashes resulted in a crash rate of 0.28, which is below both the Statewide and District 5 averages. Three (3) of these crashes were rear-end collisions, three (3) of the crashes were angle collisions, one (1) was a sideswipe in the same direction, one (1) was a collision with a pedestrian, and one (1) was of unknown type. Three (3) of the crashes resulted in at least one injury.

The one pedestrian collision that occurred at the intersection involved a vehicle traveling in the eastbound direction. It was unclear whether the pedestrian was within a marked crosswalk or the collision was during the pedestrian crossing phase of the traffic signal.

A total of seven (7) crashes occurred at the intersection of President Avenue (Rte. 6) and Chestnut Street. These crashes resulted in a crash rate of 0.40, which is below both the Statewide and District 5 averages. Four (4) of these crashes were rear-end collisions and three (3) of the crashes were angle collisions. Four (4) of the crashes resulted in injury.

A total of three (3) crashes occurred at the intersection of President Avenue (Rte. 6) and Ray Street. These crashes resulted in a crash rate of 0.17, which is below both the Statewide and District 5 averages. Two (2) of these crashes were angle collisions and one (1) of the crashes was a rear end collision. None of the collisions resulted in an injury.

A total of six (6) crashes occurred at the intersection of Elsbree Street and Langley Street. These crashes resulted in a crash rate of 0.38, which is below both the Statewide and District 5 averages. Five (5) of these crashes were angle collisions and one (1) of the crashes was a rear end collision. One (1) of the crashes resulted in at least one injury.

A total of 38 crashes occurred on Elsbree Street between President Avenue (Rte. 6) and Langley Street. These crashes resulted in a crash rate of 4.63, which is higher than the Statewide and District 5 averages. Fifteen (15) of these crashes were rear-end collisions, fifteen (15) of the crashes were angle collisions, two (2) were sideswipes in the same direction, one (1) was a head-on collision, one (1) was a collision with a pedestrian, and four (4) were of unknown type. Six (6) of the crashes resulted in injury.

The pedestrian crash involved a southbound traveling vehicle and three (3) pedestrians. It was unclear where on Elsbree Street this collision occurred or if it was within a marked crosswalk. Three (3) injuries were reported.

In general, the intersection crash rates in the area are below Statewide and District averages. However, crashes along Elsbree Street in vicinity of the School driveways result in a higher than average rate. Heavy traffic volumes along Elsbree Street, numerous vehicle access points with heavy turning movements, and the necessity of crossing multiple lanes of traffic to make a left-turn onto Elsbree Street from side streets all may contribute to the higher than average crash rate.



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## **FUTURE CONDITIONS**

### **Traffic Volumes**

Traffic volumes in the study area were projected to the year 2024 to cover a seven-year time horizon from the Existing (2017) condition in conformance with MassDOT's *TIA Guidelines*. Two future (2024) scenarios were analyzed including a Future (2024) No-Build scenario and Future (2024) Build scenario. Under the Future (2024) No-Build scenario, the traffic volumes include existing traffic volumes and new traffic volumes associated with expected background growth. The Future (2024) Build scenario includes all traffic volumes under the Future (2024) No-Build scenario and a redistribution of traffic in accordance with the anticipated on-site traffic circulation.

### **Future (2024) No-Build Traffic Volumes**

The Future (2024) No-Build traffic volume scenario includes all existing traffic volumes and the traffic volumes associated with expected background growth. To provide a conservative analysis, the background growth in traffic volumes consists of a general background traffic growth rate consistent with recent traffic volume growth in the area surrounding the study area and any additional traffic projected from additional developments near the study area. This method allows for the inclusion of a general growth rate to account for any unforeseen increases in traffic volumes and accounts for specific known developments expecting to impact the transportation system adjacent to the Project. Background traffic data is included in Appendix F.

#### *General Background Traffic Growth*

To determine the appropriate growth rate to apply to the transportation network within the study area, recent traffic volume data trends in and around the study area were consulted. MassDOT traffic volume data from MassDOT count station 6280, located on President Avenue (Rte. 6) west of Elsbree Street in Fall River, MA, was observed between 2006 and 2016. The information gathered indicated an average annual growth rate of 0.15%. Based on this information, a conservative annual growth rate of 0.5% was applied to determine the general background traffic volumes.

#### *In-Process Developments*

According to correspondence with the Fall River Planning Department in October 2017, there are no other known projects in the vicinity of the study area, either under construction or proposed, that are expected to have an impact on the traffic volumes at intersections within the study area.

#### *In-Process Roadway Projects*

According to correspondence with the City of Fall River Engineering Department, MassDOT District 5, and the Southeastern Regional Planning and Economic Development District (SRPEDD), there are currently no planned roadway or intersection improvement projects within the study area.



#### *Future (2024) No-Build Traffic Volumes*

Based on the evaluation of the appropriate general background traffic growth and other in-process developments, the Future (2024) No-Build scenario traffic volumes were determined. The Future (2024) No-Build scenario includes the existing traffic volumes with the addition of a 0.5% annual growth rate. It should be noted that background growth was not applied to traffic volumes turning into and out of the site. Future No-Build traffic volumes are shown in Figure 4.

#### **Project Trip Generation**

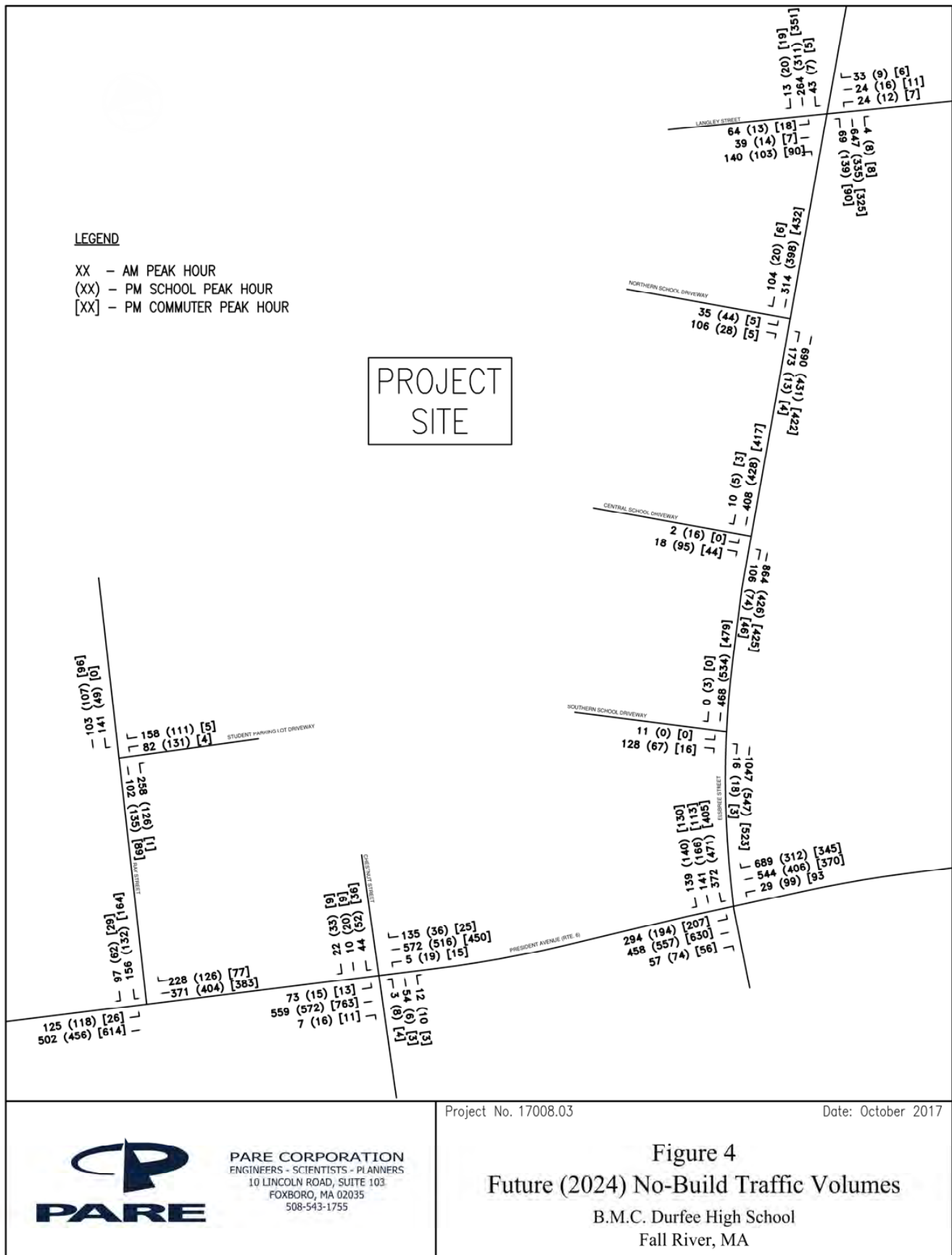
According to correspondence with the School, the student population is expected to remain constant under the proposed reconstruction project. Therefore, no additional trips are expected to be generated by the School under the Future (2024) Build scenario. However, it is expected that the modifications to the existing on-site traffic circulation pattern will impact the surrounding transportation network.

Traffic counts were collected at each of the School driveways to determine the existing trip generation of the School. A summary of the School's trip generation is included in Table 5.

**Table 5: Trip Generation Summary**

	<b>Entering</b>	<b>Exiting</b>	<b>Total</b>
Weekday, AM Peak	808	540	1,348
Weekday, PM School Peak	308	492	800
Weekday, PM Commuter Peak	63	79	142





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**Figure 4**  
**Future (2024) No-Build Traffic Volumes**

B.M.C. Durfee High School  
Fall River, MA



### **Project Trip Distribution**

The directional distribution of trips entering and exiting the site was determined by using existing traffic count at the site driveways. Table 6 below summarizes the direction distribution to and from School during arrival and dismissal periods.

**Table 6: Trip Distribution Summary**

Street	Direction	AM Peak Hour		PM School Peak Hour	
		To/From South	To/From North	To/From South	To/From North
Ray Street	Entering	65%	35%	72%	28%
Driveway	Exiting	66%	34%	46%	54%
Elsbree Street	Entering	72%	28%	79%	21%
Driveways	Exiting	84%	16%	76%	24%

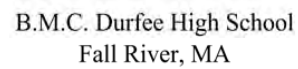
At this point in the site development, the on-site circulation pattern for drop-off and pick-up periods has yet to be finalized. Preliminary discussions among the project team regarding circulation patterns have led to following assumptions regarding on-site circulation patterns and distribution of traffic to the proposed site driveways:

- 1) The existing site driveway on the west side of the campus from Ray Street will continue to serve parent drop-offs and students. The existing drop-off/pick-up operations that occur within this parking lot are expected to continue to enter via this driveway, drop-off/pick-up along the southern side of the field house, and exit to Ray Street via the existing driveway. New student parking areas will also be provided in lots on the south side of school building. This operation will preserve the existing drop-off/pick-up activity from Ray Street and continue to help alleviate traffic demands on Elsbree Street.
- 2) The northern parking lot will serve a mix of students and faculty and will provide the main parent drop-off/pick-up loop during morning arrival and afternoon dismissal periods. It was anticipated that the northern driveway to this parking lot would be entry-only during drop-off/pick-up periods and the southern driveway would serve as exit-only. This pattern is expected to reduce vehicular conflict during the arrival and dismissal period.
- 3) The southernmost driveway on Elsbree Street will serve faculty accessing the parking lots in these areas.
- 4) The loop roadway in front of the field house is expected to serve buses during arrival and dismissal.
- 5) The driveway that serves the small lot east of the school building is expected to serve visitors and is not expected to serve significant traffic volumes during arrival and dismissal periods.

### **Future (2024) Build Traffic Volumes**

The Future (2024) Build traffic volumes consist of the Future (2024) No-Build traffic volumes with the addition of the Project generated traffic volumes. The Future (2024) Build a.m. peak hour, p.m. school peak hour, and p.m. commuter peak hour traffic volumes are shown in Figure 5.





## **TRAFFIC CAPACITY ANALYSIS**

Capacity analysis was completed for all the study intersections for Existing (2017), Future (2024) No-Build, and Future (2024) Build conditions. Capacity analysis characterizes intersections based on their level of service (LOS). LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed, travel times, traffic interruptions, etc. Six LOS are defined for each type of facility, from A to F, with A representing the best operating conditions and F representing the worst operating conditions. The LOS criteria, as defined by the 2010 Highway Capacity Manual<sup>1</sup> (HCM) for unsignalized and signalized intersections are provided in Table 7 and Table 8, respectively. The traffic capacity analysis was performed using the Synchro 9 software. Table 9 shows the results of the capacity analysis. The complete capacity analysis results can be found in Appendix G.

It should be noted that since the School is not expected to experience population growth and generation of additional overall trips after the new construction, The Future (2024) Build Condition is represented by the Future (2024) No-Build condition at all non-School Driveway study intersections.

**Table 7: LOS Criteria for Unsignalized Intersections**

Level-of-Service by Volume-to-Capacity		Control Delay
v/c ≤ 1.0	v/c > 1.0	(Seconds Per Vehicle)
A	F	0-10
B	F	> 10-15
C	F	> 15-25
D	F	> 25-35
E	F	> 35-50
F	F	> 50

**Table 8: LOS Criteria for Signalized Intersections**

Level of Service	Control Delay (Seconds Per Vehicle)
A	0-10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80

### **President Avenue (Rte. 6) & Elsbree Street**

Under existing conditions, the majority of movements at the intersection operate at LOS D or better during each of the three peak hours analyzed. The eastbound left-turn movement operates at LOS F during all three periods. Additionally, the southbound left-turn operates at LOS E during the a.m. peak hour and p.m. school peak hour. These conditions worsen slightly under the Future (2024) No-Build condition as delay and queue lengths increase. However, no other movements worsen to LOS E or LOS F. Overall, the intersection operates at LOS E during the a.m. peak hour, LOS D during the p.m. school peak hour, and LOS C during the p.m. commuter peak hours under both Existing (2017) conditions and Future (2024) No-Build conditions.

<sup>1</sup> *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.



**Table 9: Signalized Intersection Capacity Analysis Results**

Intersection	Movement	2017 Existing			2024 No-Build / 2024 Build		
		LOS	Delay <sup>1</sup>	Queue Length <sup>3</sup>	LOS	Delay <sup>1</sup>	Queue Length <sup>3</sup>
President Avenue (Rte. 6) & Elsbree Street	<i>Weekday AM Peak Hour</i>						
	SB L	E	63.3	#403	D	46.4	#431
		D	40.5	258	D	36.3	272
	EB T	F	361.7	#469	F	305.3	#482
		C	25.3	188	C	25.0	192
	WB R	C	25.7	62	C	25.5	63
		D	46.0	46	D	45.6	49
	WB T	C	31.6	225	C	30.9	233
		C	24.1	534	C	20.9	#593
	Intersection	E	68.1		E	59.7	
	<i>Weekday PM School Peak Hour</i>						
	SB L	E	61.9	#490	E	75.0	#527
		D	36.3	#277	D	37.9	#302
	EB T	F	140.5	#283	F	146.7	#288
		C	33.4	222	C	33.5	225
	WB R	C	29.4	74	C	29.4	75
		D	52.1	#122	D	54.6	#133
	WB T	C	32.2	153	C	32.7	162
		B	13.6	161	B	13.8	172
	Intersection	D	46.0		D	49.3	
	<i>Weekday PM Commuter Peak Hour</i>						
	SB L	C	34.7	#407	D	35.2	#434
		C	25.9	200	C	25.9	211
	EB T	F	97.3	#299	F	103.7	#307
		C	28.7	#273	C	29.1	#281
	WB R	C	24.9	59	C	25.0	60
		D	40.7	#105	D	42.7	#121
	WB T	C	20.6	134	C	26.2	147
		A	9.9	172	B	10.2	193
	Intersection	C	33.0		C	33.6	

1. Delay is measured in seconds/vehicle.
2. Volume-to-Capacity Ratio
3. Queue Length shown represents the 95<sup>th</sup> percentile queue length in feet.

### President Avenue (Rte. 6) & Ray Street

Under existing conditions, the southbound approach to the intersection operates at LOS F during the a.m. peak hour, p.m. school peak hour, and p.m. commuter peak hour. The eastbound and westbound approaches on President Avenue (Rte. 6) operate at LOS A during the peak periods analyzed. These LOS conditions are expected to remain under the Future (2024) No-Build/Build condition.

### President Avenue (Rte. 6) & Chestnut Street

Under existing conditions, the northbound and southbound approaches to the intersection operate at LOS F during the a.m. peak hour and p.m. school peak hour. The northbound approach operates at LOS D and the southbound approach operates at LOS E during the p.m. commuter peak. The eastbound and westbound approaches on President Avenue (Rte. 6) operate at LOS A during all periods analyzed.

These LOS conditions are expected to remain under the Future (2024) No-Build/Build condition with the exceptions of the southbound approach during the p.m. commuter peak. This approach is expected to worsen from LOS E to LOS F.





**Table 10: Unsignalized Intersection Capacity Analysis Results**

Intersection	Movement	2017 Existing				2024 No-Build / 2024 Build			
		LOS	Delay <sup>1</sup>	v/c <sup>2</sup>	Queue Length <sup>3</sup>	LOS	Delay <sup>1</sup>	v/c <sup>2</sup>	Queue Length <sup>3</sup>
President Avenue (Rte. 6) & Ray Street	<i>Weekday AM Peak Hour</i>								
	SB L,R	F	300+	1.579	20	F	284.9	1.471	17
	EB L,T	A	1.9	0.144	1	A	1.9	0.146	1
	WB T,R	A	0.0	-	0	A	0.0	-	0
	<i>Weekday PM School Peak Hour</i>								
	SB L,R	F	267.0	1.424	16	F	130.4	1.060	10
	EB L,T	A	1.9	0.138	1	A	1.9	0.130	1
	WB T,R	A	0.0	-	0	A	0.0	-	0
	<i>Weekday PM Commuter Peak Hour</i>								
President Avenue (Rte. 6) & Chestnut Street	SB L,R	F	97.4	0.977	9	F	91.5	0.941	9
	EB L,T	A	0.3	0.026	1	A	0.3	0.028	1
	WB T,R	A	0.0	-	0	A	0.0	-	0
	<i>Weekday AM Peak Hour</i>								
	NB L,T,R	F	183.6	1.067	7	F	129.4	0.815	5
	SB L,T,R	F	300+	8.145	15	F	300+	1.836	9
	EB L,T,R	A	1.1	0.088	1	A	1.1	0.097	1
	WB L,T,R	A	0.1	0.005	0	A	0.1	0.006	0
	<i>Weekday PM School Peak Hour</i>								
Elsbree Street & Langley Street	NB L,T,R	F	240.4	0.847	4	F	61.4	0.293	2
	SB L,T,R	F	300+	2.894	17	F	261.7	1.254	9
	EB L,T,R	A	0.2	0.024	1	A	0.2	0.019	1
	WB L,T,R	A	0.3	0.034	1	A	0.3	0.025	1
	<i>Weekday PM Commuter Peak Hour</i>								
	NB L,T,R	D	30.4	0.069	1	D	32.4	0.077	1
	SB L,T,R	E	46.5	0.398	2	F	54.3	0.455	2
	EB L,T,R	A	0.1	0.012	0	A	0.1	0.013	0
	WB L,T,R	A	0.3	0.018	1	A	0.3	0.021	1
Elsbree Street & Langley Street	<i>Weekday AM Peak Hour</i>								
	NB L,T,R	A	0.8	0.071	1	A	0.8	0.060	1
	SB L,T,R	A	1.3	0.064	1	A	1.2	0.052	1
	EB L,T,R	F	300+	2.477	32	F	168.6	1.195	13
	WB L,T,R	F	300+	1.608	11	F	68.5	0.638	4
	<i>Weekday PM School Peak Hour</i>								
	NB L,T,R	A	2.4	0.127	1	A	2.4	0.126	1
	SB L,T,R	A	0.1	0.006	0	A	0.2	0.006	0
	EB L,T,R	C	18.6	0.383	2	C	17.4	0.329	2
Elsbree Street & Langley Street	WB L,T,R	D	34.9	0.369	2	D	28.3	0.207	1
	<i>Weekday PM Commuter Peak Hour</i>								
	NB L,T,R	A	1.8	0.088	1	A	1.8	0.084	1
	SB L,T,R	A	0.1	0.005	0	A	0.1	0.005	0
	EB L,T,R	C	21.2	0.460	3	C	16.0	0.277	2
Elsbree Street & Langley Street	WB L,T,R	D	27.2	0.164	1	C	22.1	0.110	1

1. Delay is measured in seconds/vehicle.
2. Volume-to-Capacity Ratio
3. Queue Length shown represents the 95<sup>th</sup> percentile queue length in vehicles.

### Elsbree Street & Langley Street

Under existing conditions, the eastbound and westbound approaches to the intersection operates at LOS F during the a.m. peak hour. The eastbound and westbound approaches operate at LOS D or better during the p.m. school peak and p.m. commuter peak. These conditions are expected to remain under the Future (2024) No-Build/Build condition. The northbound and southbound approaches on President Avenue (Rte. 6) operate at LOS A during all periods analyzed.

While extensive eastbound and westbound vehicle delays and queue lengths are represented in the a.m. peak hour analysis results, it should be noted that these conditions were not observed during the peak hour field reviews.



**Table 11: Site Driveway Capacity Analysis Results**

Intersection	Movement	2017 Existing				2024 No-Build			
		LOS	Delay <sup>1</sup>	v/c <sup>2</sup>	Queue Length <sup>3</sup>	LOS	Delay <sup>1</sup>	v/c <sup>2</sup>	Queue Length <sup>3</sup>
Elsbree Street & the Southern School Driveway	<i>Weekday AM Peak Hour</i>								
	NB L,T	A	0.5	0.025	1	A	0.3	0.020	1
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	F	160.7	1.183	14	D	33.4	0.553	4
	<i>Weekday PM School Peak Hour</i>								
	NB L,T	A	0.7	0.043	1	A	0.5	0.026	1
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	D	27.5	0.451	3	C	20.8	0.243	1
	<i>Weekday PM Commuter Peak Hour</i>								
	NB L,T	A	0.1	0.003	0	A	0.0	0.003	0
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	B	10.4	0.031	1	B	10.1	0.024	1
Elsbree Street & the Central School Driveway	<i>Weekday AM Peak Hour</i>								
	NB L,T	A	1.0	0.138	1	A	1.0	0.108	1
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	C	19.4	0.134	1	C	15.1	0.057	1
	<i>Weekday PM School Peak Hour</i>								
	NB L,T	A	1.3	0.074	1	A	1.3	0.075	1
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	C	17.3	0.343	2	C	15.9	0.268	2
	<i>Weekday PM Commuter Peak Hour</i>								
	NB L,T	A	0.9	0.051	1	A	0.8	0.045	1
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	C	13.0	0.144	1	B	11.5	0.079	1
Elsbree Street & the Northern School Driveway	<i>Weekday AM Peak Hour</i>								
	NB L,T	A	1.9	0.209	1	A	1.8	0.168	1
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	F	300+	1.605	20	E	36.4	0.585	4
	<i>Weekday PM School Peak Hour</i>								
	NB L,T	A	0.3	0.013	0	A	0.2	0.010	0
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	D	26.8	0.541	4	B	12.4	0.138	1
	<i>Weekday PM Commuter Peak Hour</i>								
	NB L,T	A	0.1	0.004	0	A	0.1	0.004	0
	SB T,R	A	0.0	-	0	A	0.0	-	0
	EB L,R	C	15.9	0.078	1	B	14.4	0.028	1
Ray Street & the Student Parking Lot Driveway	<i>Weekday AM Peak Hour</i>								
	NB T,R	A	0.0	-	0	A	0.0	-	0
	SB L,T	A	5.5	0.181	1	A	4.9	0.130	1
	WB L,R	F	170.6	1.257	19	C	23.5	0.580	4
	<i>Weekday PM School Peak Hour</i>								
	NB T,R	A	0.0	-	0	A	0.0	-	0
	SB L,T	A	2.6	0.051	1	A	2.5	0.042	1
	WB L,R	E	36.8	0.855	10	B	14.4	0.408	2
	<i>Weekday PM Commuter Peak Hour</i>								
	NB T,R	A	0.0	-	0	A	0.0	-	0
	SB L,T	A	0.0	-	0	A	2.6	-	0
	WB L,R	A	9.4	0.017	1	A	9.3	0.011	0

1. Delay is measured in seconds/vehicle.

2. Volume-to-Capacity Ratio

Queue Length shown represents the 95<sup>th</sup> percentile queue length

### Existing School Driveways

Under exiting conditions, three of the existing School driveways operate at LOS F during the a.m. peak hour. This poor level of service can be primarily attributed to the significant increase in traffic during the peak 15-minute interval. During the morning drop-off period, there is an intense spike in traffic volumes entering and exiting the School. This peak results in the poor LOS, however, this is only for a short duration in time.



**Table 12: Future Build Site Driveway Capacity Analysis Results**

Intersection	Movement	LOS	Delay <sup>1</sup>	2024 Build v/c <sup>2</sup>	Queue Length <sup>3</sup>
Elsbree Street & the Southern School Driveway	<i>Weekday AM Peak Hour</i>				
	NB L,T	A	0.9	0.05	1
	SB T,R	A	0.0	-	0
	EB L,R	B	1.7	0.04	1
	<i>Weekday PM School Peak Hour</i>				
	NB L,T	A	0.9	-	0
Elsbree Street & the Field House Driveway	SB T,R	A	0.0	-	0
	EB L,R	D	30.7	0.367	2
	<i>Weekday AM Peak Hour</i>				
	NB L,T	A	0.2	0.016	0
	SB T,R	A	0.0	-	0
	EB L,R	A	0.0	-	0
Elsbree Street & the Southern Main Lot Driveway	<i>Weekday PM School Peak Hour</i>				
	NB L,T	A	0.3	0.016	0
	SB T,R	A	0.0	-	0
	EB L,R	A	0.0	-	0
	<i>Weekday AM Peak Hour</i>				
	NB L,T	A	0.0	-	0
Elsbree Street & the Northern Main Lot Driveway	SB T,R	A	0.0	-	0
	EB L,R	E	42.7	0.811	8
	<i>Weekday PM School Peak Hour</i>				
	NB L,T	A	0.0	-	0
	SB T,R	A	0.0	-	0
	EB L,R	C	18.7	0.445	3
Ray Street & the Student Parking Lot Driveway	<i>Weekday AM Peak Hour</i>				
	NB T,R	A	2.5	0.248	1
	SB L,T	A	0.0	-	0
	EB L,R	A	0.0	-	0
	<i>Weekday PM School Peak Hour</i>				
	NB L,T	A	1.7	0.104	1
Ray Street & the Student Parking Lot Driveway	SB T,R	A	0.0	-	0
	WB L,R	C	23.5	0.580	4
	<i>Weekday PM School Peak Hour</i>				
	NB T,R	A	0.0	-	0
	SB L,T	A	2.5	0.042	1
	WB L,R	B	14.4	0.408	2

1. Delay is measured in seconds/vehicle.

2. Volume-to-Capacity Ratio

Queue Length shown represents the 95<sup>th</sup> percentile queue length

### Future School Driveways

Under the Future (2024) Build condition, all school driveways are expected to operate at LOS E or better during the a.m. peak hour, and p.m. school peak hour.



## **MITIGATION ALTERNATIVES**

### ***Left-turn Lane Analysis***

In our review of traffic patterns throughout the project area, the projected heavy left-turn volume from Elsbree Street into the northern main lot driveway was noted. Because of this heavy turning volume, an assessment was conducted to determine if a northbound left-turn lane on Elsbree Street should be considered. The American Association of State Highway and Transportation Officials (AASHTO) publication *A Policy on Geometric Design of Highways and Streets*<sup>2</sup> includes guidelines recommending when the installation of a left-turn lane can be considered for installation based on vehicle speeds, left-turning volume, and opposing volume. The assessment was completed using hourly traffic volumes from the a.m. peak hour as the greatest number of northbound left-turn movements into the site are projected during this time period. The complete assessment is included in Appendix H.

The results of the analysis indicated that the proposed traffic volume turning left into the site and the conflicting volumes on Elsbree Street exceed the requirements for installation of a left-turn lane. Installation of the left-turn lane can be installed within the existing pavement width on Elsbree Street, however, will require the removal of on-street parking on one side of the roadway. Installation of the left-turn at this location is recommended, however, should be coordinated with the City of Fall River to determine if removal of the parking lane is feasibility.

### ***Traffic Signal Warrant Analysis***

A traffic signal warrants analysis was completed at the intersection of President Avenue (Rte. 6) & Ray Street to determine if the installation of a traffic signal is justified. Traffic signal warrants are provided in the *Manual on Uniform Traffic Control Devices*<sup>3</sup> (MUTCD) as a means of justification for the installation of a traffic signal. The study completed for the warrant analysis should include an analysis of the intersection, the existing or proposed volumes, and existing traffic and safety operations at the location. Nine signal warrants are available, at least one of which should be met prior to consideration of signalization. While they are useful indicators of the need for a signal, the satisfaction of a traffic signal warrant or warrants should not in itself require the installation of a traffic signal.

The eight-hour traffic volume warrant was not completed as the eight-hour traffic data was not collected at the study intersections. Table 13 summarizes the results. The complete assessment is included in Appendix I.

**Table 13: Traffic Signal Warrant Summary**

Warrant	Warrant Met?
1) 8-Hour Vehicular Volume	Unknown
2) 4-Hour Vehicular Volume	Yes
3) Peak Hour Vehicle Volume	Yes
4) Pedestrian Crossing	No
5) School Crossing	No
6) Coordinated Signal System	No
7) Crash Experience	No
8) Roadway Network	No
9) Intersection Near a Grade Crossing	No

<sup>2</sup> *A Policy on the Geometric Design of Highways and Streets, 6<sup>th</sup> Edition*; American Association of State Highway and Transportation Officials; 2011.

<sup>3</sup> *Manual on Uniform Traffic Control Devices for Street and Highways*; 2009 Edition; Federal Highway Administration.





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Both the 4-hour vehicle volume warrant and the peak hour warrant are met at the intersection of President Avenue (Rte. 6) & Ray Street under existing conditions. As the traffic volumes at the intersection are not expected to have a significant change with the construction of the new School, the future operations at the intersection are expected to be similar to existing. As the School is not expected to worsen conditions at this location, we recommend that the intersection be evaluated on a regular basis after construction of the School to observe vehicle delays, crash history, and traffic operations. Should the results of these evaluations indicate the intersection should be signalized, a signal can be installed at that point in time.



## SIGHT DISTANCE ANALYSIS

A sight distance analysis was performed at the location of the proposed School driveways. Under the proposed design, there will be a total of six driveways. One driveway will be located at the existing Student Parking on Ray Street. The other five driveways will be located along Elsbree Street.

Sight distance measurements obtained included both stopping sight distance (SSD) and intersection sight distance (ISD). SSD is the distance required for a vehicle traveling at the design speed of the roadway to come to a complete stop. It includes both the distance traverse during the driver's brake reaction time and the distance to decelerate the vehicle to a stop. ISD is the distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver.

A design speed of 45 miles-per-hour was used for Elsbree Street while a design speed of 30 miles-per hour was used for Ray Street. The design speeds for Ray Street and Elsbree Street were selected based on the results of the speed study at each location.

Sight distance standards presented in the American Association of State Highway and Transportation Officials (AASHTO) publication *A Policy on the Geometric Design of Highways and Streets, Sixth Edition 2011* were used to establish minimum safe sight distances at each of the site driveways. Level roadway conditions were used for Ray Street and Elsbree Street. The results of the sight distance analysis are summarized in Table 14.

**Table 14: Sight Distance Summary**

Proposed Driveway		Required SSD (ft)	Measured SSD (ft)	Required ISD (ft)	Measured ISD (ft)
<b>Student Parking Lot Driveway</b> (Ray Street)	To the North	200	345	335	345
	To the South	200	380	335	380
<b>Southern Driveway</b> (Elsbree Street)	To the North	360	650	500	<b>290</b>
	To the South	360	700	500	<b>280</b>
<b>Bus Loop Driveway</b> (Elsbree Street)	To the North	360	1,000 +	500	1,000 +
	To the South	360	600	500	600
<b>Visitors Loop Driveway</b> (Elsbree Street)	To the North	360	1,000 +	500	1,000 +
	To the South	360	800	500	800
<b>Southern Main Lot Driveway</b> (Elsbree Street)	To the North	360	645	500	645
	To the South	360	1,000+	500	1,000 +
<b>Northern Main Lot Driveway</b> (Elsbree Street)	To the North	360	525	500	525
	To the South	360	1,000+	500	1,000 +

1. SSD – Stopping Sight Distance
2. ISD – Intersection Sight Distance
3. Bolded figures fall below AASHTO required distances.



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Measured sight distances exceed AASHTO requirements at all but one proposed driveway. At the Southern School Driveway on Elsbree Street, intersection sight distances do not meet AASHTO requirements. A chain link fence is located on the southwest corner that restricts visibility to the south while a white picket fence is located on the northwest corner, restricting sight distance to the north.

Despite the limitations in available sight distance, Pare is of the opinion that vehicles can exit this driveway safely. The design speed for this measurement of 45 miles per hour was based on a speed study conducted approximately 1,000 feet to the north. Based on observations, travel speeds in the area of the Southern Site Driveway are less than those measured to the north on Elsbree Street. It should also be noted that the posted speed limit on Elsbree Street is 30 miles-per-hour. Additionally, drivers have the ability to slowly creep towards Elsbree Street to have clear visibility prior to making a turning movement. As noted above, the stopping sight distances on Elsbree Street significantly exceed the AASHTO requirements.



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## **CONCLUSIONS & RECOMMENDATIONS**

### **Conclusion**

In general, the construction of the new B.M.C. Durfee High School is expected have minimal impact on the surrounding roadway network compared to the existing condition. With the student population anticipated to remain the same after the reconstruction of the School, no new trips are expected to be generated to the site as part of the project. The most significant changes regarding traffic conditions at the site will result from the introduction of new site driveways and modifications to site circulation. While on-site circulation patterns have yet to be finalized, the following circulation assumptions were developed with input from the project team for the purposes of this study:

- 1) The existing site driveway on the west side of the campus from Ray Street will continue to serve parent drop-offs and students. The existing drop-off/pick-up operations that occur within this parking lot are expected to continue to enter via this driveway, drop-off/pick-up along the southern side of the field house, and exit to Ray Street via the existing driveway. New student parking areas will also be provided in lots on the south side of school building. This operation will preserve the existing drop-off/pick-up activity from Ray Street and continue to help alleviate traffic demands on Elsbree Street.
- 2) The northern parking lot will serve a mix of students and faculty and will provide the main parent drop-off/pick-up loop during morning arrival and afternoon dismissal periods. It was anticipated that the northern driveway to this parking lot would be entry-only during drop-off/pick-up periods and the southern driveway would serve as exit-only. This pattern is expected to reduce vehicular conflict during the arrival and dismissal period.
- 3) The southernmost driveway on Elsbree Street will serve faculty accessing the parking lots in these areas.
- 4) The loop roadway in front of the field house is expected to serve buses during arrival and dismissal.
- 5) The driveway that serves the small lot east of the school building is expected to serve visitors and is not expected to serve significant traffic volumes during arrival and dismissal periods.

The results of the analysis performed given the above traffic circulation pattern indicate acceptable level of service conditions during both arrival and dismissal periods at each of site driveways. Additionally, as this circulation pattern maintains the general existing traffic distribution between Elsbree Street and Ray Street, the future build conditions are not anticipated to result in significant differences from future no-build conditions at the remaining study intersections.

### **Recommendations**

While the analysis performed under this study indicates that the project can be accommodated by the existing transportation network with traffic conditions comparable to the existing, several recommendations can be considered. These recommendations include:





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*General*

- Consider coordinating morning and afternoon arrival and dismissal schedules with the Bishop Connolly High School and Bristol Community College. Staggering of arrival and dismissal times between the schools may help alleviate peak traffic conditions on Elsbree Street, particularly during the busy morning arrival period.
- Any landscaping or signs installed as part of the project should be kept to a maximum of 2 feet in height within all sight triangles and the School driveways to maintain sufficient sight distance.

*President Avenue (Rte. 6) & Elsbree Street*

- Optimization of traffic signal timings during peak periods could be considered to help reduce vehicle delays at the intersection. While this is not expected to have a major impact to operations, signal timings could be adjusted to reflect the most recent traffic patterns.
- Significant improvements to operations at the intersection would require widen approaches to accommodate additional travel lanes. Based on a preliminary overview of the traffic signal layout plan, property lines appear to be at the back of sidewalk along the majority of approaches and widening of the intersection would require the taking of private property. This is not recommended at this time as the reconstruction of the School is not expected to add traffic volumes to the intersection.

*President Avenue (Rte. 6) & Ray Street*

- Consideration for installation of a traffic signal at this intersection can be given. Traffic volumes at the intersection reach those meeting a traffic signal warrant. However, as the School is not expected to worsen conditions at this location, we recommend that the intersection be evaluated on a regular basis after construction of the School to observe vehicle delays, crash history, and traffic operations. Should the results of these evaluations indicate the intersection should be signalized, a signal can be installed at that point in time.

*Elsbree Street*

- Consideration can be given to install a left-turn lane on Elsbree Street northbound into the site at the northern most driveway, if that driveway is used as the main drop-off/pick-up and faculty entrance. The introduction of this lane would be beneficial for separating turning vehicles from northbound through vehicles continuing towards Langley Street and BCC. This would require parking along one side of Elsbree Street to be removed in the area.

*On-Site Circulation*

- In general, providing an on-site circulation pattern that distributes traffic between Elsbree Street and Ray Street and provides drivers with flexibility will help reduce the impact of the site's traffic to the transportation system.
- A one-way traffic circulation pattern within the proposed northern parking lot is recommended during arrival and dismissal times to help reduce the number of vehicular conflicts at the driveways.



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## Appendix A

### Traffic Count Data



**Transportation Data Corporation**  
Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Elsbree Street  
E/W: Langley Street  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936A  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	1	46	4	0	3	0	2	0	2	60	12	0	27	2	6	0	165
07:15 AM	1	55	8	0	5	1	4	1	0	132	18	0	30	6	7	1	269
07:30 AM	2	77	18	1	11	10	11	0	2	167	17	0	52	18	20	3	409
07:45 AM	5	80	14	0	13	11	6	2	0	205	21	0	33	13	27	0	430
Total	9	258	44	1	32	22	23	3	4	564	68	0	142	39	60	4	1273
08:00 AM	4	42	1	1	2	1	2	0	1	120	10	0	20	0	7	2	213
08:15 AM	2	61	0	0	1	0	6	2	1	107	4	0	2	0	3	0	189
08:30 AM	0	80	0	3	0	0	0	3	0	102	0	0	2	0	0	0	190
08:45 AM	0	53	0	0	1	0	0	0	1	151	0	0	0	0	1	0	207
Total	6	236	1	4	4	1	8	5	3	480	14	0	24	0	11	2	799
Grand Total	15	494	45	5	36	23	31	8	7	1044	82	0	166	39	71	6	2072
Apprch %	2.7	88.4	8.1	0.9	36.7	23.5	31.6	8.2	0.6	92.1	7.2	0	58.9	13.8	25.2	2.1	
Total %	0.7	23.8	2.2	0.2	1.7	1.1	1.5	0.4	0.3	50.4	4	0	8	1.9	3.4	0.3	
Cars & Peds	14	482	45	5	33	23	31	8	5	1029	81	0	166	39	71	6	2038
% Cars & Peds	93.3	97.6	100	100	91.7	100	100	100	71.4	98.6	98.8	0	100	100	100	100	98.4
Trucks & Buses	1	12	0	0	3	0	0	0	2	13	1	0	0	0	0	0	32
% Trucks & Buses	6.7	2.4	0	0	8.3	0	0	0	28.6	1.2	1.2	0	0	0	0	0	1.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0.1

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	55	8	0	64	5	1	4	1	11	0	132	18	0	150	30	6	7	1	44	269
07:30 AM	2	77	18	1	98	11	10	11	0	32	2	167	17	0	186	52	18	20	3	93	409
07:45 AM	5	80	14	0	99	13	11	6	2	32	0	205	21	0	226	33	13	27	0	73	430
08:00 AM	4	42	1	1	48	2	1	2	0	5	1	120	10	0	131	20	0	7	2	29	213
Total Volume	12	254	41	2	309	31	23	23	3	80	3	624	66	0	693	135	37	61	6	239	1321
% App. Total	3.9	82.2	13.3	0.6		38.8	28.8	28.8	3.8		0.4	90	9.5	0		56.5	15.5	25.5	2.5		
PHF	.600	.794	.569	.500	.780	.596	.523	.523	.375	.625	.375	.761	.786	.000	.767	.649	.514	.565	.500	.642	.768
Cars & Peds	11	244	41	2	298	30	23	23	3	79	2	612	65	0	679	135	37	61	6	239	1295
% Cars & Peds	91.7	96.1	100	100	96.4	96.8	100	100	100	98.8	66.7	98.1	98.5	0	98.0	100	100	100	100	100	98.0
Trucks & Buses	1	10	0	0	11	1	0	0	0	1	1	10	1	0	12	0	0	0	0	0	24
% Trucks & Buses	8.3	3.9	0	0	3.6	3.2	0	0	0	1.3	33.3	1.6	1.5	0	1.7	0	0	0	0	0	1.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0.2

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N/S: Elsbree Street  
E/W: Langley Street  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936A  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	1	46	4	0	2	0	2	0	1	58	12	0	27	2	6	0	161
07:15 AM	1	53	8	0	5	1	4	1	0	132	17	0	30	6	7	1	266
07:30 AM	2	72	18	1	11	10	11	0	1	159	17	0	52	18	20	3	395
07:45 AM	4	77	14	0	12	11	6	2	0	202	21	0	33	13	27	0	422
Total	8	248	44	1	30	22	23	3	2	551	67	0	142	39	60	4	1244
08:00 AM	4	42	1	1	2	1	2	0	1	119	10	0	20	0	7	2	212
08:15 AM	2	60	0	0	0	0	6	2	1	107	4	0	2	0	3	0	187
08:30 AM	0	80	0	3	0	0	0	3	0	102	0	0	2	0	0	0	190
08:45 AM	0	52	0	0	1	0	0	0	1	150	0	0	0	0	1	0	205
Total	6	234	1	4	3	1	8	5	3	478	14	0	24	0	11	2	794
Grand Total	14	482	45	5	33	23	31	8	5	1029	81	0	166	39	71	6	2038
Apprch %	2.6	88.3	8.2	0.9	34.7	24.2	32.6	8.4	0.4	92.3	7.3	0	58.9	13.8	25.2	2.1	
Total %	0.7	23.7	2.2	0.2	1.6	1.1	1.5	0.4	0.2	50.5	4	0	8.1	1.9	3.5	0.3	

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	53	8	0	62	5	1	4	1	11	0	132	17	0	149	30	6	7	1	44	266
07:30 AM	2	72	18	1	93	11	10	11	0	32	1	159	17	0	177	52	18	20	3	93	395
07:45 AM	4	77	14	0	95	12	11	6	2	31	0	202	21	0	223	33	13	27	0	73	422
08:00 AM	4	42	1	1	48	2	1	2	0	5	1	119	10	0	130	20	0	7	2	29	212
Total Volume	11	244	41	2	298	30	23	23	3	79	2	612	65	0	679	135	37	61	6	239	1295
% App. Total	3.7	81.9	13.8	0.7		38	29.1	29.1	3.8		0.3	90.1	9.6	0		56.5	15.5	25.5	2.5		
PHF	.688	.792	.569	.500	.784	.625	.523	.523	.375	.617	.500	.757	.774	.000	.761	.649	.514	.565	.500	.642	.767



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Client: Pare/T. Thomson

File Name : 04936A  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	1	0	0	0	1	2	0	0	0	0	0	0	4
07:15 AM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
07:30 AM	0	5	0	0	0	0	0	0	1	7	0	0	0	0	0	0	13
07:45 AM	1	3	0	0	1	0	0	0	0	2	0	0	0	0	0	0	7
Total	1	10	0	0	2	0	0	0	2	11	1	0	0	0	0	0	27
08:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Total	0	2	0	0	1	0	0	0	0	2	0	0	0	0	0	0	5
Grand Total	1	12	0	0	3	0	0	0	2	13	1	0	0	0	0	0	32
Apprch %	7.7	92.3	0	0	100	0	0	0	12.5	81.2	6.2	0	0	0	0	0	
Total %	3.1	37.5	0	0	9.4	0	0	0	6.2	40.6	3.1	0	0	0	0	0	

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	4
07:15 AM	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
07:30 AM	0	5	0	0	5	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	13
07:45 AM	1	3	0	0	4	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	7
Total Volume	1	10	0	0	11	2	0	0	0	2	2	11	1	0	14	0	0	0	0	0	27
% App. Total	9.1	90.9	0	0		100	0	0	0		14.3	78.6	7.1	0		0	0	0	0		
PHF	.250	.500	.000	.000	.550	.500	.000	.000	.000	.500	.500	.393	.250	.000	.438	.000	.000	.000	.000	.000	.519

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File Name : 04936A  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	

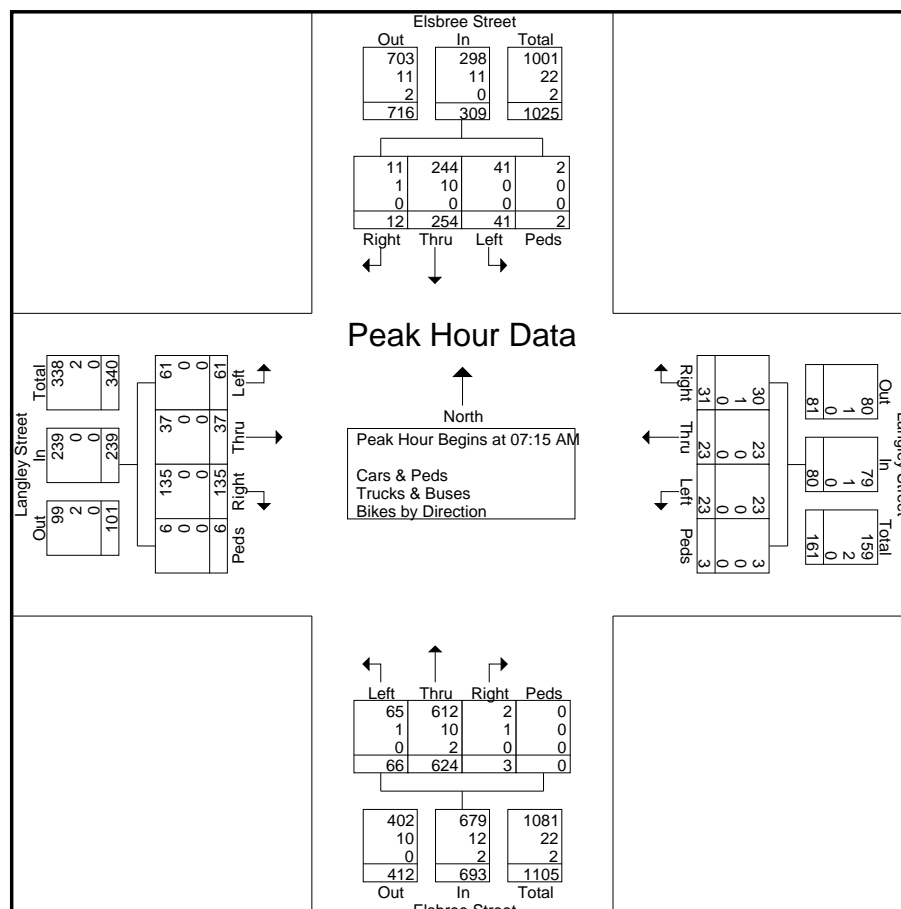
	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% App. Total	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.500

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File Name : 04936A  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	55	8	0	64	5	1	4	1	11	0	132	18	0	150	30	6	7	1	44	269
07:30 AM	2	77	18	1	98	11	10	11	0	32	2	167	17	0	186	52	18	20	3	93	409
07:45 AM	5	80	14	0	99	13	11	6	2	32	0	205	21	0	226	33	13	27	0	73	430
08:00 AM	4	42	1	1	48	2	1	2	0	5	1	120	10	0	131	20	0	7	2	29	213
Total Volume	12	254	41	2	309	31	23	23	3	80	3	624	66	0	693	135	37	61	6	239	1321
% App. Total	3.9	82.2	13.3	0.6		38.8	28.8	28.8	3.8		0.4	90	9.5	0		56.5	15.5	25.5	2.5		
PHF	.600	.794	.569	.500	.780	.596	.523	.523	.375	.625	.375	.761	.786	.000	.767	.649	.514	.565	.500	.642	.768
Cars & Peds	11	244	41	2	298	30	23	23	3	79	2	612	65	0	679	135	37	61	6	239	1295
% Cars & Peds	91.7	96.1	100	100	96.4	96.8	100	100	100	98.8	66.7	98.1	98.5	0	98.0	100	100	100	100	100	98.0
Trucks & Buses	1	10	0	0	11	1	0	0	0	1	1	10	1	0	12	0	0	0	0	0	24
% Trucks & Buses	8.3	3.9	0	0	3.6	3.2	0	0	0	1.3	33.3	1.6	1.5	0	1.7	0	0	0	0	0	1.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0.2



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N/S: Elsbree Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	5	110	0	0	1	3	0	0	1	76	24	0	21	5	3	0	249
02:15 PM	3	75	4	0	0	1	1	0	2	70	27	0	14	4	4	1	206
02:30 PM	5	80	1	0	5	8	6	1	1	73	26	0	17	5	2	0	230
02:45 PM	3	67	1	1	1	3	2	0	1	87	45	0	27	2	3	4	247
Total	16	332	6	1	7	15	9	1	5	306	122	0	79	16	12	5	932
03:00 PM	6	82	2	0	2	1	1	2	2	82	36	0	35	3	4	1	259
03:15 PM	5	71	2	1	0	3	2	2	3	81	27	1	20	3	3	2	226
03:30 PM	1	75	0	0	1	0	2	0	4	85	23	0	22	1	4	1	219
03:45 PM	3	88	0	1	1	3	3	1	3	101	19	0	17	2	6	0	248
Total	15	316	4	2	4	7	8	5	12	349	105	1	94	9	17	4	952
04:00 PM	7	89	2	2	0	3	2	2	1	75	22	0	17	0	4	1	227
04:15 PM	3	80	0	0	0	3	2	0	2	84	26	0	16	0	5	0	221
04:30 PM	4	119	2	0	0	2	1	0	1	73	20	0	21	1	3	1	248
04:45 PM	5	65	0	0	3	2	0	0	0	77	22	0	12	3	4	0	193
Total	19	353	4	2	3	10	5	2	4	309	90	0	66	4	16	2	889
05:00 PM	6	74	2	0	2	3	3	0	4	79	18	0	40	2	5	0	238
05:15 PM	2	64	1	1	2	1	1	0	1	84	35	0	15	3	10	0	220
05:30 PM	3	71	0	0	1	0	2	1	1	74	32	0	26	2	2	2	217
05:45 PM	3	66	3	0	1	1	2	0	0	71	17	0	18	2	4	0	188
Total	14	275	6	1	6	5	8	1	6	308	102	0	99	9	21	2	863
Grand Total	64	1276	20	6	20	37	30	9	27	1272	419	1	338	38	66	13	3636
Apprch %	4.7	93.4	1.5	0.4	20.8	38.5	31.2	9.4	1.6	74	24.4	0.1	74.3	8.4	14.5	2.9	
Total %	1.8	35.1	0.6	0.2	0.6	1	0.8	0.2	0.7	35	11.5	0	9.3	1	1.8	0.4	
Cars & Peds	60	1258	20	6	20	37	29	9	27	1257	418	1	337	38	66	13	3596
% Cars & Peds	93.8	98.6	100	100	100	100	96.7	100	100	98.8	99.8	100	99.7	100	100	100	98.9
Trucks & Buses	3	15	0	0	0	0	1	0	0	12	0	0	1	0	0	0	32
% Trucks & Buses	4.7	1.2	0	0	0	0	3.3	0	0	0.9	0	0	0.3	0	0	0	0.9
Bikes by Direction	1	3	0	0	0	0	0	0	0	3	1	0	0	0	0	0	8
% Bikes by Direction	1.6	0.2	0	0	0	0	0	0	0	0.2	0.2	0	0	0	0	0	0.2

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:30 PM																					
02:30 PM	5	80	1	0	86	5	8	6	1	20	1	73	26	0	100	17	5	2	0	24	230
02:45 PM	3	67	1	1	72	1	3	2	0	6	1	87	45	0	133	27	2	3	4	36	247
03:00 PM	6	82	2	0	90	2	1	1	2	6	2	82	36	0	120	35	3	4	1	43	259
03:15 PM	5	71	2	1	79	0	3	2	2	7	3	81	27	1	112	20	3	3	2	28	226
Total Volume	19	300	6	2	327	8	15	11	5	39	7	323	134	1	465	99	13	12	7	131	962
% App. Total	5.8	91.7	1.8	0.6		20.5	38.5	28.2	12.8		1.5	69.5	28.8	0.2		75.6	9.9	9.2	5.3		
PHF	.792	.915	.750	.500	.908	.400	.469	.458	.625	.488	.583	.928	.744	.250	.874	.707	.650	.750	.438	.762	.929
Cars & Peds	17	295	6	2	320	8	15	11	5	39	7	317	134	1	459	99	13	12	7	131	949
% Cars & Peds	89.5	98.3	100	100	97.9	100	100	100	100	100	100	98.1	100	100	98.7	100	100	100	100	100	98.6
Trucks & Buses	2	4	0	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
% Trucks & Buses	10.5	1.3	0	0	1.8	0	0	0	0	0	0	1.5	0	0	1.1	0	0	0	0	0	1.1
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Bikes by Direction	0	0.3	0	0	0.3	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0.2

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N/S: Elsbree Street  
E/W: Langley Street  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	3	80	0	0	83	0	3	2	0	5	2	84	26	0	112	16	0	5	0	21	221
04:30 PM	4	119	2	0	125	0	2	1	0	3	1	73	20	0	94	21	1	3	1	26	248
04:45 PM	5	65	0	0	70	3	2	0	0	5	0	77	22	0	99	12	3	4	0	19	193
05:00 PM	6	74	2	0	82	2	3	3	0	8	4	79	18	0	101	40	2	5	0	47	238
Total Volume	18	338	4	0	360	5	10	6	0	21	7	313	86	0	406	89	6	17	1	113	900
% App. Total	5	93.9	1.1	0		23.8	47.6	28.6	0		1.7	77.1	21.2	0		78.8	5.3	15	0.9		
PHF	.750	.710	.500	.000	.720	.417	.833	.500	.000	.656	.438	.932	.827	.000	.906	.556	.500	.850	.250	.601	.907
Cars & Peds	18	334	4	0	356	5	10	5	0	20	7	312	86	0	405	89	6	17	1	113	894
% Cars & Peds	100	98.8	100	0	98.9	100	100	83.3	0	95.2	100	99.7	100	0	99.8	100	100	100	100	100	99.3
Trucks & Buses	0	4	0	0	4	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	6
% Trucks & Buses	0	1.2	0	0	1.1	0	0	16.7	0	4.8	0	0.3	0	0	0.2	0	0	0	0	0	0.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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N/S: Elsbree Street  
E/W: Langley Street  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

Start Time	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	5	109	0	0	1	3	0	0	1	75	24	0	21	5	3	0	247
02:15 PM	3	73	4	0	0	1	1	0	2	69	27	0	14	4	4	1	203
02:30 PM	3	78	1	0	5	8	6	1	1	71	26	0	17	5	2	0	224
02:45 PM	3	65	1	1	1	3	2	0	1	85	45	0	27	2	3	4	243
Total	14	325	6	1	7	15	9	1	5	300	122	0	79	16	12	5	917
03:00 PM	6	82	2	0	2	1	1	2	2	81	36	0	35	3	4	1	258
03:15 PM	5	70	2	1	0	3	2	2	3	80	27	1	20	3	3	2	224
03:30 PM	1	75	0	0	1	0	2	0	4	84	23	0	22	1	4	1	218
03:45 PM	3	86	0	1	1	3	3	1	3	100	19	0	16	2	6	0	244
Total	15	313	4	2	4	7	8	5	12	345	105	1	93	9	17	4	944
04:00 PM	6	88	2	2	0	3	2	2	1	74	22	0	17	0	4	1	224
04:15 PM	3	79	0	0	0	3	2	0	2	84	26	0	16	0	5	0	220
04:30 PM	4	119	2	0	0	2	1	0	1	72	20	0	21	1	3	1	247
04:45 PM	5	63	0	0	3	2	0	0	0	77	22	0	12	3	4	0	191
Total	18	349	4	2	3	10	5	2	4	307	90	0	66	4	16	2	882
05:00 PM	6	73	2	0	2	3	2	0	4	79	18	0	40	2	5	0	236
05:15 PM	2	63	1	1	2	1	1	0	1	83	34	0	15	3	10	0	217
05:30 PM	2	70	0	0	1	0	2	1	1	73	32	0	26	2	2	2	214
05:45 PM	3	65	3	0	1	1	2	0	0	70	17	0	18	2	4	0	186
Total	13	271	6	1	6	5	7	1	6	305	101	0	99	9	21	2	853
Grand Total	60	1258	20	6	20	37	29	9	27	1257	418	1	337	38	66	13	3596
Apprch %	4.5	93.6	1.5	0.4	21.1	38.9	30.5	9.5	1.6	73.8	24.5	0.1	74.2	8.4	14.5	2.9	
Total %	1.7	35	0.6	0.2	0.6	1	0.8	0.3	0.8	35	11.6	0	9.4	1.1	1.8	0.4	

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:30 PM																					
02:30 PM	3	78	1	0	82	5	8	6	1	20	1	71	26	0	98	17	5	2	0	24	224
02:45 PM	3	65	1	1	70	1	3	2	0	6	1	85	45	0	131	27	2	3	4	36	243
03:00 PM	6	82	2	0	90	2	1	1	2	6	2	81	36	0	119	35	3	4	1	43	258
03:15 PM	5	70	2	1	78	0	3	2	2	7	3	80	27	1	111	20	3	3	2	28	224
Total Volume	17	295	6	2	320	8	15	11	5	39	7	317	134	1	459	99	13	12	7	131	949
% App. Total	5.3	92.2	1.9	0.6		20.5	38.5	28.2	12.8		1.5	69.1	29.2	0.2		75.6	9.9	9.2	5.3		
PHF	.708	.899	.750	.500	.889	.400	.469	.458	.625	.488	.583	.932	.744	.250	.876	.707	.650	.750	.438	.762	.920

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM

04:15 PM	3	79	0	0	82	0	3	2	0	5	2	84	26	0	112	16	0	5	0	21	220
04:30 PM	4	119	2	0	125	0	2	1	0	3	1	72	20	0	93	21	1	3	1	26	247
04:45 PM	5	63	0	0	68	3	2	0	0	5	0	77	22	0	99	12	3	4	0	19	191
05:00 PM	6	73	2	0	81	2	3	2	0	7	4	79	18	0	101	40	2	5	0	47	236
Total Volume	18	334	4	0	356	5	10	5	0	20	7	312	86	0	405	89	6	17	1	113	894
% App. Total	5.1	93.8	1.1	0		25	50	25	0		1.7	77	21.2	0		78.8	5.3	15	0.9		
PHF	.750	.702	.500	.000	.712	.417	.833	.625	.000	.714	.438	.929	.827	.000	.904	.556	.500	.850	.250	.601	.905

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
02:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
02:15 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
02:30 PM	2	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5
02:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
Total	2	6	0	0	0	0	0	0	0	5	0	0	0	0	0	0	13
03:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
03:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
03:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
03:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Total	0	2	0	0	0	0	0	0	0	3	0	0	1	0	0	0	6
04:00 PM	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
04:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
04:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	1	4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	7
05:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
05:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Total	0	3	0	0	0	0	1	0	0	2	0	0	0	0	0	0	6
Grand Total	3	15	0	0	0	0	1	0	0	12	0	0	1	0	0	0	32
Apprch %	16.7	83.3	0	0	0	0	100	0	0	100	0	0	100	0	0	0	
Total %	9.4	46.9	0	0	0	0	3.1	0	0	37.5	0	0	3.1	0	0	0	

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
02:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
02:30 PM	2	1	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
02:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total Volume	2	6	0	0	8	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	13
% App. Total	25	75	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.250	.750	.000	.000	.667	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.650

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
04:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	1	4	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
% App. Total	20	80	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.250	.500	.000	.000	.625	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.583

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North				Langley Street From East				Elsbree Street From South				Langley Street From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Total	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
05:30 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	4
Grand Total	1	3	0	0	0	0	0	0	0	3	1	0	0	0	0	0	8
Apprch %	25	75	0	0	0	0	0	0	0	75	25	0	0	0	0	0	
Total %	12.5	37.5	0	0	0	0	0	0	0	37.5	12.5	0	0	0	0	0	

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.500

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

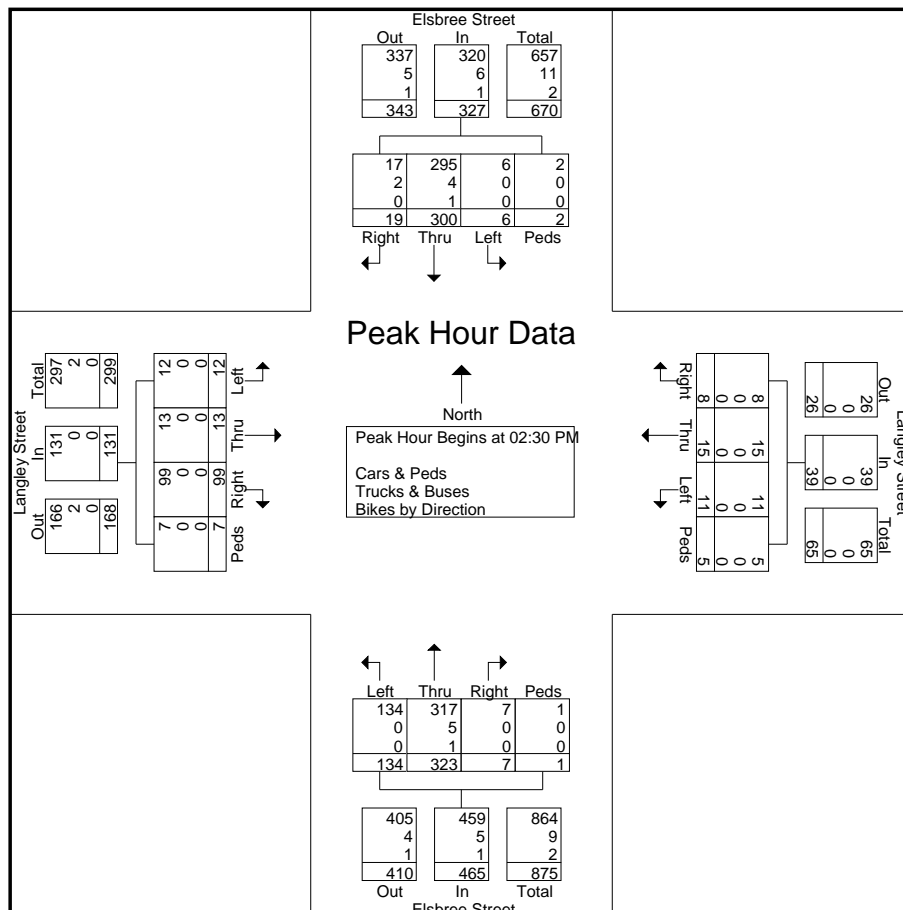
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
05:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	1	1	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
% App. Total	50	50	0	0		0	0	0	0		0	50	50	0		0	0	0	0		
PHF	.250	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.250	.000	.250	.000	.000	.000	.000	.000	.500

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N/S: Elsbree Street  
E/W: Langley Street  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:30 PM																					
02:30 PM	5	80	1	0	86	5	8	6	1	20	1	73	26	0	100	17	5	2	0	24	230
02:45 PM	3	67	1	1	72	1	3	2	0	6	1	87	45	0	133	27	2	3	4	36	247
03:00 PM	6	82	2	0	90	2	1	1	2	6	2	82	36	0	120	35	3	4	1	43	259
03:15 PM	5	71	2	1	79	0	3	2	2	7	3	81	27	1	112	20	3	3	2	28	226
Total Volume	19	300	6	2	327	8	15	11	5	39	7	323	134	1	465	99	13	12	7	131	962
% App. Total	5.8	91.7	1.8	0.6		20.5	38.5	28.2	12.8		1.5	69.5	28.8	0.2		75.6	9.9	9.2	5.3		
PHF	.792	.915	.750	.500	.908	.400	.469	.458	.625	.488	.583	.928	.744	.250	.874	.707	.650	.750	.438	.762	.929
Cars & Peds	17	295	6	2	320	8	15	11	5	39	7	317	134	1	459	99	13	12	7	131	949
% Cars & Peds	89.5	98.3	100	100	97.9	100	100	100	100	100	100	98.1	100	100	98.7	100	100	100	100	100	98.6
Trucks & Buses	2	4	0	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
% Trucks & Buses	10.5	1.3	0	0	1.8	0	0	0	0	0	0	1.5	0	0	1.1	0	0	0	0	0	1.1
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Bikes by Direction	0	0.3	0	0	0.3	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0.2

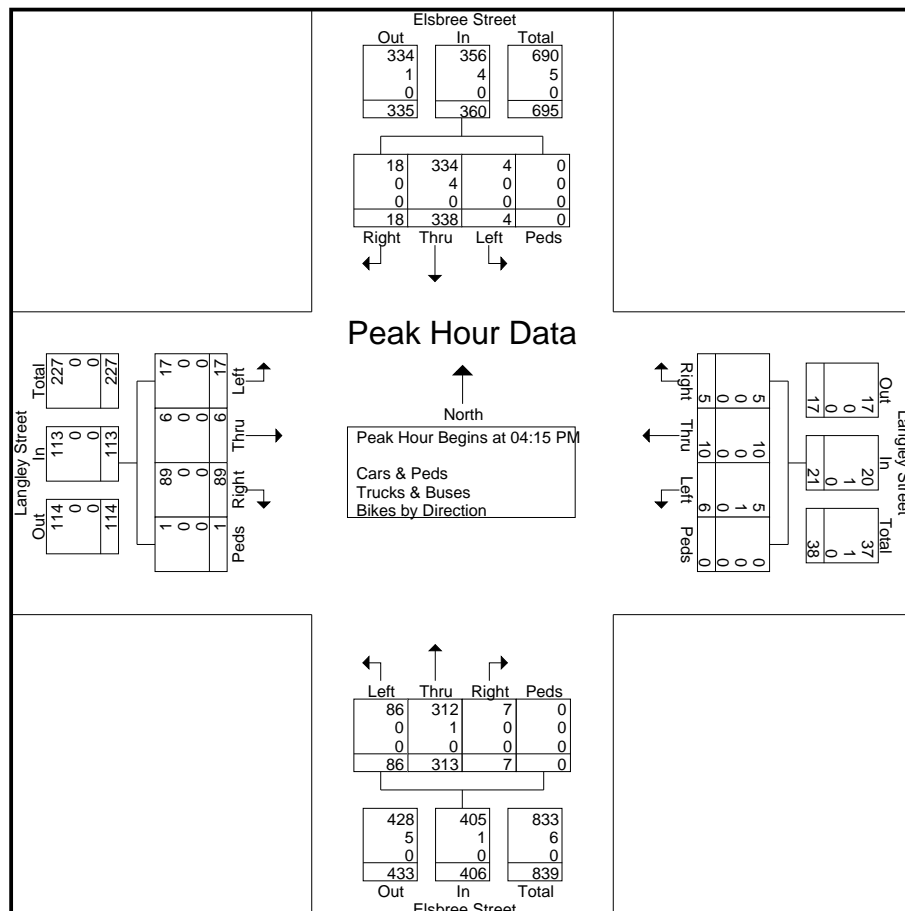


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N/S: Elsbree Street  
E/W: Langley Street  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936AA  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North					Langley Street From East					Elsbree Street From South					Langley Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	3	80	0	0	83	0	3	2	0	5	2	84	26	0	112	16	0	5	0	21	221
04:30 PM	4	119	2	0	125	0	2	1	0	3	1	73	20	0	94	21	1	3	1	26	248
04:45 PM	5	65	0	0	70	3	2	0	0	5	0	77	22	0	99	12	3	4	0	19	193
05:00 PM	6	74	2	0	82	2	3	3	0	8	4	79	18	0	101	40	2	5	0	47	238
Total Volume	18	338	4	0	360	5	10	6	0	21	7	313	86	0	406	89	6	17	1	113	900
% App. Total	5	93.9	1.1	0		23.8	47.6	28.6	0		1.7	77.1	21.2	0		78.8	5.3	15	0.9		
PHF	.750	.710	.500	.000	.720	.417	.833	.500	.000	.656	.438	.932	.827	.000	.906	.556	.500	.850	.250	.601	.907
Cars & Peds	18	334	4	0	356	5	10	5	0	20	7	312	86	0	405	89	6	17	1	113	894
% Cars & Peds	100	98.8	100	0	98.9	100	100	83.3	0	95.2	100	99.7	100	0	99.8	100	100	100	100	100	99.3
Trucks & Buses	0	4	0	0	4	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	6
% Trucks & Buses	0	1.2	0	0	1.1	0	0	16.7	0	4.8	0	0.3	0	0	0.2	0	0	0	0	0	0.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





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N/S: Elsbree Street  
E/W: School Brook Rd./Durfee South Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936B  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	5	70	0	0	1	0	2	3	1	79	42	0	5	0	0	1	209
07:15 AM	1	94	0	3	0	0	0	0	0	213	18	0	2	0	0	1	332
07:30 AM	0	139	0	2	2	0	1	0	0	263	10	0	3	0	0	0	420
07:45 AM	6	105	0	0	0	0	1	0	0	231	58	2	9	0	2	0	414
Total	12	408	0	5	3	0	4	3	1	786	128	2	19	0	2	2	1375
08:00 AM	3	56	0	0	0	0	1	0	0	127	20	0	4	0	0	1	212
08:15 AM	1	71	0	0	0	0	1	1	0	118	9	0	3	0	1	0	205
08:30 AM	0	82	1	0	0	0	0	3	1	103	7	0	4	0	0	0	201
08:45 AM	1	54	0	0	0	0	0	0	1	157	9	0	4	0	0	0	226
Total	5	263	1	0	0	0	2	4	2	505	45	0	15	0	1	1	844
Grand Total	17	671	1	5	3	0	6	7	3	1291	173	2	34	0	3	3	2219
Apprch %	2.4	96.7	0.1	0.7	18.8	0	37.5	43.8	0.2	87.9	11.8	0.1	85	0	7.5	7.5	
Total %	0.8	30.2	0	0.2	0.1	0	0.3	0.3	0.1	58.2	7.8	0.1	1.5	0	0.1	0.1	
Cars & Peds	17	659	1	5	1	0	6	7	2	1277	163	2	34	0	3	3	2180
% Cars & Peds	100	98.2	100	100	33.3	0	100	100	66.7	98.9	94.2	100	100	0	100	100	98.2
Trucks & Buses	0	12	0	0	2	0	0	0	1	13	10	0	0	0	0	0	38
% Trucks & Buses	0	1.8	0	0	66.7	0	0	0	33.3	1	5.8	0	0	0	0	0	1.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	94	0	3	98	0	0	0	0	0	0	213	18	0	231	2	0	0	1	3	332
07:30 AM	0	139	0	2	141	2	0	1	0	3	0	263	10	0	273	3	0	0	0	3	420
07:45 AM	6	105	0	0	111	0	0	1	0	1	0	231	58	2	291	9	0	2	0	11	414
08:00 AM	3	56	0	0	59	0	0	1	0	1	0	127	20	0	147	4	0	0	1	5	212
Total Volume	10	394	0	5	409	2	0	3	0	5	0	834	106	2	942	18	0	2	2	22	1378
% App. Total	2.4	96.3	0	1.2		40	0	60	0		0	88.5	11.3	0.2		81.8	0	9.1	9.1		
PHF	.417	.709	.000	.417	.725	.250	.000	.750	.000	.417	.000	.793	.457	.250	.809	.500	.000	.250	.500	.500	.820
Cars & Peds	10	384	0	5	399	1	0	3	0	4	0	822	96	2	920	18	0	2	2	22	1345
% Cars & Peds	100	97.5	0	100	97.6	50.0	0	100	0	80.0	0	98.6	90.6	100	97.7	100	0	100	100	100	97.6
Trucks & Buses	0	10	0	0	10	1	0	0	0	1	0	11	10	0	21	0	0	0	0	0	32
% Trucks & Buses	0	2.5	0	0	2.4	50.0	0	0	0	20.0	0	1.3	9.4	0	2.2	0	0	0	0	0	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0.1

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936B  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	5	70	0	0	0	0	2	3	0	78	42	0	5	0	0	1	206
07:15 AM	1	92	0	3	0	0	0	0	0	212	18	0	2	0	0	1	329
07:30 AM	0	134	0	2	1	0	1	0	0	256	0	0	3	0	0	0	397
07:45 AM	6	102	0	0	0	0	1	0	0	228	58	2	9	0	2	0	408
Total	12	398	0	5	1	0	4	3	0	774	118	2	19	0	2	2	1340
08:00 AM	3	56	0	0	0	0	1	0	0	126	20	0	4	0	0	1	211
08:15 AM	1	70	0	0	0	0	1	1	0	118	9	0	3	0	1	0	204
08:30 AM	0	82	1	0	0	0	0	3	1	103	7	0	4	0	0	0	201
08:45 AM	1	53	0	0	0	0	0	0	1	156	9	0	4	0	0	0	224
Total	5	261	1	0	0	0	2	4	2	503	45	0	15	0	1	1	840
Grand Total	17	659	1	5	1	0	6	7	2	1277	163	2	34	0	3	3	2180
Apprch %	2.5	96.6	0.1	0.7	7.1	0	42.9	50	0.1	88.4	11.3	0.1	85	0	7.5	7.5	
Total %	0.8	30.2	0	0.2	0	0	0.3	0.3	0.1	58.6	7.5	0.1	1.6	0	0.1	0.1	

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	92	0	3	96	0	0	0	0	0	0	212	18	0	230	2	0	0	1	3	329
07:30 AM	0	134	0	2	136	1	0	1	0	2	0	256	0	0	256	3	0	0	0	3	397
07:45 AM	6	102	0	0	108	0	0	1	0	1	0	228	58	2	288	9	0	2	0	11	408
08:00 AM	3	56	0	0	59	0	0	1	0	1	0	126	20	0	146	4	0	0	1	5	211
Total Volume	10	384	0	5	399	1	0	3	0	4	0	822	96	2	920	18	0	2	2	22	1345
% App. Total	2.5	96.2	0	1.3		25	0	75	0		0	89.3	10.4	0.2		81.8	0	9.1	9.1		
PHF	.417	.716	.000	.417	.733	.250	.000	.750	.000	.500	.000	.803	.414	.250	.799	.500	.000	.250	.500	.500	.824

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N/S: Elsbree Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936B  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	3
07:15 AM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
07:30 AM	0	5	0	0	1	0	0	0	0	7	10	0	0	0	0	0	23
07:45 AM	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5
Total	0	10	0	0	2	0	0	0	1	11	10	0	0	0	0	0	34
08:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Total	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
Grand Total	0	12	0	0	2	0	0	0	1	13	10	0	0	0	0	0	38
Apprch %	0	100	0	0	100	0	0	0	4.2	54.2	41.7	0	0	0	0	0	
Total %	0	31.6	0	0	5.3	0	0	0	2.6	34.2	26.3	0	0	0	0	0	

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	3
07:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
07:30 AM	0	5	0	0	5	1	0	0	0	1	0	7	10	0	17	0	0	0	0	0	23
07:45 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
Total Volume	0	10	0	0	10	2	0	0	0	2	1	11	10	0	22	0	0	0	0	0	34
% App. Total	0	100	0	0		100	0	0	0		4.5	50	45.5	0		0	0	0	0		
PHF	.000	.500	.000	.000	.500	.500	.000	.000	.000	.500	.250	.393	.250	.000	.324	.000	.000	.000	.000	.000	.370

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Client: Pare/T. Thomson

File Name : 04936B  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	

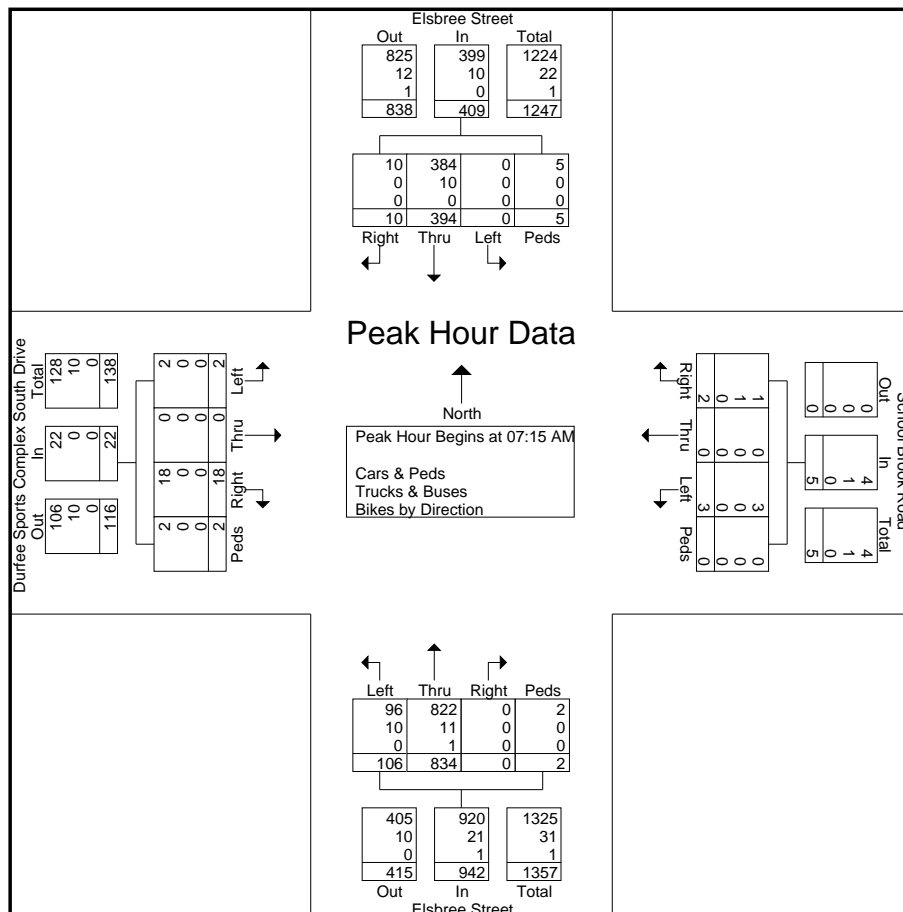
	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% App. Total	0	0	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.250

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Client: Pare/T. Thomson

File Name : 04936B  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	94	0	3	98	0	0	0	0	0	0	213	18	0	231	2	0	0	1	3	332
07:30 AM	0	139	0	2	141	2	0	1	0	3	0	263	10	0	273	3	0	0	0	3	420
07:45 AM	6	105	0	0	111	0	0	1	0	1	0	231	58	2	291	9	0	2	0	11	414
08:00 AM	3	56	0	0	59	0	0	1	0	1	0	127	20	0	147	4	0	0	1	5	212
Total Volume	10	394	0	5	409	2	0	3	0	5	0	834	106	2	942	18	0	2	2	22	1378
% App. Total	2.4	96.3	0	1.2		40	0	60	0		0	88.5	11.3	0.2		81.8	0	9.1	9.1		
PHF	.417	.709	.000	.417	.725	.250	.000	.750	.000	.417	.000	.793	.457	.250	.809	.500	.000	.250	.500	.500	.820
Cars & Peds	10	384	0	5	399	1	0	3	0	4	0	822	96	2	920	18	0	2	2	22	1345
% Cars & Peds	100	97.5	0	100	97.6	50.0	0	100	0	80.0	0	98.6	90.6	100	97.7	100	0	100	100	100	97.6
Trucks & Buses	0	10	0	0	10	1	0	0	0	1	0	11	10	0	21	0	0	0	0	0	32
% Trucks & Buses	0	2.5	0	0	2.4	50.0	0	0	0	20.0	0	1.3	9.4	0	2.2	0	0	0	0	0	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0.1





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N/S: Elsbree Street  
E/W: School Brook Rd./Durfee South Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936BB  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	3	134	0	0	0	0	1	4	1	99	4	0	6	0	0	4	256
02:15 PM	1	84	0	0	0	0	1	0	0	103	27	1	7	0	4	0	228
02:30 PM	3	95	0	0	0	0	2	0	0	100	23	0	18	0	0	2	243
02:45 PM	0	104	1	1	2	0	0	6	0	93	19	2	30	0	6	10	274
Total	7	417	1	1	2	0	4	10	1	395	73	3	61	0	10	16	1001
03:00 PM	0	124	0	1	0	0	0	6	0	111	15	1	29	0	10	7	304
03:15 PM	2	90	1	0	0	0	1	3	2	107	17	2	18	0	0	5	248
03:30 PM	0	99	0	0	1	0	3	0	1	105	10	1	12	0	0	7	239
03:45 PM	0	108	0	0	0	0	1	3	1	122	5	0	5	0	1	9	255
Total	2	421	1	1	1	0	5	12	4	445	47	4	64	0	11	28	1046
04:00 PM	0	109	0	0	1	0	1	0	0	92	5	1	10	0	3	2	224
04:15 PM	0	94	0	0	0	0	2	0	0	113	9	0	7	0	0	2	227
04:30 PM	1	140	0	2	0	0	0	2	1	95	8	0	7	0	0	0	256
04:45 PM	0	72	0	1	1	0	0	2	1	99	11	0	5	0	0	0	192
Total	1	415	0	3	2	0	3	4	2	399	33	1	29	0	3	4	899
05:00 PM	1	113	0	0	0	0	0	0	2	103	11	0	12	0	0	2	244
05:15 PM	1	77	2	0	1	0	0	0	1	113	16	0	20	0	0	0	231
05:30 PM	2	99	0	0	0	0	1	0	0	105	17	0	20	0	0	3	247
05:45 PM	0	77	0	0	0	0	0	0	0	92	14	0	12	0	1	1	197
Total	4	366	2	0	1	0	1	0	3	413	58	0	64	0	1	6	919
Grand Total	14	1619	4	5	6	0	13	26	10	1652	211	8	218	0	25	54	3865
Apprch %	0.9	98.6	0.2	0.3	13.3	0	28.9	57.8	0.5	87.8	11.2	0.4	73.4	0	8.4	18.2	
Total %	0.4	41.9	0.1	0.1	0.2	0	0.3	0.7	0.3	42.7	5.5	0.2	5.6	0	0.6	1.4	
Cars & Peds	14	1600	4	5	6	0	13	26	10	1635	199	8	216	0	24	54	3814
% Cars & Peds	100	98.8	100	100	100	0	100	100	100	99	94.3	100	99.1	0	96	100	98.7
Trucks & Buses	0	15	0	0	0	0	0	0	0	13	12	0	2	0	1	0	43
% Trucks & Buses	0	0.9	0	0	0	0	0	0	0	0.8	5.7	0	0.9	0	4	0	1.1
Bikes by Direction	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	8
% Bikes by Direction	0	0.2	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0.2

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:30 PM																					
02:30 PM	3	95	0	0	98	0	0	2	0	2	0	100	23	0	123	18	0	0	2	20	243
02:45 PM	0	104	1	1	106	2	0	0	6	8	0	93	19	2	114	30	0	6	10	46	274
03:00 PM	0	124	0	1	125	0	0	0	6	6	0	111	15	1	127	29	0	10	7	46	304
03:15 PM	2	90	1	0	93	0	0	1	3	4	2	107	17	2	128	18	0	0	5	23	248
Total Volume	5	413	2	2	422	2	0	3	15	20	2	411	74	5	492	95	0	16	24	135	1069
% App. Total	1.2	97.9	0.5	0.5		10	0	15	75		0.4	83.5	15	1		70.4	0	11.9	17.8		
PHF	.417	.833	.500	.500	.844	.250	.000	.375	.625	.625	.250	.926	.804	.625	.961	.792	.000	.400	.600	.734	.879
Cars & Peds	5	409	2	2	418	2	0	3	15	20	2	404	74	5	485	95	0	15	24	134	1057
% Cars & Peds	100	99.0	100	100	99.1	100	0	100	100	100	100	98.3	100	100	98.6	100	0	93.8	100	99.3	98.9
Trucks & Buses	0	3	0	0	3	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	9
% Trucks & Buses	0	0.7	0	0	0.7	0	0	0	0	0	0	1.2	0	0	1.0	0	0	6.3	0	0.7	0.8
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Bikes by Direction	0	0.2	0	0	0.2	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0.3

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936BB  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	140	0	2	143	0	0	0	2	2	1	95	8	0	104	7	0	0	0	7	256
04:45 PM	0	72	0	1	73	1	0	0	2	3	1	99	11	0	111	5	0	0	0	5	192
05:00 PM	1	113	0	0	114	0	0	0	0	0	2	103	11	0	116	12	0	0	2	14	244
05:15 PM	1	77	2	0	80	1	0	0	0	1	1	113	16	0	130	20	0	0	0	20	231
Total Volume	3	402	2	3	410	2	0	0	4	6	5	410	46	0	461	44	0	0	2	46	923
% App. Total	0.7	98	0.5	0.7		33.3	0	0	66.7		1.1	88.9	10	0		95.7	0	0	4.3		
PHF	.750	.718	.250	.375	.717	.500	.000	.000	.500	.500	.625	.907	.719	.000	.887	.550	.000	.000	.250	.575	.901
Cars & Peds	3	398	2	3	406	2	0	0	4	6	5	406	46	0	457	44	0	0	2	46	915
% Cars & Peds	100	99.0	100	100	99.0	100	0	0	100	100	100	99.0	100	0	99.1	100	0	0	100	100	99.1
Trucks & Buses	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
% Trucks & Buses	0	0.7	0	0	0.7	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0.5
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Bikes by Direction	0	0.2	0	0	0.2	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0.3

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936BB  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	3	132	0	0	0	0	1	4	1	98	4	0	6	0	0	4	253
02:15 PM	1	82	0	0	0	0	1	0	0	102	17	1	6	0	4	0	214
02:30 PM	3	93	0	0	0	0	2	0	0	98	23	0	18	0	0	2	239
02:45 PM	0	104	1	1	2	0	0	6	0	92	19	2	30	0	6	10	273
Total	7	411	1	1	2	0	4	10	1	390	63	3	60	0	10	16	979
03:00 PM	0	123	0	1	0	0	0	6	0	108	15	1	29	0	9	7	299
03:15 PM	2	89	1	0	0	0	1	3	2	106	17	2	18	0	0	5	246
03:30 PM	0	99	0	0	1	0	3	0	1	104	10	1	12	0	0	7	238
03:45 PM	0	105	0	0	0	0	1	3	1	122	5	0	5	0	1	9	252
Total	2	416	1	1	1	0	5	12	4	440	47	4	64	0	10	28	1035
04:00 PM	0	108	0	0	1	0	1	0	0	91	4	1	10	0	3	2	221
04:15 PM	0	93	0	0	0	0	2	0	0	113	9	0	7	0	0	2	226
04:30 PM	1	139	0	2	0	0	0	2	1	94	8	0	7	0	0	0	254
04:45 PM	0	70	0	1	1	0	0	2	1	99	11	0	5	0	0	0	190
Total	1	410	0	3	2	0	3	4	2	397	32	1	29	0	3	4	891
05:00 PM	1	113	0	0	0	0	0	0	2	101	11	0	12	0	0	2	242
05:15 PM	1	76	2	0	1	0	0	0	1	112	16	0	20	0	0	0	229
05:30 PM	2	98	0	0	0	0	1	0	0	104	17	0	20	0	0	3	245
05:45 PM	0	76	0	0	0	0	0	0	0	91	13	0	11	0	1	1	193
Total	4	363	2	0	1	0	1	0	3	408	57	0	63	0	1	6	909
Grand Total	14	1600	4	5	6	0	13	26	10	1635	199	8	216	0	24	54	3814
Apprch %	0.9	98.6	0.2	0.3	13.3	0	28.9	57.8	0.5	88.3	10.7	0.4	73.5	0	8.2	18.4	
Total %	0.4	42	0.1	0.1	0.2	0	0.3	0.7	0.3	42.9	5.2	0.2	5.7	0	0.6	1.4	

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:30 PM																					
02:30 PM	3	93	0	0	96	0	0	2	0	2	0	98	23	0	121	18	0	0	2	20	239
02:45 PM	0	104	1	1	106	2	0	0	6	8	0	92	19	2	113	30	0	6	10	46	273
03:00 PM	0	123	0	1	124	0	0	0	6	6	0	108	15	1	124	29	0	9	7	45	299
03:15 PM	2	89	1	0	92	0	0	1	3	4	2	106	17	2	127	18	0	0	5	23	246
Total Volume	5	409	2	2	418	2	0	3	15	20	2	404	74	5	485	95	0	15	24	134	1057
% App. Total	1.2	97.8	0.5	0.5		10	0	15	75		0.4	83.3	15.3	1		70.9	0	11.2	17.9		
PHF	.417	.831	.500	.500	.843	.250	.000	.375	.625	.625	.250	.935	.804	.625	.955	.792	.000	.417	.600	.728	.884

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	1	139	0	2	142	0	0	0	2	2	1	94	8	0	103	7	0	0	0	7	254
04:45 PM	0	70	0	1	71	1	0	0	2	3	1	99	11	0	111	5	0	0	0	5	190
05:00 PM	1	113	0	0	114	0	0	0	0	0	2	101	11	0	114	12	0	0	2	14	242
05:15 PM	1	76	2	0	79	1	0	0	0	1	1	112	16	0	129	20	0	0	0	20	229
Total Volume	3	398	2	3	406	2	0	0	4	6	5	406	46	0	457	44	0	0	2	46	915
% App. Total	0.7	98	0.5	0.7		33.3	0	0	66.7		1.1	88.8	10.1	0		95.7	0	0	4.3		
PHF	.750	.716	.250	.375	.715	.500	.000	.000	.500	.500	.625	.906	.719	.000	.886	.550	.000	.000	.250	.575	.901

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File Name : 04936BB  
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Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
02:15 PM	0	2	0	0	0	0	0	0	0	1	10	0	1	0	0	0	14
02:30 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
02:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	5	0	0	0	0	0	0	0	5	10	0	1	0	0	0	21
03:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3
03:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
03:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
03:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	4	0	0	0	0	0	0	0	3	0	0	0	0	1	0	8
04:00 PM	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	3
04:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
04:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	4	0	0	0	0	0	0	0	2	1	0	0	0	0	0	7
05:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
05:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
05:45 PM	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	4
Total	0	2	0	0	0	0	0	0	0	3	1	0	1	0	0	0	7
Grand Total	0	15	0	0	0	0	0	0	0	13	12	0	2	0	1	0	43
Apprch %	0	100	0	0	0	0	0	0	0	52	48	0	66.7	0	33.3	0	
Total %	0	34.9	0	0	0	0	0	0	0	30.2	27.9	0	4.7	0	2.3	0	

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
02:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	10	0	11	1	0	0	0	1	14
02:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	5	0	0	5	0	0	0	0	0	0	5	10	0	15	1	0	0	0	1	21
% App. Total	0	100	0	0		0	0	0	0		0	33.3	66.7	0		100	0	0	0		
PHF	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	.625	.250	.000	.341	.250	.000	.000	.000	.250	.375

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	3
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
04:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	4	0	0	4	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	7
% App. Total	0	100	0	0		0	0	0	0		0	66.7	33.3	0		0	0	0	0		
PHF	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.000	.500	.250	.000	.375	.000	.000	.000	.000	.000	.583

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N/S: Elsbree Street  
E/W: School Brook Rd./Durfee South Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936BB  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North				School Brook Road From East				Elsbree Street From South				Durfee Sports Complex South Drive From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
05:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
Grand Total	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	8
Apprch %	0	100	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	50	0	0	0	0	0	0	0	50	0	0	0	0	0	0	

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:15 PM																					
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total Volume	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.375

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.750



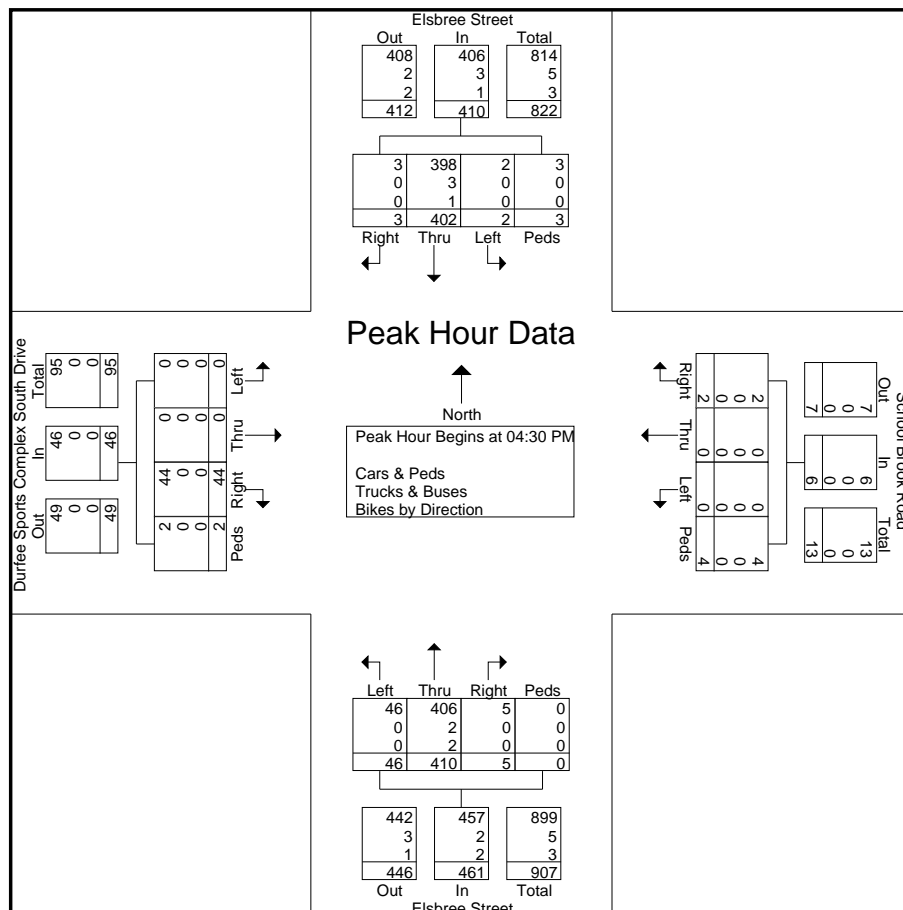


**Transportation Data Corporation**  
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N/S: Elsbree Street  
E/W: School Brook Rd./Durfee South Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936BB  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North					School Brook Road From East					Elsbree Street From South					Durfee Sports Complex South Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	140	0	2	143	0	0	0	2	2	1	95	8	0	104	7	0	0	0	7	256
04:45 PM	0	72	0	1	73	1	0	0	2	3	1	99	11	0	111	5	0	0	0	5	192
05:00 PM	1	113	0	0	114	0	0	0	0	0	2	103	11	0	116	12	0	0	2	14	244
05:15 PM	1	77	2	0	80	1	0	0	0	1	1	113	16	0	130	20	0	0	0	20	231
Total Volume	3	402	2	3	410	2	0	0	4	6	5	410	46	0	461	44	0	0	2	46	923
% App. Total	0.7	98	0.5	0.7		33.3	0	0	66.7		1.1	88.9	10	0		95.7	0	0	4.3		
PHF	.750	.718	.250	.375	.717	.500	.000	.000	.500	.500	.625	.907	.719	.000	.887	.550	.000	.000	.250	.575	.901
Cars & Peds	3	398	2	3	406	2	0	0	4	6	5	406	46	0	457	44	0	0	2	46	915
% Cars & Peds	100	99.0	100	100	99.0	100	0	0	100	100	100	99.0	100	0	99.1	100	0	0	100	100	99.1
Trucks & Buses	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
% Trucks & Buses	0	0.7	0	0	0.7	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0.5
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
% Bikes by Direction	0	0.2	0	0	0.2	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0.3



**Transportation Data Corporation**  
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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936C  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

Start Time	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			Int. Total
	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	
07:00 AM	0	79	0	127	7	51	30	2	0	296
07:15 AM	0	103	3	270	2	44	25	1	0	448
07:30 AM	0	150	0	294	1	66	7	5	0	523
07:45 AM	0	119	1	320	6	52	66	3	0	567
Total	0	451	4	1011	16	213	128	11	0	1834
08:00 AM	0	62	0	154	13	5	22	1	0	257
08:15 AM	2	75	0	130	10	10	10	0	0	237
08:30 AM	1	86	0	120	13	2	14	0	0	236
08:45 AM	0	59	0	166	7	8	7	3	0	250
Total	3	282	0	570	43	25	53	4	0	980
Grand Total	3	733	4	1581	59	238	181	15	0	2814
Apprch %	0.4	99.1	0.5	84.2	3.1	12.7	92.3	7.7	0	
Total %	0.1	26	0.1	56.2	2.1	8.5	6.4	0.5	0	
Cars & Peds	3	721	4	1561	57	238	177	8	0	2769
% Cars & Peds	100	98.4	100	98.7	96.6	100	97.8	53.3	0	98.4
Trucks & Buses	0	12	0	19	1	0	4	7	0	43
% Trucks & Buses	0	1.6	0	1.2	1.7	0	2.2	46.7	0	1.5
Bikes by Direction	0	0	0	1	1	0	0	0	0	2
% Bikes by Direction	0	0	0	0.1	1.7	0	0	0	0	0.1

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	79	0	79	127	7	51	185	30	2	0	32	296
07:15 AM	0	103	3	106	270	2	44	316	25	1	0	26	448
07:30 AM	0	150	0	150	294	1	66	361	7	5	0	12	523
07:45 AM	0	119	1	120	320	6	52	378	66	3	0	69	567
Total Volume	0	451	4	455	1011	16	213	1240	128	11	0	139	1834
% App. Total	0	99.1	0.9		81.5	1.3	17.2		92.1	7.9	0		
PHF	.000	.752	.333	.758	.790	.571	.807	.820	.485	.550	.000	.504	.809
Cars & Peds	0	441	4	445	994	14	213	1221	124	4	0	128	1794
% Cars & Peds	0	97.8	100	97.8	98.3	87.5	100	98.5	96.9	36.4	0	92.1	97.8
Trucks & Buses	0	10	0	10	16	1	0	17	4	7	0	11	38
% Trucks & Buses	0	2.2	0	2.2	1.6	6.3	0	1.4	3.1	63.6	0	7.9	2.1
Bikes by Direction	0	0	0	0	1	1	0	2	0	0	0	0	2
% Bikes by Direction	0	0	0	0	0.1	6.3	0	0.2	0	0	0	0	0.1

**Transportation Data Corporation**  
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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936C  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	79	0	125	6	51	30	2	0	293
07:15 AM	0	101	3	269	2	44	25	0	0	444
07:30 AM	0	145	0	282	0	66	3	0	0	496
07:45 AM	0	116	1	318	6	52	66	2	0	561
Total	0	441	4	994	14	213	124	4	0	1794
08:00 AM	0	62	0	153	13	5	22	1	0	256
08:15 AM	2	74	0	129	10	10	10	0	0	235
08:30 AM	1	86	0	120	13	2	14	0	0	236
08:45 AM	0	58	0	165	7	8	7	3	0	248
Total	3	280	0	567	43	25	53	4	0	975
Grand Total	3	721	4	1561	57	238	177	8	0	2769
Apprch %	0.4	99	0.5	84.1	3.1	12.8	95.7	4.3	0	
Total %	0.1	26	0.1	56.4	2.1	8.6	6.4	0.3	0	

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	79	0	79	125	6	51	182	30	2	0	32	293
07:15 AM	0	101	3	104	269	2	44	315	25	0	0	25	444
07:30 AM	0	145	0	145	282	0	66	348	3	0	0	3	496
07:45 AM	0	116	1	117	318	6	52	376	66	2	0	68	561
Total Volume	0	441	4	445	994	14	213	1221	124	4	0	128	1794
% App. Total	0	99.1	0.9		81.4	1.1	17.4		96.9	3.1	0		
PHF	.000	.760	.333	.767	.781	.583	.807	.812	.470	.500	.000	.471	.799

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City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936C  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

Start Time	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			Int. Total
	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	
07:00 AM	0	0	0	2	1	0	0	0	0	3
07:15 AM	0	2	0	1	0	0	0	1	0	4
07:30 AM	0	5	0	12	0	0	4	5	0	26
07:45 AM	0	3	0	1	0	0	0	1	0	5
Total	0	10	0	16	1	0	4	7	0	38
08:00 AM	0	0	0	1	0	0	0	0	0	1
08:15 AM	0	1	0	1	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	1	0	0	0	0	0	2
Total	0	2	0	3	0	0	0	0	0	5
Grand Total	0	12	0	19	1	0	4	7	0	43
Apprch %	0	100	0	95	5	0	36.4	63.6	0	
Total %	0	27.9	0	44.2	2.3	0	9.3	16.3	0	

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	2	1	0	3	0	0	0	0	3
07:15 AM	0	2	0	2	1	0	0	1	0	1	0	1	4
07:30 AM	0	5	0	5	12	0	0	12	4	5	0	9	26
07:45 AM	0	3	0	3	1	0	0	1	0	1	0	1	5
Total Volume	0	10	0	10	16	1	0	17	4	7	0	11	38
% App. Total	0	100	0		94.1	5.9	0		36.4	63.6	0		
PHF	.000	.500	.000	.500	.333	.250	.000	.354	.250	.350	.000	.306	.365



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City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936C  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	1	0	0	0	0	1
07:45 AM	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	1	0	0	0	0	2
Apprch %	0	0	0	50	50	0	0	0	0	
Total %	0	0	0	50	50	0	0	0	0	

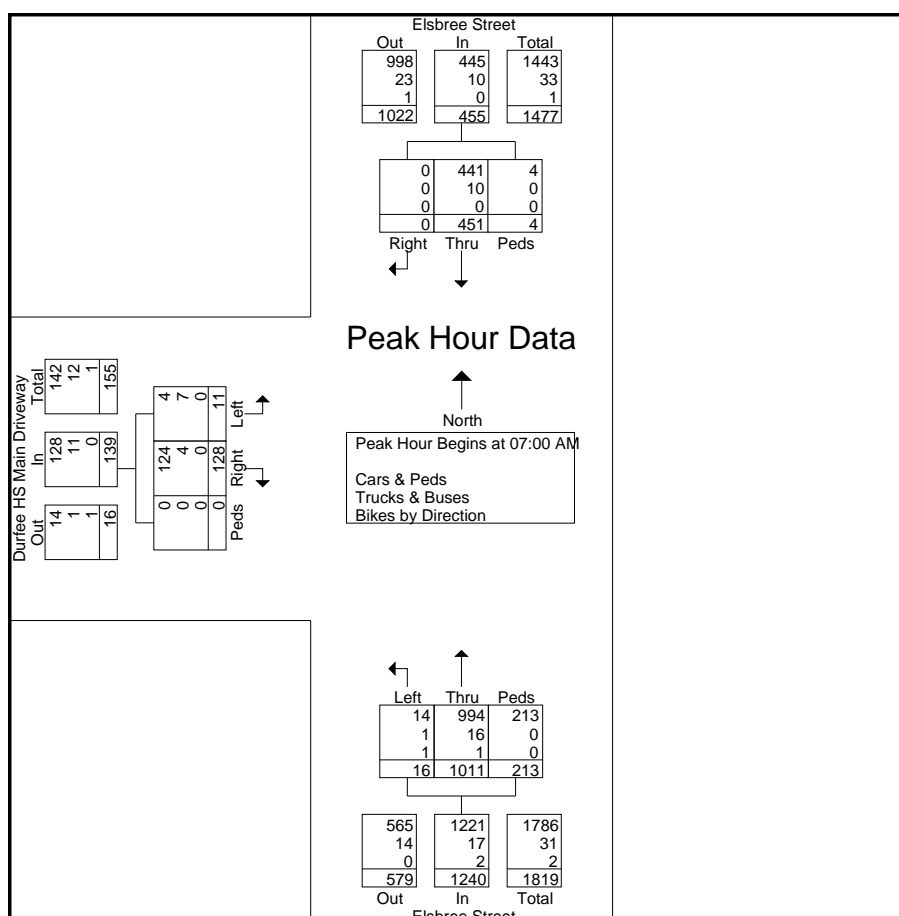
	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	0	0	0	1	1	0	2	0	0	0	0	2
% App. Total	0	0	0		50	50	0		0	0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.000	.000	.500

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N/S: Elsbree Street  
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File Name : 04936C  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	79	0	79	127	7	51	185	30	2	0	32	296
07:15 AM	0	103	3	106	270	2	44	316	25	1	0	26	448
07:30 AM	0	150	0	150	294	1	66	361	7	5	0	12	523
07:45 AM	0	119	1	120	320	6	52	378	66	3	0	69	567
Total Volume	0	451	4	455	1011	16	213	1240	128	11	0	139	1834
% App. Total	0	99.1	0.9		81.5	1.3	17.2		92.1	7.9	0		
PHF	.000	.752	.333	.758	.790	.571	.807	.820	.485	.550	.000	.504	.809
Cars & Peds	0	441	4	445	994	14	213	1221	124	4	0	128	1794
% Cars & Peds	0	97.8	100	97.8	98.3	87.5	100	98.5	96.9	36.4	0	92.1	97.8
Trucks & Buses	0	10	0	10	16	1	0	17	4	7	0	11	38
% Trucks & Buses	0	2.2	0	2.2	1.6	6.3	0	1.4	3.1	63.6	0	7.9	2.1
Bikes by Direction	0	0	0	0	1	1	0	2	0	0	0	0	2
% Bikes by Direction	0	0	0	0	0.1	6.3	0	0.2	0	0	0	0	0.1



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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
02:00 PM	0	142	2	111	4	1	8	1	0	269
02:15 PM	0	99	0	160	5	2	4	0	0	270
02:30 PM	1	120	5	120	1	34	0	0	2	283
02:45 PM	0	138	7	134	2	225	32	0	3	541
Total	1	499	14	525	12	262	44	1	5	1363
03:00 PM	2	158	13	114	10	29	31	0	1	358
03:15 PM	0	117	3	118	3	13	12	1	2	269
03:30 PM	0	110	0	124	4	16	18	2	3	277
03:45 PM	1	115	2	133	2	9	19	1	5	287
Total	3	500	18	489	19	67	80	4	11	1191
04:00 PM	1	130	0	102	4	2	11	1	3	254
04:15 PM	0	108	3	129	1	4	4	0	0	249
04:30 PM	0	147	0	112	2	3	5	0	0	269
04:45 PM	0	75	0	128	0	0	3	0	0	206
Total	1	460	3	471	7	9	23	1	3	978
05:00 PM	0	132	0	136	0	1	4	0	2	275
05:15 PM	0	106	0	131	2	2	2	0	0	243
05:30 PM	0	124	2	129	1	4	8	0	0	268
05:45 PM	1	91	0	106	2	0	2	1	1	204
Total	1	453	2	502	5	7	16	1	3	990
Grand Total	6	1912	37	1987	43	345	163	7	22	4522
Apprch %	0.3	97.8	1.9	83.7	1.8	14.5	84.9	3.6	11.5	
Total %	0.1	42.3	0.8	43.9	1	7.6	3.6	0.2	0.5	
Cars & Peds	5	1888	37	1958	41	345	144	7	22	4447
% Cars & Peds	83.3	98.7	100	98.5	95.3	100	88.3	100	100	98.3
Trucks & Buses	0	17	0	25	1	0	12	0	0	55
% Trucks & Buses	0	0.9	0	1.3	2.3	0	7.4	0	0	1.2
Bikes by Direction	1	7	0	4	1	0	7	0	0	20
% Bikes by Direction	16.7	0.4	0	0.2	2.3	0	4.3	0	0	0.4

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	0	99	0	99	160	5	2	167	4	0	0	4	270
02:30 PM	1	120	5	126	120	1	34	155	0	0	2	2	283
02:45 PM	0	138	7	145	134	2	225	361	32	0	3	35	541
03:00 PM	2	158	13	173	114	10	29	153	31	0	1	32	358
Total Volume	3	515	25	543	528	18	290	836	67	0	6	73	1452
% App. Total	0.6	94.8	4.6		63.2	2.2	34.7		91.8	0	8.2		
PHF	.375	.815	.481	.785	.825	.450	.322	.579	.523	.000	.500	.521	.671
Cars & Peds	2	507	25	534	510	17	290	817	50	0	6	56	1407
% Cars & Peds	66.7	98.4	100	98.3	96.6	94.4	100	97.7	74.6	0	100	76.7	96.9
Trucks & Buses	0	5	0	5	15	0	0	15	10	0	0	10	30
% Trucks & Buses	0	1.0	0	0.9	2.8	0	0	1.8	14.9	0	0	13.7	2.1
Bikes by Direction	1	3	0	4	3	1	0	4	7	0	0	7	15
% Bikes by Direction	33.3	0.6	0	0.7	0.6	5.6	0	0.5	10.4	0	0	9.6	1.0

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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	108	3	111	129	1	4	134	4	0	0	4	249
04:30 PM	0	147	0	147	112	2	3	117	5	0	0	5	269
04:45 PM	0	75	0	75	128	0	0	128	3	0	0	3	206
05:00 PM	0	132	0	132	136	0	1	137	4	0	2	6	275
Total Volume	0	462	3	465	505	3	8	516	16	0	2	18	999
% App. Total	0	99.4	0.6		97.9	0.6	1.6		88.9	0	11.1		
PHF	.000	.786	.250	.791	.928	.375	.500	.942	.800	.000	.250	.750	.908
Cars & Peds	0	458	3	461	502	3	8	513	16	0	2	18	992
% Cars & Peds	0	99.1	100	99.1	99.4	100	100	99.4	100	0	100	100	99.3
Trucks & Buses	0	3	0	3	2	0	0	2	0	0	0	0	5
% Trucks & Buses	0	0.6	0	0.6	0.4	0	0	0.4	0	0	0	0	0.5
Bikes by Direction	0	1	0	1	1	0	0	1	0	0	0	0	2
% Bikes by Direction	0	0.2	0	0.2	0.2	0	0	0.2	0	0	0	0	0.2

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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

Start Time	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			Int. Total
	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	
02:00 PM	0	139	2	110	3	1	7	1	0	263
02:15 PM	0	94	0	149	5	2	4	0	0	254
02:30 PM	0	118	5	118	0	34	0	0	2	277
02:45 PM	0	138	7	132	2	225	16	0	3	523
Total	0	489	14	509	10	262	27	1	5	1317
03:00 PM	2	157	13	111	10	29	30	0	1	353
03:15 PM	0	116	3	117	3	13	12	1	2	267
03:30 PM	0	110	0	123	4	16	17	2	3	275
03:45 PM	1	112	2	133	2	9	19	1	5	284
Total	3	495	18	484	19	67	78	4	11	1179
04:00 PM	1	129	0	100	4	2	11	1	3	251
04:15 PM	0	107	3	129	1	4	4	0	0	248
04:30 PM	0	146	0	111	2	3	5	0	0	267
04:45 PM	0	73	0	128	0	0	3	0	0	204
Total	1	455	3	468	7	9	23	1	3	970
05:00 PM	0	132	0	134	0	1	4	0	2	273
05:15 PM	0	105	0	131	2	2	2	0	0	242
05:30 PM	0	123	2	128	1	4	8	0	0	266
05:45 PM	1	89	0	104	2	0	2	1	1	200
Total	1	449	2	497	5	7	16	1	3	981
Grand Total	5	1888	37	1958	41	345	144	7	22	4447
Apprch %	0.3	97.8	1.9	83.5	1.7	14.7	83.2	4	12.7	
Total %	0.1	42.5	0.8	44	0.9	7.8	3.2	0.2	0.5	

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:30 PM													
02:30 PM	0	118	5	123	118	0	34	152	0	0	2	2	277
02:45 PM	0	138	7	145	132	2	225	359	16	0	3	19	523
03:00 PM	2	157	13	172	111	10	29	150	30	0	1	31	353
03:15 PM	0	116	3	119	117	3	13	133	12	1	2	15	267
Total Volume	2	529	28	559	478	15	301	794	58	1	8	67	1420
% App. Total	0.4	94.6	5		60.2	1.9	37.9		86.6	1.5	11.9		
PHF	.250	.842	.538	.813	.905	.375	.334	.553	.483	.250	.667	.540	.679

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	107	3	110	129	1	4	134	4	0	0	4	248
04:30 PM	0	146	0	146	111	2	3	116	5	0	0	5	267
04:45 PM	0	73	0	73	128	0	0	128	3	0	0	3	204
05:00 PM	0	132	0	132	134	0	1	135	4	0	2	6	273
Total Volume	0	458	3	461	502	3	8	513	16	0	2	18	992
% App. Total	0	99.3	0.7		97.9	0.6	1.6		88.9	0	11.1		
PHF	.000	.784	.250	.789	.937	.375	.500	.950	.800	.000	.250	.750	.908



**Transportation Data Corporation**

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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

Start Time	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			Int. Total
	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	
02:00 PM	0	2	0	1	1	0	1	0	0	5
02:15 PM	0	3	0	11	0	0	0	0	0	14
02:30 PM	0	1	0	2	0	0	0	0	0	3
02:45 PM	0	0	0	1	0	0	10	0	0	11
Total	0	6	0	15	1	0	11	0	0	33
03:00 PM	0	1	0	1	0	0	0	0	0	2
03:15 PM	0	1	0	1	0	0	0	0	0	2
03:30 PM	0	0	0	1	0	0	1	0	0	2
03:45 PM	0	2	0	0	0	0	0	0	0	2
Total	0	4	0	3	0	0	1	0	0	8
04:00 PM	0	1	0	2	0	0	0	0	0	3
04:15 PM	0	1	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	1	0	0	0	0	0	1
04:45 PM	0	2	0	0	0	0	0	0	0	2
Total	0	4	0	3	0	0	0	0	0	7
05:00 PM	0	0	0	1	0	0	0	0	0	1
05:15 PM	0	1	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	1	0	0	0	0	0	1
05:45 PM	0	2	0	2	0	0	0	0	0	4
Total	0	3	0	4	0	0	0	0	0	7
Grand Total	0	17	0	25	1	0	12	0	0	55
Apprch %	0	100	0	96.2	3.8	0	100	0	0	
Total %	0	30.9	0	45.5	1.8	0	21.8	0	0	

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	0	2	0	2	1	1	0	2	1	0	0	1	5
02:15 PM	0	3	0	3	11	0	0	11	0	0	0	0	14
02:30 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
02:45 PM	0	0	0	0	1	0	0	1	10	0	0	10	11
Total Volume	0	6	0	6	15	1	0	16	11	0	0	11	33
% App. Total	0	100	0		93.8	6.2	0		100	0	0		
PHF	.000	.500	.000	.500	.341	.250	.000	.364	.275	.000	.000	.275	.589

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
04:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
04:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Volume	0	4	0	4	3	0	0	3	0	0	0	0	7
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.500	.000	.500	.375	.000	.000	.375	.000	.000	.000	.000	.583

**Transportation Data Corporation**

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N/S: Elsbree Street  
W: Durfee HS Main Driveway  
City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

Start Time	Elsbree Street From North			Elsbree Street From South			Durfee HS Main Driveway From West			Int. Total
	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	
02:00 PM	0	1	0	0	0	0	0	0	0	1
02:15 PM	0	2	0	0	0	0	0	0	0	2
02:30 PM	1	1	0	0	1	0	0	0	0	3
02:45 PM	0	0	0	1	0	0	6	0	0	7
Total	1	4	0	1	1	0	6	0	0	13
03:00 PM	0	0	0	2	0	0	1	0	0	3
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	1	0	0	0	0	0	0	0	1
Total	0	1	0	2	0	0	1	0	0	4
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	1	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	2
Grand Total	1	7	0	4	1	0	7	0	0	20
Apprch %	12.5	87.5	0	80	20	0	100	0	0	
Total %	5	35	0	20	5	0	35	0	0	

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
02:30 PM	1	1	0	2	0	1	0	1	0	0	0	0	3
02:45 PM	0	0	0	0	1	0	0	1	6	0	0	6	7
03:00 PM	0	0	0	0	2	0	0	2	1	0	0	1	3
Total Volume	1	3	0	4	3	1	0	4	7	0	0	7	15
% App. Total	25	75	0		75	25	0		100	0	0		
PHF	.250	.375	.000	.500	.375	.250	.000	.500	.292	.000	.000	.292	.536

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

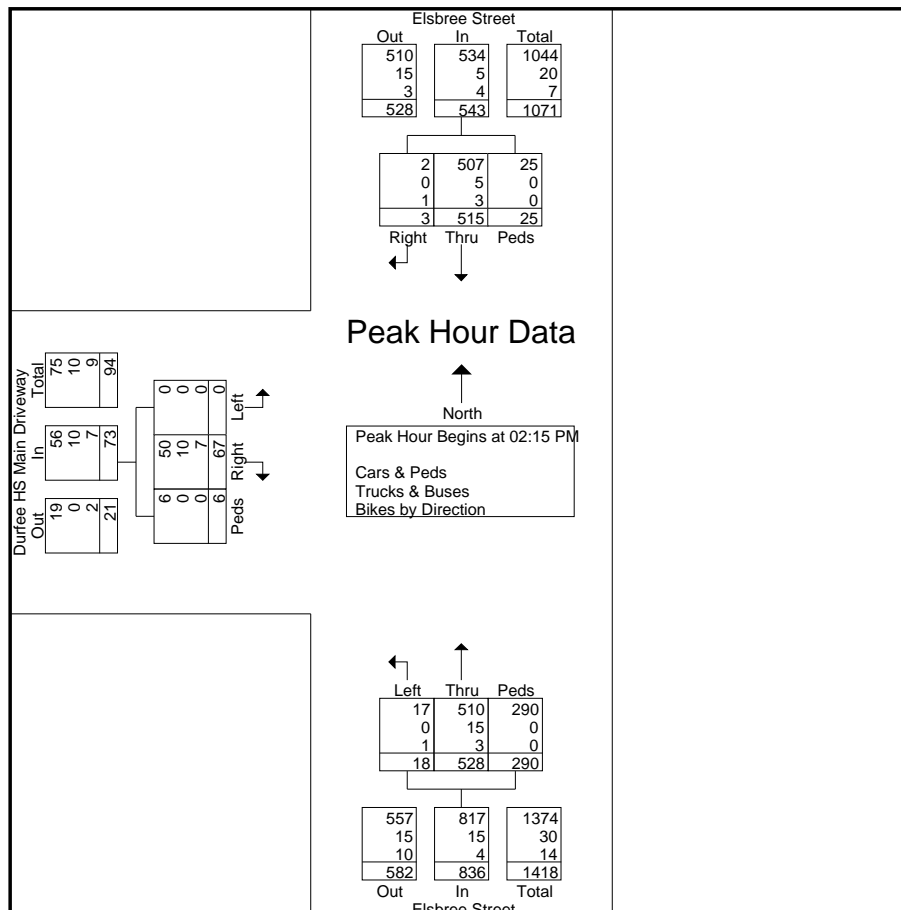
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	1	0	1	1	0	0	1	0	0	0	0	2
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.500

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City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	0	99	0	99	160	5	2	167	4	0	0	4	270
02:30 PM	1	120	5	126	120	1	34	155	0	0	2	2	283
02:45 PM	0	138	7	145	134	2	225	361	32	0	3	35	541
03:00 PM	2	158	13	173	114	10	29	153	31	0	1	32	358
Total Volume	3	515	25	543	528	18	290	836	67	0	6	73	1452
% App. Total	0.6	94.8	4.6		63.2	2.2	34.7		91.8	0	8.2		
PHF	.375	.815	.481	.785	.825	.450	.322	.579	.523	.000	.500	.521	.671
Cars & Peds	2	507	25	534	510	17	290	817	50	0	6	56	1407
% Cars & Peds	66.7	98.4	100	98.3	96.6	94.4	100	97.7	74.6	0	100	76.7	96.9
Trucks & Buses	0	5	0	5	15	0	0	15	10	0	0	10	30
% Trucks & Buses	0	1.0	0	0.9	2.8	0	0	1.8	14.9	0	0	13.7	2.1
Bikes by Direction	1	3	0	4	3	1	0	4	7	0	0	7	15
% Bikes by Direction	33.3	0.6	0	0.7	0.6	5.6	0	0.5	10.4	0	0	9.6	1.0

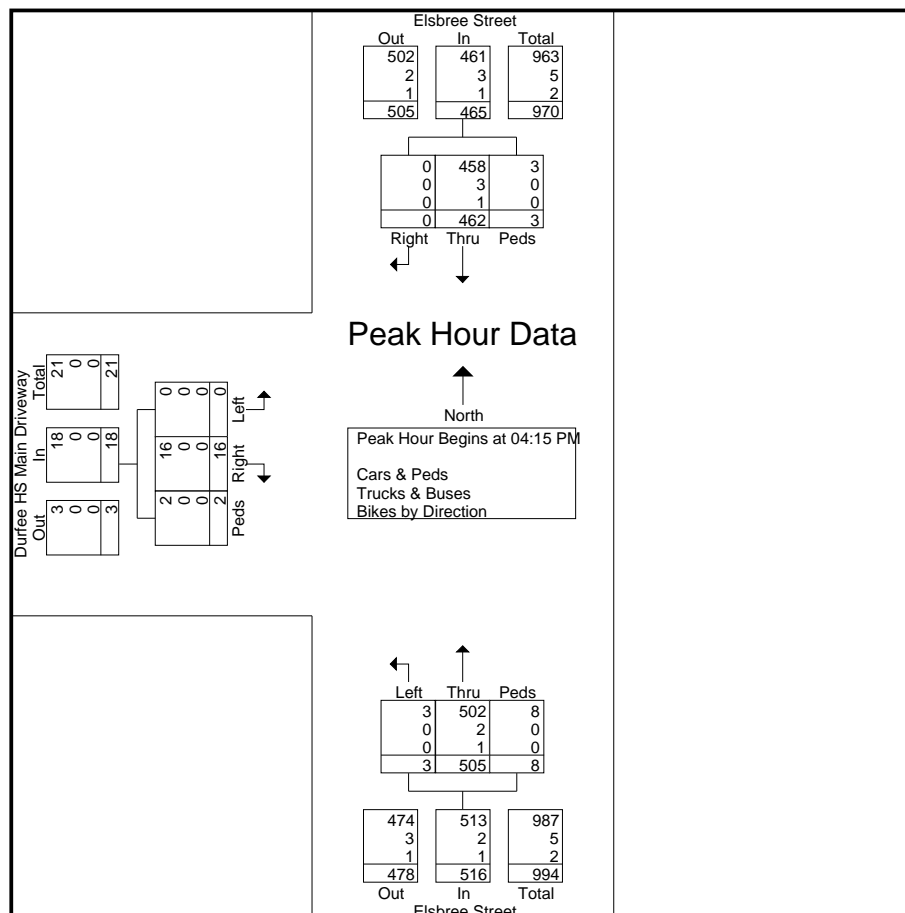


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City, State: Fall River, MA  
Client: Pare/T.Thomson

File Name : 04936CC  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North				Elsbree Street From South				Durfee HS Main Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	108	3	111	129	1	4	134	4	0	0	4	249
04:30 PM	0	147	0	147	112	2	3	117	5	0	0	5	269
04:45 PM	0	75	0	75	128	0	0	128	3	0	0	3	206
05:00 PM	0	132	0	132	136	0	1	137	4	0	2	6	275
Total Volume	0	462	3	465	505	3	8	516	16	0	2	18	999
% App. Total	0	99.4	0.6		97.9	0.6	1.6		88.9	0	11.1		
PHF	.000	.786	.250	.791	.928	.375	.500	.942	.800	.000	.250	.750	.908
Cars & Peds	0	458	3	461	502	3	8	513	16	0	2	18	992
% Cars & Peds	0	99.1	100	99.1	99.4	100	100	99.4	100	0	100	100	99.3
Trucks & Buses	0	3	0	3	2	0	0	2	0	0	0	0	5
% Trucks & Buses	0	0.6	0	0.6	0.4	0	0	0.4	0	0	0	0	0.5
Bikes by Direction	0	1	0	1	1	0	0	1	0	0	0	0	2
% Bikes by Direction	0	0.2	0	0.2	0.2	0	0	0.2	0	0	0	0	0.2



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N/S: Elsbree Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936D  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	17	13	77	1	109	68	4	0	0	1	0	0	9	88	50	4	441
07:15 AM	29	25	102	1	186	119	5	0	0	0	0	0	10	111	74	9	671
07:30 AM	25	39	87	9	208	160	8	0	0	0	0	0	18	98	77	19	748
07:45 AM	56	45	108	2	180	125	6	1	0	0	0	1	15	128	93	3	763
Total	127	122	374	13	683	472	23	1	0	1	0	1	52	425	294	35	2623
08:00 AM	24	27	62	1	91	121	9	1	0	0	0	1	12	105	39	1	494
08:15 AM	29	15	49	0	68	122	15	0	0	0	0	0	14	102	32	1	447
08:30 AM	23	18	45	0	80	101	9	0	0	0	0	0	15	126	62	0	479
08:45 AM	25	16	43	0	103	85	12	1	0	0	0	0	10	89	47	0	431
Total	101	76	199	1	342	429	45	2	0	0	0	1	51	422	180	2	1851
Grand Total	228	198	573	14	1025	901	68	3	0	1	0	2	103	847	474	37	4474
Apprch %	22.5	19.5	56.6	1.4	51.3	45.1	3.4	0.2	0	33.3	0	66.7	7	58	32.4	2.5	
Total %	5.1	4.4	12.8	0.3	22.9	20.1	1.5	0.1	0	0	0	0	2.3	18.9	10.6	0.8	
Cars & Peds	226	197	552	14	1014	896	68	3	0	0	0	2	101	833	462	37	4405
% Cars & Peds	99.1	99.5	96.3	100	98.9	99.4	100	100	0	0	0	100	98.1	98.3	97.5	100	98.5
Trucks & Buses	2	1	21	0	11	5	0	0	0	0	0	0	2	14	12	0	68
% Trucks & Buses	0.9	0.5	3.7	0	1.1	0.6	0	0	0	0	0	0	1.9	1.7	2.5	0	1.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	29	25	102	1	157	186	119	5	0	310	0	0	0	0	0	10	111	74	9	204	671
07:30 AM	25	39	87	9	160	208	160	8	0	376	0	0	0	0	0	18	98	77	19	212	748
07:45 AM	56	45	108	2	211	180	125	6	1	312	0	0	0	1	1	15	128	93	3	239	763
08:00 AM	24	27	62	1	114	91	121	9	1	222	0	0	0	1	1	12	105	39	1	157	494
Total Volume	134	136	359	13	642	665	525	28	2	1220	0	0	0	2	2	55	442	283	32	812	2676
% App. Total	20.9	21.2	55.9	2		54.5	43	2.3	0.2		0	0	0	100		6.8	54.4	34.9	3.9		
PHF	.598	.756	.831	.361	.761	.799	.820	.778	.500	.811	.000	.000	.000	.500	.500	.764	.863	.761	.421	.849	.877
Cars & Peds	133	135	345	13	626	657	521	28	2	1208	0	0	0	2	2	54	434	271	32	791	2627
% Cars & Peds	99.3	99.3	96.1	100	97.5	98.8	99.2	100	100	99.0	0	0	0	100	100	98.2	98.2	95.8	100	97.4	98.2
Trucks & Buses	1	1	14	0	16	8	4	0	0	12	0	0	0	0	0	1	8	12	0	21	49
% Trucks & Buses	0.7	0.7	3.9	0	2.5	1.2	0.8	0	0	1.0	0	0	0	0	0	1.8	1.8	4.2	0	2.6	1.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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N/S: Elsbree Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936D  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	17	13	76	1	109	68	4	0	0	0	0	0	8	86	50	4	436
07:15 AM	29	25	101	1	184	117	5	0	0	0	0	0	10	110	69	9	660
07:30 AM	24	38	79	9	206	159	8	0	0	0	0	0	18	98	70	19	728
07:45 AM	56	45	104	2	179	125	6	1	0	0	0	1	15	124	93	3	754
Total	126	121	360	13	678	469	23	1	0	0	0	1	51	418	282	35	2578
08:00 AM	24	27	61	1	88	120	9	1	0	0	0	1	11	102	39	1	485
08:15 AM	28	15	47	0	68	121	15	0	0	0	0	0	14	102	32	1	443
08:30 AM	23	18	44	0	79	101	9	0	0	0	0	0	15	124	62	0	475
08:45 AM	25	16	40	0	101	85	12	1	0	0	0	0	10	87	47	0	424
Total	100	76	192	1	336	427	45	2	0	0	0	1	50	415	180	2	1827
Grand Total	226	197	552	14	1014	896	68	3	0	0	0	2	101	833	462	37	4405
Apprch %	22.9	19.9	55.8	1.4	51.2	45.2	3.4	0.2	0	0	0	100	7	58.1	32.2	2.6	
Total %	5.1	4.5	12.5	0.3	23	20.3	1.5	0.1	0	0	0	0	2.3	18.9	10.5	0.8	

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	29	25	101	1	156	184	117	5	0	306	0	0	0	0	0	10	110	69	9	198	660
07:30 AM	24	38	79	9	150	206	159	8	0	373	0	0	0	0	0	18	98	70	19	205	728
07:45 AM	56	45	104	2	207	179	125	6	1	311	0	0	0	1	1	15	124	93	3	235	754
08:00 AM	24	27	61	1	113	88	120	9	1	218	0	0	0	1	1	11	102	39	1	153	485
Total Volume	133	135	345	13	626	657	521	28	2	1208	0	0	0	2	2	54	434	271	32	791	2627
% App. Total	21.2	21.6	55.1	2.1		54.4	43.1	2.3	0.2		0	0	0	100		6.8	54.9	34.3	4		
PHF	.594	.750	.829	.361	.756	.797	.819	.778	.500	.810	.000	.000	.000	.500	.500	.750	.875	.728	.421	.841	.871

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936D  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	2	0	0	4
07:15 AM	0	0	1	0	2	2	0	0	0	0	0	0	0	1	5	0	11
07:30 AM	1	1	8	0	2	1	0	0	0	0	0	0	0	0	7	0	20
07:45 AM	0	0	4	0	1	0	0	0	0	0	0	0	0	4	0	0	9
Total	1	1	14	0	5	3	0	0	0	0	0	0	1	7	12	0	44
08:00 AM	0	0	1	0	3	1	0	0	0	0	0	0	1	3	0	0	9
08:15 AM	1	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	4
08:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	4
08:45 AM	0	0	3	0	2	0	0	0	0	0	0	0	0	2	0	0	7
Total	1	0	7	0	6	2	0	0	0	0	0	0	1	7	0	0	24
Grand Total	2	1	21	0	11	5	0	0	0	0	0	0	2	14	12	0	68
Apprch %	8.3	4.2	87.5	0	68.8	31.2	0	0	0	0	0	0	7.1	50	42.9	0	
Total %	2.9	1.5	30.9	0	16.2	7.4	0	0	0	0	0	0	2.9	20.6	17.6	0	

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	1	0	1	2	2	0	0	4	0	0	0	0	0	0	1	5	0	6	11
07:30 AM	1	1	8	0	10	2	1	0	0	3	0	0	0	0	0	0	0	7	0	7	20
07:45 AM	0	0	4	0	4	1	0	0	0	1	0	0	0	0	0	0	4	0	0	4	9
08:00 AM	0	0	1	0	1	3	1	0	0	4	0	0	0	0	0	1	3	0	0	4	9
Total Volume	1	1	14	0	16	8	4	0	0	12	0	0	0	0	0	1	8	12	0	21	49
% App. Total	6.2	6.2	87.5	0		66.7	33.3	0	0		0	0	0	0		4.8	38.1	57.1	0		
PHF	.250	.250	.438	.000	.400	.667	.500	.000	.000	.750	.000	.000	.000	.000	.000	.250	.500	.429	.000	.750	.613

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Client: Pare/T. Thomson

File Name : 04936D  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	

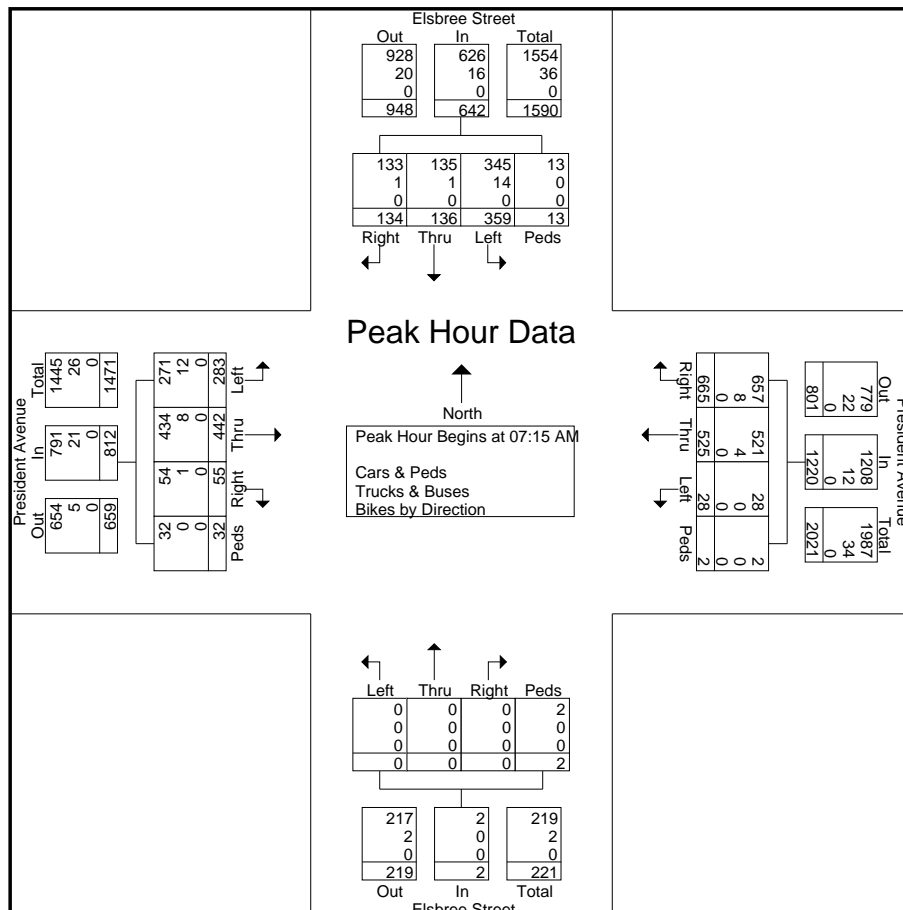
	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% App. Total	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.250

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Client: Pare/T. Thomson

File Name : 04936D  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	29	25	102	1	157	186	119	5	0	310	0	0	0	0	0	10	111	74	9	204	671
07:30 AM	25	39	87	9	160	208	160	8	0	376	0	0	0	0	0	18	98	77	19	212	748
07:45 AM	56	45	108	2	211	180	125	6	1	312	0	0	0	1	1	15	128	93	3	239	763
08:00 AM	24	27	62	1	114	91	121	9	1	222	0	0	0	1	1	12	105	39	1	157	494
Total Volume	134	136	359	13	642	665	525	28	2	1220	0	0	0	2	2	55	442	283	32	812	2676
% App. Total	20.9	21.2	55.9	2		54.5	43	2.3	0.2		0	0	0	100		6.8	54.4	34.9	3.9		
PHF	.598	.756	.831	.361	.761	.799	.820	.778	.500	.811	.000	.000	.000	.500	.500	.764	.863	.761	.421	.849	.877
Cars & Peds	133	135	345	13	626	657	521	28	2	1208	0	0	0	2	2	54	434	271	32	791	2627
% Cars & Peds	99.3	99.3	96.1	100	97.5	98.8	99.2	100	100	99.0	0	0	0	100	100	98.2	98.2	95.8	100	97.4	98.2
Trucks & Buses	1	1	14	0	16	8	4	0	0	12	0	0	0	0	0	1	8	12	0	21	49
% Trucks & Buses	0.7	0.7	3.9	0	2.5	1.2	0.8	0	0	1.0	0	0	0	0	0	1.8	1.8	4.2	0	2.6	1.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936DD  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	30	29	129	3	69	68	12	0	0	0	0	0	5	120	38	3	506
02:15 PM	34	13	79	3	65	99	16	2	0	0	0	0	7	117	45	2	482
02:30 PM	22	13	72	3	63	130	14	0	0	0	0	0	5	127	49	1	499
02:45 PM	35	44	94	8	69	104	28	7	0	0	0	0	13	120	41	34	597
Total	121	99	374	17	266	401	70	9	0	0	0	0	30	484	173	40	2084
03:00 PM	33	48	118	5	75	81	18	1	0	0	0	0	22	161	49	1	612
03:15 PM	40	39	121	2	70	107	24	1	0	0	0	0	11	123	41	2	581
03:30 PM	27	29	121	0	87	100	25	0	1	0	0	0	25	133	56	3	607
03:45 PM	28	20	88	1	126	89	26	0	0	0	0	0	9	147	49	0	583
Total	128	136	448	8	358	377	93	2	1	0	0	0	67	564	195	6	2383
04:00 PM	29	34	98	3	86	94	21	0	0	0	0	0	17	164	52	0	598
04:15 PM	33	23	100	2	88	86	20	0	0	0	0	0	12	138	50	3	555
04:30 PM	41	26	104	0	75	83	26	7	0	0	0	0	14	174	56	3	609
04:45 PM	22	26	89	3	84	94	22	2	0	0	0	0	11	132	41	0	526
Total	125	109	391	8	333	357	89	9	0	0	0	0	54	608	199	6	2288
05:00 PM	21	24	99	1	74	91	25	0	0	0	0	0	22	154	54	0	565
05:15 PM	36	24	104	0	76	99	23	0	0	0	0	0	12	140	39	0	553
05:30 PM	34	12	88	1	75	84	17	2	0	0	0	0	13	129	31	1	487
05:45 PM	32	10	96	1	69	90	20	0	0	0	0	0	9	103	33	0	463
Total	123	70	387	3	294	364	85	2	0	0	0	0	56	526	157	1	2068
Grand Total	497	414	1600	36	1251	1499	337	22	1	0	0	0	207	2182	724	53	8823
Apprch %	19.5	16.3	62.8	1.4	40.2	48.2	10.8	0.7	100	0	0	0	6.5	68.9	22.9	1.7	
Total %	5.6	4.7	18.1	0.4	14.2	17	3.8	0.2	0	0	0	0	2.3	24.7	8.2	0.6	
Cars & Peds	496	403	1584	36	1226	1489	336	22	1	0	0	0	206	2172	722	53	8746
% Cars & Peds	99.8	97.3	99	100	98	99.3	99.7	100	100	0	0	0	99.5	99.5	99.7	100	99.1
Trucks & Buses	1	11	16	0	25	10	1	0	0	0	0	0	1	10	1	0	76
% Trucks & Buses	0.2	2.7	1	0	2	0.7	0.3	0	0	0	0	0	0.5	0.5	0.1	0	0.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	35	44	94	8	181	69	104	28	7	208	0	0	0	0	0	13	120	41	34	208	597
03:00 PM	33	48	118	5	204	75	81	18	1	175	0	0	0	0	0	22	161	49	1	233	612
03:15 PM	40	39	121	2	202	70	107	24	1	202	0	0	0	0	0	11	123	41	2	177	581
03:30 PM	27	29	121	0	177	87	100	25	0	212	1	0	0	0	1	25	133	56	3	217	607
Total Volume	135	160	454	15	764	301	392	95	9	797	1	0	0	0	1	71	537	187	40	835	2397
% App. Total	17.7	20.9	59.4	2		37.8	49.2	11.9	1.1		100	0	0	0		8.5	64.3	22.4	4.8		
PHF	.844	.833	.938	.469	.936	.865	.916	.848	.321	.940	.250	.000	.000	.000	.250	.710	.834	.835	.294	.896	.979
Cars & Peds	135	149	451	15	750	296	390	94	9	789	1	0	0	0	1	70	531	186	40	827	2367
% Cars & Peds	100	93.1	99.3	100	98.2	98.3	99.5	98.9	100	99.0	100	0	0	0	100	98.6	98.9	99.5	100	99.0	98.7
Trucks & Buses	0	11	3	0	14	5	2	1	0	8	0	0	0	0	0	1	6	1	0	8	30
% Trucks & Buses	0	6.9	0.7	0	1.8	1.7	0.5	1.1	0	1.0	0	0	0	0	0	1.4	1.1	0.5	0	1.0	1.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



**Transportation Data Corporation**  
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N/S: Elsbree Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936DD  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 2

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	29	<b>34</b>	98	<b>3</b>	164	86	<b>94</b>	21	0	201	0	0	0	0	0	<b>17</b>	164	52	0	233	598
04:15 PM	33	23	100	2	158	<b>88</b>	86	20	0	194	0	0	0	0	0	12	138	50	<b>3</b>	203	555
04:30 PM	<b>41</b>	26	<b>104</b>	0	<b>171</b>	75	83	<b>26</b>	<b>7</b>	191	0	0	0	0	0	14	<b>174</b>	<b>56</b>	<b>3</b>	<b>247</b>	<b>609</b>
04:45 PM	22	26	89	3	140	84	94	22	2	<b>202</b>	0	0	0	0	0	11	132	41	0	184	526
Total Volume	125	109	391	8	633	333	357	89	9	788	0	0	0	0	0	54	608	199	6	867	2288
% App. Total	19.7	17.2	61.8	1.3		42.3	45.3	11.3	1.1		0	0	0	0		6.2	70.1	23	0.7		
PHF	.762	.801	.940	.667	.925	.946	.949	.856	.321	.975	.000	.000	.000	.000	.000	.794	.874	.888	.500	.878	.939
Cars & Peds	125	109	389	8	631	331	357	89	9	786	0	0	0	0	0	54	605	199	6	864	2281
% Cars & Peds	100	100	99.5	100	99.7	99.4	100	100	100	99.7	0	0	0	0	0	100	99.5	100	100	99.7	99.7
Trucks & Buses	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	0	3	0	0	3	7
% Trucks & Buses	0	0	0.5	0	0.3	0.6	0	0	0	0.3	0	0	0	0	0	0	0.5	0	0	0.3	0.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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N/S: Elsbree Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936DD  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	30	29	128	3	66	68	12	0	0	0	0	0	5	120	38	3	502
02:15 PM	33	13	78	3	54	97	16	2	0	0	0	0	7	117	45	2	467
02:30 PM	22	13	70	3	62	125	14	0	0	0	0	0	5	127	49	1	491
02:45 PM	35	33	94	8	66	103	28	7	0	0	0	0	13	119	41	34	581
Total	120	88	370	17	248	393	70	9	0	0	0	0	30	483	173	40	2041
03:00 PM	33	48	117	5	73	80	18	1	0	0	0	0	21	158	49	1	604
03:15 PM	40	39	121	2	70	107	23	1	0	0	0	0	11	123	41	2	580
03:30 PM	27	29	119	0	87	100	25	0	1	0	0	0	25	131	55	3	602
03:45 PM	28	20	86	1	125	89	26	0	0	0	0	0	9	147	49	0	580
Total	128	136	443	8	355	376	92	2	1	0	0	0	66	559	194	6	2366
04:00 PM	29	34	98	3	85	94	21	0	0	0	0	0	17	162	52	0	595
04:15 PM	33	23	100	2	88	86	20	0	0	0	0	0	12	137	50	3	554
04:30 PM	41	26	104	0	75	83	26	7	0	0	0	0	14	174	56	3	609
04:45 PM	22	26	87	3	83	94	22	2	0	0	0	0	11	132	41	0	523
Total	125	109	389	8	331	357	89	9	0	0	0	0	54	605	199	6	2281
05:00 PM	21	24	99	1	74	91	25	0	0	0	0	0	22	154	54	0	565
05:15 PM	36	24	102	0	75	98	23	0	0	0	0	0	12	140	38	0	548
05:30 PM	34	12	88	1	74	84	17	2	0	0	0	0	13	129	31	1	486
05:45 PM	32	10	93	1	69	90	20	0	0	0	0	0	9	102	33	0	459
Total	123	70	382	3	292	363	85	2	0	0	0	0	56	525	156	1	2058
Grand Total	496	403	1584	36	1226	1489	336	22	1	0	0	0	206	2172	722	53	8746
Apprch %	19.7	16	62.9	1.4	39.9	48.5	10.9	0.7	100	0	0	0	6.5	68.9	22.9	1.7	
Total %	5.7	4.6	18.1	0.4	14	17	3.8	0.3	0	0	0	0	2.4	24.8	8.3	0.6	

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	35	33	94	8	170	66	103	28	7	204	0	0	0	0	0	13	119	41	34	207	581
03:00 PM	33	48	117	5	203	73	80	18	1	172	0	0	0	0	0	21	158	49	1	229	604
03:15 PM	40	39	121	2	202	70	107	23	1	201	0	0	0	0	0	11	123	41	2	177	580
03:30 PM	27	29	119	0	175	87	100	25	0	212	1	0	0	0	1	25	131	55	3	214	602
Total Volume	135	149	451	15	750	296	390	94	9	789	1	0	0	0	1	70	531	186	40	827	2367
% App. Total	18	19.9	60.1	2		37.5	49.4	11.9	1.1		100	0	0	0		8.5	64.2	22.5	4.8		
PHF	.844	.776	.932	.469	.924	.851	.911	.839	.321	.930	.250	.000	.000	.000	.250	.700	.840	.845	.294	.903	.980

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	29	34	98	3	164	85	94	21	0	200	0	0	0	0	0	17	162	52	0	231	595
04:15 PM	33	23	100	2	158	88	86	20	0	194	0	0	0	0	0	12	137	50	3	202	554
04:30 PM	41	26	104	0	171	75	83	26	7	191	0	0	0	0	0	14	174	56	3	247	609
04:45 PM	22	26	87	3	138	83	94	22	2	201	0	0	0	0	0	11	132	41	0	184	523
Total Volume	125	109	389	8	631	331	357	89	9	786	0	0	0	0	0	54	605	199	6	864	2281
% App. Total	19.8	17.3	61.6	1.3		42.1	45.4	11.3	1.1		0	0	0	0		6.2	70	23	0.7		
PHF	.762	.801	.935	.667	.923	.940	.949	.856	.321	.978	.000	.000	.000	.000	.000	.794	.869	.888	.500	.874	.936

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Client: Pare/T. Thomson

File Name : 04936DD  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	4
02:15 PM	1	0	1	0	11	2	0	0	0	0	0	0	0	0	0	0	15
02:30 PM	0	0	2	0	1	5	0	0	0	0	0	0	0	0	0	0	8
02:45 PM	0	11	0	0	3	1	0	0	0	0	0	0	0	1	0	0	16
Total	1	11	4	0	18	8	0	0	0	0	0	0	0	1	0	0	43
03:00 PM	0	0	1	0	2	1	0	0	0	0	0	0	1	3	0	0	8
03:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	2	1	0	5
03:45 PM	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	5	0	3	1	1	0	0	0	0	0	1	5	1	0	17
04:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	2	0	2	0	0	0	0	0	0	0	0	3	0	0	7
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	4
Total	0	0	5	0	2	1	0	0	0	0	0	0	0	1	0	0	9
Grand Total	1	11	16	0	25	10	1	0	0	0	0	0	1	10	1	0	76
Apprch %	3.6	39.3	57.1	0	69.4	27.8	2.8	0	0	0	0	0	8.3	83.3	8.3	0	
Total %	1.3	14.5	21.1	0	32.9	13.2	1.3	0	0	0	0	0	1.3	13.2	1.3	0	

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:15 PM																					
02:15 PM	1	0	1	0	2	11	2	0	0	13	0	0	0	0	0	0	0	0	0	0	15
02:30 PM	0	0	2	0	2	1	5	0	0	6	0	0	0	0	0	0	0	0	0	0	8
02:45 PM	0	11	0	0	11	3	1	0	0	4	0	0	0	0	0	0	1	0	0	1	16
03:00 PM	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	1	3	0	0	4	8
Total Volume	1	11	4	0	16	17	9	0	0	26	0	0	0	0	0	1	4	0	0	5	47
% App. Total	6.2	68.8	25	0		65.4	34.6	0	0		0	0	0	0		20	80	0	0		
PHF	.250	.250	.500	.000	.364	.386	.450	.000	.000	.500	.000	.000	.000	.000	.000	.250	.333	.000	.000	.313	.734

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	2	0	2	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4
Total Volume	0	0	5	0	5	2	1	0	0	3	0	0	0	0	0	0	1	0	0	1	9
% App. Total	0	0	100	0		66.7	33.3	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.417	.000	.417	.500	.250	.000	.000	.375	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.563

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File Name : 04936DD  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Bikes by Direction

Start Time	Elsbree Street From North				President Avenue From East				Elsbree Street From South				President Avenue From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

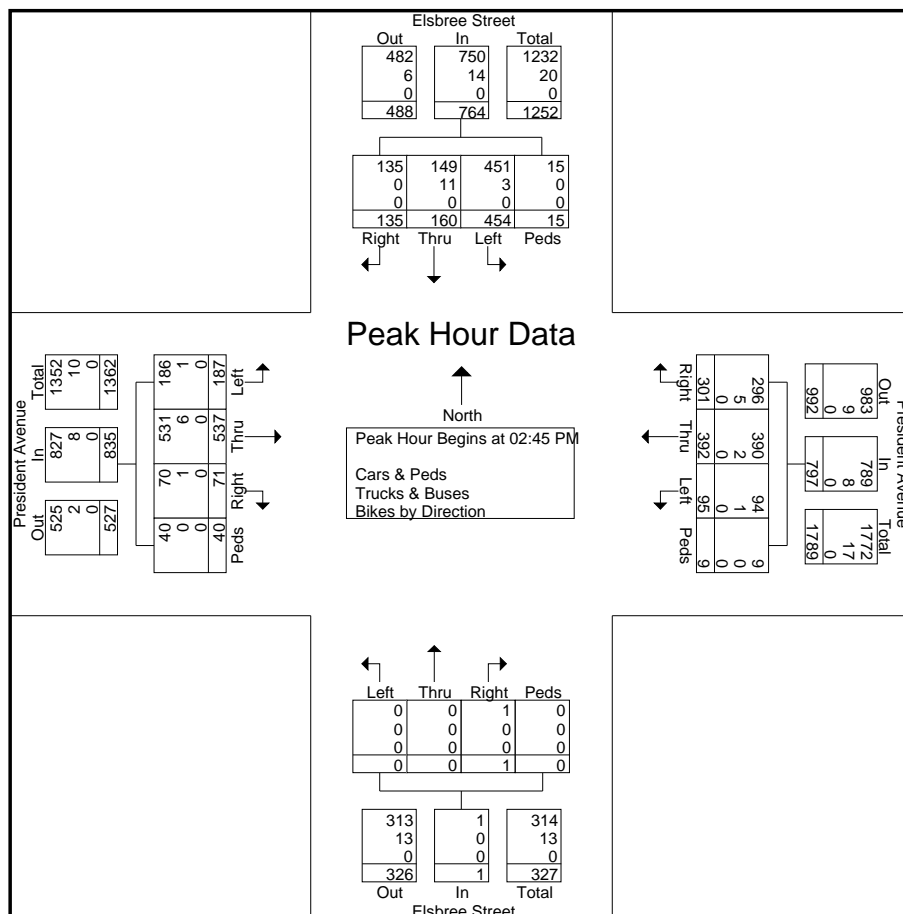
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

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Page No : 1

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	35	44	94	8	181	69	104	28	7	208	0	0	0	0	0	13	120	41	34	208	597
03:00 PM	33	48	118	5	204	75	81	18	1	175	0	0	0	0	0	22	161	49	1	233	612
03:15 PM	40	39	121	2	202	70	107	24	1	202	0	0	0	0	0	11	123	41	2	177	581
03:30 PM	27	29	121	0	177	87	100	25	0	212	1	0	0	0	0	25	133	56	3	217	607
Total Volume	135	160	454	15	764	301	392	95	9	797	1	0	0	0	1	71	537	187	40	835	2397
% App. Total	17.7	20.9	59.4	2		37.8	49.2	11.9	1.1		100	0	0	0	0	8.5	64.3	22.4	4.8		
PHF	.844	.833	.938	.469	.936	.865	.916	.848	.321	.940	.250	.000	.000	.000	.250	.710	.834	.835	.294	.896	.979
Cars & Peds	135	149	451	15	750	296	390	94	9	789	1	0	0	0	1	70	531	186	40	827	2367
% Cars & Peds	100	93.1	99.3	100	98.2	98.3	99.5	98.9	100	99.0	100	0	0	0	100	98.6	98.9	99.5	100	99.0	98.7
Trucks & Buses	0	11	3	0	14	5	2	1	0	8	0	0	0	0	0	1	6	1	0	8	30
% Trucks & Buses	0	6.9	0.7	0	1.8	1.7	0.5	1.1	0	1.0	0	0	0	0	0	1.4	1.1	0.5	0	1.0	1.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



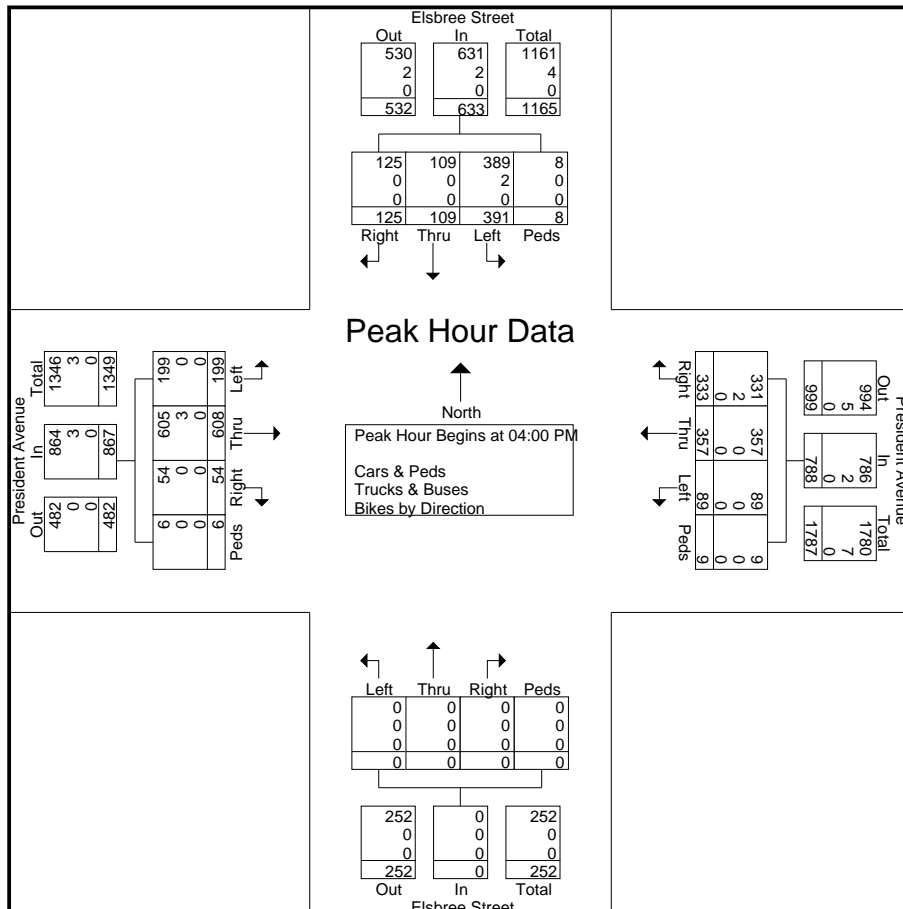


**Transportation Data Corporation**  
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N/S: Elsbree Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936DD  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 2

	Elsbree Street From North					President Avenue From East					Elsbree Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	29	34	98	3	164	86	94	21	0	201	0	0	0	0	0	17	164	52	0	233	598
04:15 PM	33	23	100	2	158	88	86	20	0	194	0	0	0	0	0	12	138	50	3	203	555
04:30 PM	41	26	104	0	171	75	83	26	7	191	0	0	0	0	0	14	174	56	3	247	609
04:45 PM	22	26	89	3	140	84	94	22	2	202	0	0	0	0	0	11	132	41	0	184	526
Total Volume	125	109	391	8	633	333	357	89	9	788	0	0	0	0	0	54	608	199	6	867	2288
% App. Total	19.7	17.2	61.8	1.3		42.3	45.3	11.3	1.1		0	0	0	0		6.2	70.1	23	0.7		
PHF	.762	.801	.940	.667	.925	.946	.949	.856	.321	.975	.000	.000	.000	.000	.000	.794	.874	.888	.500	.878	.939
Cars & Peds	125	109	389	8	631	331	357	89	9	786	0	0	0	0	0	54	605	199	6	864	2281
% Cars & Peds	100	100	99.5	100	99.7	99.4	100	100	100	99.7	0	0	0	0	0	100	99.5	100	100	99.7	99.7
Trucks & Buses	0	0	2	0	2	2	0	0	0	2	0	0	0	0	0	0	3	0	0	3	7
% Trucks & Buses	0	0	0.5	0	0.3	0.6	0	0	0	0.3	0	0	0	0	0	0	0.5	0	0	0.3	0.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# **Transportation Data Corporation**

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N/S: Chestnut Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936E  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

## Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	1	0	2	0	2	79	0	0	0	3	1	0	1	120	3	0	212
07:15 AM	3	3	9	1	24	138	0	1	1	5	2	1	2	165	5	0	360
07:30 AM	4	1	10	1	36	147	1	14	7	19	2	0	1	129	9	0	381
07:45 AM	2	4	13	2	20	153	1	5	3	17	0	0	3	140	17	0	380
Total	10	8	34	4	82	517	2	20	11	44	5	1	7	554	34	0	1333
08:00 AM	8	0	6	1	35	122	0	11	1	7	0	0	1	143	18	0	353
08:15 AM	7	4	13	6	39	130	2	11	0	9	0	0	1	127	26	0	375
08:30 AM	3	2	16	0	13	117	3	3	3	3	0	0	1	156	9	0	329
08:45 AM	0	0	5	1	3	122	1	0	2	0	0	0	1	116	2	0	253
Total	18	6	40	8	90	491	6	25	6	19	0	0	4	542	55	0	1310
Grand Total	28	14	74	12	172	1008	8	45	17	63	5	1	11	1096	89	0	2643
Apprch %	21.9	10.9	57.8	9.4	13.9	81.8	0.6	3.6	19.8	73.3	5.8	1.2	0.9	91.6	7.4	0	
Total %	1.1	0.5	2.8	0.5	6.5	38.1	0.3	1.7	0.6	2.4	0.2	0	0.4	41.5	3.4	0	
Cars & Peds	28	14	74	12	171	1002	8	45	17	62	5	1	11	1077	89	0	2616
% Cars & Peds	100	100	100	100	99.4	99.4	100	100	100	98.4	100	100	100	98.3	100	0	99
Trucks & Buses	0	0	0	0	1	6	0	0	0	0	0	0	0	19	0	0	26
% Trucks & Buses	0	0	0	0	0.6	0.6	0	0	0	0	0	0	0	1.7	0	0	1
Bikes by Direction	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	1.6	0	0	0	0	0	0	0

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	1	10	1	16	36	147	1	14	198	7	19	2	0	28	1	129	9	0	139	381
07:45 AM	2	4	13	2	21	20	153	1	5	179	3	17	0	0	20	3	140	17	0	160	380
08:00 AM	8	0	6	1	15	35	122	0	11	168	1	7	0	0	8	1	143	18	0	162	353
08:15 AM	7	4	13	6	30	39	130	2	11	182	0	9	0	0	9	1	127	26	0	154	375
Total Volume	21	9	42	10	82	130	552	4	41	727	11	52	2	0	65	6	539	70	0	615	1489
% App. Total	25.6	11	51.2	12.2		17.9	75.9	0.6	5.6		16.9	80	3.1	0		1	87.6	11.4	0		
PHF	.656	.563	.808	.417	.683	.833	.902	.500	.732	.918	.393	.684	.250	.000	.580	.500	.942	.673	.000	.949	.977
Cars & Peds	21	9	42	10	82	130	548	4	41	723	11	51	2	0	64	6	528	70	0	604	1473
% Cars & Peds	100	100	100	100	100	100	99.3	100	100	99.4	100	98.1	100	0	98.5	100	98.0	100	0	98.2	98.9
Trucks & Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	15
% Trucks & Buses	0	0	0	0	0	0	0.7	0	0	0.6	0	0	0	0	0	0	2.0	0	0	1.8	1.0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1.9	0	0	1.5	0	0	0	0	0	0.1

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N/S: Chestnut Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936E  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	1	0	2	0	2	79	0	0	0	3	1	0	1	117	3	0	209
07:15 AM	3	3	9	1	24	136	0	1	1	5	2	1	2	164	5	0	357
07:30 AM	4	1	10	1	36	145	1	14	7	19	2	0	1	128	9	0	378
07:45 AM	2	4	13	2	20	153	1	5	3	16	0	0	3	136	17	0	375
Total	10	8	34	4	82	513	2	20	11	43	5	1	7	545	34	0	1319
08:00 AM	8	0	6	1	35	121	0	11	1	7	0	0	1	139	18	0	348
08:15 AM	7	4	13	6	39	129	2	11	0	9	0	0	1	125	26	0	372
08:30 AM	3	2	16	0	12	117	3	3	3	3	0	0	1	155	9	0	327
08:45 AM	0	0	5	1	3	122	1	0	2	0	0	0	1	113	2	0	250
Total	18	6	40	8	89	489	6	25	6	19	0	0	4	532	55	0	1297
Grand Total	28	14	74	12	171	1002	8	45	17	62	5	1	11	1077	89	0	2616
Apprch %	21.9	10.9	57.8	9.4	13.9	81.7	0.7	3.7	20	72.9	5.9	1.2	0.9	91.5	7.6	0	
Total %	1.1	0.5	2.8	0.5	6.5	38.3	0.3	1.7	0.6	2.4	0.2	0	0.4	41.2	3.4	0	

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	1	10	1	16	36	145	1	14	196	7	19	2	0	28	1	128	9	0	138	378
07:45 AM	2	4	13	2	21	20	153	1	5	179	3	16	0	0	19	3	136	17	0	156	375
08:00 AM	8	0	6	1	15	35	121	0	11	167	1	7	0	0	8	1	139	18	0	158	348
08:15 AM	7	4	13	6	30	39	129	2	11	181	0	9	0	0	9	1	125	26	0	152	372
Total Volume	21	9	42	10	82	130	548	4	41	723	11	51	2	0	64	6	528	70	0	604	1473
% App. Total	25.6	11	51.2	12.2		18	75.8	0.6	5.7		17.2	79.7	3.1	0		1	87.4	11.6	0		
PHF	.656	.563	.808	.417	.683	.833	.895	.500	.732	.922	.393	.671	.250	.000	.571	.500	.950	.673	.000	.956	.974

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N/S: Chestnut Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936E  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
07:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	3
07:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
Total	0	0	0	0	0	4	0	0	0	0	0	0	0	9	0	0	13
08:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0	5
08:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
08:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
Total	0	0	0	0	1	2	0	0	0	0	0	0	0	10	0	0	13
Grand Total	0	0	0	0	1	6	0	0	0	0	0	0	0	19	0	0	26
Apprch %	0	0	0	0	14.3	85.7	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	3.8	23.1	0	0	0	0	0	0	0	73.1	0	0	

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
07:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
08:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	5
Total Volume	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	10	0	0	10	15
% App. Total	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.750

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N/S: Chestnut Street  
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Client: Pare/T. Thomson

File Name : 04936E  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% App. Total	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250

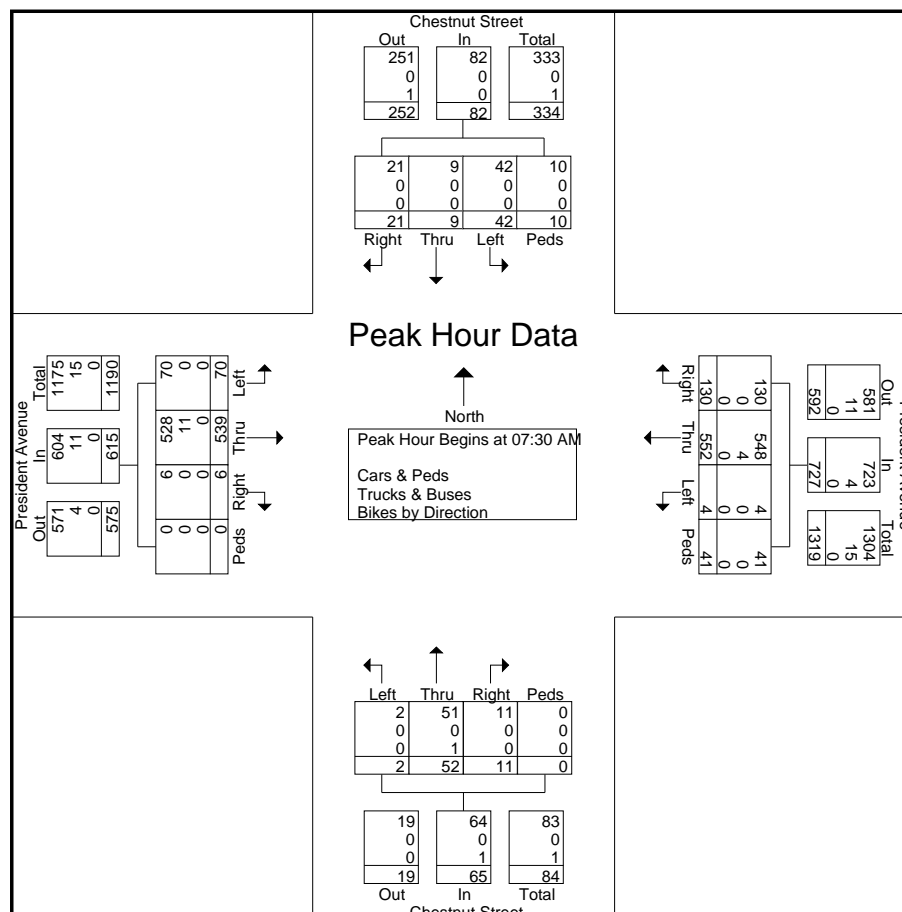


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N/S: Chestnut Street  
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Client: Pare/T. Thomson

File Name : 04936E  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	1	10	1	16	36	147	1	14	198	7	19	2	0	28	1	129	9	0	139	381
07:45 AM	2	4	13	2	21	20	153	1	5	179	3	17	0	0	20	3	140	17	0	160	380
08:00 AM	8	0	6	1	15	35	122	0	11	168	1	7	0	0	8	1	143	18	0	162	353
08:15 AM	7	4	13	6	30	39	130	2	11	182	0	9	0	0	9	1	127	26	0	154	375
Total Volume	21	9	42	10	82	130	552	4	41	727	11	52	2	0	65	6	539	70	0	615	1489
% App. Total	25.6	11	51.2	12.2		17.9	75.9	0.6	5.6		16.9	80	3.1	0		1	87.6	11.4	0		
PHF	.656	.563	.808	.417	.683	.833	.902	.500	.732	.918	.393	.684	.250	.000	.580	.500	.942	.673	.000	.949	.977
Cars & Peds	21	9	42	10	82	130	548	4	41	723	11	51	2	0	64	6	528	70	0	604	1473
% Cars & Peds	100	100	100	100	100	100	99.3	100	100	99.4	100	98.1	100	0	98.5	100	98.0	100	0	98.2	98.9
Trucks & Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	15
% Trucks & Buses	0	0	0	0	0	0	0.7	0	0	0.6	0	0	0	0	0	0	2.0	0	0	1.8	1.0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1.9	0	0	1.5	0	0	0	0	0	0.1



**Transportation Data Corporation**  
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N/S: Chestnut Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	4	4	11	89	3	2	0	3	1	1	2	153	7	0	280
02:15 PM	4	0	5	2	14	108	2	1	4	3	1	1	1	139	11	0	296
02:30 PM	4	1	4	0	16	112	2	13	1	0	0	0	2	134	10	0	299
02:45 PM	12	4	10	9	14	124	5	122	2	3	1	0	1	112	9	0	428
Total	20	5	23	15	55	433	12	138	7	9	3	2	6	538	37	0	1303
03:00 PM	17	8	18	2	6	123	4	15	3	0	2	2	9	144	0	0	353
03:15 PM	2	1	9	3	8	119	1	3	2	0	0	0	3	125	2	0	278
03:30 PM	0	6	13	2	6	132	8	1	2	2	4	3	2	171	3	0	355
03:45 PM	1	3	8	3	5	112	2	0	2	0	0	0	1	183	1	0	321
Total	20	18	48	10	25	486	15	19	9	2	6	5	15	623	6	0	1307
04:00 PM	3	1	6	2	4	118	3	2	1	0	1	0	2	200	3	0	346
04:15 PM	3	2	9	1	5	108	7	0	1	0	0	0	4	170	5	0	315
04:30 PM	0	2	10	2	7	110	2	2	0	1	1	0	1	207	1	0	346
04:45 PM	2	3	9	2	8	98	2	0	0	1	1	1	3	159	3	0	292
Total	8	8	34	7	24	434	14	4	2	2	3	1	10	736	12	0	1299
05:00 PM	4	2	7	2	11	97	3	0	2	1	1	0	2	202	6	0	340
05:15 PM	4	2	9	0	6	126	4	2	1	0	0	0	2	161	0	0	317
05:30 PM	3	0	9	1	4	111	6	4	1	2	2	0	3	148	2	1	297
05:45 PM	1	0	2	4	3	106	4	0	1	0	1	0	5	120	1	0	248
Total	12	4	27	7	24	440	17	6	5	3	4	0	12	631	9	1	1202
Grand Total	60	35	132	39	128	1793	58	167	23	16	16	8	43	2528	64	1	5111
Apprch %	22.6	13.2	49.6	14.7	6	83.6	2.7	7.8	36.5	25.4	25.4	12.7	1.6	95.9	2.4	0	
Total %	1.2	0.7	2.6	0.8	2.5	35.1	1.1	3.3	0.5	0.3	0.3	0.2	0.8	49.5	1.3	0	
Cars & Peds	59	34	131	39	128	1784	58	167	23	14	16	8	43	2518	64	1	5087
% Cars & Peds	98.3	97.1	99.2	100	100	99.5	100	100	100	87.5	100	100	100	99.6	100	100	99.5
Trucks & Buses	1	0	1	0	0	9	0	0	0	0	0	0	0	10	0	0	21
% Trucks & Buses	1.7	0	0.8	0	0	0.5	0	0	0	0	0	0	0	0.4	0	0	0.4
Bikes by Direction	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
% Bikes by Direction	0	2.9	0	0	0	0	0	0	0	12.5	0	0	0	0	0	0	0.1

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	12	4	10	9	35	14	124	5	122	265	2	3	1	0	6	1	112	9	0	122	428
03:00 PM	17	8	18	2	45	6	123	4	15	148	3	0	2	2	7	9	144	0	0	153	353
03:15 PM	2	1	9	3	15	8	119	1	3	131	2	0	0	0	2	3	125	2	0	130	278
03:30 PM	0	6	13	2	21	6	132	8	1	147	2	2	4	3	11	2	171	3	0	176	355
Total Volume	31	19	50	16	116	34	498	18	141	691	9	5	7	5	26	15	552	14	0	581	1414
% App. Total	26.7	16.4	43.1	13.8		4.9	72.1	2.6	20.4		34.6	19.2	26.9	19.2		2.6	95	2.4	0		
PHF	.456	.594	.694	.444	.644	.607	.943	.563	.289	.652	.750	.417	.438	.417	.591	.417	.807	.389	.000	.825	.826
Cars & Peds	31	19	49	16	115	34	495	18	141	688	9	5	7	5	26	15	546	14	0	575	1404
% Cars & Peds	100	100	98.0	100	99.1	100	99.4	100	100	99.6	100	100	100	100	100	100	98.9	100	0	99.0	99.3
Trucks & Buses	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	10
% Trucks & Buses	0	0	2.0	0	0.9	0	0.6	0	0	0.4	0	0	0	0	0	0	1.1	0	0	1.0	0.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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N/S: Chestnut Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 2

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	3	1	6	2	12	4	118	3	2	127	1	0	1	0	2	2	200	3	0	205	346
04:15 PM	3	2	9	1	15	5	108	7	0	120	1	0	0	0	1	4	170	5	0	179	315
04:30 PM	0	2	10	2	14	7	110	2	2	121	0	1	1	0	2	1	207	1	0	209	346
04:45 PM	2	3	9	2	16	8	98	2	0	108	0	1	1	1	3	3	159	3	0	165	292
Total Volume	8	8	34	7	57	24	434	14	4	476	2	2	3	1	8	10	736	12	0	758	1299
% App. Total	14	14	59.6	12.3		5	91.2	2.9	0.8		25	25	37.5	12.5		1.3	97.1	1.6	0		
PHF	.667	.667	.850	.875	.891	.750	.919	.500	.500	.937	.500	.500	.750	.250	.667	.625	.889	.600	.000	.907	.939
Cars & Peds	8	7	34	7	56	24	434	14	4	476	2	2	3	1	8	10	733	12	0	755	1295
% Cars & Peds	100	87.5	100	100	98.2	100	100	100	100	100	100	100	100	100	100	100	99.6	100	0	99.6	99.7
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4	0.2
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Bikes by Direction	0	12.5	0	0	1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1

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N/S: Chestnut Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	4	4	11	89	3	2	0	3	1	1	2	153	7	0	280
02:15 PM	4	0	5	2	14	106	2	1	4	3	1	1	1	139	11	0	294
02:30 PM	3	1	4	0	16	109	2	13	1	0	0	0	2	134	10	0	295
02:45 PM	12	4	10	9	14	123	5	122	2	3	1	0	1	110	9	0	425
Total	19	5	23	15	55	427	12	138	7	9	3	2	6	536	37	0	1294
03:00 PM	17	8	17	2	6	121	4	15	3	0	2	2	9	143	0	0	349
03:15 PM	2	1	9	3	8	119	1	3	2	0	0	0	3	124	2	0	277
03:30 PM	0	6	13	2	6	132	8	1	2	2	4	3	2	169	3	0	353
03:45 PM	1	3	8	3	5	112	2	0	2	0	0	0	1	183	1	0	321
Total	20	18	47	10	25	484	15	19	9	2	6	5	15	619	6	0	1300
04:00 PM	3	1	6	2	4	118	3	2	1	0	1	0	2	198	3	0	344
04:15 PM	3	2	9	1	5	108	7	0	1	0	0	0	4	169	5	0	314
04:30 PM	0	1	10	2	7	110	2	2	0	1	1	0	1	207	1	0	345
04:45 PM	2	3	9	2	8	98	2	0	0	1	1	1	3	159	3	0	292
Total	8	7	34	7	24	434	14	4	2	2	3	1	10	733	12	0	1295
05:00 PM	4	2	7	2	11	97	3	0	2	1	1	0	2	202	6	0	340
05:15 PM	4	2	9	0	6	125	4	2	1	0	0	0	2	161	0	0	316
05:30 PM	3	0	9	1	4	111	6	4	1	0	2	0	3	148	2	1	295
05:45 PM	1	0	2	4	3	106	4	0	1	0	1	0	5	119	1	0	247
Total	12	4	27	7	24	439	17	6	5	1	4	0	12	630	9	1	1198
Grand Total	59	34	131	39	128	1784	58	167	23	14	16	8	43	2518	64	1	5087
Apprch %	22.4	12.9	49.8	14.8	6	83.5	2.7	7.8	37.7	23	26.2	13.1	1.6	95.9	2.4	0	
Total %	1.2	0.7	2.6	0.8	2.5	35.1	1.1	3.3	0.5	0.3	0.3	0.2	0.8	49.5	1.3	0	

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	12	4	10	9	35	14	123	5	122	264	2	3	1	0	6	1	110	9	0	120	425
03:00 PM	17	8	17	2	44	6	121	4	15	146	3	0	2	2	7	9	143	0	0	152	349
03:15 PM	2	1	9	3	15	8	119	1	3	131	2	0	0	0	2	3	124	2	0	129	277
03:30 PM	0	6	13	2	21	6	132	8	1	147	2	2	4	3	11	2	169	3	0	174	353
Total Volume	31	19	49	16	115	34	495	18	141	688	9	5	7	5	26	15	546	14	0	575	1404
% App. Total	27	16.5	42.6	13.9		4.9	71.9	2.6	20.5		34.6	19.2	26.9	19.2		2.6	95	2.4	0		
PHF	.456	.594	.721	.444	.653	.607	.938	.563	.289	.652	.750	.417	.438	.417	.591	.417	.808	.389	.000	.826	.826

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	3	1	6	2	12	4	118	3	2	127	1	0	1	0	2	2	198	3	0	203	344
04:15 PM	3	2	9	1	15	5	108	7	0	120	1	0	0	0	1	4	169	5	0	178	314
04:30 PM	0	1	10	2	13	7	110	2	2	121	0	1	1	0	2	1	207	1	0	209	345
04:45 PM	2	3	9	2	16	8	98	2	0	108	0	1	1	1	3	3	159	3	0	165	292
Total Volume	8	7	34	7	56	24	434	14	4	476	2	2	3	1	8	10	733	12	0	755	1295
% App. Total	14.3	12.5	60.7	12.5		5	91.2	2.9	0.8		25	25	37.5	12.5		1.3	97.1	1.6	0		
PHF	.667	.583	.850	.875	.875	.750	.919	.500	.500	.937	.500	.500	.750	.250	.667	.625	.885	.600	.000	.903	.938

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N/S: Chestnut Street  
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Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
02:30 PM	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
02:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
Total	1	0	0	0	0	6	0	0	0	0	0	0	0	2	0	0	9
03:00 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	4
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	2	0	0	0	0	0	0	0	4	0	0	7
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
Grand Total	1	0	1	0	0	9	0	0	0	0	0	0	0	10	0	0	21
Apprch %	50	0	50	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	4.8	0	4.8	0	0	42.9	0	0	0	0	0	0	0	47.6	0	0	

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:15 PM																					
02:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
02:30 PM	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	4
02:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
03:00 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	4
Total Volume	1	0	1	0	2	0	8	0	0	8	0	0	0	0	0	0	3	0	0	3	13
% App. Total	50	0	50	0		0	100	0	0		0	0	0	0		0	100	0	0		
PHF	.250	.000	.250	.000	.500	.000	.667	.000	.000	.667	.000	.000	.000	.000	.000	.000	.375	.000	.000	.375	.813

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.000	.000	.375	.375



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Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Chestnut Street From North				President Avenue From East				Chestnut Street From South				President Avenue From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
Grand Total	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
Apprch %	0	100	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	33.3	0	0	0	0	0	0	0	66.7	0	0	0	0	0	0	

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					Int. Total
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

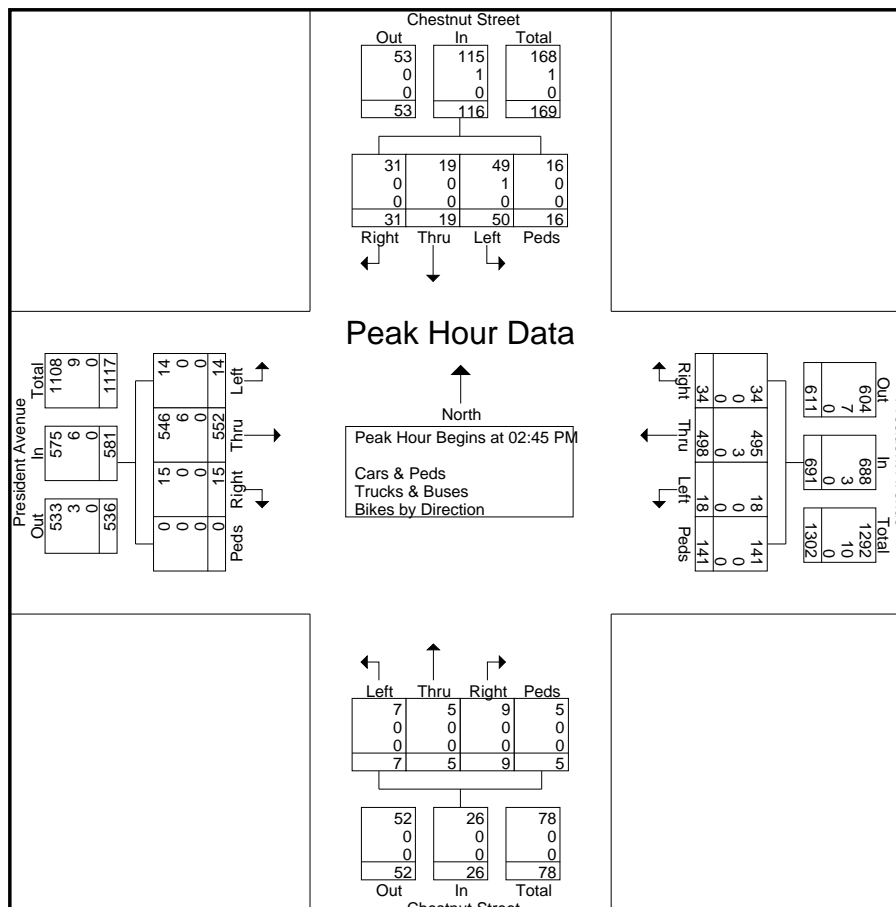
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2
% App. Total	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250

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N/S: Chestnut Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:45 PM																					
02:45 PM	12	4	10	9	35	14	124	5	122	265	2	3	1	0	6	1	112	9	0	122	428
03:00 PM	17	8	18	2	45	6	123	4	15	148	3	0	2	2	7	9	144	0	0	153	353
03:15 PM	2	1	9	3	15	8	119	1	3	131	2	0	0	0	2	3	125	2	0	130	278
03:30 PM	0	6	13	2	21	6	132	8	1	147	2	2	4	3	11	2	171	3	0	176	355
Total Volume	31	19	50	16	116	34	498	18	141	691	9	5	7	5	26	15	552	14	0	581	1414
% App. Total	26.7	16.4	43.1	13.8		4.9	72.1	2.6	20.4		34.6	19.2	26.9	19.2		2.6	95	2.4	0		
PHF	.456	.594	.694	.444	.644	.607	.943	.563	.289	.652	.750	.417	.438	.417	.591	.417	.807	.389	.000	.825	.826
Cars & Peds	31	19	49	16	115	34	495	18	141	688	9	5	7	5	26	15	546	14	0	575	1404
% Cars & Peds	100	100	98.0	100	99.1	100	99.4	100	100	99.6	100	100	100	100	100	100	98.9	100	0	99.0	99.3
Trucks & Buses	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	10
% Trucks & Buses	0	0	2.0	0	0.9	0	0.6	0	0	0.4	0	0	0	0	0	0	1.1	0	0	1.0	0.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

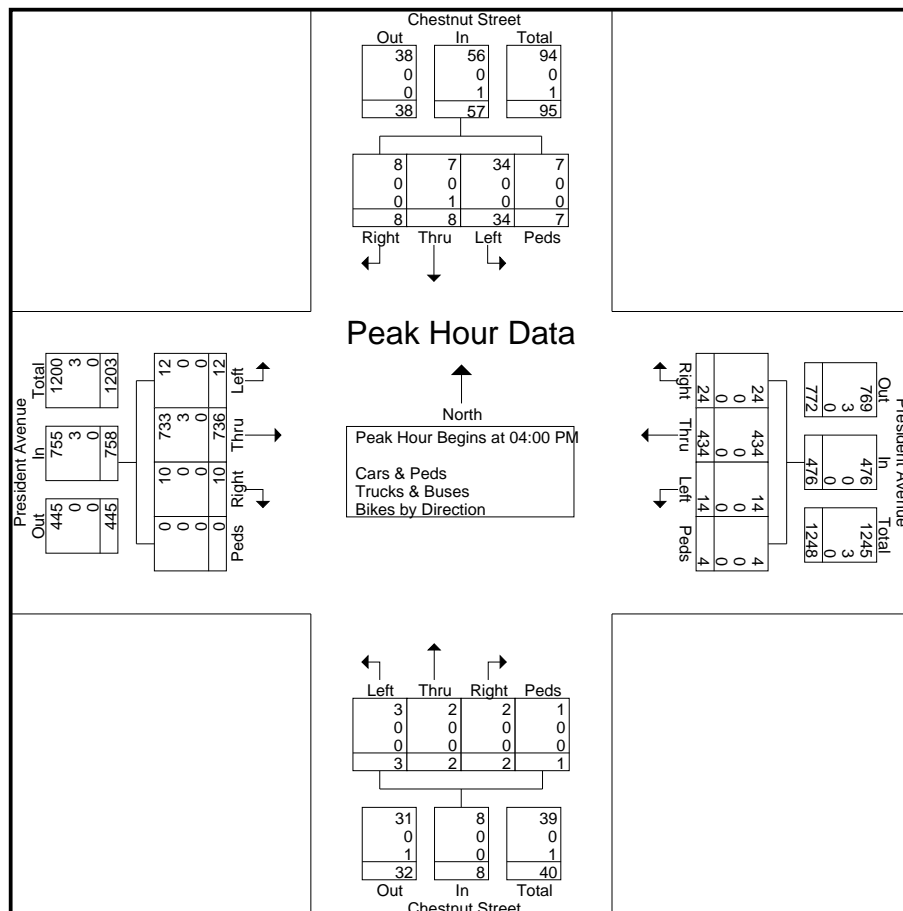


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N/S: Chestnut Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936EE  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 2

	Chestnut Street From North					President Avenue From East					Chestnut Street From South					President Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	3	1	6	2	12	4	118	3	2	127	1	0	1	0	2	2	200	3	0	205	346
04:15 PM	3	2	9	1	15	5	108	7	0	120	1	0	0	0	1	4	170	5	0	179	315
04:30 PM	0	2	10	2	14	7	110	2	2	121	0	1	1	0	2	1	207	1	0	209	346
04:45 PM	2	3	9	2	16	8	98	2	0	108	0	1	1	1	3	3	159	3	0	165	292
Total Volume	8	8	34	7	57	24	434	14	4	476	2	2	3	1	8	10	736	12	0	758	1299
% App. Total	14	14	59.6	12.3		5	91.2	2.9	0.8		25	25	37.5	12.5		1.3	97.1	1.6	0		
PHF	.667	.667	.850	.875	.891	.750	.919	.500	.500	.937	.500	.500	.750	.250	.667	.625	.889	.600	.000	.907	.939
Cars & Peds	8	7	34	7	56	24	434	14	4	476	2	2	3	1	8	10	733	12	0	755	1295
% Cars & Peds	100	87.5	100	100	98.2	100	100	100	100	100	100	100	100	100	100	100	99.6	100	0	99.6	99.7
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0.4	0.2
Bikes by Direction	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Bikes by Direction	0	12.5	0	0	1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1



**Transportation Data Corporation**

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N: Ray Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936F  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

Start Time	Ray Street From North			President Avenue From East			President Avenue From West			Int. Total
	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	
07:00 AM	15	23	0	35	50	0	106	14	0	243
07:15 AM	17	30	0	61	81	0	142	32	0	363
07:30 AM	26	35	2	68	84	0	104	42	0	361
07:45 AM	30	45	1	45	108	0	115	25	0	369
Total	88	133	3	209	323	0	467	113	0	1336
08:00 AM	20	40	1	46	85	0	123	21	0	336
08:15 AM	18	56	6	51	87	0	104	24	0	346
08:30 AM	14	56	0	38	85	0	111	6	0	310
08:45 AM	2	18	0	30	90	0	101	5	0	246
Total	54	170	7	165	347	0	439	56	0	1238
Grand Total	142	303	10	374	670	0	906	169	0	2574
Apprch %	31.2	66.6	2.2	35.8	64.2	0	84.3	15.7	0	
Total %	5.5	11.8	0.4	14.5	26	0	35.2	6.6	0	
Cars & Peds	137	300	10	373	664	0	889	165	0	2538
% Cars & Peds	96.5	99	100	99.7	99.1	0	98.1	97.6	0	98.6
Trucks & Buses	5	3	0	1	6	0	17	4	0	36
% Trucks & Buses	3.5	1	0	0.3	0.9	0	1.9	2.4	0	1.4
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	17	30	0	47	61	81	0	142	142	32	0	174	363
07:30 AM	26	35	2	63	68	84	0	152	104	42	0	146	361
07:45 AM	30	45	1	76	45	108	0	153	115	25	0	140	369
08:00 AM	20	40	1	61	46	85	0	131	123	21	0	144	336
Total Volume	93	150	4	247	220	358	0	578	484	120	0	604	1429
% App. Total	37.7	60.7	1.6		38.1	61.9	0		80.1	19.9	0		
PHF	.775	.833	.500	.813	.809	.829	.000	.944	.852	.714	.000	.868	.968
Cars & Peds	90	148	4	242	219	353	0	572	476	118	0	594	1408
% Cars & Peds	96.8	98.7	100	98.0	99.5	98.6	0	99.0	98.3	98.3	0	98.3	98.5
Trucks & Buses	3	2	0	5	1	5	0	6	8	2	0	10	21
% Trucks & Buses	3.2	1.3	0	2.0	0.5	1.4	0	1.0	1.7	1.7	0	1.7	1.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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N: Ray Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936F  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds

	Ray Street From North			President Avenue From East			President Avenue From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	14	23	0	35	50	0	102	14	0	238
07:15 AM	17	30	0	61	79	0	141	31	0	359
07:30 AM	25	34	2	68	82	0	104	42	0	357
07:45 AM	29	45	1	44	108	0	111	24	0	362
Total	85	132	3	208	319	0	458	111	0	1316
08:00 AM	19	39	1	46	84	0	120	21	0	330
08:15 AM	18	56	6	51	86	0	101	23	0	341
08:30 AM	13	55	0	38	85	0	111	6	0	308
08:45 AM	2	18	0	30	90	0	99	4	0	243
Total	52	168	7	165	345	0	431	54	0	1222
Grand Total	137	300	10	373	664	0	889	165	0	2538
Apprch %	30.6	67.1	2.2	36	64	0	84.3	15.7	0	
Total %	5.4	11.8	0.4	14.7	26.2	0	35	6.5	0	

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	17	30	0	47	61	79	0	140	141	31	0	172	359
07:30 AM	25	34	2	61	68	82	0	150	104	42	0	146	357
07:45 AM	29	45	1	75	44	108	0	152	111	24	0	135	362
08:00 AM	19	39	1	59	46	84	0	130	120	21	0	141	330
Total Volume	90	148	4	242	219	353	0	572	476	118	0	594	1408
% App. Total	37.2	61.2	1.7		38.3	61.7	0		80.1	19.9	0		
PHF	.776	.822	.500	.807	.805	.817	.000	.941	.844	.702	.000	.863	.972



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Client: Pare/T. Thomson

File Name : 04936F  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Trucks & Buses

Start Time	Ray Street From North			President Avenue From East			President Avenue From West			Int. Total
	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	
07:00 AM	1	0	0	0	0	0	4	0	0	5
07:15 AM	0	0	0	0	2	0	1	1	0	4
07:30 AM	1	1	0	0	2	0	0	0	0	4
07:45 AM	1	0	0	1	0	0	4	1	0	7
Total	3	1	0	1	4	0	9	2	0	20
08:00 AM	1	1	0	0	1	0	3	0	0	6
08:15 AM	0	0	0	0	1	0	3	1	0	5
08:30 AM	1	1	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	0	0	0	2	1	0	3
Total	2	2	0	0	2	0	8	2	0	16
Grand Total	5	3	0	1	6	0	17	4	0	36
Apprch %	62.5	37.5	0	14.3	85.7	0	81	19	0	
Total %	13.9	8.3	0	2.8	16.7	0	47.2	11.1	0	

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	1	1	0	2	0	2	0	2	0	0	0	0	4
07:45 AM	1	0	0	1	1	0	0	1	4	1	0	5	7
08:00 AM	1	1	0	2	0	1	0	1	3	0	0	3	6
08:15 AM	0	0	0	0	0	1	0	1	3	1	0	4	5
Total Volume	3	2	0	5	1	4	0	5	10	2	0	12	22
% App. Total	60	40	0		20	80	0		83.3	16.7	0		
PHF	.750	.500	.000	.625	.250	.500	.000	.625	.625	.500	.000	.600	.786

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File Name : 04936F  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Ray Street From North			President Avenue From East			President Avenue From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

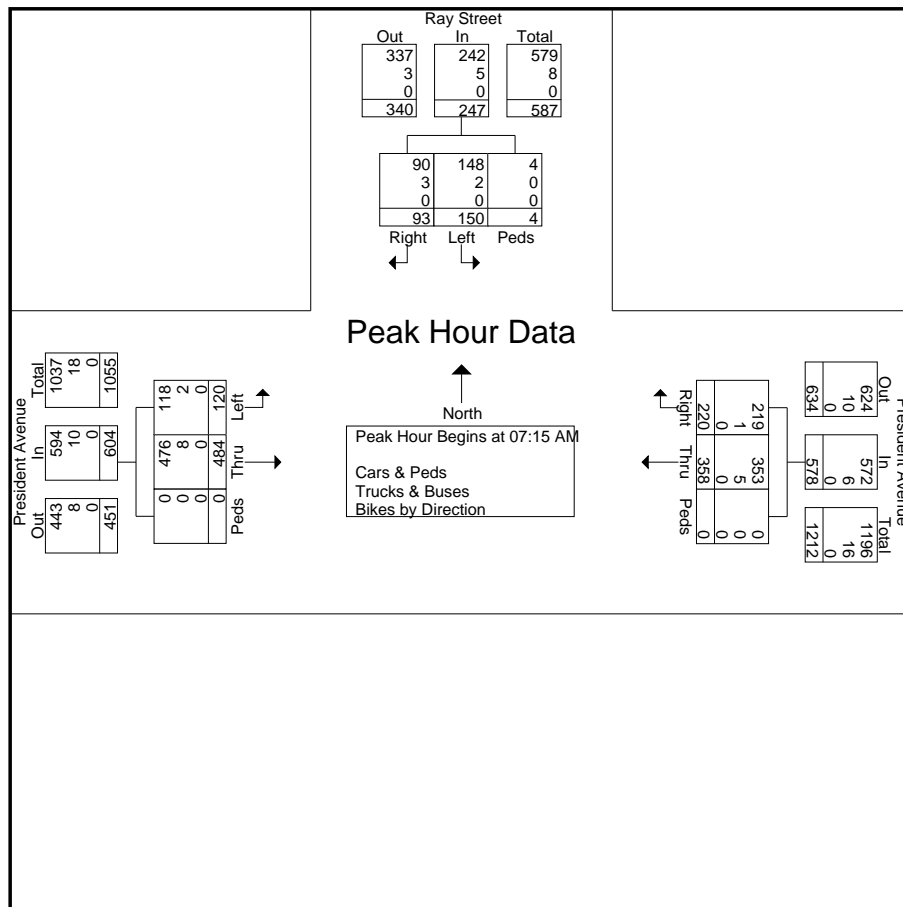
	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	17	30	0	47	61	81	0	142	142	32	0	174	363
07:30 AM	26	35	2	63	68	84	0	152	104	42	0	146	361
07:45 AM	30	45	1	76	45	108	0	153	115	25	0	140	369
08:00 AM	20	40	1	61	46	85	0	131	123	21	0	144	336
Total Volume	93	150	4	247	220	358	0	578	484	120	0	604	1429
% App. Total	37.7	60.7	1.6		38.1	61.9	0		80.1	19.9	0		
PHF	.775	.833	.500	.813	.809	.829	.000	.944	.852	.714	.000	.868	.968
Cars & Peds	90	148	4	242	219	353	0	572	476	118	0	594	1408
% Cars & Peds	96.8	98.7	100	98.0	99.5	98.6	0	99.0	98.3	98.3	0	98.3	98.5
Trucks & Buses	3	2	0	5	1	5	0	6	8	2	0	10	21
% Trucks & Buses	3.2	1.3	0	2.0	0.5	1.4	0	1.0	1.7	1.7	0	1.7	1.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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N: Ray Street  
E/W: President Avenue  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936FF  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Ray Street From North			President Avenue From East			President Avenue From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
02:00 PM	9	33	4	19	72	0	132	10	0	279
02:15 PM	7	21	0	29	92	0	131	27	0	307
02:30 PM	9	25	0	39	77	0	123	47	0	320
02:45 PM	19	37	8	25	113	4	83	23	2	314
Total	44	116	12	112	354	4	469	107	2	1220
03:00 PM	24	44	1	28	108	0	103	16	0	324
03:15 PM	9	42	3	26	99	0	90	9	0	278
03:30 PM	9	43	2	18	109	3	128	9	0	321
03:45 PM	11	40	1	16	92	2	147	6	0	315
Total	53	169	7	88	408	5	468	40	0	1238
04:00 PM	9	48	3	24	97	1	158	8	0	348
04:15 PM	5	35	0	19	90	0	141	7	0	297
04:30 PM	8	46	2	16	95	0	159	8	0	334
04:45 PM	6	29	3	15	87	0	134	2	0	276
Total	28	158	8	74	369	1	592	25	0	1255
05:00 PM	9	45	1	18	82	0	168	9	0	332
05:15 PM	5	35	0	21	111	0	127	7	0	306
05:30 PM	8	40	0	18	95	0	116	4	0	281
05:45 PM	5	30	4	17	93	0	97	2	0	248
Total	27	150	5	74	381	0	508	22	0	1167
Grand Total	152	593	32	348	1512	10	2037	194	2	4880
Apprch %	19.6	76.3	4.1	18.6	80.9	0.5	91.2	8.7	0.1	
Total %	3.1	12.2	0.7	7.1	31	0.2	41.7	4	0	
Cars & Peds	144	590	32	344	1506	10	2029	183	2	4840
% Cars & Peds	94.7	99.5	100	98.9	99.6	100	99.6	94.3	100	99.2
Trucks & Buses	8	3	0	4	6	0	8	11	0	40
% Trucks & Buses	5.3	0.5	0	1.1	0.4	0	0.4	5.7	0	0.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	7	21	0	28	29	92	0	121	131	27	0	158	307
02:30 PM	9	25	0	34	39	77	0	116	123	47	0	170	320
02:45 PM	19	37	8	64	25	113	4	142	83	23	2	108	314
03:00 PM	24	44	1	69	28	108	0	136	103	16	0	119	324
Total Volume	59	127	9	195	121	390	4	515	440	113	2	555	1265
% App. Total	30.3	65.1	4.6		23.5	75.7	0.8		79.3	20.4	0.4		
PHF	.615	.722	.281	.707	.776	.863	.250	.907	.840	.601	.250	.816	.976
Cars & Peds	56	126	9	191	117	385	4	506	437	108	2	547	1244
% Cars & Peds	94.9	99.2	100	97.9	96.7	98.7	100	98.3	99.3	95.6	100	98.6	98.3
Trucks & Buses	3	1	0	4	4	5	0	9	3	5	0	8	21
% Trucks & Buses	5.1	0.8	0	2.1	3.3	1.3	0	1.7	0.7	4.4	0	1.4	1.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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N: Ray Street  
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Client: Pare/T. Thomson

File Name : 04936FF  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 2

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	9	48	3	60	24	97	1	122	158	8	0	166	348
04:15 PM	5	35	0	40	19	90	0	109	141	7	0	148	297
04:30 PM	8	46	2	56	16	95	0	111	159	8	0	167	334
04:45 PM	6	29	3	38	15	87	0	102	134	2	0	136	276
Total Volume	28	158	8	194	74	369	1	444	592	25	0	617	1255
% App. Total	14.4	81.4	4.1		16.7	83.1	0.2		95.9	4.1	0		
PHF	.778	.823	.667	.808	.771	.951	.250	.910	.931	.781	.000	.924	.902
Cars & Peds	26	157	8	191	74	369	1	444	591	23	0	614	1249
% Cars & Peds	92.9	99.4	100	98.5	100	100	100	100	99.8	92.0	0	99.5	99.5
Trucks & Buses	2	1	0	3	0	0	0	0	1	2	0	3	6
% Trucks & Buses	7.1	0.6	0	1.5	0	0	0	0	0.2	8.0	0	0.5	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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Client: Pare/T. Thomson

File Name : 04936FF  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Cars & Peds

Start Time	Ray Street From North			President Avenue From East			President Avenue From West			Int. Total
	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	
02:00 PM	8	33	4	19	72	0	132	10	0	278
02:15 PM	7	21	0	28	91	0	131	25	0	303
02:30 PM	8	25	0	37	75	0	123	46	0	314
02:45 PM	18	36	8	25	112	4	81	21	2	307
Total	41	115	12	109	350	4	467	102	2	1202
03:00 PM	23	44	1	27	107	0	102	16	0	320
03:15 PM	9	42	3	26	99	0	88	8	0	275
03:30 PM	8	43	2	18	109	3	127	9	0	319
03:45 PM	11	40	1	16	92	2	146	5	0	313
Total	51	169	7	87	407	5	463	38	0	1227
04:00 PM	8	47	3	24	97	1	157	8	0	345
04:15 PM	5	35	0	19	90	0	141	6	0	296
04:30 PM	8	46	2	16	95	0	159	8	0	334
04:45 PM	5	29	3	15	87	0	134	1	0	274
Total	26	157	8	74	369	1	591	23	0	1249
05:00 PM	8	45	1	18	82	0	168	9	0	331
05:15 PM	5	35	0	21	110	0	127	6	0	304
05:30 PM	8	40	0	18	95	0	116	4	0	281
05:45 PM	5	29	4	17	93	0	97	1	0	246
Total	26	149	5	74	380	0	508	20	0	1162
Grand Total	144	590	32	344	1506	10	2029	183	2	4840
Apprch %	18.8	77	4.2	18.5	81	0.5	91.6	8.3	0.1	
Total %	3	12.2	0.7	7.1	31.1	0.2	41.9	3.8	0	

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	7	21	0	28	28	91	0	119	131	25	0	156	303
02:30 PM	8	25	0	33	37	75	0	112	123	46	0	169	314
02:45 PM	18	36	8	62	25	112	4	141	81	21	2	104	307
03:00 PM	23	44	1	68	27	107	0	134	102	16	0	118	320
Total Volume	56	126	9	191	117	385	4	506	437	108	2	547	1244
% App. Total	29.3	66	4.7		23.1	76.1	0.8		79.9	19.7	0.4		
PHF	.609	.716	.281	.702	.791	.859	.250	.897	.834	.587	.250	.809	.972

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	8	47	3	58	24	97	1	122	157	8	0	165	345
04:15 PM	5	35	0	40	19	90	0	109	141	6	0	147	296
04:30 PM	8	46	2	56	16	95	0	111	159	8	0	167	334
04:45 PM	5	29	3	37	15	87	0	102	134	1	0	135	274
Total Volume	26	157	8	191	74	369	1	444	591	23	0	614	1249
% App. Total	13.6	82.2	4.2		16.7	83.1	0.2		96.3	3.7	0		
PHF	.813	.835	.667	.823	.771	.951	.250	.910	.929	.719	.000	.919	.905



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Client: Pare/T. Thomson

File Name : 04936FF  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Ray Street From North			President Avenue From East			President Avenue From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
02:00 PM	1	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	1	1	0	0	2	0	4
02:30 PM	1	0	0	2	2	0	0	1	0	6
02:45 PM	1	1	0	0	1	0	2	2	0	7
Total	3	1	0	3	4	0	2	5	0	18
03:00 PM	1	0	0	1	1	0	1	0	0	4
03:15 PM	0	0	0	0	0	0	2	1	0	3
03:30 PM	1	0	0	0	0	0	1	0	0	2
03:45 PM	0	0	0	0	0	0	1	1	0	2
Total	2	0	0	1	1	0	5	2	0	11
04:00 PM	1	1	0	0	0	0	1	0	0	3
04:15 PM	0	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	0	0	0	0	0	1	0	2
Total	2	1	0	0	0	0	1	2	0	6
05:00 PM	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	1	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	0	0	0	0	0	1	0	2
Total	1	1	0	0	1	0	0	2	0	5
Grand Total	8	3	0	4	6	0	8	11	0	40
Apprch %	72.7	27.3	0	40	60	0	42.1	57.9	0	
Total %	20	7.5	0	10	15	0	20	27.5	0	

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	0	0	0	0	1	1	0	2	0	2	0	2	4
02:30 PM	1	0	0	1	2	2	0	4	0	1	0	1	6
02:45 PM	1	1	0	2	0	1	0	1	2	2	0	4	7
03:00 PM	1	0	0	1	1	1	0	2	1	0	0	1	4
Total Volume	3	1	0	4	4	5	0	9	3	5	0	8	21
% App. Total	75	25	0		44.4	55.6	0		37.5	62.5	0		
PHF	.750	.250	.000	.500	.500	.625	.000	.563	.375	.625	.000	.500	.750

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	1	1	0	2	0	0	0	0	1	0	0	1	3
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	2	1	0	3	0	0	0	0	1	2	0	3	6
% App. Total	66.7	33.3	0		0	0	0		33.3	66.7	0		
PHF	.500	.250	.000	.375	.000	.000	.000	.000	.250	.500	.000	.750	.500

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Client: Pare/T. Thomson

File Name : 04936FF  
Site Code : 04936  
Start Date : 9/14/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Ray Street From North			President Avenue From East			President Avenue From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
02:00 PM	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:00 PM

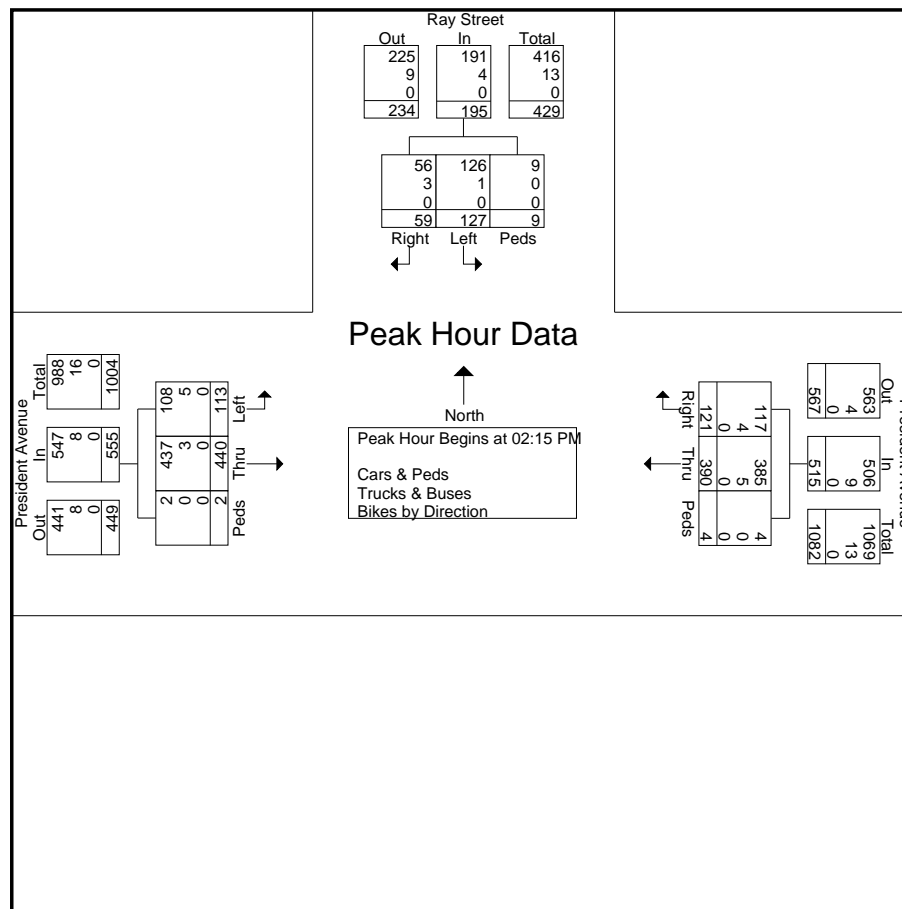
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	7	21	0	28	29	92	0	121	131	27	0	158	307
02:30 PM	9	25	0	34	39	77	0	116	123	47	0	170	320
02:45 PM	19	37	8	64	25	113	4	142	83	23	2	108	314
03:00 PM	24	44	1	69	28	108	0	136	103	16	0	119	324
Total Volume	59	127	9	195	121	390	4	515	440	113	2	555	1265
% App. Total	30.3	65.1	4.6		23.5	75.7	0.8		79.3	20.4	0.4		
PHF	.615	.722	.281	.707	.776	.863	.250	.907	.840	.601	.250	.816	.976
Cars & Peds	56	126	9	191	117	385	4	506	437	108	2	547	1244
% Cars & Peds	94.9	99.2	100	97.9	96.7	98.7	100	98.3	99.3	95.6	100	98.6	98.3
Trucks & Buses	3	1	0	4	4	5	0	9	3	5	0	8	21
% Trucks & Buses	5.1	0.8	0	2.1	3.3	1.3	0	1.7	0.7	4.4	0	1.4	1.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

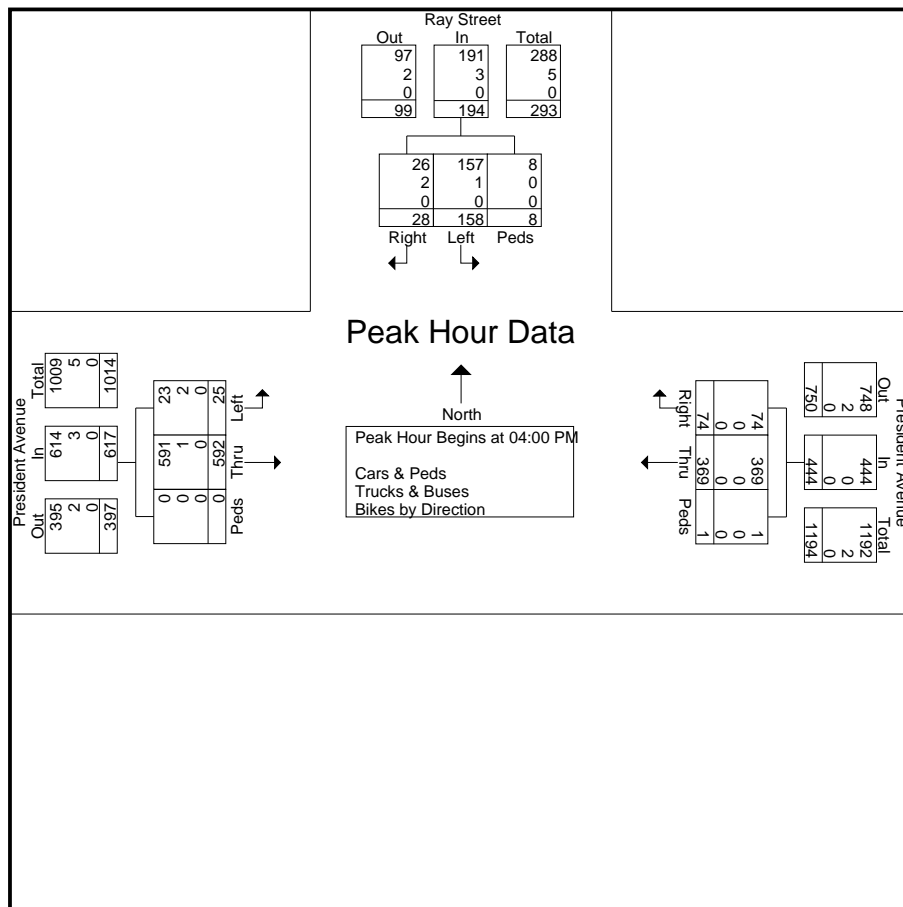


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	Ray Street From North				President Avenue From East				President Avenue From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	9	48	3	60	24	97	1	122	158	8	0	166	348
04:15 PM	5	35	0	40	19	90	0	109	141	7	0	148	297
04:30 PM	8	46	2	56	16	95	0	111	159	8	0	167	334
04:45 PM	6	29	3	38	15	87	0	102	134	2	0	136	276
Total Volume	28	158	8	194	74	369	1	444	592	25	0	617	1255
% App. Total	14.4	81.4	4.1		16.7	83.1	0.2		95.9	4.1	0		
PHF	.778	.823	.667	.808	.771	.951	.250	.910	.931	.781	.000	.924	.902
Cars & Peds	26	157	8	191	74	369	1	444	591	23	0	614	1249
% Cars & Peds	92.9	99.4	100	98.5	100	100	100	100	99.8	92.0	0	99.5	99.5
Trucks & Buses	2	1	0	3	0	0	0	0	1	2	0	3	6
% Trucks & Buses	7.1	0.6	0	1.5	0	0	0	0	0.2	8.0	0	0.5	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



**Transportation Data Corporation**

Mario Perone, mperone1@verizon.net  
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N/S: Ray Street  
E: Durfee HS Student Parking Lot  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936G  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

Start Time	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			Int. Total
	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	
07:00 AM	26	15	0	3	9	0	41	6	0	100
07:15 AM	21	34	0	7	26	0	69	16	0	173
07:30 AM	21	56	0	27	62	0	103	42	0	311
07:45 AM	31	36	0	45	61	0	45	34	0	252
Total	99	141	0	82	158	0	258	98	0	836
08:00 AM	28	3	0	5	8	0	7	35	0	86
08:15 AM	34	6	0	4	7	0	12	55	0	118
08:30 AM	51	2	0	2	5	0	2	32	0	94
08:45 AM	20	3	0	1	2	0	7	30	0	63
Total	133	14	0	12	22	0	28	152	0	361
Grand Total	232	155	0	94	180	0	286	250	0	1197
Apprch %	59.9	40.1	0	34.3	65.7	0	53.4	46.6	0	
Total %	19.4	12.9	0	7.9	15	0	23.9	20.9	0	
Cars & Peds	229	155	0	94	180	0	286	247	0	1191
% Cars & Peds	98.7	100	0	100	100	0	100	98.8	0	99.5
Trucks & Buses	3	0	0	0	0	0	0	3	0	6
% Trucks & Buses	1.3	0	0	0	0	0	0	1.2	0	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	26	15	0	41	3	9	0	12	41	6	0	47	100
07:15 AM	21	34	0	55	7	26	0	33	69	16	0	85	173
07:30 AM	21	56	0	77	27	62	0	89	103	42	0	145	311
07:45 AM	31	36	0	67	45	61	0	106	45	34	0	79	252
Total Volume	99	141	0	240	82	158	0	240	258	98	0	356	836
% App. Total	41.2	58.8	0		34.2	65.8	0		72.5	27.5	0		
PHF	.798	.629	.000	.779	.456	.637	.000	.566	.626	.583	.000	.614	.672
Cars & Peds	98	141	0	239	82	158	0	240	258	95	0	353	832
% Cars & Peds	99.0	100	0	99.6	100	100	0	100	100	96.9	0	99.2	99.5
Trucks & Buses	1	0	0	1	0	0	0	0	0	3	0	3	4
% Trucks & Buses	1.0	0	0	0.4	0	0	0	0	0	3.1	0	0.8	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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N/S: Ray Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936G  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	26	15	0	3	9	0	41	6	0	100
07:15 AM	21	34	0	7	26	0	69	15	0	172
07:30 AM	20	56	0	27	62	0	103	42	0	310
07:45 AM	31	36	0	45	61	0	45	32	0	250
Total	98	141	0	82	158	0	258	95	0	832
08:00 AM	28	3	0	5	8	0	7	35	0	86
08:15 AM	33	6	0	4	7	0	12	55	0	117
08:30 AM	50	2	0	2	5	0	2	32	0	93
08:45 AM	20	3	0	1	2	0	7	30	0	63
Total	131	14	0	12	22	0	28	152	0	359
Grand Total	229	155	0	94	180	0	286	247	0	1191
Apprch %	59.6	40.4	0	34.3	65.7	0	53.7	46.3	0	
Total %	19.2	13	0	7.9	15.1	0	24	20.7	0	

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	26	15	0	41	3	9	0	12	41	6	0	47	100
07:15 AM	21	34	0	55	7	26	0	33	69	15	0	84	172
07:30 AM	20	<b>56</b>	0	<b>76</b>	27	<b>62</b>	0	<b>89</b>	<b>103</b>	<b>42</b>	0	<b>145</b>	<b>310</b>
07:45 AM	<b>31</b>	36	0	67	<b>45</b>	61	0	<b>106</b>	45	32	0	77	250
Total Volume	98	141	0	239	82	158	0	240	258	95	0	353	832
% App. Total	41	59	0		34.2	65.8	0		73.1	26.9	0		
PHF	.790	.629	.000	.786	.456	.637	.000	.566	.626	.565	.000	.609	.671



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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936G  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

Start Time	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			Int. Total
	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	1	0	1
07:30 AM	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	2	0	2
Total	1	0	0	0	0	0	0	3	0	4
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	1	0	0	0	0	0	0	0	0	1
08:30 AM	1	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	0	0	0	0	0	0	2
Grand Total	3	0	0	0	0	0	0	3	0	6
Apprch %	100	0	0	0	0	0	0	100	0	
Total %	50	0	0	0	0	0	0	50	0	

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	1	0	0	1	0	0	0	0	0	3	0	3	4
% App. Total	100	0	0		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.000	.000	.000	.000	.375	.000	.375	.500

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File Name : 04936G  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

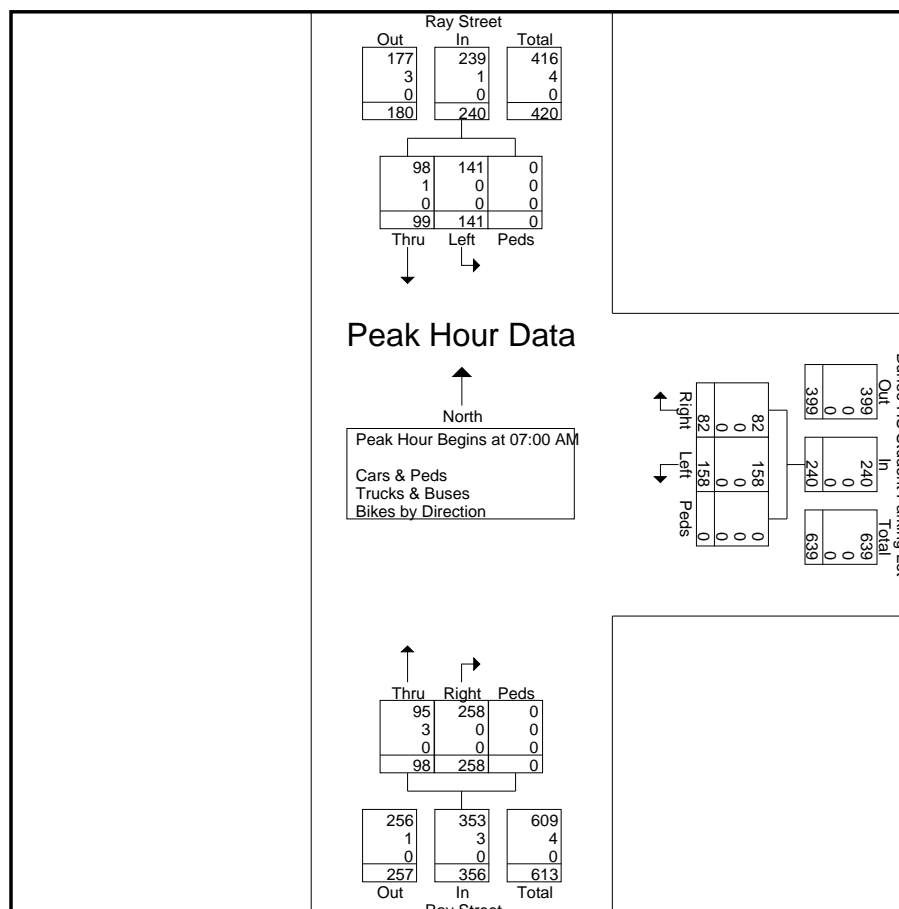
	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : 04936G  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	26	15	0	41	3	9	0	12	41	6	0	47	100
07:15 AM	21	34	0	55	7	26	0	33	69	16	0	85	173
07:30 AM	21	<b>56</b>	0	<b>77</b>	27	<b>62</b>	0	<b>89</b>	<b>103</b>	<b>42</b>	0	<b>145</b>	<b>311</b>
07:45 AM	<b>31</b>	36	0	67	<b>45</b>	61	0	<b>106</b>	45	34	0	79	252
Total Volume	99	141	0	240	82	158	0	240	258	98	0	356	836
% App. Total	41.2	58.8	0		34.2	65.8	0		72.5	27.5	0		
PHF	.798	.629	.000	.779	.456	.637	.000	.566	.626	.583	.000	.614	.672
Cars & Peds	98	141	0	239	82	158	0	240	258	95	0	353	832
% Cars & Peds	99.0	100	0	99.6	100	100	0	100	100	96.9	0	99.2	99.5
Trucks & Buses	1	0	0	1	0	0	0	0	0	3	0	3	4
% Trucks & Buses	1.0	0	0	0.4	0	0	0	0	0	3.1	0	0.8	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

Start Time	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			Int. Total
	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	
02:00 PM	19	2	0	0	1	0	4	20	0	46
02:15 PM	20	14	0	0	3	0	31	35	0	103
02:30 PM	28	22	1	10	16	0	57	31	0	165
02:45 PM	21	12	13	62	65	6	32	27	0	238
Total	88	50	14	72	85	6	124	113	0	552
03:00 PM	34	1	0	59	27	5	6	37	0	169
03:15 PM	26	2	7	10	20	0	6	20	0	91
03:30 PM	20	2	1	1	14	0	4	24	0	66
03:45 PM	23	1	0	3	3	0	1	14	0	45
Total	103	6	8	73	64	5	17	95	0	371
04:00 PM	21	0	0	3	1	0	0	19	0	44
04:15 PM	16	0	3	1	1	0	1	18	0	40
04:30 PM	17	0	0	1	4	0	0	17	0	39
04:45 PM	20	0	2	0	1	0	0	16	0	39
Total	74	0	5	5	7	0	1	70	0	162
05:00 PM	32	0	0	2	0	0	0	27	0	61
05:15 PM	20	0	0	2	2	0	1	24	0	49
05:30 PM	20	0	0	0	2	1	0	18	0	41
05:45 PM	14	0	0	0	0	0	0	12	0	26
Total	86	0	0	4	4	1	1	81	0	177
Grand Total	351	56	27	154	160	12	143	359	0	1262
Apprch %	80.9	12.9	6.2	47.2	49.1	3.7	28.5	71.5	0	
Total %	27.8	4.4	2.1	12.2	12.7	1	11.3	28.4	0	
Cars & Peds	346	56	27	154	160	12	143	355	0	1253
% Cars & Peds	98.6	100	100	100	100	100	100	98.9	0	99.3
Trucks & Buses	5	0	0	0	0	0	0	3	0	8
% Trucks & Buses	1.4	0	0	0	0	0	0	0.8	0	0.6
Bikes by Direction	0	0	0	0	0	0	0	1	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0.3	0	0.1

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	20	14	0	34	0	3	0	3	31	35	0	66	103
02:30 PM	28	22	1	51	10	16	0	26	57	31	0	88	165
02:45 PM	21	12	13	46	62	65	6	133	32	27	0	59	238
03:00 PM	34	1	0	35	59	27	5	91	6	37	0	43	169
Total Volume	103	49	14	166	131	111	11	253	126	130	0	256	675
% App. Total	62	29.5	8.4		51.8	43.9	4.3		49.2	50.8	0		
PHF	.757	.557	.269	.814	.528	.427	.458	.476	.553	.878	.000	.727	.709
Cars & Peds	100	49	14	163	131	111	11	253	126	128	0	254	670
% Cars & Peds	97.1	100	100	98.2	100	100	100	100	100	98.5	0	99.2	99.3
Trucks & Buses	3	0	0	3	0	0	0	0	0	2	0	2	5
% Trucks & Buses	2.9	0	0	1.8	0	0	0	0	0	1.5	0	0.8	0.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	20	0	2	22	0	1	0	1	0	16	0	16	39
05:00 PM	32	0	0	32	2	0	0	2	0	27	0	27	61
05:15 PM	20	0	0	20	2	2	0	4	1	24	0	25	49
05:30 PM	20	0	0	20	0	2	1	3	0	18	0	18	41
Total Volume	92	0	2	94	4	5	1	10	1	85	0	86	190
% App. Total	97.9	0	2.1		40	50	10		1.2	98.8	0		
PHF	.719	.000	.250	.734	.500	.625	.250	.625	.250	.787	.000	.796	.779
Cars & Peds	92	0	2	94	4	5	1	10	1	85	0	86	190
% Cars & Peds	100	0	100	100	100	100	100	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

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Client: Pare/T. Thomson

File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

Start Time	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			Int. Total
	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	
02:00 PM	19	2	0	0	1	0	4	20	0	46
02:15 PM	20	14	0	0	3	0	31	35	0	103
02:30 PM	28	22	1	10	16	0	57	30	0	164
02:45 PM	18	12	13	62	65	6	32	27	0	235
Total	85	50	14	72	85	6	124	112	0	548
03:00 PM	34	1	0	59	27	5	6	36	0	168
03:15 PM	25	2	7	10	20	0	6	19	0	89
03:30 PM	20	2	1	1	14	0	4	24	0	66
03:45 PM	23	1	0	3	3	0	1	14	0	45
Total	102	6	8	73	64	5	17	93	0	368
04:00 PM	20	0	0	3	1	0	0	18	0	42
04:15 PM	16	0	3	1	1	0	1	18	0	40
04:30 PM	17	0	0	1	4	0	0	17	0	39
04:45 PM	20	0	2	0	1	0	0	16	0	39
Total	73	0	5	5	7	0	1	69	0	160
05:00 PM	32	0	0	2	0	0	0	27	0	61
05:15 PM	20	0	0	2	2	0	1	24	0	49
05:30 PM	20	0	0	0	2	1	0	18	0	41
05:45 PM	14	0	0	0	0	0	0	12	0	26
Total	86	0	0	4	4	1	1	81	0	177
Grand Total	346	56	27	154	160	12	143	355	0	1253
Apprch %	80.7	13.1	6.3	47.2	49.1	3.7	28.7	71.3	0	
Total %	27.6	4.5	2.2	12.3	12.8	1	11.4	28.3	0	

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	20	14	0	34	0	3	0	3	31	35	0	66	103
02:30 PM	28	22	1	51	10	16	0	26	57	30	0	87	164
02:45 PM	18	12	13	43	62	65	6	133	32	27	0	59	235
03:00 PM	34	1	0	35	59	27	5	91	6	36	0	42	168
Total Volume	100	49	14	163	131	111	11	253	126	128	0	254	670
% App. Total	61.3	30.1	8.6		51.8	43.9	4.3		49.6	50.4	0		
PHF	.735	.557	.269	.799	.528	.427	.458	.476	.553	.889	.000	.730	.713

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	20	0	2	22	0	1	0	1	0	16	0	16	39
05:00 PM	32	0	0	32	2	0	0	2	0	27	0	27	61
05:15 PM	20	0	0	20	2	2	0	4	1	24	0	25	49
05:30 PM	20	0	0	20	0	2	1	3	0	18	0	18	41
Total Volume	92	0	2	94	4	5	1	10	1	85	0	86	190
% App. Total	97.9	0	2.1		40	50	10		1.2	98.8	0		
PHF	.719	.000	.250	.734	.500	.625	.250	.625	.250	.787	.000	.796	.779



**Transportation Data Corporation**  
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N/S: Ray Street  
E: Durfee HS Student Parking Lot  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

Start Time	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			Int. Total
	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	1	0	1
02:45 PM	3	0	0	0	0	0	0	0	0	3
Total	3	0	0	0	0	0	0	1	0	4
03:00 PM	0	0	0	0	0	0	0	1	0	1
03:15 PM	1	0	0	0	0	0	0	1	0	2
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	0	0	2	0	3
04:00 PM	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	5	0	0	0	0	0	0	3	0	8
Apprch %	100	0	0	0	0	0	0	100	0	
Total %	62.5	0	0	0	0	0	0	37.5	0	

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:30 PM													
02:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
02:45 PM	3	0	0	3	0	0	0	0	0	0	0	0	3
03:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
03:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	4	0	0	4	0	0	0	0	0	3	0	3	7
% App. Total	100	0	0		0	0	0		0	100	0		
PHF	.333	.000	.000	.333	.000	.000	.000	.000	.000	.750	.000	.750	.583

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	0	0	0	0	0	0	0	1
% App. Total	100	0	0		0	0	0		0	0	0		
PHF	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

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N/S: Ray Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

Start Time	Ray Street From North			Durfee HS Student Parking Lot From East			Ray Street From South			Int. Total
	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	
02:00 PM	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	1	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	0	1
Apprch %	0	0	0	0	0	0	0	100	0	
Total %	0	0	0	0	0	0	0	100	0	

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:00 PM

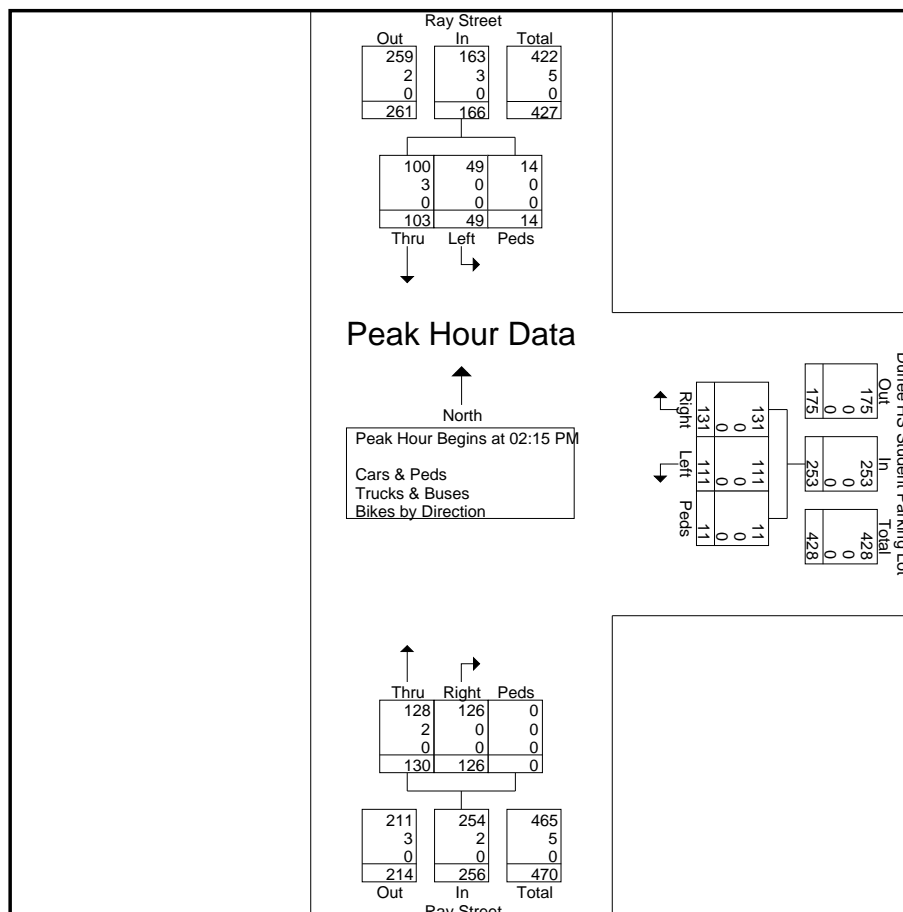
04:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

**Transportation Data Corporation**  
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N/S: Ray Street  
E: Durfee HS Student Parking Lot  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	20	14	0	34	0	3	0	3	31	35	0	66	103
02:30 PM	28	22	1	51	10	16	0	26	57	31	0	88	165
02:45 PM	21	12	13	46	62	65	6	133	32	27	0	59	238
03:00 PM	34	1	0	35	59	27	5	91	6	37	0	43	169
Total Volume	103	49	14	166	131	111	11	253	126	130	0	256	675
% App. Total	62	29.5	8.4		51.8	43.9	4.3		49.2	50.8	0		
PHF	.757	.557	.269	.814	.528	.427	.458	.476	.553	.878	.000	.727	.709
Cars & Peds	100	49	14	163	131	111	11	253	126	128	0	254	670
% Cars & Peds	97.1	100	100	98.2	100	100	100	100	100	98.5	0	99.2	99.3
Trucks & Buses	3	0	0	3	0	0	0	0	0	2	0	2	5
% Trucks & Buses	2.9	0	0	1.8	0	0	0	0	0	1.5	0	0.8	0.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

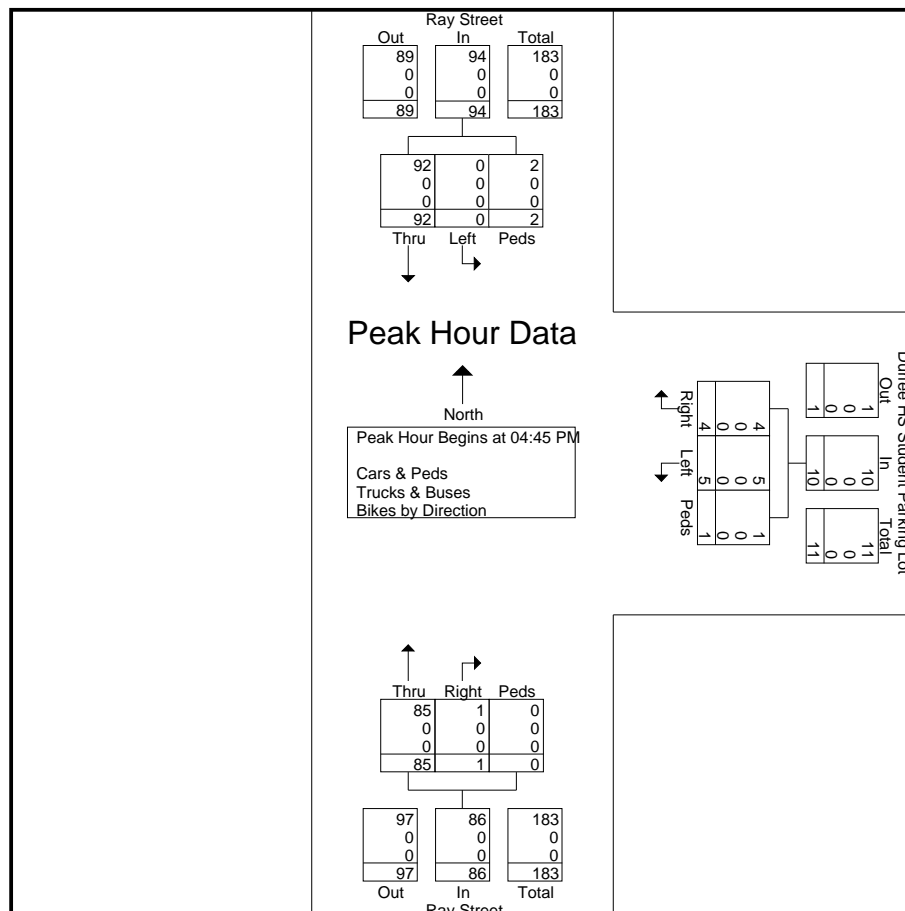


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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936GG  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Ray Street From North				Durfee HS Student Parking Lot From East				Ray Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	20	0	2	22	0	1	0	1	0	16	0	16	39
05:00 PM	32	0	0	32	2	0	0	2	0	27	0	27	61
05:15 PM	20	0	0	20	2	2	0	4	1	24	0	25	49
05:30 PM	20	0	0	20	0	2	1	3	0	18	0	18	41
Total Volume	92	0	2	94	4	5	1	10	1	85	0	86	190
% App. Total	97.9	0	2.1		40	50	10		1.2	98.8	0		
PHF	.719	.000	.250	.734	.500	.625	.250	.625	.250	.787	.000	.796	.779
Cars & Peds	92	0	2	94	4	5	1	10	1	85	0	86	190
% Cars & Peds	100	0	100	100	100	100	100	100	100	100	0	100	100
Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks & Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



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N/S: Elsbree Street  
W: Durfee Sports Complex North Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936H  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	3	71	0	74	6	0	2	3	0	159
07:15 AM	26	64	0	145	62	0	35	6	0	338
07:30 AM	51	85	0	170	93	0	55	18	0	472
07:45 AM	22	96	0	219	17	0	16	8	0	378
Total	102	316	0	608	178	0	108	35	0	1347
08:00 AM	5	58	0	132	1	0	0	3	0	199
08:15 AM	0	67	0	114	2	0	0	1	0	184
08:30 AM	3	79	0	100	0	0	0	0	0	182
08:45 AM	0	54	0	150	0	0	0	0	0	204
Total	8	258	0	496	3	0	0	4	0	769
Grand Total	110	574	0	1104	181	0	108	39	0	2116
Apprch %	16.1	83.9	0	85.9	14.1	0	73.5	26.5	0	
Total %	5.2	27.1	0	52.2	8.6	0	5.1	1.8	0	
Cars & Peds	110	562	0	1087	181	0	108	39	0	2087
% Cars & Peds	100	97.9	0	98.5	100	0	100	100	0	98.6
Trucks & Buses	0	12	0	16	0	0	0	0	0	28
% Trucks & Buses	0	2.1	0	1.4	0	0	0	0	0	1.3
Bikes by Direction	0	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0.1	0	0	0	0	0	0

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	26	64	0	90	145	62	0	207	35	6	0	41	338
07:30 AM	51	85	0	136	170	93	0	263	55	18	0	73	472
07:45 AM	22	96	0	118	219	17	0	236	16	8	0	24	378
08:00 AM	5	58	0	63	132	1	0	133	0	3	0	3	199
Total Volume	104	303	0	407	666	173	0	839	106	35	0	141	1387
% App. Total	25.6	74.4	0		79.4	20.6	0		75.2	24.8	0		
PHF	.510	.789	.000	.748	.760	.465	.000	.798	.482	.486	.000	.483	.735
Cars & Peds	104	293	0	397	653	173	0	826	106	35	0	141	1364
% Cars & Peds	100	96.7	0	97.5	98.0	100	0	98.5	100	100	0	100	98.3
Trucks & Buses	0	10	0	10	12	0	0	12	0	0	0	0	22
% Trucks & Buses	0	3.3	0	2.5	1.8	0	0	1.4	0	0	0	0	1.6
Bikes by Direction	0	0	0	0	1	0	0	1	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0.2	0	0	0.1	0	0	0	0	0.1

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N/S: Elsbree Street  
W: Durfee Sports Complex North Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936H  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	3	71	0	71	6	0	2	3	0	156
07:15 AM	26	62	0	144	62	0	35	6	0	335
07:30 AM	51	80	0	162	93	0	55	18	0	459
07:45 AM	22	93	0	216	17	0	16	8	0	372
Total	102	306	0	593	178	0	108	35	0	1322
08:00 AM	5	58	0	131	1	0	0	3	0	198
08:15 AM	0	66	0	114	2	0	0	1	0	183
08:30 AM	3	79	0	100	0	0	0	0	0	182
08:45 AM	0	53	0	149	0	0	0	0	0	202
Total	8	256	0	494	3	0	0	4	0	765
Grand Total	110	562	0	1087	181	0	108	39	0	2087
Apprch %	16.4	83.6	0	85.7	14.3	0	73.5	26.5	0	
Total %	5.3	26.9	0	52.1	8.7	0	5.2	1.9	0	

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	26	62	0	88	144	62	0	206	35	6	0	41	335
07:30 AM	51	80	0	131	162	93	0	255	55	18	0	73	459
07:45 AM	22	93	0	115	216	17	0	233	16	8	0	24	372
08:00 AM	5	58	0	63	131	1	0	132	0	3	0	3	198
Total Volume	104	293	0	397	653	173	0	826	106	35	0	141	1364
% App. Total	26.2	73.8	0		79.1	20.9	0		75.2	24.8	0		
PHF	.510	.788	.000	.758	.756	.465	.000	.810	.482	.486	.000	.483	.743



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Client: Pare/T. Thomson

File Name : 04936H  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	0	0	3	0	0	0	0	0	3
07:15 AM	0	2	0	1	0	0	0	0	0	3
07:30 AM	0	5	0	8	0	0	0	0	0	13
07:45 AM	0	3	0	2	0	0	0	0	0	5
Total	0	10	0	14	0	0	0	0	0	24
08:00 AM	0	0	0	1	0	0	0	0	0	1
08:15 AM	0	1	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	1	0	0	0	0	0	2
Total	0	2	0	2	0	0	0	0	0	4
Grand Total	0	12	0	16	0	0	0	0	0	28
Apprch %	0	100	0	100	0	0	0	0	0	
Total %	0	42.9	0	57.1	0	0	0	0	0	

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	3	0	0	3	0	0	0	0	3
07:15 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
07:30 AM	0	5	0	5	8	0	0	8	0	0	0	0	13
07:45 AM	0	3	0	3	2	0	0	2	0	0	0	0	5
Total Volume	0	10	0	10	14	0	0	14	0	0	0	0	24
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.500	.000	.500	.438	.000	.000	.438	.000	.000	.000	.000	.462

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File Name : 04936H  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Bikes by Direction

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	1	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	0	0	0	0	1
Apprch %	0	0	0	100	0	0	0	0	0	
Total %	0	0	0	100	0	0	0	0	0	

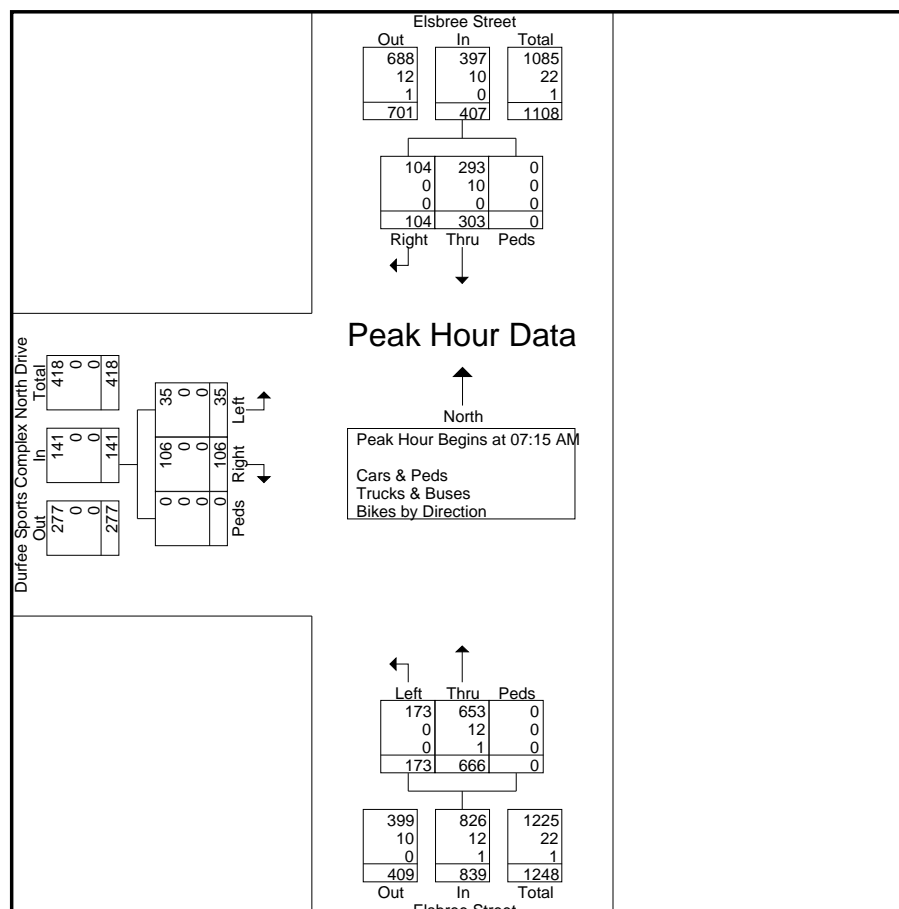
	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	0	0	0	1	0	0	1	0	0	0	0	1
% App. Total	0	0	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.250

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N/S: Elsbree Street  
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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936H  
Site Code : 04936  
Start Date : 9/13/2017  
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	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	26	64	0	90	145	62	0	207	35	6	0	41	338
07:30 AM	51	85	0	136	170	93	0	263	55	18	0	73	472
07:45 AM	22	96	0	118	219	17	0	236	16	8	0	24	378
08:00 AM	5	58	0	63	132	1	0	133	0	3	0	3	199
Total Volume	104	303	0	407	666	173	0	839	106	35	0	141	1387
% App. Total	25.6	74.4	0		79.4	20.6	0		75.2	24.8	0		
PHF	.510	.789	.000	.748	.760	.465	.000	.798	.482	.486	.000	.483	.735
Cars & Peds	104	293	0	397	653	173	0	826	106	35	0	141	1364
% Cars & Peds	100	96.7	0	97.5	98.0	100	0	98.5	100	100	0	100	98.3
Trucks & Buses	0	10	0	10	12	0	0	12	0	0	0	0	22
% Trucks & Buses	0	3.3	0	2.5	1.8	0	0	1.4	0	0	0	0	1.6
Bikes by Direction	0	0	0	0	1	0	0	1	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0.2	0	0	0.1	0	0	0	0	0.1



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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
02:00 PM	0	131	0	97	2	0	0	2	0	232
02:15 PM	2	83	0	100	6	0	0	2	0	193
02:30 PM	9	95	0	94	7	0	4	3	0	212
02:45 PM	5	83	0	98	2	0	17	31	0	236
Total	16	392	0	389	17	0	21	38	0	873
03:00 PM	6	116	0	120	1	0	6	6	0	255
03:15 PM	0	90	0	104	3	0	1	4	0	202
03:30 PM	1	98	0	106	1	0	1	2	0	209
03:45 PM	0	109	0	121	0	0	0	0	0	230
Total	7	413	0	451	5	0	8	12	0	896
04:00 PM	1	109	0	94	2	0	1	3	0	210
04:15 PM	0	96	0	113	0	0	0	0	0	209
04:30 PM	0	139	0	95	1	0	0	0	0	235
04:45 PM	0	74	0	100	0	0	1	2	0	177
Total	1	418	0	402	3	0	2	5	0	831
05:00 PM	6	108	0	99	3	0	4	3	0	223
05:15 PM	2	77	0	111	2	0	3	6	0	201
05:30 PM	2	100	0	100	5	0	0	9	0	216
05:45 PM	4	78	0	87	5	0	1	1	0	176
Total	14	363	0	397	15	0	8	19	0	816
Grand Total	38	1586	0	1639	40	0	39	74	0	3416
Apprch %	2.3	97.7	0	97.6	2.4	0	34.5	65.5	0	
Total %	1.1	46.4	0	48	1.2	0	1.1	2.2	0	
Cars & Peds	38	1567	0	1621	40	0	39	74	0	3379
% Cars & Peds	100	98.8	0	98.9	100	0	100	100	0	98.9
Trucks & Buses	0	15	0	14	0	0	0	0	0	29
% Trucks & Buses	0	0.9	0	0.9	0	0	0	0	0	0.8
Bikes by Direction	0	4	0	4	0	0	0	0	0	8
% Bikes by Direction	0	0.3	0	0.2	0	0	0	0	0	0.2

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:30 PM													
02:30 PM	9	95	0	104	94	7	0	101	4	3	0	7	212
02:45 PM	5	83	0	88	98	2	0	100	17	31	0	48	236
03:00 PM	6	116	0	122	120	1	0	121	6	6	0	12	255
03:15 PM	0	90	0	90	104	3	0	107	1	4	0	5	202
Total Volume	20	384	0	404	416	13	0	429	28	44	0	72	905
% App. Total	5	95	0		97	3	0		38.9	61.1	0		
PHF	.556	.828	.000	.828	.867	.464	.000	.886	.412	.355	.000	.375	.887
Cars & Peds	20	380	0	400	408	13	0	421	28	44	0	72	893
% Cars & Peds	100	99.0	0	99.0	98.1	100	0	98.1	100	100	0	100	98.7
Trucks & Buses	0	3	0	3	6	0	0	6	0	0	0	0	9
% Trucks & Buses	0	0.8	0	0.7	1.4	0	0	1.4	0	0	0	0	1.0
Bikes by Direction	0	1	0	1	2	0	0	2	0	0	0	0	3
% Bikes by Direction	0	0.3	0	0.2	0.5	0	0	0.5	0	0	0	0	0.3

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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
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	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	96	0	96	113	0	0	113	0	0	0	0	209
04:30 PM	0	139	0	139	95	1	0	96	0	0	0	0	235
04:45 PM	0	74	0	74	100	0	0	100	1	2	0	3	177
05:00 PM	6	108	0	114	99	3	0	102	4	3	0	7	223
Total Volume	6	417	0	423	407	4	0	411	5	5	0	10	844
% App. Total	1.4	98.6	0		99	1	0		50	50	0		
PHF	.250	.750	.000	.761	.900	.333	.000	.909	.313	.417	.000	.357	.898
Cars & Peds	6	413	0	419	404	4	0	408	5	5	0	10	837
% Cars & Peds	100	99.0	0	99.1	99.3	100	0	99.3	100	100	0	100	99.2
Trucks & Buses	0	3	0	3	2	0	0	2	0	0	0	0	5
% Trucks & Buses	0	0.7	0	0.7	0.5	0	0	0.5	0	0	0	0	0.6
Bikes by Direction	0	1	0	1	1	0	0	1	0	0	0	0	2
% Bikes by Direction	0	0.2	0	0.2	0.2	0	0	0.2	0	0	0	0	0.2

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Client: Pare/T. Thomson

File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Cars & Peds

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
02:00 PM	0	129	0	96	2	0	0	2	0	229
02:15 PM	2	81	0	99	6	0	0	2	0	190
02:30 PM	9	93	0	92	7	0	4	3	0	208
02:45 PM	5	83	0	97	2	0	17	31	0	235
Total	16	386	0	384	17	0	21	38	0	862
03:00 PM	6	115	0	116	1	0	6	6	0	250
03:15 PM	0	89	0	103	3	0	1	4	0	200
03:30 PM	1	98	0	105	1	0	1	2	0	208
03:45 PM	0	106	0	121	0	0	0	0	0	227
Total	7	408	0	445	5	0	8	12	0	885
04:00 PM	1	108	0	93	2	0	1	3	0	208
04:15 PM	0	95	0	113	0	0	0	0	0	208
04:30 PM	0	138	0	94	1	0	0	0	0	233
04:45 PM	0	72	0	100	0	0	1	2	0	175
Total	1	413	0	400	3	0	2	5	0	824
05:00 PM	6	108	0	97	3	0	4	3	0	221
05:15 PM	2	76	0	110	2	0	3	6	0	199
05:30 PM	2	99	0	99	5	0	0	9	0	214
05:45 PM	4	77	0	86	5	0	1	1	0	174
Total	14	360	0	392	15	0	8	19	0	808
Grand Total	38	1567	0	1621	40	0	39	74	0	3379
Apprch %	2.4	97.6	0	97.6	2.4	0	34.5	65.5	0	
Total %	1.1	46.4	0	48	1.2	0	1.2	2.2	0	

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:30 PM													
02:30 PM	9	93	0	102	92	7	0	99	4	3	0	7	208
02:45 PM	5	83	0	88	97	2	0	99	17	31	0	48	235
03:00 PM	6	115	0	121	116	1	0	117	6	6	0	12	250
03:15 PM	0	89	0	89	103	3	0	106	1	4	0	5	200
Total Volume	20	380	0	400	408	13	0	421	28	44	0	72	893
% App. Total	5	95	0		96.9	3.1	0		38.9	61.1	0		
PHF	.556	.826	.000	.826	.879	.464	.000	.900	.412	.355	.000	.375	.893

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:15 PM

04:15 PM	0	95	0	95	113	0	0	113	0	0	0	0	208
04:30 PM	0	138	0	138	94	1	0	95	0	0	0	0	233
04:45 PM	0	72	0	72	100	0	0	100	1	2	0	3	175
05:00 PM	6	108	0	114	97	3	0	100	4	3	0	7	221
Total Volume	6	413	0	419	404	4	0	408	5	5	0	10	837
% App. Total	1.4	98.6	0		99	1	0		50	50	0		
PHF	.250	.748	.000	.759	.894	.333	.000	.903	.313	.417	.000	.357	.898



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City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

Groups Printed- Trucks & Buses

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
02:00 PM	0	2	0	1	0	0	0	0	0	3
02:15 PM	0	2	0	1	0	0	0	0	0	3
02:30 PM	0	1	0	2	0	0	0	0	0	3
02:45 PM	0	0	0	1	0	0	0	0	0	1
Total	0	5	0	5	0	0	0	0	0	10
03:00 PM	0	1	0	2	0	0	0	0	0	3
03:15 PM	0	1	0	1	0	0	0	0	0	2
03:30 PM	0	0	0	1	0	0	0	0	0	1
03:45 PM	0	2	0	0	0	0	0	0	0	2
Total	0	4	0	4	0	0	0	0	0	8
04:00 PM	0	1	0	1	0	0	0	0	0	2
04:15 PM	0	1	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	1	0	0	0	0	0	1
04:45 PM	0	2	0	0	0	0	0	0	0	2
Total	0	4	0	2	0	0	0	0	0	6
05:00 PM	0	0	0	1	0	0	0	0	0	1
05:15 PM	0	1	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	1	0	0	0	0	0	1
05:45 PM	0	1	0	1	0	0	0	0	0	2
Total	0	2	0	3	0	0	0	0	0	5
Grand Total	0	15	0	14	0	0	0	0	0	29
Apprch %	0	100	0	100	0	0	0	0	0	
Total %	0	51.7	0	48.3	0	0	0	0	0	

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
02:15 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
02:30 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
02:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	5	0	5	5	0	0	5	0	0	0	0	10
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.625	.000	.625	.625	.000	.000	.625	.000	.000	.000	.000	.833

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM

04:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
04:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
04:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Volume	0	4	0	4	2	0	0	2	0	0	0	0	6
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.500	.000	.500	.500	.000	.000	.500	.000	.000	.000	.000	.750

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File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
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Groups Printed- Bikes by Direction

	Elsbree Street From North			Elsbree Street From South			Durfee Sports Complex North Drive From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
02:00 PM	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	1
03:00 PM	0	0	0	2	0	0	0	0	0	2
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	1	0	0	0	0	0	0	0	1
Total	0	1	0	2	0	0	0	0	0	3
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	1	0	0	0	0	0	1
05:15 PM	0	0	0	1	0	0	0	0	0	1
05:30 PM	0	1	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	2	0	0	0	0	0	3
Grand Total	0	4	0	4	0	0	0	0	0	8
Apprch %	0	100	0	100	0	0	0	0	0	
Total %	0	50	0	50	0	0	0	0	0	

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:15 PM													
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
Total Volume	0	1	0	1	2	0	0	2	0	0	0	0	3
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.375

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

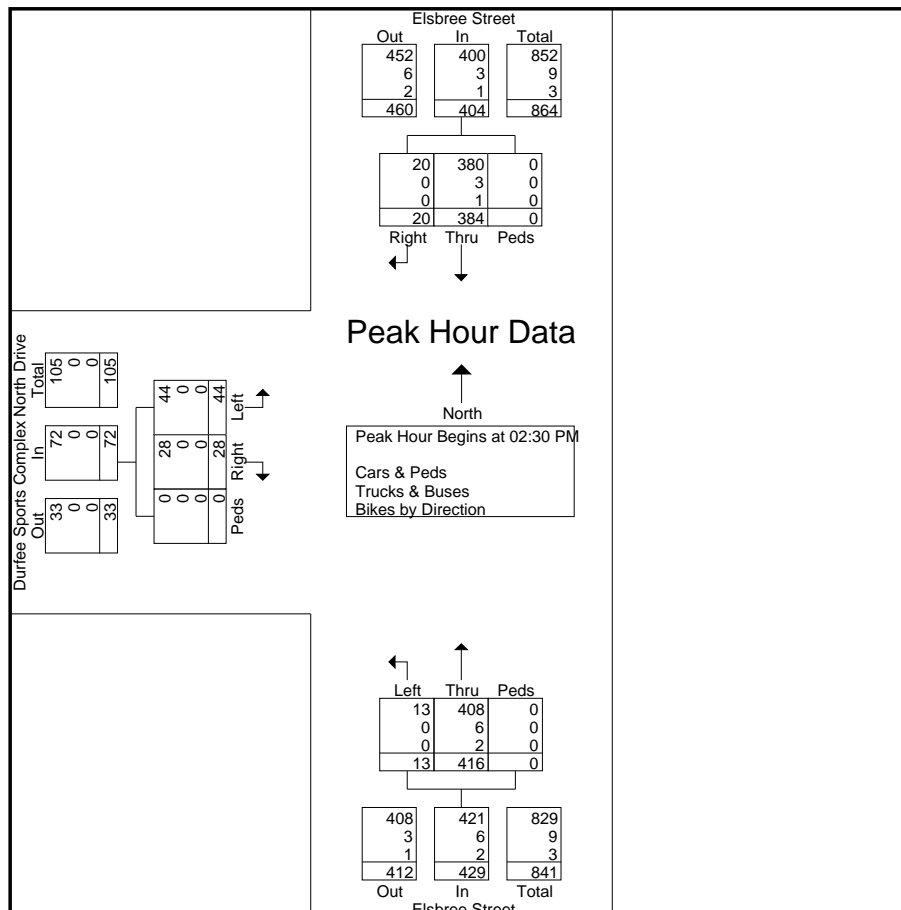
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
05:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	1	0	1	2	0	0	2	0	0	0	0	3
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.250	.000	.250	.500	.000	.000	.500	.000	.000	.000	.000	.750

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N/S: Elsbree Street  
W: Durfee Sports Complex North Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 1

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 03:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:30 PM													
02:30 PM	9	95	0	104	94	7	0	101	4	3	0	7	212
02:45 PM	5	83	0	88	98	2	0	100	17	31	0	48	236
03:00 PM	6	116	0	122	120	1	0	121	6	6	0	12	255
03:15 PM	0	90	0	90	104	3	0	107	1	4	0	5	202
Total Volume	20	384	0	404	416	13	0	429	28	44	0	72	905
% App. Total	5	95	0		97	3	0		38.9	61.1	0		
PHF	.556	.828	.000	.828	.867	.464	.000	.886	.412	.355	.000	.375	.887
Cars & Peds	20	380	0	400	408	13	0	421	28	44	0	72	893
% Cars & Peds	100	99.0	0	99.0	98.1	100	0	98.1	100	100	0	100	98.7
Trucks & Buses	0	3	0	3	6	0	0	6	0	0	0	0	9
% Trucks & Buses	0	0.8	0	0.7	1.4	0	0	1.4	0	0	0	0	1.0
Bikes by Direction	0	1	0	1	2	0	0	2	0	0	0	0	3
% Bikes by Direction	0	0.3	0	0.2	0.5	0	0	0.5	0	0	0	0	0.3

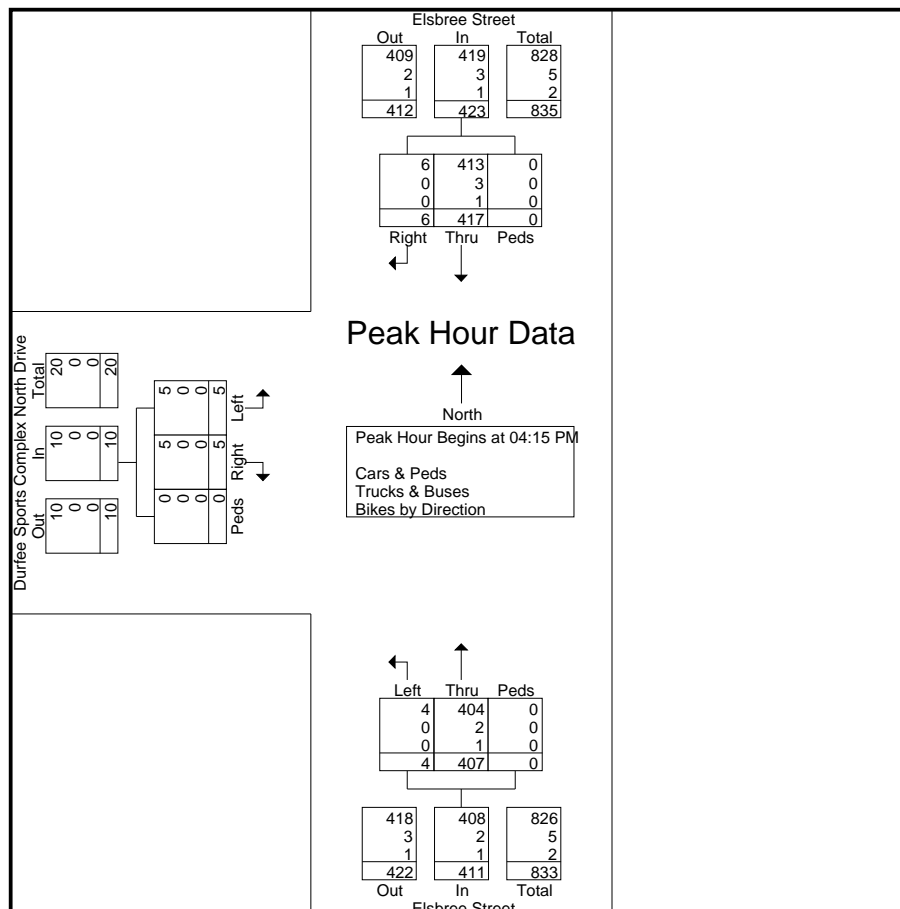


**Transportation Data Corporation**  
Mario Perone, mperone1@verizon.net  
tel (781) 587-0086 cell (781) 439-4999

N/S: Elsbree Street  
W: Durfee Sports Complex North Drive  
City, State: Fall River, MA  
Client: Pare/T. Thomson

File Name : 04936HH  
Site Code : 04936  
Start Date : 9/13/2017  
Page No : 2

	Elsbree Street From North				Elsbree Street From South				Durfee Sports Complex North Drive From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	96	0	96	113	0	0	113	0	0	0	0	209
04:30 PM	0	139	0	139	95	1	0	96	0	0	0	0	235
04:45 PM	0	74	0	74	100	0	0	100	1	2	0	3	177
05:00 PM	6	108	0	114	99	3	0	102	4	3	0	7	223
Total Volume	6	417	0	423	407	4	0	411	5	5	0	10	844
% App. Total	1.4	98.6	0		99	1	0		50	50	0		
PHF	.250	.750	.000	.761	.900	.333	.000	.909	.313	.417	.000	.357	.898
Cars & Peds	6	413	0	419	404	4	0	408	5	5	0	10	837
% Cars & Peds	100	99.0	0	99.1	99.3	100	0	99.3	100	100	0	100	99.2
Trucks & Buses	0	3	0	3	2	0	0	2	0	0	0	0	5
% Trucks & Buses	0	0.7	0	0.7	0.5	0	0	0.5	0	0	0	0	0.6
Bikes by Direction	0	1	0	1	1	0	0	1	0	0	0	0	2
% Bikes by Direction	0	0.2	0	0.2	0.2	0	0	0.2	0	0	0	0	0.2



---

## Appendix B

### Seasonal Adjustment Data



MASSACHUSETTS HIGHWAY DEPARTMENT - STATEWIDE TRAFFIC DATA COLLECTION

2011 WEEKDAY SEASONAL FACTORS \*

\* Note: These are weekday factors. The average of the factors for the year will not equal 1, as weekend data are not considered.

FACTOR GROUP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
GROUP 1 - WEST INTERSTATE	0.98	0.93	0.90	0.89	0.90	0.88	0.91	0.90	0.89	0.89	0.93	0.95
GROUP 2 - RURAL MAJOR COLLECTOR (R-5)	1.12	1.12	1.07	0.99	0.91	0.90	0.86	0.86	0.92	0.93	1.01	1.05
GROUP 3A - RECREATIONAL ** (1-4) See below	1.26	1.25	1.20	1.06	0.96	0.89	0.76	0.76	0.92	0.99	1.08	1.14
GROUP 3B - RECREATIONAL *** (5) See below	1.22	1.26	1.22	1.06	0.96	0.90	0.72	0.74	0.97	1.02	1.14	1.15
GROUP 4 - I-495 INTERSTATE	1.02	1.00	1.00	0.96	0.92	0.89	0.85	0.83	0.93	0.96	1.01	1.03
GROUP 5 - EAST INTERSTATE	1.04	1.00	0.96	0.93	0.92	0.91	0.91	0.89	0.93	0.93	0.96	1.01
GROUP 6 - URBAN ARTERIALS, COLLECTORS & RURAL ARTERIALS (R-2, R-3)	1.03	1.01	0.96	0.92	0.91	0.90	0.92	0.92	0.93	0.92	0.97	0.97
GROUP 7 - I-94 PROXIMITY (STAS. 17.3921)	1.24	1.24	1.15	1.04	0.99	1.00	0.93	0.89	1.05	1.05	1.05	1.12
GROUP 8 - I-295 PROXIMITY (STA. 6590)	1.00	0.99	0.95	0.92	0.94	0.91	0.93	0.92	0.95	0.94	0.97	0.95
GROUP 9 - I-195 PROXIMITY (STA. 7)	1.13	1.05	1.03	0.95	0.89	0.87	0.86	0.79	0.88	0.91	0.99	1.03

RECREATIONAL (ALL YEARS)

- \*\*GROUP 3A:  
1. CAPE COD (ALL TOWNS)  
2. PLYMOUTH/SOUTH OF RTE 3A)

- 7014, 7779, 7080, 7090, 7091, 7092, 7093, 7094, 7095, 7096, 7097, 7108, 7178  
3. MARTHA'S VINEYARD  
4. NANTUCKET

\*\*\*GROUP 3B:

5. PERMANENTS 2 & 185  
1065, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1113, 1114, 1116, 2195, 2197, 2198

Apply I-84 factor to stations: 3290, 3929

2011 AXLE CORRECTION FACTORS

ROAD INVENTORY FUNCTIONAL CLASSIFICATION	AXLE CORRECTION FACTOR
--	------------------------

RURAL

- 1 0.95  
2 0.97  
3 0.98  
0.5, 6 0.98

URBAN

- 1 0.96  
2 0.96  
3 0.98  
5 0.98  
0.8 0.99  
I-84 0.90

ROUND OFF

- 0 - 999 ..... 10  
> 1,000 ..... 100



---

## Appendix C

### Crash Data and Crash Rate Calculations



## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Fall River COUNT DATE : Sep-17

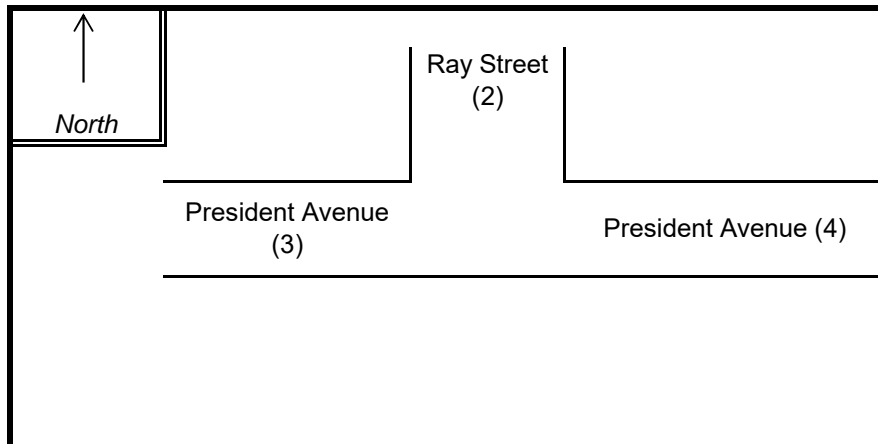
DISTRICT : 5 UNSIGNALIZED : ☒ SIGNALIZED : ☐

### ~ INTERSECTION DATA ~

MAJOR STREET : President Avenue (Rte. 6)

MINOR STREET(S) : Ray 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) :	0	243	604	578		1,425

" K " FACTOR :

**0.090**

INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

**15,833**

TOTAL # OF CRASHES :

**3**

# OF YEARS :

**3**

AVERAGE # OF CRASHES PER YEAR ( A ) :

**1.00**

**CRASH RATE CALCULATION :**

**0.17**

RATE =

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

Comments :

Project Title & Date : Pare Project No. 17008.03 Sep-17



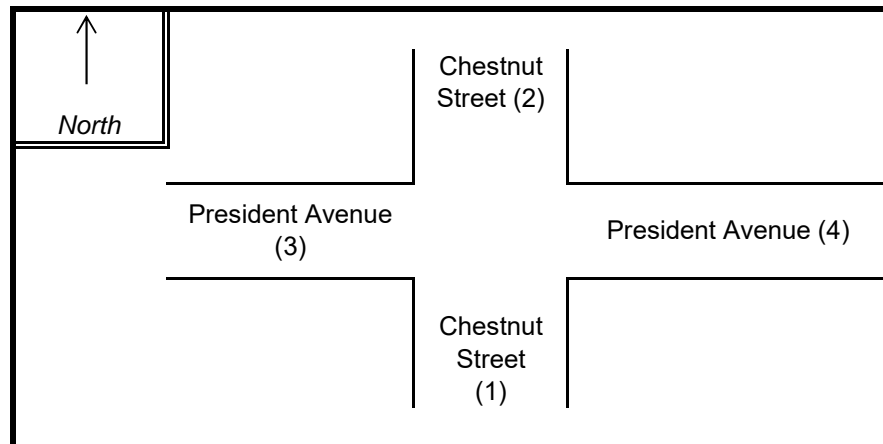
## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Fall River COUNT DATE : Sep-17  
 DISTRICT : 5 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

### ~ INTERSECTION DATA ~

MAJOR STREET : President Avenue (Rte. 6)  
 MINOR STREET(S) : Chestnut 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) :	65	72	615	686		1,438

" K " FACTOR : 0.090 INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME : 15,978

TOTAL # OF CRASHES : 7 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR ( A ) : 2.33

CRASH RATE CALCULATION : 0.40 RATE =  $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : \_\_\_\_\_

Project Title & Date : Pare Project No. 17008.03 Sep-17

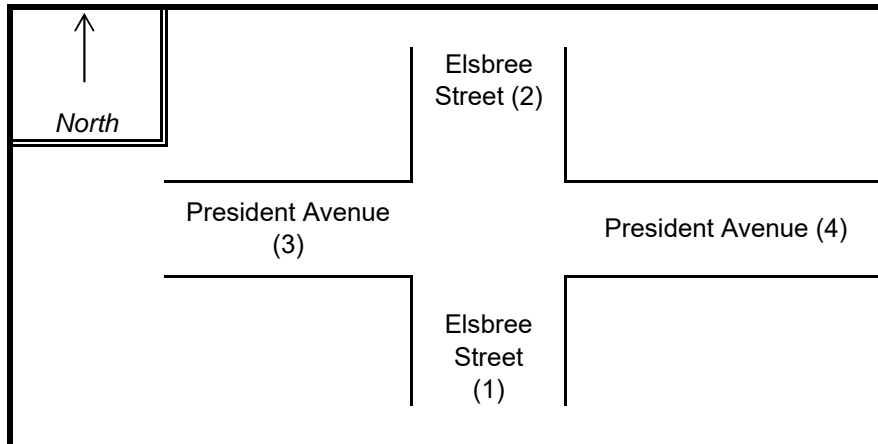
## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Fall River COUNT DATE : Sep-17  
DISTRICT : 5 UNSIGNALIZED : ☐ SIGNALIZED : ☒

### ~ INTERSECTION DATA ~

MAJOR STREET : President Avenue (Rte. 6)  
MINOR STREET(S) : Elsbree 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) :	0	629	780	1,218		2,627

" K " FACTOR :

**0.090**

INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

**29,189**

TOTAL # OF CRASHES :

**9**

# OF YEARS :

**3**

AVERAGE # OF CRASHES PER YEAR ( A ) :

**3.00**

CRASH RATE CALCULATION :

**0.28**

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

Comments :

Project Title & Date : Pare Project No. 17008.03 Sep-17



## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Fall River COUNT DATE : Sep-17

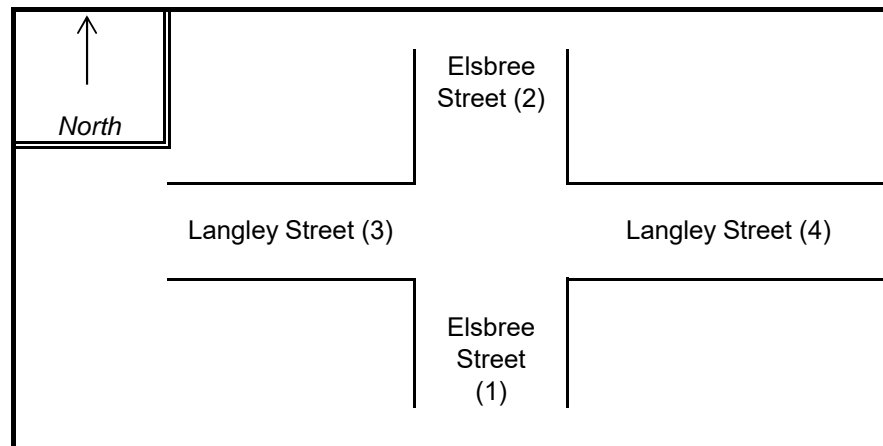
DISTRICT : 5 UNSIGNALIZED : ☒ SIGNALIZED : ☐

### ~ INTERSECTION DATA ~

MAJOR STREET : Elsbree Street

MINOR STREET(S) : Langley 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) :	693	307	233	77		1,310

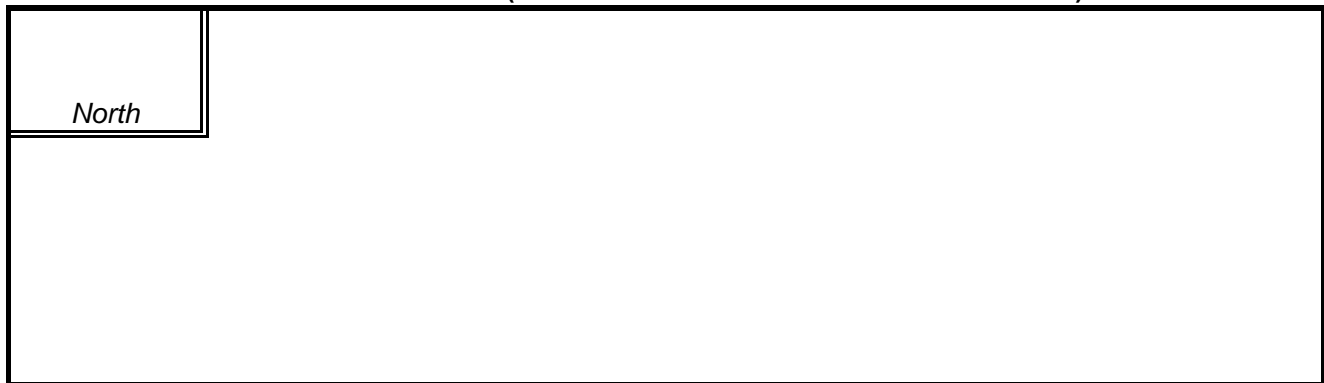
" K " FACTOR : 0.090 INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME : 14,556

TOTAL # OF CRASHES : 6 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR ( A ) : 2.00

CRASH RATE CALCULATION : 0.38 RATE =  $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : \_\_\_\_\_

Project Title & Date : Pare Project No. 17008.03 Sep-17

**SEGMENT CRASH RATE WORKSHEET**CITY/TOWN : Fall River COUNT DATE : Sep-17DISTRICT : 5**~ SEGMENT DATA ~**ROADWAY NAME: Elsbree StreetSTART POINT: President Avenue (Rte. 6)END POINT: Langley StreetFUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Collector**ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)****AVERAGE DAILY TRAFFIC**SEGMENT LENGTH IN MILES ( L ): **0.5**AVERAGE DAILY TRAFFIC VOLUME ( V ): **15,000**

TOTAL # OF CRASHES:

**38**# OF  
YEARS :**3**AVERAGE # OF  
CRASHES PER YEAR ( **A** ) :**12.67****CRASH RATE  
CALCULATION :****4.63**

RATE =

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

Comments : \_\_\_\_\_

Project Title & Date: Pare Project No. 17008.03



---

## Appendix D

### SRTA Schedule Information







	1 SRTA Terminal	2 High St. at Pine St.	3 Charlton Memorial	4 McDonald's/ President Ave.	5 Durfee High School	6 Bristol Comm. College
WEEKDAYS						
AM	6:30	6:34	6:36	6:45	6:47	6:50
	7:00	7:04	7:06	7:15	7:17	7:20
	7:20	7:24	7:26	7:35	7:37	7:40
	7:25	7:29	7:31	7:40	7:42	7:45
	7:30	7:34	7:36	7:45	7:47	7:50
	8:00	8:04	8:06	8:15	8:17	8:20
	8:30	8:34	8:36	8:45	8:47	8:50
	9:00	9:04	9:06	9:15	9:17	9:20
	9:30	9:34	9:36	9:45	9:47	9:50
	10:00	10:04	10:06	10:15	10:17	10:20
	10:30	10:34	10:36	10:45	10:47	10:50
	11:00	11:04	11:06	11:15	11:17	11:20
	11:30	11:34	11:36	11:45	11:47	11:50
PM	12:00	12:04	12:06	12:15	12:17	12:20
	12:30	12:34	12:36	12:45	12:47	12:50
	1:00	1:04	1:06	1:15	1:17	1:20
	1:30	1:34	1:36	1:45	1:47	1:50
	2:00	2:04	2:06	2:15	2:17	2:20
	2:30	2:34	2:36	2:45	2:47	2:50
	3:00	3:04	3:06	3:15	3:17	3:20
	3:30	3:34	3:36	3:45	3:47	3:50
	4:00	4:04	4:06	4:15	4:17	4:20
	4:30	4:34	4:36	4:45	4:47	4:50
	5:00	5:04	5:06	5:15	5:17	5:20
	5:30	5:34	5:36	5:45	5:47	5:50
	6:00	6:04	6:06	6:15	6:17	6:20
	6:30	6:34	6:36	6:45	6:47	6:50
	7:00	7:04	7:06	7:15	7:17	7:20
	7:30	7:34	7:36	7:45	7:47	7:50
	8:00	8:04	8:06	8:15	8:17	8:20
SATURDAY						
AM	7:20	7:24	7:26	7:35	7:37	7:40
	8:20	8:24	8:26	8:35	8:37	8:40
	9:20	9:24	9:26	9:35	9:37	9:40
	10:20	10:24	10:26	10:35	10:37	10:40
	11:20	11:24	11:26	11:35	11:37	11:40
PM	12:20	12:24	12:26	12:35	12:37	12:40
	1:20	1:24	1:26	1:35	1:37	1:40
	2:20	2:24	2:26	2:35	2:37	2:40
	3:20	3:24	3:26	3:35	3:37	3:40
	4:20	4:24	4:26	4:35	4:37	4:40
	5:20	5:24	5:26	5:35	5:37	5:40

## Route 8

Bristol Community College /  
Durfee High School

Southeastern Regional  
Transit Authority



Louis D. Pettine Transportation Center

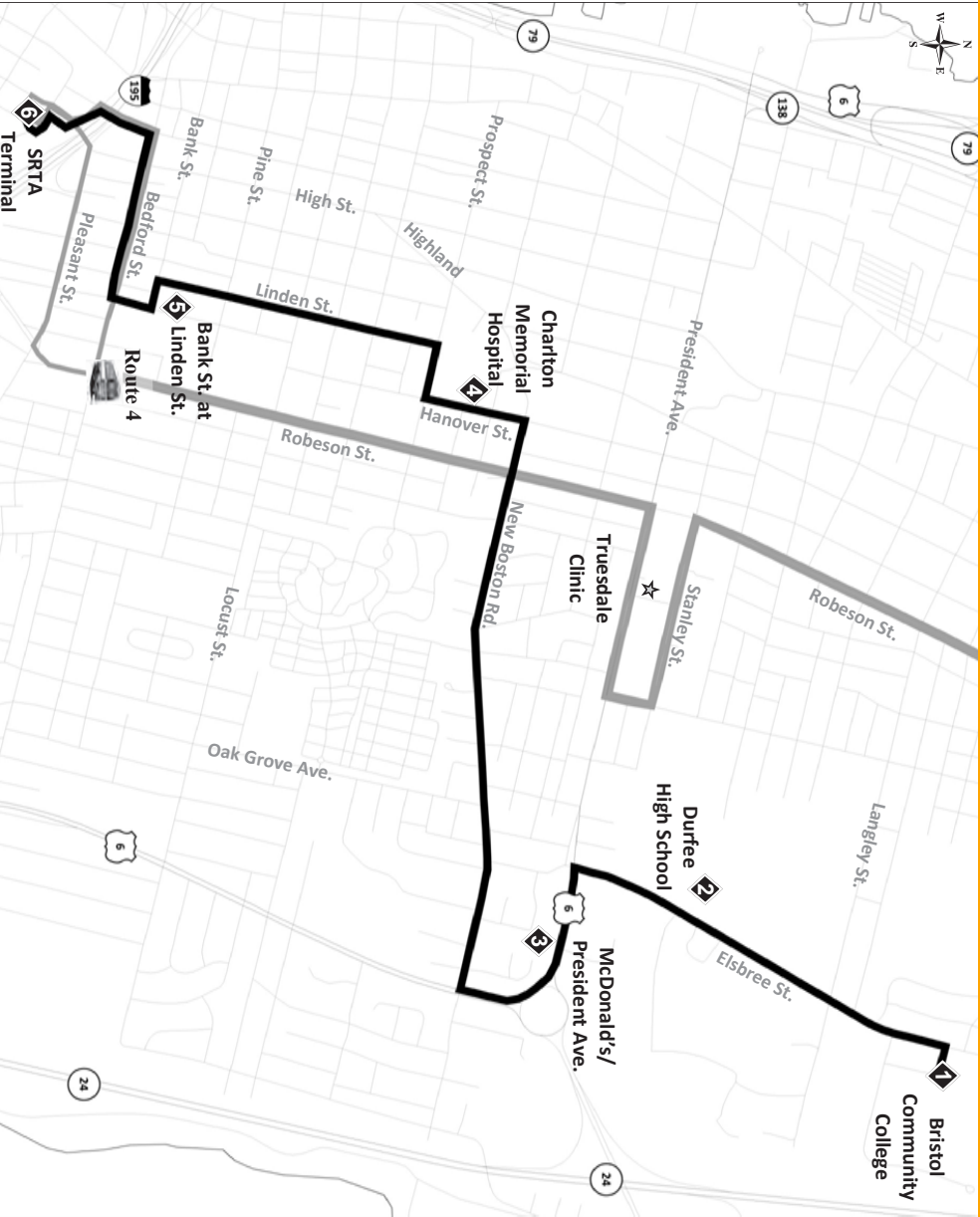
September 1, 2014



Borden and Third Street  
Fall River, MA 02721  
508-999-5211  
www.srtabus.com

Operated by  
SouthCoast Transit Management, Inc.





	1 Bristol Comm. College	2 Durfee High School	3 McDonald's/ President Ave.	4 Charlton Memorial	5 Bank St. at Linden St.	6 SRTA Terminal
WEEKDAYS						
AM	6:50	6:53	6:55	7:05	7:07	7:10
	7:20	7:23	7:25	7:35	7:37	7:40
	7:50	7:53	7:55	8:05	8:07	8:10
	8:20	8:23	8:25	8:35	8:37	8:40
	8:50	8:53	8:55	9:05	9:07	9:10
	9:20	9:23	9:25	9:35	9:37	9:40
	9:50	9:53	9:55	10:05	10:07	10:10
	10:20	10:23	10:25	10:35	10:37	10:40
	10:50	10:53	10:55	11:05	11:07	11:10
	11:20	11:23	11:25	11:35	11:37	11:40
	11:50	11:53	11:55	12:05	12:07	12:10
PM	12:20	12:23	12:25	12:35	12:37	12:40
	12:50	12:53	12:55	1:05	1:07	1:10
	1:20	1:23	1:25	1:35	1:37	1:40
	1:50	1:53	1:55	2:05	2:07	2:10
	2:20	2:23	2:25	2:35	2:37	2:40
	2:50	2:53	2:55	3:05	3:07	3:10
	.....	2:50	2:52	2:58	3:02	3:05
	3:20	3:23	3:25	3:35	3:37	3:40
	3:50	3:53	3:55	4:05	4:07	4:10
	4:20	4:23	4:25	4:35	4:37	4:40
	4:50	4:53	4:55	5:05	5:07	5:10
	5:20	5:23	5:25	5:35	5:37	5:40
	5:50	5:53	5:55	6:05	6:07	6:10
	6:20	6:23	6:25	6:35	6:37	6:40
	6:50	6:53	6:55	7:05	7:07	7:10
	7:20	7:23	7:25	7:35	7:37	7:40
	7:50	7:53	7:55	8:05	8:07	8:10
	8:20	8:23	8:25	8:35	8:37	8:40
SATURDAY						
AM	7:40	7:43	7:45	7:55	7:57	8:00
	8:40	8:43	8:45	8:55	8:57	9:00
	9:40	9:43	9:45	9:55	9:57	10:00
	10:40	10:43	10:45	10:55	10:57	11:00
	11:40	11:43	11:45	11:55	11:57	12:00
PM	12:40	12:43	12:45	12:55	12:57	1:00
	1:40	1:43	1:45	1:55	1:57	2:00
	2:40	2:43	2:45	2:55	2:57	3:00
	3:40	3:43	3:45	3:55	3:57	4:00
	4:40	Please note that schedule times are approximate.				5:00

FARES

- **Regular Fare**—\$1.50 per trip
- **Children under 6**—Free when accompanied by adult (Limit 2 children per adult)
- **6-11 Yrs. Old**—\$0.75 per trip
- **Senior Citizens**—\$0.75 per trip
- **Registered Disabled**—\$0.75 per trip
- **Medicare Recipients**—\$0.75 per trip

Charlie Card Fares

- **Regular Fare**—\$1.40 per trip
- **Reduced Fare**—\$0.70 per trip

All buses are wheelchair accessible.

NO SUNDAY SERVICE

- SMOKING:** Smoking is prohibited on all buses.
- FOOD AND BEVERAGES:**  
The consuming of food or beverage of any kind on the bus is prohibited. Serious injury may occur when trash is left aboard the vehicle.
- OBJECTIONABLE PERSONS:**  
This Authority and its Operator reserve the right to refuse to transport a person under the influence of alcohol or drugs, or who is incapable of taking care of him or herself, or whose conduct is such or likely to be such as to make him or her objectionable to other passengers or prospective passengers.





---

## Appendix E

### Speed Study Data



## Pare Corporation

Roadway: Ray Street  
Location: Durfee HS Driveway  
Weather: Sunny  
Taken By: TT

File Name : Ray Street Speed Study  
Site Code : 00000000  
Start Date : 10/20/2017  
Page No : 1

#	Northbound	Southbound
1	27	23
2	24	26
3	22	21
4	26	22
5	18	28
6	22	24
7	26	21
8	26	21
9	26	29
10	23	24
11		18
12		25
13		24
14		25
15		24
16		17
17		27
18		24
19		26
20		

Class	Vehicle Count	85 Percentile	10 MPH Pace Speed	Number in Pace	Percent in Pace	True Median (50th Percentile)	Average Speed	Number of Vehicles Over 25 MPH	Percent of Vehicles Over 25 MPH
Northbound	10	26	18 - 27	10	100	25	24	5	50
Southbound	19	26	17 - 26	16	84	24	24	5	26
Summary	29	26	18 - 27	26	90	24	24	10	34

## Pare Corporation

Roadway: Elsbree Street  
Location: Durfee HS Athletic Fields  
Weather: Sunny, Warm  
Taken By: TT

File Name : Elsbree Street Speed Study  
Site Code : 00000000  
Start Date : 10/20/2017  
Page No : 1

#	Northbound	Southbound
1	35	30
2	48	30
3	43	33
4	30	35
5	37	29
6	32	35
7	29	35
8	31	35
9	42	31
10	44	38
11	37	36
12	34	41
13	36	38
14	35	40
15	36	41
16	43	37
17	38	33
18	36	36
19	47	35
20	41	32
21	31	38
22	35	37
23	28	32
24	39	36
25	35	34
26	40	39
27	40	35
28	35	30
29	36	35
30	39	45
31	37	41
32	48	36
33	29	49
34	31	33
35	35	35
36	38	33
37	37	39
38	38	28
39	42	36
40	34	31
41		

Class	Vehicle Count	85 Percentile	10 MPH Pace Speed	Number in Pace	Percent in Pace	True Median (50th Percentile)	Average Speed	Number of Vehicles Over 30 MPH	Percent of Vehicles Over 30 MPH
Northbound	40	42	34 - 43	28	70	36	37	36	90
Southbound	40	39	30 - 39	32	80	35	36	35	88
Summary	80	41	30 - 39	58	72	36	36	71	89

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## Appendix F

### Background Growth Data



Durfee High School  
Fall River, MA  
Background Traffic Growth  
PARE Project No. 17008.03  
October 19, 2017



**Location ID 6280**  
**President Ave (Rte. 6) west of Elsbree Street**

	AADT
2016	13,395
2006	13,200
Years	10

ANNUAL GROWTH RATE	0.15%
<b>Say</b>	<b>0.50%</b>

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## Appendix G

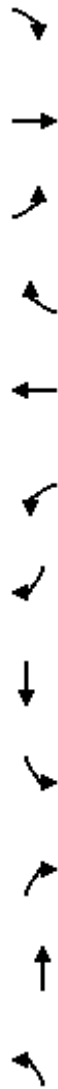
### Intersection Capacity Analysis Results





Lanes, Volumes, Timings  
**4: Elsbree Street & President Avenue (Rte. 6)**

Durfee High School TIA  
 Existing (2017) AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔	
Volume (vph)	283	442	55	28	525	665	0	0	0	359	136	134	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150		250	80		400	0	0	0	0	0	0	
Storage Lanes	1		1	1		1	0	0	0	1	1	0	
Taper Length (ft)	25		25	25		25	25			25			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850					0.926		
Flt Protected	0.950		0.950							0.950			
Satd. Flow (prot)	1736	3539	1583	1805	3574	1599	0	0	0	1736	1742	0	
Flt Permitted	0.950		0.950							0.950			
Satd. Flow (perm)	1736	3539	1583	1805	3574	1599	0	0	0	1736	1742	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		1172			515			669			621		
Travel Time (s)		26.6			11.7			15.2			14.1		
Peak Hour Factor	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92	0.92	0.76	0.76	0.76	
Heavy Vehicles (%)	4%	2%	2%	0%	1%	1%	0%	0%	0%	4%	1%	1%	
Adj. Flow (vph)	333	520	65	35	648	821	0	0	0	472	179	176	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	333	520	65	35	648	821	0	0	0	472	355	0	
Turn Type	Prot	NA	Perm	Prot	NA	pt+ov				Split	NA		
Protected Phases	1	6		5	2	24				4	4	8	
Permitted Phases			6										
Detector Phase	1	6	6	5	2	24				4	4		
Switch Phase													
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0					7.0	7.0	3.0	
Minimum Split (s)	11.0	11.5	11.5	11.0	11.5					11.0	11.0	25.5	
Total Split (s)	14.0	31.5	31.5	14.0	31.5					29.5	29.5	25.5	
Total Split (%)	13.9%	31.3%	31.3%	13.9%	31.3%					29.4%	29.4%	25%	
Maximum Green (s)	10.0	27.0	27.0	10.0	27.0					25.5	25.5	21.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5					3.0	3.0	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0					1.0	1.0	1.0	

Lanes, Volumes, Timings  
4: Elsbree Street & President Avenue (Rte. 6)

Durfee High School TIA  
Existing (2017) AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					0.0	0.0		
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5					4.0	4.0		
Lead/Lag	Lead	Lag	Lag	Lead	Lag								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	2.7	2.7	2.7	2.7	2.7					2.7	2.7		2.7
Recall Mode	None	Min	Min	None	Min					None	None		None
Walk Time (s)													4.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													47
Act Effct Green (s)	10.2	35.0	35.0	7.8	27.2	57.4				26.1	26.1		
Actuated g/C Ratio	0.11	0.39	0.39	0.09	0.30	0.64				0.29	0.29		
v/c Ratio	1.69	0.38	0.11	0.22	0.60	0.81				0.94	0.70		
Control Delay	361.7	25.3	25.7	46.0	31.6	24.1				63.3	40.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0		
Total Delay	361.7	25.3	25.7	46.0	31.6	24.1				63.3	40.5		
LOS	F	C	C	D	C	C				E	D		
Approach Delay		147.3			27.8						53.5		
Approach LOS		F			C						D		
Queue Length 50th (ft)	~331	143	30	22	195	446				~338	214		
Queue Length 95th (ft)	#469	188	62	46	225	534				#403	258		
Internal Link Dist (ft)		1092			435			589			541		
Turn Bay Length (ft)	150		250	80		400							
Base Capacity (vph)	197	1375	615	204	1096	1006				502	504		
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	1.69	0.38	0.11	0.17	0.59	0.82				0.94	0.70		
Intersection Summary													
Area Type:	Other												
Cycle Length: 100.5													
Actuated Cycle Length: 90													
Natural Cycle: 130													
Control Type: Actuated-Uncoordinated													



**HCM 2010 TWSC**  
**1: President Avenue (Rte. 6) & Ray Street**

**Durfee High School TIA**  
Existing (2017) AM Peak Hour

Intersection							
Int Delay, s/veh	62.1						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	120	484	358	220	150	93	
Conflicting Peds, #/hr	4	0	0	4	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	87	87	94	94	81	81	
Heavy Vehicles, %	2	2	1	1	1	3	
Mvmt Flow	138	556	381	234	185	115	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	615	0	-	0	1330	502	
Stage 1	-	-	-	-	498	-	
Stage 2	-	-	-	-	832	-	
Critical Hdwy	4.12	-	-	-	6.41	6.23	
Critical Hdwy Stg 1	-	-	-	-	5.41	-	
Critical Hdwy Stg 2	-	-	-	-	5.41	-	
Follow-up Hdwy	2.218	-	-	-	3.509	3.327	
Pot Cap-1 Maneuver	965	-	-	-	~ 171	567	
Stage 1	-	-	-	-	613	-	
Stage 2	-	-	-	-	429	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	961	-	-	-	~ 135	565	
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-	
Stage 1	-	-	-	-	613	-	
Stage 2	-	-	-	-	340	-	
Approach	EB		WB		SB		
HCM Control Delay, s	1.9		0		\$ 328.7		
HCM LOS					F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	961	-	-	-	190		
HCM Lane V/C Ratio	0.144	-	-	-	1.579		
HCM Control Delay (s)	9.4	0	-	-	\$ 328.7		
HCM Lane LOS	A	A	-	-	F		
HCM 95th %tile Q(veh)	0.5	-	-	-	19.5		
Notes							
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon							

**HCM 2010 TWSC**  
**8: President Avenue (Rte. 6) & Chestnut Street**

**Durfee High School TIA**  
Existing (2017) AM Peak Hour

Intersection												
Int Delay, s/veh	262.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	70	539	6	4	552	130	2	52	11	42	9	21
Conflicting Peds, #/hr	10	0	0	0	0	10	0	0	41	41	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	92	92	92	58	58	58	68	68	68
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	74	567	6	4	600	141	3	90	19	62	13	31
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	782	0	0	615	0	0	1501	1550	622	1533	1482	722
Stage 1	-	-	-	-	-	-	759	759	-	720	720	-
Stage 2	-	-	-	-	-	-	742	791	-	813	762	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	845	-	-	974	-	-	101	115	490	96	126	430
Stage 1	-	-	-	-	-	-	402	418	-	422	435	-
Stage 2	-	-	-	-	-	-	411	404	-	375	416	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	837	-	-	965	-	-	72	92	466	~ 8	101	409
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	92	-	~ 8	101	-
Stage 1	-	-	-	-	-	-	336	349	-	353	415	-
Stage 2	-	-	-	-	-	-	362	386	-	230	348	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.1			0.1			183.6			\$ 3786.7		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	105	837	-	-	965	-	-	13				
HCM Lane V/C Ratio	1.067	0.088	-	-	0.005	-	-	8.145				
HCM Control Delay (s)	183.6	9.7	0	-	8.7	0	\$ 3786.7					
HCM Lane LOS	F	A	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	6.9	0.3	-	-	0	-	-	14.4				

**Notes**

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

**HCM 2010 TWSC**  
**10: Elsbree Street & Langley Street**

**Durfee High School TIA**  
Existing (2017) AM Peak Hour

Intersection												
Int Delay, s/veh	179.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	61	37	135	23	23	31	66	624	3	41	254	12
Conflicting Peds, #/hr	2	0	0	0	0	2	3	0	6	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	64	64	63	63	63	77	77	77	78	78	78
Heavy Vehicles, %	0	0	0	0	0	3	2	2	33	0	4	8
Mvmt Flow	95	58	211	37	37	49	86	810	4	53	326	15
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1469	1428	341	1561	1434	820	343	0	0	816	0	0
Stage 1	440	440	-	986	986	-	-	-	-	-	-	-
Stage 2	1029	988	-	575	448	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	107	136	706	92	135	373	1216	-	-	820	-	-
Stage 1	600	581	-	301	328	-	-	-	-	-	-	-
Stage 2	285	328	-	507	576	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 58	108	701	~ 32	108	370	1209	-	-	815	-	-
Mov Cap-2 Maneuver	~ 58	108	-	~ 32	108	-	-	-	-	-	-	-
Stage 1	521	534	-	261	285	-	-	-	-	-	-	-
Stage 2	186	285	-	289	529	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	\$ 732.8			\$ 419.4			0.8			1.3		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1209	-	-	147	76	815	-	-				
HCM Lane V/C Ratio	0.071	-	-	2.477	1.608	0.064	-	-				
HCM Control Delay (s)	8.2	0	-	\$ 732.8	\$ 419.4	9.7	0	-				
HCM Lane LOS	A	A	-	F	F	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	31.5	10.2	0.2	-	-				
Notes												
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												



# HCM 2010 TWSC

## 14: Elsbree Street & Southern School Driveway

Durfee High School TIA  
Existing (2017) AM Peak Hour

### Intersection

Int Delay, s/veh 21.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	11	128	16	1011	451	0
Conflicting Peds, #/hr	4	213	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	82	82	76	76
Heavy Vehicles, %	64	3	6	2	2	0
Mvmt Flow	22	256	20	1233	593	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1461	510	806
Stage 1	806	-	-
Stage 2	655	-	-
Critical Hdwy	8.08	6.96	4.22
Critical Hdwy Stg 1	7.08	-	-
Critical Hdwy Stg 2	7.08	-	-
Follow-up Hdwy	4.14	3.33	2.26
Pot Cap-1 Maneuver	68	506	789
Stage 1	273	-	-
Stage 2	341	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	40	403	789
Mov Cap-2 Maneuver	40	-	-
Stage 1	218	-	-
Stage 2	250	-	-

Approach	EB	NB	SB
HCM Control Delay, s	160.7	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	789	-	235	-	-
HCM Lane V/C Ratio	0.025	-	1.183	-	-
HCM Control Delay (s)	9.7	0.4	160.7	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	13.2	-	-

HCM 2010 TWSC  
16: Elsbree Street & Central School Driveway

Durfee High School TIA  
Existing (2017) AM Peak Hour

Intersection							
Int Delay, s/veh	1.1						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Vol, veh/h	2	18	106	834	394	10	
Conflicting Peds, #/hr	5	2	2	0	0	2	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	50	50	81	81	73	73	
Heavy Vehicles, %	0	0	9	1	3	0	
Mvmt Flow	4	36	131	1030	540	14	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1843	554	558	0	-	0	
Stage 1	552	-	-	-	-	-	
Stage 2	1291	-	-	-	-	-	
Critical Hdwy	6.4	6.2	4.19	-	-	-	
Critical Hdwy Stg 1	5.4	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	-	-	-	-	-	
Follow-up Hdwy	3.5	3.3	2.281	-	-	-	
Pot Cap-1 Maneuver	84	536	979	-	-	-	
Stage 1	581	-	-	-	-	-	
Stage 2	260	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	57	532	977	-	-	-	
Mov Cap-2 Maneuver	57	-	-	-	-	-	
Stage 1	578	-	-	-	-	-	
Stage 2	178	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	19.4	1		0			
HCM LOS	C						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	977	-	290	-	-		
HCM Lane V/C Ratio	0.134	-	0.138	-	-		
HCM Control Delay (s)	9.3	0	19.4	-	-		
HCM Lane LOS	A	A	C	-	-		
HCM 95th %tile Q(veh)	0.5	-	0.5	-	-		

# HCM 2010 TWSC

## 17: Elsbree Street & Northern School Driveway

Durfee High School TIA  
Existing (2017) AM Peak Hour

### Intersection

Int Delay, s/veh 54.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	35	106	173	666	303	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	48	48	80	80	75	75
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	73	221	216	832	404	139

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1738	473	543 0
Stage 1	473	-	- -
Stage 2	1265	-	- -
Critical Hdwy	6.4	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	97	595	1036 -
Stage 1	631	-	- -
Stage 2	268	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	~ 59	595	1036 -
Mov Cap-2 Maneuver	~ 59	-	- -
Stage 1	631	-	- -
Stage 2	164	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	\$ 341.8	1.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1036	-	183	-	-
HCM Lane V/C Ratio	0.209	-	1.605	-	-
HCM Control Delay (s)	9.4	0\$ 341.8	-	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.8	-	19.5	-	-

### Notes

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

HCM 2010 TWSC  
19: Ray Street & Student Parking Lot

Durfee High School TIA  
Existing (2017) AM Peak Hour

Intersection						
Int Delay, s/veh	56					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	158	82	98	258	141	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	57	57	61	61	78	78
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	277	144	161	423	181	127
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	860	372	0	0	584	0
Stage 1	372	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	329	678	-	-	1001	-
Stage 1	702	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 265	678	-	-	1001	-
Mov Cap-2 Maneuver	~ 265	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	170.6	0		5.5		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	335	1001	-	
HCM Lane V/C Ratio	-	-	1.257	0.181	-	
HCM Control Delay (s)	-	-	170.6	9.4	0	
HCM Lane LOS	-	-	F	A	A	
HCM 95th %tile Q(veh)	-	-	19	0.7	-	
Notes						
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon						

Lanes, Volumes, Timings  
**4: Elsbree Street & President Avenue (Rte. 6)**

BMC Durfee High School TIA  
 Existing (2017) PM Commuter Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔	↔	↔	↔	↔	
Volume (vph)	199	608	54	89	357	333	0	0	0	391	109	125	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150		250	80		400	0	0	0	0		0	
Storage Lanes	1		1	1		1	0	0	0	1		0	
Taper Length (ft)	25		25	25		25	25			25			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850					0.920		
Flt Protected	0.950		0.950							0.950			
Satd. Flow (prot)	1805	3574	1615	1805	3610	1599	0	0	0	1787	1748	0	
Flt Permitted	0.950		0.950							0.950			
Satd. Flow (perm)	1805	3574	1615	1805	3610	1599	0	0	0	1787	1748	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		1172			515			669			621		
Travel Time (s)		26.6			11.7			15.2			14.1		
Peak Hour Factor	0.88	0.88	0.88	0.98	0.98	0.98	0.92	0.92	0.92	0.93	0.93	0.93	
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	
Adj. Flow (vph)	226	691	61	91	364	340	0	0	0	420	117	134	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	226	691	61	91	364	340	0	0	0	420	251	0	
Turn Type	Prot	NA	Perm	Prot	NA	pt+ov				Split	NA		
Protected Phases	1	6		5	2	24				4	4	8	
Permitted Phases			6										
Detector Phase	1	6	6	5	2	24				4	4		
Switch Phase													
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0					7.0	7.0	3.0	
Minimum Split (s)	11.0	11.5	11.5	11.0	11.5					11.0	11.0	25.5	
Total Split (s)	12.0	24.5	24.5	12.0	24.5					26.0	26.0	25.5	
Total Split (%)	13.6%	27.8%	27.8%	13.6%	27.8%					29.5%	29.5%	29%	
Maximum Green (s)	8.0	20.0	20.0	8.0	20.0					22.0	22.0	21.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5					3.0	3.0	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0					1.0	1.0	1.0	

Lanes, Volumes, Timings  
4: Elsbree Street & President Avenue (Rte. 6)

BMC Durfee High School TIA  
Existing (2017) PM Commuter Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					0.0	0.0		
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5					4.0	4.0		
Lead/Lag		Lag	Lag	Lead	Lag								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	2.7	2.7	2.7	2.7	2.7					2.7	2.7		2.7
Recall Mode	None	Min	Min	None	Min					None	None		None
Walk Time (s)													4.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													23
Act Effct Green (s)	8.6	20.1	20.1	8.0	16.3	42.4				21.8	21.8		
Actuated g/C Ratio	0.13	0.30	0.30	0.12	0.24	0.62				0.32	0.32		
v/c Ratio	1.00	0.65	0.13	0.43	0.42	0.34				0.73	0.45		
Control Delay	97.3	28.7	24.9	40.7	25.5	9.9				34.7	25.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0		
Total Delay	97.3	28.7	24.9	40.7	25.5	9.9				34.7	25.9		
LOS	F	C	C	D	C	A				C	C		
Approach Delay		44.3			20.6						31.4		
Approach LOS		D			C						C		
Queue Length 50th (ft)	85	114	16	31	53	32				127	68		
Queue Length 95th (ft)	#299	#273	59	#105	134	172				#407	200		
Internal Link Dist (ft)		1092			435			589			541		
Turn Bay Length (ft)	150		250	80		400							
Base Capacity (vph)	227	1126	509	227	1137	1021				619	606		
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	1.00	0.61	0.12	0.40	0.32	0.33				0.68	0.41		

Intersection Summary

Area Type: Other

Cycle Length: 88

Actuated Cycle Length: 67.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

10/25/2017

TT

Synchro 9 Report  
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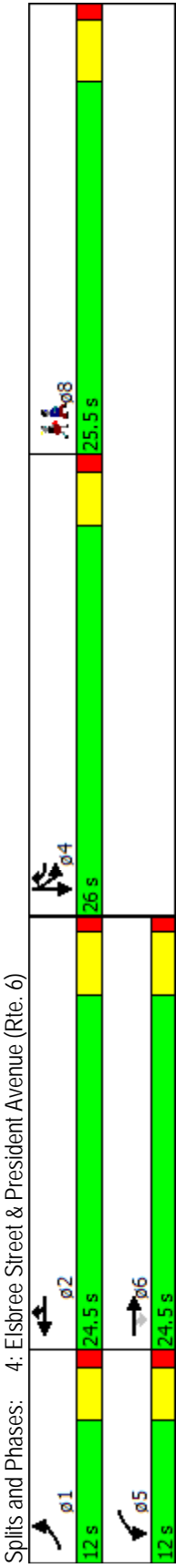
Lanes, Volumes, Timings

4: Elsabee Street & President Avenue (Rte. 6)

BMC Durfee High School TIA

Existing (2017) PM Commuter Peak Hour

Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 33.0	Intersection LOS: C
Intersection Capacity Utilization 54.7%	ICU Level of Service A
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	



**HCM 2010 TWSC**  
**1: President Avenue (Rte. 6) & Ray Street**

**BMC Durfee High School TIA**  
Existing (2017) PM Commuter Peak Hour

Intersection							
Int Delay, s/veh	16.3						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	25	592	369	74	158	28	
Conflicting Peds, #/hr	8	0	0	8	1	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	91	91	81	81	
Heavy Vehicles, %	8	0	0	0	1	7	
Mvmt Flow	27	643	405	81	195	35	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	488	0	-	0	1145	455	
Stage 1	-	-	-	-	447	-	
Stage 2	-	-	-	-	698	-	
Critical Hdwy	4.18	-	-	-	6.41	6.27	
Critical Hdwy Stg 1	-	-	-	-	5.41	-	
Critical Hdwy Stg 2	-	-	-	-	5.41	-	
Follow-up Hdwy	2.272	-	-	-	3.509	3.363	
Pot Cap-1 Maneuver	1045	-	-	-	222	595	
Stage 1	-	-	-	-	646	-	
Stage 2	-	-	-	-	495	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	1037	-	-	-	212	590	
Mov Cap-2 Maneuver	-	-	-	-	212	-	
Stage 1	-	-	-	-	645	-	
Stage 2	-	-	-	-	474	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0.3		0		97.4		
HCM LOS					F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	1037	-	-	-	235		
HCM Lane V/C Ratio	0.026	-	-	-	0.977		
HCM Control Delay (s)	8.6	0	-	-	97.4		
HCM Lane LOS	A	A	-	-	F		
HCM 95th %tile Q(veh)	0.1	-	-	-	9		

**HCM 2010 TWSC**  
**8: President Avenue (Rte. 6) & Chestnut Street**

**BMC Durfee High School TIA**  
Existing (2017) PM Commuter Peak Hour

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	736	10	14	434	24	3	2	2	34	8	8
Conflicting Peds, #/hr	7	0	1	1	0	7	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	94	94	94	67	67	67	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	809	11	15	462	26	4	3	3	38	9	9
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	491	0	0	824	0	0	1362	1366	825	1356	1358	485
Stage 1	-	-	-	-	-	-	845	845	-	508	508	-
Stage 2	-	-	-	-	-	-	517	521	-	848	850	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1083	-	-	815	-	-	126	149	376	128	150	586
Stage 1	-	-	-	-	-	-	360	382	-	551	542	-
Stage 2	-	-	-	-	-	-	545	535	-	359	380	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1076	-	-	810	-	-	113	141	372	119	142	580
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	141	-	119	142	-
Stage 1	-	-	-	-	-	-	351	372	-	537	526	-
Stage 2	-	-	-	-	-	-	511	520	-	343	370	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			30.4			46.5		
HCM LOS							D			E		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	152	1076	-	-	810	-	-	141				
HCM Lane V/C Ratio	0.069	0.012	-	-	0.018	-	-	0.398				
HCM Control Delay (s)	30.4	8.4	0	-	9.5	0	-	46.5				
HCM Lane LOS	D	A	A	-	A	A	-	E				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	1.7				

HCM 2010 TWSC  
10: Elsbree Street & Langley Street

BMC Durfee High School TIA  
Existing (2017) PM Commuter Peak Hour

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	17	6	89	6	10	5	86	313	7	4	338	18
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	66	66	66	91	91	91	72	72	72
Heavy Vehicles, %	0	0	0	17	0	0	0	0	0	0	1	0
Mvmt Flow	28	10	148	9	15	8	95	344	8	6	469	25
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1041	1034	483	1109	1043	349	494	0	0	352	0	0
Stage 1	493	493	-	537	537	-	-	-	-	-	-	-
Stage 2	548	541	-	572	506	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	210	234	588	175	231	699	1080	-	-	1218	-	-
Stage 1	562	550	-	502	526	-	-	-	-	-	-	-
Stage 2	524	524	-	480	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	179	207	587	115	204	698	1079	-	-	1217	-	-
Mov Cap-2 Maneuver	179	207	-	115	204	-	-	-	-	-	-	-
Stage 1	500	546	-	447	468	-	-	-	-	-	-	-
Stage 2	446	466	-	349	539	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	21.2			27.2			1.8			0.1		
HCM LOS	C			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1079	-	-	406	194	1217	-	-				
HCM Lane V/C Ratio	0.088	-	-	0.46	0.164	0.005	-	-				
HCM Control Delay (s)	8.7	0	-	21.2	27.2	8	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.3	-	-	2.4	0.6	0	-	-				

# HCM 2010 TWSC

## 14: Elsbree Street & Southern School Driveway

BMC Durfee High School TIA  
Existing (2017) PM Commuter Peak Hour

### Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	16	3	505	462	3
Conflicting Peds, #/hr	3	8	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	94	94	79	79
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	21	3	537	585	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	870	304	597 0
Stage 1	595	-	- -
Stage 2	275	-	- -
Critical Hdwy	6.8	6.9	4.1 -
Critical Hdwy Stg 1	5.8	-	- -
Critical Hdwy Stg 2	5.8	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	295	698	989 -
Stage 1	519	-	- -
Stage 2	753	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	289	691	987 -
Mov Cap-2 Maneuver	289	-	- -
Stage 1	515	-	- -
Stage 2	744	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	987	-	691	-	-
HCM Lane V/C Ratio	0.003	-	0.031	-	-
HCM Control Delay (s)	8.7	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
16: Elsbree Street & Central School Driveway

BMC Durfee High School TIA  
Existing (2017) PM Commuter Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	44	46	410	402	3
Conflicting Peds, #/hr	3	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	89	89	72	72
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	76	52	461	558	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1127	565	566	0	-	0
Stage 1	563	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	228	528	1016	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	211	525	1014	-	-	-
Mov Cap-2 Maneuver	211	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13	0.9		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1014	-	525	-	-	
HCM Lane V/C Ratio	0.051	-	0.144	-	-	
HCM Control Delay (s)	8.7	0	13	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-	



# HCM 2010 TWSC

## 17: Elsbree Street & Northern School Driveway

BMC Durfee High School TIA  
Existing (2017) PM Commuter Peak Hour

### Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	5	4	407	417	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	36	36	91	91	76	76
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	14	14	4	447	549	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1009	553	557 0
Stage 1	553	-	- -
Stage 2	456	-	- -
Critical Hdwy	6.4	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	269	537	1024 -
Stage 1	580	-	- -
Stage 2	643	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	268	537	1024 -
Mov Cap-2 Maneuver	268	-	- -
Stage 1	580	-	- -
Stage 2	640	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1024	-	358	-	-
HCM Lane V/C Ratio	0.004	-	0.078	-	-
HCM Control Delay (s)	8.5	0	15.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

**HCM 2010 TWSC**  
**19: Ray Street & Student Parking Lot**

**BMC Durfee High School TIA**  
Existing (2017) PM Commuter Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	4	85	1	0	92
Conflicting Peds, #/hr	0	2	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	63	63	80	80	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	6	106	1	0	126
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	235	110	0	0	110	0
Stage 1	109	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	758	949	-	-	1493	-
Stage 1	921	-	-	-	-	-
Stage 2	905	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	756	946	-	-	1492	-
Mov Cap-2 Maneuver	756	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.4	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	830	1492	-	
HCM Lane V/C Ratio	-	-	0.017	-	-	
HCM Control Delay (s)	-	-	9.4	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Lanes, Volumes, Timings  
**4: Elsbree Street & President Avenue (Rte. 6)**

**BMC Durfee High School TIA**  
 Existing (2017) PM School Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Configurations													
Volume (vph)	187	537	71	95	392	301	0	0	0	454	160	135	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150	250	80	400	400	400	0	0	0	0	0	0	
Storage Lanes	1	1	1	1	1	1	0	0	0	1	1	0	
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.950	0.850	0.850	0.950	0.850	0.850	0.950	0.950	0.950	0.950	0.931	0.950	
Flt Protected	0.950			0.950						0.950			
Satd. Flow (prot)	1787	3574	1599	1787	3574	1583	0	0	0	1787	1704	0	
Flt Permitted	0.950			0.950						0.950			
Satd. Flow (perm)	1787	3574	1599	1787	3574	1583	0	0	0	1787	1704	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	1172	1172	1172	1172	1172	1172	1172	1172	1172	1172	1172	1172	
Travel Time (s)	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	
Peak Hour Factor	0.90	0.90	0.90	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	0%	0%	0%	1%	7%	0%	
Adj. Flow (vph)	208	597	79	101	417	320	0	0	0	483	170	144	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	208	597	79	101	417	320	0	0	0	483	314	0	
Turn Type	Prot	NA	Perm	Prot	NA	pt+ov				Split	NA		
Protected Phases	1	6	6	5	2	24				4	4	8	
Permitted Phases													
Detector Phase	1	6	6	5	2	24				4	4		
Switch Phase													
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0				7.0	7.0	3.0	
Minimum Split (s)	11.0	11.5	11.5	11.0	11.5	11.5				11.0	11.0	25.5	
Total Split (s)	12.0	24.5	24.5	12.0	24.5	24.5				26.0	26.0	25.5	
Total Split (%)	13.6%	27.8%	27.8%	13.6%	27.8%	27.8%				29.5%	29.5%	29%	
Maximum Green (s)	8.0	20.0	20.0	8.0	20.0	20.0				22.0	22.0	21.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5				3.0	3.0	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0				1.0	1.0	1.0	

Lanes, Volumes, Timings  
4: Elsbree Street & President Avenue (Rte. 6)

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					0.0	0.0		
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5					4.0	4.0		
Lead/Lag		Lag	Lag	Lead	Lag								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	2.7	2.7	2.7	2.7	2.7					2.7	2.7		2.7
Recall Mode	None	Min	Min	None	Min					None	None		None
Walk Time (s)													4.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													64
Act Effct Green (s)	8.4	20.7	20.7	8.1	17.0	44.2				23.1	23.1		
Actuated g/C Ratio	0.10	0.26	0.26	0.10	0.21	0.55				0.29	0.29		
v/c Ratio	1.12	0.65	0.19	0.56	0.55	0.37				0.94	0.64		
Control Delay	140.5	33.4	29.4	52.1	32.2	13.6				61.9	36.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0		
Total Delay	140.5	33.4	29.4	52.1	32.2	13.6				61.9	36.3		
LOS	F	C	C	D	C	B				E	D		
Approach Delay		58.2			27.5						51.8		
Approach LOS		E			C						D		
Queue Length 50th (ft)	~148	162	36	55	106	100				~303	161		
Queue Length 95th (ft)	#283	222	74	#122	153	161				#490	#277		
Internal Link Dist (ft)		1092			435			589			541		
Turn Bay Length (ft)	150		250	80		400							
Base Capacity (vph)	186	941	420	186	934	863				513	490		
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	1.12	0.63	0.19	0.54	0.45	0.37				0.94	0.64		

Intersection Summary	
Area Type:	Other
Cycle Length: 88	
Actuated Cycle Length: 80.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

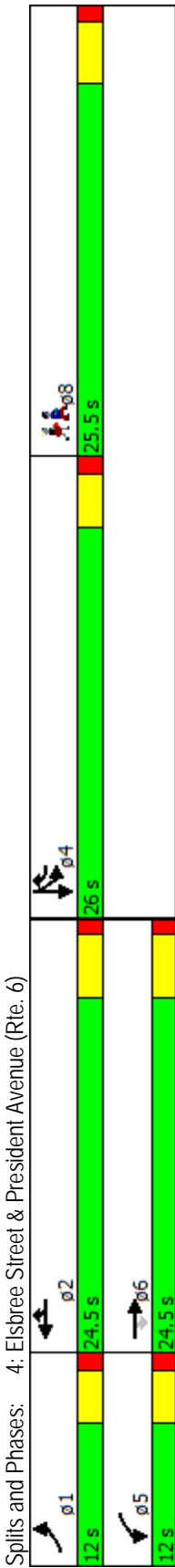
Lanes, Volumes, Timings

BMC Durfee High School TIA

Existing (2017) PM School Peak Hour

4: Elsbree Street & President Avenue (Rte. 6)

Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 46.0	Intersection LOS: D
Intersection Capacity Utilization 56.8%	ICU Level of Service B
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.	



HCM 2010 TWSC  
1: President Avenue (Rte. 6) & Ray Street

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

Intersection							
Int Delay, s/veh	47.6						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	113	440	390	121	127	59	
Conflicting Peds, #/hr	9	0	0	9	4	2	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	82	82	91	91	71	71	
Heavy Vehicles, %	2	2	1	1	1	3	
Mvmt Flow	138	537	429	133	179	83	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	566	0	-	0	1311	508	
Stage 1	-	-	-	-	499	-	
Stage 2	-	-	-	-	812	-	
Critical Hdwy	4.12	-	-	-	6.41	6.23	
Critical Hdwy Stg 1	-	-	-	-	5.41	-	
Critical Hdwy Stg 2	-	-	-	-	5.41	-	
Follow-up Hdwy	2.218	-	-	-	3.509	3.327	
Pot Cap-1 Maneuver	1006	-	-	-	~ 176	563	
Stage 1	-	-	-	-	612	-	
Stage 2	-	-	-	-	438	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	997	-	-	-	~ 140	556	
Mov Cap-2 Maneuver	-	-	-	-	~ 140	-	
Stage 1	-	-	-	-	610	-	
Stage 2	-	-	-	-	350	-	
Approach	EB		WB		SB		
HCM Control Delay, s	1.9		0		267		
HCM LOS					F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	997	-	-	-	184		
HCM Lane V/C Ratio	0.138	-	-	-	1.424		
HCM Control Delay (s)	9.2	0	-	-	267		
HCM Lane LOS	A	A	-	-	F		
HCM 95th %tile Q(veh)	0.5	-	-	-	15.9		
Notes							
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon							



**HCM 2010 TWSC**  
**8: President Avenue (Rte. 6) & Chestnut Street**

**BMC Durfee High School TIA**  
Existing (2017) PM School Peak Hour

Intersection												
Int Delay, s/veh	96.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	14	552	15	18	498	34	7	5	9	50	19	31
Conflicting Peds, #/hr	16	0	5	5	0	16	0	0	141	141	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	65	65	65	59	59	59	64	64	64
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	2	0	0
Mvmt Flow	17	665	18	28	766	52	12	8	15	78	30	48
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	959	0	0	824	0	0	1877	1864	831	1850	1847	949
Stage 1	-	-	-	-	-	-	849	849	-	989	989	-
Stage 2	-	-	-	-	-	-	1028	1015	-	861	858	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4	3.3
Pot Cap-1 Maneuver	725	-	-	815	-	-	55	74	373	~ 57	75	319
Stage 1	-	-	-	-	-	-	358	380	-	297	327	-
Stage 2	-	-	-	-	-	-	285	318	-	350	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	714	-	-	803	-	-	19	50	318	~ 37	51	272
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	50	-	~ 37	51	-
Stage 1	-	-	-	-	-	-	298	316	-	247	265	-
Stage 2	-	-	-	-	-	-	192	257	-	307	313	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			240.4			\$ 1015.7		
HCM LOS	F			F			F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	42	714	-	-	803	-	-	54				
HCM Lane V/C Ratio	0.847	0.024	-	-	0.034	-	-	2.894				
HCM Control Delay (s)	240.4	10.2	0	-	9.6	0	\$ 1015.7					
HCM Lane LOS	F	B	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	3.3	0.1	-	-	0.1	-	-	16.4				

**Notes**

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

HCM 2010 TWSC  
10: Elsbree Street & Langley Street

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	13	99	11	15	8	134	323	7	6	300	19
Conflicting Peds, #/hr	2	0	1	1	0	2	7	0	5	5	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	49	49	49	87	87	87	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	11
Mvmt Flow	16	17	130	22	31	16	154	371	8	7	330	21
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1064	1044	349	1114	1051	384	353	0	0	381	0	0
Stage 1	355	355	-	685	685	-	-	-	-	-	-	-
Stage 2	709	689	-	429	366	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	202	231	699	187	229	668	1217	-	-	1189	-	-
Stage 1	666	633	-	441	451	-	-	-	-	-	-	-
Stage 2	428	450	-	608	626	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	150	191	693	122	190	662	1209	-	-	1181	-	-
Mov Cap-2 Maneuver	150	191	-	122	190	-	-	-	-	-	-	-
Stage 1	557	627	-	369	377	-	-	-	-	-	-	-
Stage 2	319	376	-	474	620	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	18.6			34.9			2.4			0.1		
HCM LOS	C			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1209	-	-	426	188	1181	-	-				
HCM Lane V/C Ratio	0.127	-	-	0.383	0.369	0.006	-	-				
HCM Control Delay (s)	8.4	0	-	18.6	34.9	8.1	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.4	-	-	1.8	1.6	0	-	-				

# HCM 2010 TWSC

## 14: Elsbree Street & Southern School Driveway

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

### Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	67	18	528	515	3
Conflicting Peds, #/hr	25	290	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	52	52	58	58	79	79
Heavy Vehicles, %	0	15	0	3	1	0
Mvmt Flow	0	129	31	910	652	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1461	624	946 0
Stage 1	944	-	- -
Stage 2	517	-	- -
Critical Hdwy	6.8	7.2	4.1 -
Critical Hdwy Stg 1	5.8	-	- -
Critical Hdwy Stg 2	5.8	-	- -
Follow-up Hdwy	3.5	3.45	2.2 -
Pot Cap-1 Maneuver	122	398	734 -
Stage 1	343	-	- -
Stage 2	569	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	58	286	730 -
Mov Cap-2 Maneuver	58	-	- -
Stage 1	248	-	- -
Stage 2	376	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	27.5	0.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	730	-	286	-	-
HCM Lane V/C Ratio	0.043	-	0.451	-	-
HCM Control Delay (s)	10.2	0.4	27.5	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2.2	-	-

HCM 2010 TWSC  
16: Elsbree Street & Central School Driveway

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	95	74	411	413	5
Conflicting Peds, #/hr	2	5	24	0	0	24
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	96	96	84	84
Heavy Vehicles, %	6	0	0	1	1	0
Mvmt Flow	22	130	77	428	492	6
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1082	524	503	0	-	0
Stage 1	500	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Critical Hdwy	6.46	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	237	557	1072	-	-	-
Stage 1	601	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	542	1047	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.3	1.3		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1047	-	443	-	-	
HCM Lane V/C Ratio	0.074	-	0.343	-	-	
HCM Control Delay (s)	8.7	0	17.3	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	1.5	-	-	

# HCM 2010 TWSC

## 17: Elsbree Street & Northern School Driveway

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

### Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	44	28	13	416	384	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	38	38	89	89	83	83
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	116	74	15	467	463	24

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	972	475	487 0 - 0
Stage 1	475	-	- - - -
Stage 2	497	-	- - - -
Critical Hdwy	6.4	6.2	4.1 - - -
Critical Hdwy Stg 1	5.4	-	- - - -
Critical Hdwy Stg 2	5.4	-	- - - -
Follow-up Hdwy	3.5	3.3	2.2 - - -
Pot Cap-1 Maneuver	282	594	1086 - - -
Stage 1	630	-	- - - -
Stage 2	615	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	277	594	1086 - - -
Mov Cap-2 Maneuver	277	-	- - - -
Stage 1	630	-	- - - -
Stage 2	603	-	- - - -

Approach	EB	NB	SB
HCM Control Delay, s	26.8	0.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	350	-	-
HCM Lane V/C Ratio	0.013	-	0.541	-	-
HCM Control Delay (s)	8.4	0	26.8	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	3.1	-	-

HCM 2010 TWSC  
19: Ray Street & Student Parking Lot

BMC Durfee High School TIA  
Existing (2017) PM School Peak Hour

Intersection						
Int Delay, s/veh	18.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	111	131	130	126	49	103
Conflicting Peds, #/hr	0	14	0	11	11	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	48	48	73	73	81	81
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	231	273	178	173	60	127
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	526	289	0	0	365	0
Stage 1	278	-	-	-	-	-
Stage 2	248	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	516	755	-	-	1205	-
Stage 1	774	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	477	737	-	-	1192	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	36.8	0		2.6		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	590	1192	-	
HCM Lane V/C Ratio	-	-	0.855	0.051	-	
HCM Control Delay (s)	-	-	36.8	8.2	0	
HCM Lane LOS	-	-	E	A	A	
HCM 95th %tile Q(veh)	-	-	9.4	0.2	-	



Lanes, Volumes, Timings  
 4: Elsbree Street & President Avenue (Rte. 6)

Durfee High School TIA  
 Future (2024) No Build AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Volume (vph)	294	458	57	29	544	689	0	0	0	372	141	139	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150		250	80		400	0	0	0	0	0	0	
Storage Lanes	1		1	1		1	0	0	0	1	1	0	
Taper Length (ft)	25		25	25		25	25			25			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850					0.925		
Flt Protected	0.950			0.950						0.950			
Satd. Flow (prot)	1736	3539	1583	1805	3574	1599	0	0	0	1736	1740	0	
Flt Permitted	0.950			0.950						0.950			
Satd. Flow (perm)	1736	3539	1583	1805	3574	1599	0	0	0	1736	1740	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		1172			515			669			621		
Travel Time (s)		26.6			11.7			15.2			14.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	4%	2%	2%	0%	1%	1%	0%	0%	0%	4%	1%	1%	
Adj. Flow (vph)	320	498	62	32	591	749	0	0	0	404	153	151	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	320	498	62	32	591	749	0	0	0	404	304	0	
Turn Type	Prot	NA	Perm	Prot	NA	pt+ov				Split	NA		
Protected Phases	1	6		5	2	24				4	4	8	
Permitted Phases			6										
Detector Phase	1	6	6	5	2	24				4	4		
Switch Phase													
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0					7.0	7.0	3.0	
Minimum Split (s)	11.0	11.5	11.5	11.0	11.5					11.0	11.0	25.5	
Total Split (s)	14.0	31.5	31.5	14.0	31.5					29.5	29.5	25.5	
Total Split (%)	13.9%	31.3%	31.3%	13.9%	31.3%					29.4%	29.4%	25%	
Maximum Green (s)	10.0	27.0	27.0	10.0	27.0					25.5	25.5	21.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5					3.0	3.0	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0					1.0	1.0	1.0	

Lanes, Volumes, Timings

4: Elsbree Street & President Avenue (Rte. 6)

Durfee High School TIA

Future (2024) No Build AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					0.0	0.0		
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5					4.0	4.0		
Lead/Lag	Lead	Lag	Lag	Lead	Lag								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	2.7	2.7	2.7	2.7	2.7					2.7	2.7		2.7
Recall Mode	None	Min	Min	None	Min					None	None		None
Walk Time (s)													4.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													47
Act Effct Green (s)	10.4	33.8	33.8	7.8	25.6	55.1				25.4	25.4		
Actuated g/C Ratio	0.12	0.39	0.39	0.09	0.29	0.63				0.29	0.29		
v/c Ratio	1.56	0.37	0.10	0.20	0.57	0.75				0.80	0.60		
Control Delay	305.3	25.0	25.5	45.6	30.9	20.9				46.4	36.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0		
Total Delay	305.3	25.0	25.5	45.6	30.9	20.9				46.4	36.3		
LOS	F	C	C	D	C	C				D	D		
Approach Delay		127.0			25.8						42.0		
Approach LOS		F			C						D		
Queue Length 50th (ft)	~313	136	29	20	174	372				252	176		
Queue Length 95th (ft)	#482	192	63	49	233	#593				#431	272		
Internal Link Dist (ft)		1092			435			589			541		
Turn Bay Length (ft)	150		250	80		400							
Base Capacity (vph)	205	1364	610	213	1143	1010				524	525		
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	1.56	0.37	0.10	0.15	0.52	0.74				0.77	0.58		
Intersection Summary													
Area Type:	Other												
Cycle Length:	100.5												
Actuated Cycle Length:	87.7												
Natural Cycle:	100												
Control Type:	Actuated-Uncoordinated												

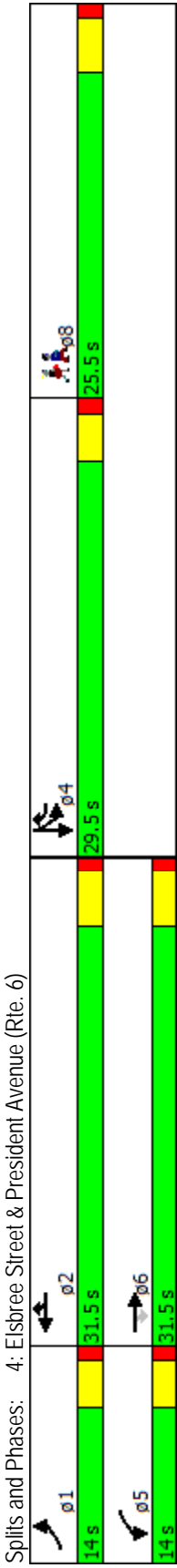
Lanes, Volumes, Timings

4: Elsbree Street & President Avenue (Rte. 6)

Durfee High School TIA

Future (2024) No Build AM Peak Hour

Maximum v/c Ratio: 1.56	
Intersection Signal Delay: 59.7	Intersection LOS: E
Intersection Capacity Utilization 66.0%	ICU Level of Service C
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.	



**HCM 2010 TWSC**  
**1: President Avenue (Rte. 6) & Ray Street**

**Durfee High School TIA**  
Future (2024) No Build AM Peak Hour

Intersection							
Int Delay, s/veh	49.5						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Vol, veh/h	125	502	371	228	156	97	
Conflicting Peds, #/hr	4	0	0	4	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	-	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	1	1	1	3	
Mvmt Flow	136	546	403	248	170	105	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	651	0	-	0	1344	531	
Stage 1	-	-	-	-	527	-	
Stage 2	-	-	-	-	817	-	
Critical Hdwy	4.12	-	-	-	6.41	6.23	
Critical Hdwy Stg 1	-	-	-	-	5.41	-	
Critical Hdwy Stg 2	-	-	-	-	5.41	-	
Follow-up Hdwy	2.218	-	-	-	3.509	3.327	
Pot Cap-1 Maneuver	935	-	-	-	~ 168	546	
Stage 1	-	-	-	-	594	-	
Stage 2	-	-	-	-	436	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	931	-	-	-	~ 133	544	
Mov Cap-2 Maneuver	-	-	-	-	~ 133	-	
Stage 1	-	-	-	-	594	-	
Stage 2	-	-	-	-	344	-	
Approach	EB		WB		SB		
HCM Control Delay, s	1.9		0		284.9		
HCM LOS					F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	931	-	-	-	187		
HCM Lane V/C Ratio	0.146	-	-	-	1.471		
HCM Control Delay (s)	9.5	0	-	-	284.9		
HCM Lane LOS	A	A	-	-	F		
HCM 95th %tile Q(veh)	0.5	-	-	-	17		
Notes							
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon							

# HCM 2010 TWSC

## 8: President Avenue (Rte. 6) & Chestnut Street

Durfee High School TIA  
Future (2024) No Build AM Peak Hour

### Intersection

Int Delay, s/veh 36.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	73	559	7	5	572	135	3	54	12	44	10	22
Conflicting Peds, #/hr	10	0	0	0	0	10	0	0	41	41	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	79	608	8	5	622	147	3	59	13	48	11	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	809	0	0	656	0	0	1575	1631	662	1594	1562	746
Stage 1	-	-	-	-	-	-	811	811	-	747	747	-
Stage 2	-	-	-	-	-	-	764	820	-	847	815	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	825	-	-	941	-	-	90	103	465	87	113	417
Stage 1	-	-	-	-	-	-	376	396	-	408	423	-
Stage 2	-	-	-	-	-	-	399	392	-	359	394	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	817	-	-	932	-	-	64	80	443	~ 29	88	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	64	80	-	~ 29	88	-
Stage 1	-	-	-	-	-	-	308	325	-	334	402	-
Stage 2	-	-	-	-	-	-	358	373	-	241	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.1	129.4	\$ 591.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	92	817	-	-	932	-	-	45
HCM Lane V/C Ratio	0.815	0.097	-	-	0.006	-	-	1.836
HCM Control Delay (s)	129.4	9.9	0	-	8.9	0	-	\$ 591.6
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	4.3	0.3	-	-	0	-	-	8.4

### Notes

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

HCM 2010 TWSC  
10: Elsbree Street & Langley Street

Durfee High School TIA  
Future (2024) No Build AM Peak Hour

Intersection												
Int Delay, s/veh	34.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	64	39	140	24	24	33	69	647	4	43	264	13
Conflicting Peds, #/hr	2	0	0	0	0	2	3	0	6	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	3	2	2	33	0	4	8
Mvmt Flow	70	42	152	26	26	36	75	703	4	47	287	14
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1278	1250	302	1344	1254	713	303	0	0	710	0	0
Stage 1	390	390	-	857	857	-	-	-	-	-	-	-
Stage 2	888	860	-	487	397	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	144	174	742	130	173	430	1258	-	-	899	-	-
Stage 1	638	611	-	355	377	-	-	-	-	-	-	-
Stage 2	341	376	-	566	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	100	146	736	70	145	427	1251	-	-	894	-	-
Mov Cap-2 Maneuver	100	146	-	70	145	-	-	-	-	-	-	-
Stage 1	574	571	-	319	339	-	-	-	-	-	-	-
Stage 2	258	338	-	387	568	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	168.6			68.5			0.8			1.2		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1251	-	-	221	138	894	-	-				
HCM Lane V/C Ratio	0.06	-	-	1.195	0.638	0.052	-	-				
HCM Control Delay (s)	8.1	0	-	168.6	68.5	9.2	0	-				
HCM Lane LOS	A	A	-	F	F	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	13	3.4	0.2	-	-				

HCM 2010 TWSC  
14: Elsbree Street & Southern School Driveway

Durfee High School TIA  
Future (2024) No Build AM Peak Hour

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	11	128	16	1047	468	0
Conflicting Peds, #/hr	4	213	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	64	3	6	2	2	0
Mvmt Flow	12	139	17	1138	509	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1326	467	722	0	-	0
Stage 1	722	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Critical Hdwy	8.08	6.96	4.22	-	-	-
Critical Hdwy Stg 1	7.08	-	-	-	-	-
Critical Hdwy Stg 2	7.08	-	-	-	-	-
Follow-up Hdwy	4.14	3.33	2.26	-	-	-
Pot Cap-1 Maneuver	86	540	850	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	52	430	850	-	-	-
Mov Cap-2 Maneuver	52	-	-	-	-	-
Stage 1	246	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	33.4	0.3		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	850	-	273	-	-	
HCM Lane V/C Ratio	0.02	-	0.553	-	-	
HCM Control Delay (s)	9.3	0.2	33.4	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	3.1	-	-	



HCM 2010 TWSC  
16: Elsbree Street & Central School Driveway

Durfee High School TIA  
Future (2024) No Build AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	18	106	864	408	10
Conflicting Peds, #/hr	5	2	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	9	1	3	0
Mvmt Flow	2	20	115	939	443	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1624	456	459	0	-	0
Stage 1	454	-	-	-	-	-
Stage 2	1170	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.281	-	-	-
Pot Cap-1 Maneuver	114	609	1066	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	87	605	1064	-	-	-
Mov Cap-2 Maneuver	87	-	-	-	-	-
Stage 1	641	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.1	1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1064	-	379	-	-	
HCM Lane V/C Ratio	0.108	-	0.057	-	-	
HCM Control Delay (s)	8.8	0	15.1	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	0.2	-	-	

# HCM 2010 TWSC

## 17: Elsbree Street & Northern School Driveway

Durfee High School TIA  
Future (2024) No Build AM Peak Hour

### Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	35	106	173	690	314	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	38	115	188	750	341	113

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1524	398	454 0
Stage 1	398	-	- -
Stage 2	1126	-	- -
Critical Hdwy	6.4	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	131	656	1117 -
Stage 1	683	-	- -
Stage 2	313	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	93	656	1117 -
Mov Cap-2 Maneuver	93	-	- -
Stage 1	683	-	- -
Stage 2	223	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	36.4	1.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1117	-	262	-	-
HCM Lane V/C Ratio	0.168	-	0.585	-	-
HCM Control Delay (s)	8.9	0	36.4	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.6	-	3.4	-	-

HCM 2010 TWSC  
19: Ray Street & Student Parking Lot

Durfee High School TIA  
Future (2024) No Build AM Peak Hour

Intersection						
Int Delay, s/veh	8.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	158	82	102	258	141	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	172	89	111	280	153	112
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	669	251	0	0	391	0
Stage 1	251	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	426	793	-	-	1179	-
Stage 1	795	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	367	793	-	-	1179	-
Mov Cap-2 Maneuver	367	-	-	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	577	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	23.5	0		4.9		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	450	1179	-	
HCM Lane V/C Ratio	-	-	0.58	0.13	-	
HCM Control Delay (s)	-	-	23.5	8.5	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	3.6	0.4	-	

Lanes, Volumes, Timings  
 4: Elsbree Street & President Avenue (Rte. 6)

BMC Durfee High School TIA  
 Future (2024) No Build PM Commuter Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Volume (vph)	207	630	56	93	370	345	0	0	0	405	113	130	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150	250	80	80	400	400	0	0	0	0	0	0	
Storage Lanes	1	1	1	1	1	1	0	0	0	1	1	0	
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.950	0.850	0.850	0.950	0.850	0.850	0.950	0.950	0.950	0.950	0.920	0.920	
Flt Protected	0.950			0.950						0.950			
Satd. Flow (prot)	1805	3574	1615	1805	3610	1599	0	0	0	1787	1748	0	
Flt Permitted	0.950			0.950						0.950			
Satd. Flow (perm)	1805	3574	1615	1805	3610	1599	0	0	0	1787	1748	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	1172	515	117	515	117	515	669	669	669	621	621	621	
Travel Time (s)	26.6	11.7	11.7	11.7	11.7	11.7	15.2	15.2	15.2	14.1	14.1	14.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	
Adj. Flow (vph)	225	685	61	101	402	375	0	0	0	440	123	141	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	225	685	61	101	402	375	0	0	0	440	264	0	
Turn Type	Prot	NA	Perm	Prot	NA	pt+ov				Split	NA		
Protected Phases	1	6	6	5	2	24				4	4	8	
Permitted Phases													
Detector Phase	1	6	6	5	2	24				4	4		
Switch Phase													
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0				7.0	7.0	3.0	
Minimum Split (s)	11.0	11.5	11.5	11.0	11.5	11.5				11.0	11.0	25.5	
Total Split (s)	12.0	24.5	24.5	12.0	24.5	24.5				26.0	26.0	25.5	
Total Split (%)	13.6%	27.8%	27.8%	13.6%	27.8%	27.8%				29.5%	29.5%	29%	
Maximum Green (s)	8.0	20.0	20.0	8.0	20.0	20.0				22.0	22.0	21.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5				3.0	3.0	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0				1.0	1.0	1.0	

Lanes, Volumes, Timings  
4: Elsbree Street & President Avenue (Rte. 6)

BMC Durfee High School TIA  
Future (2024) No Build PM Commuter Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					0.0	0.0		
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5					4.0	4.0		
Lead/Lag		Lag	Lag	Lead	Lag								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	2.7	2.7	2.7	2.7	2.7					2.7	2.7		2.7
Recall Mode	None	Min	Min	None	Min					None	None		None
Walk Time (s)													4.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													23
Act Effct Green (s)	8.4	19.8	19.8	8.1	16.4	43.5				22.9	22.9		
Actuated g/C Ratio	0.12	0.29	0.29	0.12	0.24	0.63				0.33	0.33		
v/c Ratio	1.02	0.67	0.13	0.48	0.47	0.37				0.74	0.46		
Control Delay	103.7	29.1	25.0	42.7	26.2	10.2				35.2	25.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0		
Total Delay	103.7	29.1	25.0	42.7	26.2	10.2				35.2	25.9		
LOS	F	C	C	D	C	B				D	C		
Approach Delay		46.1			21.3						31.7		
Approach LOS		D			C						C		
Queue Length 50th (ft)	84	113	16	35	60	36				134	71		
Queue Length 95th (ft)	#307	#281	60	#121	147	193				#434	211		
Internal Link Dist (ft)		1092			435			589			541		
Turn Bay Length (ft)	150		250	80		400							
Base Capacity (vph)	221	1098	496	221	1105	1001				601	589		
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	1.02	0.62	0.12	0.46	0.36	0.37				0.73	0.45		

Intersection Summary	
Area Type:	Other
Cycle Length: 88	
Actuated Cycle Length: 68.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	



**HCM 2010 TWSC**  
**1: President Avenue (Rte. 6) & Ray Street**

**BMC Durfee High School TIA**  
Future (2024) No Build PM Commuter Peak Hour

Intersection						
Int Delay, s/veh	13.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	26	614	383	77	164	29
Conflicting Peds, #/hr	8	0	0	8	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	0	0	0	1	7
Mvmt Flow	28	667	416	84	178	32
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	501	0	-	0	1183	467
Stage 1	-	-	-	-	459	-
Stage 2	-	-	-	-	724	-
Critical Hdwy	4.18	-	-	-	6.41	6.27
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.272	-	-	-	3.509	3.363
Pot Cap-1 Maneuver	1033	-	-	-	210	586
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1025	-	-	-	201	581
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	461	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		91.5	
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1025	-	-	-	223	
HCM Lane V/C Ratio	0.028	-	-	-	0.941	
HCM Control Delay (s)	8.6	0	-	-	91.5	
HCM Lane LOS	A	A	-	-	F	
HCM 95th %tile Q(veh)	0.1	-	-	-	8.1	



**HCM 2010 TWSC**  
**8: President Avenue (Rte. 6) & Chestnut Street**

**BMC Durfee High School TIA**  
Future (2024) No Build PM Commuter Peak Hour

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	763	11	15	450	25	4	3	3	36	9	9
Conflicting Peds, #/hr	7	0	1	1	0	7	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	14	829	12	16	489	27	4	3	3	39	10	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	520	0	0	845	0	0	1417	1421	846	1410	1413	514
Stage 1	-	-	-	-	-	-	868	868	-	539	539	-
Stage 2	-	-	-	-	-	-	549	553	-	871	874	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1056	-	-	800	-	-	116	138	365	117	139	564
Stage 1	-	-	-	-	-	-	350	372	-	530	525	-
Stage 2	-	-	-	-	-	-	524	518	-	349	370	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1049	-	-	795	-	-	102	130	361	108	131	558
Mov Cap-2 Maneuver	-	-	-	-	-	-	102	130	-	108	131	-
Stage 1	-	-	-	-	-	-	340	361	-	515	508	-
Stage 2	-	-	-	-	-	-	487	502	-	332	359	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			32.4			54.3		
HCM LOS							D			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	142	1049	-	-	795	-	-	129				
HCM Lane V/C Ratio	0.077	0.013	-	-	0.021	-	-	0.455				
HCM Control Delay (s)	32.4	8.5	0	-	9.6	0	-	54.3				
HCM Lane LOS	D	A	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	2				

**HCM 2010 TWSC**  
**10: Elsbree Street & Langley Street**

**BMC Durfee High School TIA**  
Future (2024) No Build PM Commuter Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	7	90	7	11	6	90	325	8	5	351	19
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	17	0	0	0	0	0	0	1	0
Mvmt Flow	20	8	98	8	12	7	98	353	9	5	382	21
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	966	961	393	1008	966	359	402	0	0	362	0	0
Stage 1	403	403	-	553	553	-	-	-	-	-	-	-
Stage 2	563	558	-	455	413	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.27	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.27	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.653	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	236	258	660	206	257	690	1168	-	-	1208	-	-
Stage 1	628	603	-	492	518	-	-	-	-	-	-	-
Stage 2	514	515	-	557	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	206	230	659	157	229	689	1167	-	-	1207	-	-
Mov Cap-2 Maneuver	206	230	-	157	229	-	-	-	-	-	-	-
Stage 1	562	600	-	440	464	-	-	-	-	-	-	-
Stage 2	444	461	-	466	594	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	16			22.1			1.8			0.1		
HCM LOS	C			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1167	-	-	452	237	1207	-	-				
HCM Lane V/C Ratio	0.084	-	-	0.277	0.11	0.005	-	-				
HCM Control Delay (s)	8.4	0	-	16	22.1	8	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.3	-	-	1.1	0.4	0	-	-				

HCM 2010 TWSC  
14: Elsbree Street & Southern School Driveway

BMC Durfee High School TIA  
Future (2024) No Build PM Commuter Peak Hour

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	16	3	523	479	3
Conflicting Peds, #/hr	3	8	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	17	3	568	521	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	821	272	532 0 - 0
Stage 1	530	-	- - - -
Stage 2	291	-	- - - -
Critical Hdwy	6.8	6.9	4.1 - - -
Critical Hdwy Stg 1	5.8	-	- - - -
Critical Hdwy Stg 2	5.8	-	- - - -
Follow-up Hdwy	3.5	3.3	2.2 - - -
Pot Cap-1 Maneuver	317	732	1046 - - -
Stage 1	560	-	- - - -
Stage 2	739	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	311	725	1044 - - -
Mov Cap-2 Maneuver	311	-	- - - -
Stage 1	556	-	- - - -
Stage 2	730	-	- - - -

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1044	-	725	-	-
HCM Lane V/C Ratio	0.003	-	0.024	-	-
HCM Control Delay (s)	8.5	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
16: Elsbree Street & Central School Driveway

BMC Durfee High School TIA  
Future (2024) No Build PM Commuter Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	44	46	425	417	3
Conflicting Peds, #/hr	3	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	48	50	462	453	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1020	460	460	0	-	0
Stage 1	458	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	264	605	1112	-	-	-
Stage 1	641	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	602	1110	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.5	0.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1110	-	602	-	-	
HCM Lane V/C Ratio	0.045	-	0.079	-	-	
HCM Control Delay (s)	8.4	0	11.5	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

# HCM 2010 TWSC

## 17: Elsbree Street & Northern School Driveway

BMC Durfee High School TIA  
Future (2024) No Build PM Commuter Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	5	4	422	432	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	5	5	4	459	470	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	940	473	476	0	-	0
Stage 1	473	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	295	595	1097	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %			-		-	-
Mov Cap-1 Maneuver	294	595	1097	-	-	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.4	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1097	-	394	-	-	
HCM Lane V/C Ratio	0.004	-	0.028	-	-	
HCM Control Delay (s)	8.3	0	14.4	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 2010 TWSC  
19: Ray Street & Student Parking Lot

BMC Durfee High School TIA  
Future (2024) No Build PM Commuter Peak Hour

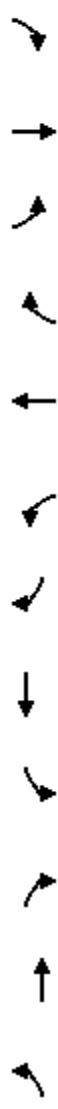
Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	4	89	1	0	96
Conflicting Peds, #/hr	0	2	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	4	97	1	0	104
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	203	100	0	0	100	0
Stage 1	99	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	790	961	-	-	1505	-
Stage 1	930	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	788	958	-	-	1504	-
Mov Cap-2 Maneuver	788	-	-	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.3	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 855	1504	-		
HCM Lane V/C Ratio	-	- 0.011	-	-		
HCM Control Delay (s)	-	- 9.3	0	-		
HCM Lane LOS	-	- A	A	-		
HCM 95th %tile Q(veh)	-	- 0	0	-		

Lanes, Volumes, Timings

4: Elsbree Street & President Avenue (Rte. 6)

BMC Durfee High School TIA

FNB (2024) PM School Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	
Volume (vph)	194	557	74	99	406	312	0	0	0	471	166	140	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150	250	80	80	400	400	0	0	0	0	0	0	
Storage Lanes	1	1	1	1	1	1	0	0	0	1	1	0	
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.950	0.850	0.850	0.950	0.850	0.850	0.950	0.950	0.950	0.950	0.931	0.950	
Frt Protected	0.950			0.950						0.950			
Satd. Flow (prot)	1787	3574	1599	1787	3574	1583	0	0	0	1787	1704	0	
Frt Permitted	0.950			0.950						0.950			
Satd. Flow (perm)	1787	3574	1599	1787	3574	1583	0	0	0	1787	1704	0	
Right Turn on Red			No			No			No			No	
Satd. Flow (RTOR)													
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	
Link Distance (ft)	1172	1172	515	515	515	515	669	669	669	621	621	621	
Travel Time (s)	26.6	26.6	11.7	11.7	11.7	11.7	15.2	15.2	15.2	14.1	14.1	14.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	2%	0%	0%	0%	1%	7%	0%	
Adj. Flow (vph)	211	605	80	108	441	339	0	0	0	512	180	152	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	211	605	80	108	441	339	0	0	0	512	332	0	
Turn Type	Prot	NA	Perm	Prot	NA	pt+ov				Split	NA		
Protected Phases	1	6	6	5	2	24				4	4	8	
Permitted Phases													
Detector Phase	1	6	6	5	2	24				4	4		
Switch Phase													
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0				7.0	7.0	3.0	
Minimum Split (s)	11.0	11.5	11.5	11.0	11.5	11.5				11.0	11.0	25.5	
Total Split (s)	12.0	24.5	24.5	12.0	24.5	24.5				26.0	26.0	25.5	
Total Split (%)	13.6%	27.8%	27.8%	13.6%	27.8%	27.8%				29.5%	29.5%	29%	
Maximum Green (s)	8.0	20.0	20.0	8.0	20.0	20.0				22.0	22.0	21.0	
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5	3.5				3.0	3.0	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0				1.0	1.0	1.0	



Lanes, Volumes, Timings

4: Elsbree Street & President Avenue (Rte. 6)

BMC Durfee High School TIA

FNB (2024) PM School Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					0.0	0.0		
Total Lost Time (s)	4.0	4.5	4.5	4.0	4.5					4.0	4.0		
Lead/Lag	Lead	Lag	Lag	Lead	Lag								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	2.7	2.7	2.7	2.7	2.7					2.7	2.7		2.7
Recall Mode	None	Min	Min	None	Min					None	None		None
Walk Time (s)													4.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													64
Act Effct Green (s)	8.4	20.9	20.9	8.1	17.1	44.3				23.0	23.0		
Actuated g/C Ratio	0.10	0.26	0.26	0.10	0.21	0.55				0.29	0.29		
v/c Ratio	1.13	0.65	0.19	0.60	0.58	0.39				1.00	0.68		
Control Delay	146.7	33.5	29.4	54.6	32.7	13.8				75.0	37.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0		
Total Delay	146.7	33.5	29.4	54.6	32.7	13.8				75.0	37.9		
LOS	F	C	C	D	C	B				E	D		
Approach Delay		59.8			28.1						60.4		
Approach LOS		E			C						E		
Queue Length 50th (ft)	~152	165	36	59	114	108				~337	172		
Queue Length 95th (ft)	#288	225	75	#133	162	172				#527	#302		
Internal Link Dist (ft)		1092			435			589			541		
Turn Bay Length (ft)	150		250	80		400							
Base Capacity (vph)	186	943	421	186	932	863				512	488		
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	1.13	0.64	0.19	0.58	0.47	0.39				1.00	0.68		
Intersection Summary													
Area Type:	Other												
Cycle Length: 88													
Actuated Cycle Length: 80.3													
Natural Cycle: 90													
Control Type: Actuated-Uncoordinated													



HCM 2010 TWSC  
1: President Avenue (Rte. 6) & Ray Street

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection							
Int Delay, s/veh	20.3						
Movement	EBL	EBT		WBT	WBR	SBL	SBR
Vol, veh/h	118	456		404	126	132	62
Conflicting Peds, #/hr	9	0		0	9	4	2
Sign Control	Free	Free		Free	Free	Stop	Stop
RT Channelized	-	None		-	None	-	None
Storage Length	-	-		-	-	0	-
Veh in Median Storage, #	-	0		0	-	0	-
Grade, %	-	0		0	-	0	-
Peak Hour Factor	92	92		92	92	92	92
Heavy Vehicles, %	2	2		1	1	1	3
Mvmt Flow	128	496		439	137	143	67
Major/Minor	Major1			Major2		Minor2	
Conflicting Flow All	580	0		-	0	1264	521
Stage 1	-	-		-	-	512	-
Stage 2	-	-		-	-	752	-
Critical Hdwy	4.12	-		-	-	6.41	6.23
Critical Hdwy Stg 1	-	-		-	-	5.41	-
Critical Hdwy Stg 2	-	-		-	-	5.41	-
Follow-up Hdwy	2.218	-		-	-	3.509	3.327
Pot Cap-1 Maneuver	994	-		-	-	188	553
Stage 1	-	-		-	-	604	-
Stage 2	-	-		-	-	468	-
Platoon blocked, %		-		-	-		
Mov Cap-1 Maneuver	985	-		-	-	153	546
Mov Cap-2 Maneuver	-	-		-	-	153	-
Stage 1	-	-		-	-	602	-
Stage 2	-	-		-	-	383	-
Approach	EB			WB		SB	
HCM Control Delay, s	1.9			0		130.4	
HCM LOS							F
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	985	-	-	-	199		
HCM Lane V/C Ratio	0.13	-	-	-	1.06		
HCM Control Delay (s)	9.2	0	-	-	130.4		
HCM Lane LOS	A	A	-	-	F		
HCM 95th %tile Q(veh)	0.4	-	-	-	9.7		

HCM 2010 TWSC  
8: President Avenue (Rte. 6) & Chestnut Street

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection												
Int Delay, s/veh	22.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	572	16	19	516	36	8	6	10	52	20	33
Conflicting Peds, #/hr	16	0	5	5	0	16	0	0	141	141	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	2	0	0
Mvmt Flow	16	622	17	21	561	39	9	7	11	57	22	36
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	741	0	0	780	0	0	1596	1586	787	1576	1576	737
Stage 1	-	-	-	-	-	-	804	804	-	763	763	-
Stage 2	-	-	-	-	-	-	792	782	-	813	813	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4	3.3
Pot Cap-1 Maneuver	875	-	-	846	-	-	87	109	395	89	111	422
Stage 1	-	-	-	-	-	-	380	398	-	397	416	-
Stage 2	-	-	-	-	-	-	385	408	-	372	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	862	-	-	833	-	-	50	76	337	65	78	360
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	76	-	65	78	-
Stage 1	-	-	-	-	-	-	319	335	-	334	346	-
Stage 2	-	-	-	-	-	-	308	340	-	338	332	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			61.4			261.7		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	89	862	-	-	833	-	-	91				
HCM Lane V/C Ratio	0.293	0.019	-	-	0.025	-	-	1.254				
HCM Control Delay (s)	61.4	9.3	0	-	9.4	0	-	261.7				
HCM Lane LOS	F	A	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	8.1				

HCM 2010 TWSC  
10: Elsbree Street & Langley Street

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	14	103	12	16	9	139	335	8	7	311	20
Conflicting Peds, #/hr	2	0	1	1	0	2	7	0	5	5	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	11
Mvmt Flow	14	15	112	13	17	10	151	364	9	8	338	22
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1052	1043	358	1103	1050	377	362	0	0	375	0	0
Stage 1	366	366	-	673	673	-	-	-	-	-	-	-
Stage 2	686	677	-	430	377	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	206	231	691	190	229	674	1208	-	-	1195	-	-
Stage 1	657	626	-	448	457	-	-	-	-	-	-	-
Stage 2	441	455	-	607	619	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	192	685	129	190	668	1200	-	-	1187	-	-
Mov Cap-2 Maneuver	164	192	-	129	190	-	-	-	-	-	-	-
Stage 1	551	620	-	376	384	-	-	-	-	-	-	-
Stage 2	347	382	-	488	613	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	17.4			28.3			2.4			0.2		
HCM LOS	C			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1200	-	-	430	194	1187	-	-				
HCM Lane V/C Ratio	0.126	-	-	0.329	0.207	0.006	-	-				
HCM Control Delay (s)	8.4	0	-	17.4	28.3	8.1	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.4	-	-	1.4	0.8	0	-	-				

HCM 2010 TWSC  
14: Elsbree Street & Southern School Driveway

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	67	18	534	547	3
Conflicting Peds, #/hr	25	290	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	15	0	3	1	0
Mvmt Flow	0	73	20	580	595	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1215	595	888 0
Stage 1	886	-	- -
Stage 2	329	-	- -
Critical Hdwy	6.8	7.2	4.1 -
Critical Hdwy Stg 1	5.8	-	- -
Critical Hdwy Stg 2	5.8	-	- -
Follow-up Hdwy	3.5	3.45	2.2 -
Pot Cap-1 Maneuver	177	417	771 -
Stage 1	368	-	- -
Stage 2	707	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	89	300	767 -
Mov Cap-2 Maneuver	89	-	- -
Stage 1	266	-	- -
Stage 2	492	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	20.8	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	767	-	300	-	-
HCM Lane V/C Ratio	0.026	-	0.243	-	-
HCM Control Delay (s)	9.8	0.2	20.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

HCM 2010 TWSC  
16: Elsbree Street & Central School Driveway

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection							
Int Delay, s/veh	2.3						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Vol, veh/h	16	95	74	426	428	5	
Conflicting Peds, #/hr	2	5	24	0	0	24	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	6	0	0	1	1	0	
Mvmt Flow	17	103	80	463	465	5	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1097	497	476	0	-	0	
Stage 1	473	-	-	-	-	-	
Stage 2	624	-	-	-	-	-	
Critical Hdwy	6.46	6.2	4.1	-	-	-	
Critical Hdwy Stg 1	5.46	-	-	-	-	-	
Critical Hdwy Stg 2	5.46	-	-	-	-	-	
Follow-up Hdwy	3.554	3.3	2.2	-	-	-	
Pot Cap-1 Maneuver	232	577	1097	-	-	-	
Stage 1	619	-	-	-	-	-	
Stage 2	527	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	207	561	1072	-	-	-	
Mov Cap-2 Maneuver	207	-	-	-	-	-	
Stage 1	616	-	-	-	-	-	
Stage 2	472	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	15.9	1.3		0			
HCM LOS	C						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	1072	-	450	-	-		
HCM Lane V/C Ratio	0.075	-	0.268	-	-		
HCM Control Delay (s)	8.6	0	15.9	-	-		
HCM Lane LOS	A	A	C	-	-		
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-		



HCM 2010 TWSC  
17: Elsbree Street & Northern School Driveway

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	44	28	13	431	98	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	48	30	14	468	107	22

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	614	117	128 0
Stage 1	117	-	- -
Stage 2	497	-	- -
Critical Hdwy	6.4	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	459	941	1470 -
Stage 1	913	-	- -
Stage 2	615	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	453	941	1470 -
Mov Cap-2 Maneuver	453	-	- -
Stage 1	913	-	- -
Stage 2	607	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1470	-	567	-	-
HCM Lane V/C Ratio	0.01	-	0.138	-	-
HCM Control Delay (s)	7.5	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

HCM 2010 TWSC  
19: Ray Street & Student Parking Lot

BMC Durfee High School TIA  
FNB (2024) PM School Peak Hour

Intersection						
Int Delay, s/veh	5.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	111	131	135	126	49	107
Conflicting Peds, #/hr	0	14	0	11	11	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	121	142	147	137	53	116
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	452	240	0	0	298	0
Stage 1	229	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	569	804	-	-	1275	-
Stage 1	814	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	531	785	-	-	1262	-
Mov Cap-2 Maneuver	531	-	-	-	-	-
Stage 1	803	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.4	0		2.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 644	1262	-		
HCM Lane V/C Ratio	-	- 0.408	0.042	-		
HCM Control Delay (s)	-	- 14.4	8	0		
HCM Lane LOS	-	- B	A	A		
HCM 95th %tile Q(veh)	-	- 2	0.1	-		

# HCM 2010 TWSC

## 1: President Avenue (Rte. 6) & Ray Street

Durfee High School TIA  
Future (2024) Build AM Peak Hour

### Intersection

Int Delay, s/veh 49.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	125	502	371	228	156	97
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	3
Mvmt Flow	136	546	403	248	170	105

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	651	0	1344
Stage 1	-	-	527
Stage 2	-	-	817
Critical Hdwy	4.12	-	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	2.218	-	3.509
Pot Cap-1 Maneuver	935	-	~ 168
Stage 1	-	-	594
Stage 2	-	-	436
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	931	-	~ 133
Mov Cap-2 Maneuver	-	-	~ 133
Stage 1	-	-	594
Stage 2	-	-	344

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	284.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	931	-	-	-	187
HCM Lane V/C Ratio	0.146	-	-	-	1.471
HCM Control Delay (s)	9.5	0	-	-	284.9
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	17

### Notes

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

**HCM 2010 TWSC**  
**8: President Avenue (Rte. 6) & Chestnut Street**

**Durfee High School TIA**  
Future (2024) Build AM Peak Hour

Intersection												
Int Delay, s/veh	36.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	73	559	7	5	572	135	3	54	12	44	10	22
Conflicting Peds, #/hr	10	0	0	0	0	10	0	0	41	41	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	79	608	8	5	622	147	3	59	13	48	11	24
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	809	0	0	656	0	0	1575	1631	662	1594	1562	746
Stage 1	-	-	-	-	-	-	811	811	-	747	747	-
Stage 2	-	-	-	-	-	-	764	820	-	847	815	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	825	-	-	941	-	-	90	103	465	87	113	417
Stage 1	-	-	-	-	-	-	376	396	-	408	423	-
Stage 2	-	-	-	-	-	-	399	392	-	359	394	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	817	-	-	932	-	-	64	80	443	~ 29	88	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	64	80	-	~ 29	88	-
Stage 1	-	-	-	-	-	-	308	325	-	334	402	-
Stage 2	-	-	-	-	-	-	358	373	-	241	323	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.1			0.1			129.4			\$ 591.6		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	92	817	-	-	932	-	-	45				
HCM Lane V/C Ratio	0.815	0.097	-	-	0.006	-	-	1.836				
HCM Control Delay (s)	129.4	9.9	0	-	8.9	0	-	\$ 591.6				
HCM Lane LOS	F	A	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	4.3	0.3	-	-	0	-	-	8.4				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

# HCM 2010 TWSC 10: Elsbree Street & Langley Street

Durfee High School TIA  
Future (2024) Build AM Peak Hour

## Intersection

Int Delay, s/veh 34.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	64	39	140	24	24	33	69	647	4	43	264	13
Conflicting Peds, #/hr	2	0	0	0	0	2	3	0	6	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	3	2	2	33	0	4	8
Mvmt Flow	70	42	152	26	26	36	75	703	4	47	287	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1278	1250	302	1344	1254	713	303	0	0	710	0	0
Stage 1	390	390	-	857	857	-	-	-	-	-	-	-
Stage 2	888	860	-	487	397	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.23	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.327	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	144	174	742	130	173	430	1258	-	-	899	-	-
Stage 1	638	611	-	355	377	-	-	-	-	-	-	-
Stage 2	341	376	-	566	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	100	146	736	70	145	427	1251	-	-	894	-	-
Mov Cap-2 Maneuver	100	146	-	70	145	-	-	-	-	-	-	-
Stage 1	574	571	-	319	339	-	-	-	-	-	-	-
Stage 2	258	338	-	387	568	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	168.6	68.5	0.8	1.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1251	-	-	221	138	894	-	-
HCM Lane V/C Ratio	0.06	-	-	1.195	0.638	0.052	-	-
HCM Control Delay (s)	8.1	0	-	168.6	68.5	9.2	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	13	3.4	0.2	-	-

HCM 2010 TWSC  
14: Elsbree Street & Southern School Driveway

Durfee High School TIA  
Future (2024) Build AM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	16	39	1047	468	0
Conflicting Peds, #/hr	4	213	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	64	3	6	2	2	0
Mvmt Flow	0	17	42	1138	509	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1376	467	722	0	-	0
Stage 1	722	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Critical Hdwy	8.08	6.96	4.22	-	-	-
Critical Hdwy Stg 1	7.08	-	-	-	-	-
Critical Hdwy Stg 2	7.08	-	-	-	-	-
Follow-up Hdwy	4.14	3.33	2.26	-	-	-
Pot Cap-1 Maneuver	79	540	850	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	430	850	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-
Stage 1	246	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.7	0.9		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	850	-	430	-	-	
HCM Lane V/C Ratio	0.05	-	0.04	-	-	
HCM Control Delay (s)	9.5	0.6	13.7	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-	

# HCM 2010 TWSC

## 16: Elsbree Street & Southern Lot Loop Driveway

Durfee High School TIA  
Future (2024) Build AM Peak Hour

### Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	16	864	408	0
Conflicting Peds, #/hr	5	2	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	9	1	3	0
Mvmt Flow	0	0	17	939	443	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1422	450	448 0 - 0
Stage 1	448	-	- - - -
Stage 2	974	-	- - - -
Critical Hdwy	6.4	6.2	4.19 - - -
Critical Hdwy Stg 1	5.4	-	- - - -
Critical Hdwy Stg 2	5.4	-	- - - -
Follow-up Hdwy	3.5	3.3	2.281 - - -
Pot Cap-1 Maneuver	152	613	1076 - - -
Stage 1	648	-	- - - -
Stage 2	369	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	146	609	1074 - - -
Mov Cap-2 Maneuver	146	-	- - - -
Stage 1	645	-	- - - -
Stage 2	355	-	- - - -

Approach	EB	NB	SB
HCM Control Delay, s	0	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1074	-	-	-	-
HCM Lane V/C Ratio	0.016	-	-	-	-
HCM Control Delay (s)	8.4	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



HCM 2010 TWSC  
17: Elsbree Street & Main Lot North Driveway

Durfee High School TIA  
Future (2024) Build AM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	256	690	314	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	0	0	278	750	341	108
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1702	395	449	0	-	0
Stage 1	395	-	-	-	-	-
Stage 2	1307	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	102	659	1122	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	256	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	59	659	1122	-	-	-
Mov Cap-2 Maneuver	59	-	-	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	2.5		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1122	-	-	-	-	
HCM Lane V/C Ratio	0.248	-	-	-	-	
HCM Control Delay (s)	9.3	0	0	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	1	-	-	-	-	

# HCM 2010 TWSC

## 19: Ray Street & Student Parking Lot

Durfee High School TIA  
Future (2024) Build AM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	102	258	141	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	0	0	111	280	153	284
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	841	251	0	0	391	0
Stage 1	251	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	338	793	-	-	1179	-
Stage 1	795	-	-	-	-	-
Stage 2	558	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	286	793	-	-	1179	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1179	-	
HCM Lane V/C Ratio	-	-	-	0.13	-	
HCM Control Delay (s)	-	-	0	8.5	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	-	0.4	-	

HCM 2010 TWSC  
23: Elsbree Street & Main Lot South Driveway

Durfee High School TIA  
Future (2024) Build AM Peak Hour

Intersection						
Int Delay, s/veh	7.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	48	252	0	1119	314	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	274	0	1216	341	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1557	341	341	0	-	0
Stage 1	341	-	-	-	-	-
Stage 2	1216	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	124	701	1218	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	124	701	1218	-	-	-
Mov Cap-2 Maneuver	124	-	-	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	42.7	0		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1218	-	402	-	-	
HCM Lane V/C Ratio	-	-	0.811	-	-	
HCM Control Delay (s)	0	-	42.7	-	-	
HCM Lane LOS	A	-	E	-	-	
HCM 95th %tile Q(veh)	0	-	7.3	-	-	

HCM 2010 TWSC  
1: President Avenue (Rte. 6) & Ray Street

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection

Int Delay, s/veh 20.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	118	456	404	126	132	62
Conflicting Peds, #/hr	9	0	0	9	4	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	3
Mvmt Flow	128	496	439	137	143	67

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	580	0	1264
Stage 1	-	-	512
Stage 2	-	-	752
Critical Hdwy	4.12	-	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	2.218	-	3.509
Pot Cap-1 Maneuver	994	-	188
Stage 1	-	-	604
Stage 2	-	-	468
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	985	-	153
Mov Cap-2 Maneuver	-	-	153
Stage 1	-	-	602
Stage 2	-	-	383

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	130.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	985	-	-	-	199
HCM Lane V/C Ratio	0.13	-	-	-	1.06
HCM Control Delay (s)	9.2	0	-	-	130.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	9.7

HCM 2010 TWSC  
8: President Avenue (Rte. 6) & Chestnut Street

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection												
Int Delay, s/veh	22.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	572	16	19	516	36	8	6	10	52	20	33
Conflicting Peds, #/hr	16	0	5	5	0	16	0	0	141	141	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	2	0	0
Mvmt Flow	16	622	17	21	561	39	9	7	11	57	22	36
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	741	0	0	780	0	0	1596	1586	787	1576	1576	737
Stage 1	-	-	-	-	-	-	804	804	-	763	763	-
Stage 2	-	-	-	-	-	-	792	782	-	813	813	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.518	4	3.3
Pot Cap-1 Maneuver	875	-	-	846	-	-	87	109	395	89	111	422
Stage 1	-	-	-	-	-	-	380	398	-	397	416	-
Stage 2	-	-	-	-	-	-	385	408	-	372	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	862	-	-	833	-	-	50	76	337	65	78	360
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	76	-	65	78	-
Stage 1	-	-	-	-	-	-	319	335	-	334	346	-
Stage 2	-	-	-	-	-	-	308	340	-	338	332	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			61.4			261.7		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	89	862	-	-	833	-	-	91				
HCM Lane V/C Ratio	0.293	0.019	-	-	0.025	-	-	1.254				
HCM Control Delay (s)	61.4	9.3	0	-	9.4	0	-	261.7				
HCM Lane LOS	F	A	A	-	A	A	-	F				
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	8.1				

HCM 2010 TWSC  
10: Elsbree Street & Langley Street

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	14	103	12	16	9	139	335	8	7	311	20
Conflicting Peds, #/hr	2	0	1	1	0	2	7	0	5	5	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	11
Mvmt Flow	14	15	112	13	17	10	151	364	9	8	338	22
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1052	1043	358	1103	1050	377	362	0	0	375	0	0
Stage 1	366	366	-	673	673	-	-	-	-	-	-	-
Stage 2	686	677	-	430	377	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	206	231	691	190	229	674	1208	-	-	1195	-	-
Stage 1	657	626	-	448	457	-	-	-	-	-	-	-
Stage 2	441	455	-	607	619	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	192	685	129	190	668	1200	-	-	1187	-	-
Mov Cap-2 Maneuver	164	192	-	129	190	-	-	-	-	-	-	-
Stage 1	551	620	-	376	384	-	-	-	-	-	-	-
Stage 2	347	382	-	488	613	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	17.4			28.3			2.4			0.2		
HCM LOS	C			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1200	-	-	430	194	1187	-	-				
HCM Lane V/C Ratio	0.126	-	-	0.329	0.207	0.006	-	-				
HCM Control Delay (s)	8.4	0	-	17.4	28.3	8.1	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.4	-	-	1.4	0.8	0	-	-				

HCM 2010 TWSC  
14: Elsbree Street & Southern School Driveway

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	14	60	0	547	534	0
Conflicting Peds, #/hr	25	290	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	15	0	3	1	0
Mvmt Flow	15	65	0	595	580	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1167	586	870	0	-	0
Stage 1	870	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.8	7.2	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.45	2.2	-	-	-
Pot Cap-1 Maneuver	190	422	783	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	304	779	-	-	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	271	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	30.7	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	779	-	219	-	-	
HCM Lane V/C Ratio	-	-	0.367	-	-	
HCM Control Delay (s)	0	-	30.7	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0	-	1.6	-	-	



HCM 2010 TWSC  
16: Elsbree Street & Southern Lot Loop Driveway

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	16	426	428	0
Conflicting Peds, #/hr	2	5	24	0	0	24
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	0	0	1	1	0
Mvmt Flow	0	0	17	463	465	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	968	494	470 0
Stage 1	470	-	- -
Stage 2	498	-	- -
Critical Hdwy	6.46	6.2	4.1 -
Critical Hdwy Stg 1	5.46	-	- -
Critical Hdwy Stg 2	5.46	-	- -
Follow-up Hdwy	3.554	3.3	2.2 -
Pot Cap-1 Maneuver	277	579	1102 -
Stage 1	621	-	- -
Stage 2	602	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	269	563	1077 -
Mov Cap-2 Maneuver	269	-	- -
Stage 1	618	-	- -
Stage 2	587	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	0	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1077	-	-	-	-
HCM Lane V/C Ratio	0.016	-	-	-	-
HCM Control Delay (s)	8.4	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 2010 TWSC  
17: Elsbree Street & Main Lot Southern Driveway

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	46	146	0	549	398	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	50	159	0	597	433	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1030	433	433	0	-	0
Stage 1	433	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	261	627	1137	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	261	627	1137	-	-	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.7	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1137	-	469	-	-	
HCM Lane V/C Ratio	-	-	0.445	-	-	
HCM Control Delay (s)	0	-	18.7	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	2.2	-	-	

# HCM 2010 TWSC 19: Ray Street & Student Parking Lot

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

## Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	31	36	135	126	49	187
Conflicting Peds, #/hr	0	14	0	11	11	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	34	39	147	137	53	203

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	539	240	0 0 298 0
Stage 1	229	-	- - - -
Stage 2	310	-	- - - -
Critical Hdwy	6.4	6.2	- - 4.1 -
Critical Hdwy Stg 1	5.4	-	- - - -
Critical Hdwy Stg 2	5.4	-	- - - -
Follow-up Hdwy	3.5	3.3	- - 2.2 -
Pot Cap-1 Maneuver	507	804	- - 1275 -
Stage 1	814	-	- - - -
Stage 2	748	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	472	785	- - 1262 -
Mov Cap-2 Maneuver	472	-	- - - -
Stage 1	803	-	- - - -
Stage 2	705	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 601	1262	-
HCM Lane V/C Ratio	-	- 0.121	0.042	-
HCM Control Delay (s)	-	- 11.8	8	0
HCM Lane LOS	-	- B	A	A
HCM 95th %tile Q(veh)	-	- 0.4	0.1	-

HCM 2010 TWSC  
23: Elsbree Street & Main Lot Northern Driveway

BMC Durfee High School TIA  
FB (2024) PM School Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	0	105	431	398	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	114	468	433	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1145	448	463	0	-	0
Stage 1	448	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	221	611	1098	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	190	611	1098	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	1.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1098	-	-	-	-	
HCM Lane V/C Ratio	0.104	-	-	-	-	
HCM Control Delay (s)	8.7	0	0	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.3	-	-	-	-	

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## Appendix H

### Left-turn Lane Analysis



**Table 9-23. Guide for Left-Turn Lanes on Two-Lane Highways (10)**

Metric					U.S. Customary				
Opposing Volume (veh/h)	Advancing Volume (veh/h)				Opposing Volume (veh/h)	Advancing Volume (veh/h)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns		5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
<b>60-km/h Operating Speed</b>					<b>40-mph Operating Speed</b>				
800	330	240	180	160	800	330	240	180	160
600	410	305	225	200	600	410	305	225	200
400	510	380	275	245	400	510	380	275	245
200	640	470	350	305	200	640	470	350	305
100	720	515	390	340	100	720	515	390	340
<b>80-km/h Operating Speed</b>					<b>50-mph Operating Speed</b>				
800	280	210	165	135	800	280	210	165	135
600	350	260	195	170	600	350	260	195	170
400	430	320	240	210	400	430	320	240	210
200	550	400	300	270	200	550	400	300	270
100	615	445	335	295	100	615	445	335	295
<b>100-km/h Operating Speed</b>					<b>60-mph Operating Speed</b>				
800	230	170	125	115	800	230	170	125	115
600	290	210	160	140	600	290	210	160	140
400	365	270	200	175	400	365	270	200	175
200	450	330	250	215	200	450	330	250	215
100	505	370	275	240	100	505	370	275	240

Additional information on left-turn lanes, including their suggested lengths, can be found in *Highway Research Record 211*, NCHRP Report 225, and NCHRP Report 279 (10, 19, 17). In the case of double left-turn lanes, a capacity analysis of the intersection should be performed to determine what traffic controls are needed in order for it to function properly.

Local conditions and the cost of right-of-way often influence the type of intersection selected as well as many of the design details. Limited sight distance, for example, may make it desirable to control traffic by yield signs, stop signs, or traffic signals when the traffic densities are less than those ordinarily considered appropriate for such control. The alignment and grade of the intersecting roads and the angle of intersection may make it advisable to channelize or use auxiliary pavement areas, regardless of the traffic densities. In general, traffic service, highway design designation, physical conditions, and cost of right-of-way are considered jointly in choosing the type of intersection.

For the general benefit of through-traffic movements, the number of crossroads, intersecting roads, or intersecting streets should be minimized. Where intersections are closely spaced on a two-way facility, it is seldom practical to provide signals for completely coordinated traffic movements at reasonable speeds in opposing directions on that facility. At the same time, the resultant road or street patterns should permit travel on roadways other than the predominant highway without too much inconvenience. Traffic analysis

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## Appendix I

### Traffic Signal Warrant Analysis





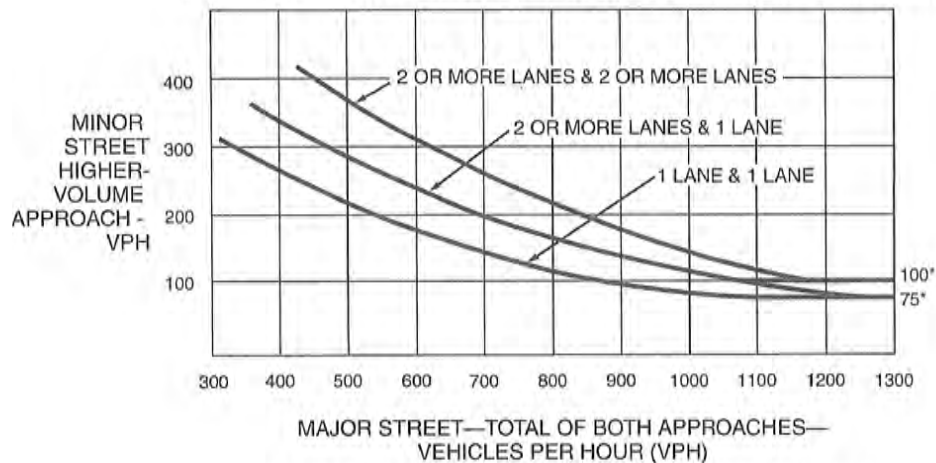
**Figure 4C-3. Warrant 3, Peak Hour**



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

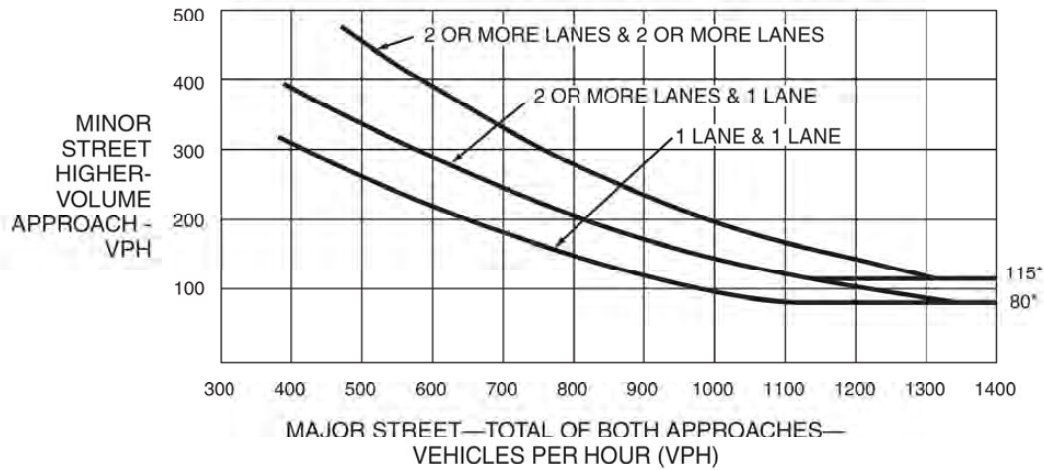
**Figure 4C-4. Warrant 3, Peak Hour (70% Factor)**

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

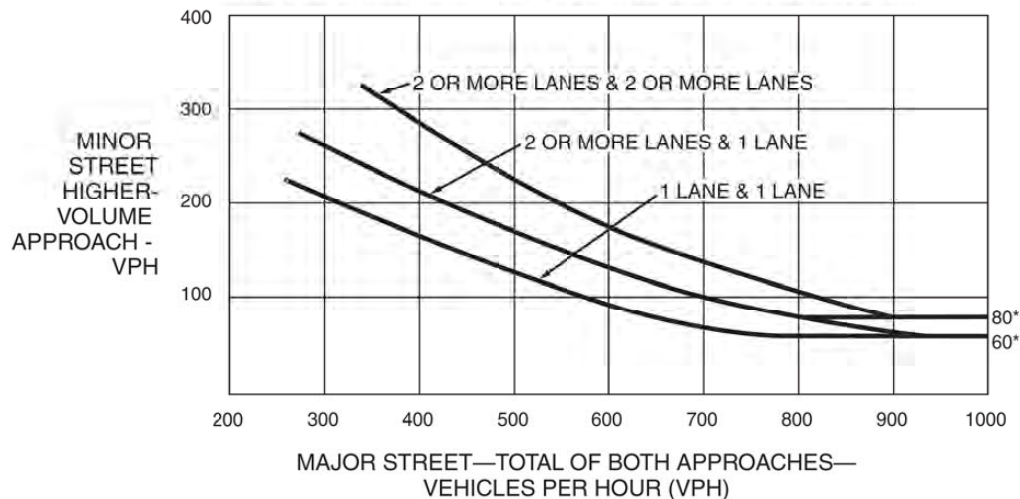
**Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**



\*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)**

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.



# ENVIRONMENTAL AND EXISTING BUILDING ASSESSMENT

Universal Environmental Consultants has performed a comprehensive environmental assessment of the existing BMC Durfee High School building located at 360 Elsbree Street. The scope of work includes inspections of accessible Asbestos Containing Materials (ACM), collection of bulk samples suspected to contain asbestos, and determination of types of ACM found. One hundred thirty-two (132) bulk samples were collected from materials suspected of containing asbestos. Samples which were found to contain asbestos included ceiling plaster at various locations throughout the school, exterior fireproofing, caulking at various locations throughout the school, linoleum flooring, dampproofing, duct insulation in boiler room, floor tile, carpet glue and the rubber floor in gymnasium. The following materials were also assumed to contain asbestos based upon the age of the building and experience with similar building types: Soft ceiling plaster, glazing caulking, tank and duct insulation, pipe and hard joint insulation, glue holding blackboards, sewer pipes, building flashing, exterior wall panels and dampproofing on foundation walls.

The Environmental & Existing Building Assessment performed by Universal Environmental Consultants, which was previously provided in the Durfee High School Feasibility Study submittal dated April 20, 2017, is also included herein for reference.



**REPORT  
FOR  
HAZARDOUS MATERIALS IDENTIFICATION STUDY  
AT  
FALL RIVER HIGH SCHOOL  
FALL RIVER, MA**

PROJECT NUMBER:  
217 041.00

SURVEY DATES:  
JANUARY 23-27, 2017

**STUDY CONDUCTED BY:**  
  
**UNIVERSAL ENVIRONMENTAL CONSULTANTS  
12 BREWSTER ROAD  
FRAMINGHAM, MASSACHUSETTS**



February 13, 2017

Mr. Troy Randall  
Ai3 Architects LLC  
526 Boston Post Road  
Wayland, MA 01778

Reference: **Hazardous Materials Identification Survey**  
**Fall River High School, Fall River, MA**

Dear Mr. Randall:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

Enclosed please find the report for the Identification Survey for accessible Asbestos Containing Materials and other hazardous materials at Fall River High School, Fall River, MA.

Please do not hesitate to contact me at (508) 628-5486 if you have any questions.

Very truly yours,

Universal Environmental Consultants

A handwritten signature in blue ink, appearing to read "Ammar Dieb", is written over a horizontal line.

Ammar Dieb  
President

UEC:\217 041.00\Report.DOC

Enclosure



## 1.0 INTRODUCTION:

Universal Environmental Consultants (UEC) has been providing comprehensive asbestos services since 2001 and has completed projects throughout New England. We have completed projects for a variety of clients including commercial, industrial, municipal, and public and private schools. We maintain appropriate asbestos licenses and staff with a minimum of fifteen years of experience.

UEC was contracted by Ai3 Architects LLC to conduct the following services at the Fall River High School, Fall River, Massachusetts:

- Asbestos Containing Materials (ACM) inspection and sampling;
- Polychlorinated Biphenyls (PCB's)-Electrical Equipment and Light Fixtures inspection;
- PCB's Caulking inspection;
- Lead Based Paint (LBP) inspection;
- Airborne Mold sampling;
- Mercury in Rubber Flooring inspection and sampling;
- Radon sampling;
- Creosol inspection.

The scope of work included the inspection of accessible ACM, collection of bulk samples, determination and quantities of types of ACM found and cost estimates for remediation. A comprehensive survey per the Environmental Protection Agency (EPA) NESHAP regulation would be required prior to any renovation or demolition activities.

Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) Method in accordance with EPA standard. Bulk samples were collected by a Massachusetts licensed asbestos inspector Mr. Leonard J. Busa (AI-030673) and analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA. Previous bulk sampling was performed as part of the AHERA inspection of the school. Bulk samples were collected by a Massachusetts licensed asbestos inspector Leonard J. Busa and analyzed by Asbestos Identification Laboratory.

Airborne mold samples were analyzed by an EPA trained laboratory EMSL, Woburn, MA.

Mercury samples were analyzed by an EPA licensed laboratory, EMSL, Cinnaminson, NJ in accordance with EPA method 7471B.

Radon samples were analyzed by an EPA licensed laboratory AccuStar, Medway, MA.

Samples results are attached.

## 2.0 FINDINGS:

### Asbestos Containing Materials (ACM):

The regulations for asbestos inspection are based on representative sampling. It would be impractical and costly to sample all materials in all areas. Therefore, representative samples of each homogenous area were collected and analyzed or assumed.

All suspect materials were grouped into homogenous areas. By definition a homogenous area is one in which the materials are evenly mixed and similar in appearance and texture throughout. A homogeneous area shall be determined to contain asbestos based on findings that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent in accordance with EPA regulations. Per the Department of Environmental Protection (DEP) any amount of asbestos found must be disposed as asbestos.

No additional suspect and accessible ACM were found during this survey. However, hidden ACM may be found during the renovation and demolition activities.

***Number of Samples Collected:***

One Hundred Thirty-two (132) bulk samples were collected from materials suspected of containing asbestos, including:

**Type and Location of Suspect Material**

1. Tar and gravel roof at center auditorium at metal deck
2. Tar and gravel roof at center auditorium at metal deck
3. Residue in channel of metal deck at first floor roof
4. Coating on concrete deck at over 85
5. Associated paper with coating on concrete deck at over 85
6. Coating on concrete deck at over 460
7. Coating on concrete deck at over 433
8. Coating on concrete deck at over 404
9. White glazing for type II windows at roof over 51-82
10. White glazing for type II windows at roof over 51-82
11. Exterior fireproofing at rear of cafeteria as debris
12. Exterior fireproofing at rear of cafeteria as debris
13. Exterior fireproofing at rear of cafeteria as debris
14. Exterior fireproofing at main entrance covered walkway
15. Exterior fireproofing at main entrance covered walkway
16. Grey door framing caulking at main entrance
17. Grey door framing caulking at door 5
18. Brown interior door framing caulking for exterior door at rear of cafeteria
19. Brown interior door framing caulking for exterior door at exit door by 134
20. Plaster over exterior window at rear pool building
21. Exterior transite siding as debris at 373
22. Exterior transite siding at gymnasium
23. Grey window framing caulking at west main entrance
24. Grey window framing caulking at 147
25. Window glazing caulking for original window west main entrance
26. Window glazing caulking for original window at door 25
27. Soft grey glazing caulking for new window at registrar's –supply
28. Ceiling plaster type I at auditorium in projector booth
29. Ceiling plaster type I at auditorium in projector booth
30. Ceiling plaster type I at varsity girl's locker room
31. Ceiling plaster type I at girl's locker room by PE
32. Ceiling plaster type I at girl's locker room at bathrooms
33. Ceiling plaster type I at electric room by 515
34. Ceiling plaster type I at custodian room at hall to shops
35. Ceiling plaster type I at boy's locker room by showers
36. Exposed glue daub on CMU wall at chalkboard/tack board
37. Mastic for wood block floor at room 55 woodshop
38. Mastic in cork running perimeter of room 55 wood block floor
39. Mastic for wood block floor at room 56 former woodshop
40. Mastic in cork running perimeter of room 56 wood block floor
41. Interior door framing caulking at classroom 115
42. Interior door framing caulking at rear of stage workroom
43. Interior door framing caulking at catwalk entrance
44. Interior door framing caulking at girls' varsity locker room
45. Interior door framing caulking at electric room by 515
46. Interior door framing caulking at room 520 former nurse room

47. Glazing for mesh window in metal door at classroom 134
48. Glazing for mesh window in metal door at classroom 130
49. Glazing for mesh window in metal door at classroom 302
50. Glazing caulking for interior window at room 520
51. Non suspect pressed wood lab table at room 311/312
52. Non suspect pressed wood lab table at room 307
53. Hard brown lab counter table at room 311/312
54. Hard brown lab counter table at room 302
55. Hard brown lab counter table at room 4<sup>th</sup> floor science room
56. 1' x 1' Acoustical ceiling tile at freshman class office
57. 1' x 1' Acoustical ceiling tile at wrestle room off gymnasium
58. 1' x 1' Acoustical ceiling tile at IT room
59. Resin floor at girl's locker room
60. Resin floor at room 111
61. Orange linoleum at hallway by 62
62. Adhesive on orange linoleum at hallway by 62
63. Linoleum type I greenish at 112 storage
64. Linoleum type IA grey at cafeteria
65. Linoleum type IA grey at rear cafeteria
66. Linoleum type I grey at registrar's
67. Linoleum type IAA grey at PIC wing
68. Linoleum type IAAA brown at boy's locker room
69. Linoleum type II red spots at classroom 123
70. Hard joint elbows off fiberglass at room 146 break room
71. Hard joint elbows off fiberglass at room 146 break room valve
72. Hard joint elbows off fiberglass at custodial storage by 227
73. Duct insulation at pool building basement boiler room
74. Duct insulation at pool building basement boiler room
75. Duct insulation at pool building basement boiler room
76. Debris beside boiler at behind metal jacketing
77. Debris beside boiler at behind metal jacketing
78. Black sink damproofing at classroom 130
79. Black sink damproofing at room 520
80. Black sink damproofing at room 346 lounge
81. Tape on metal duct at pool building roof mechanical room
82. Tape on metal duct at pool building roof mechanical room
83. Vertical expansion joint in at pool building roof mechanical room
84. Hard joint elbow debris on CMU metal duct at gymnasium building roof mechanical
85. Mud at flange end of fiberglass pipe insulation gym building roof mechanical
86. Roof drain hard joint elbow off fiberglass at gym building roof mechanical
87. Adhesive for fancy gymnasium wall at classroom 363
88. Adhesive for fancy gymnasium wall at classroom 362
89. Joint compound at classroom 385
90. Joint compound at classroom 314
91. Joint compound at classroom 362
92. Joint compound at library
93. Joint compound at lobby at main entrance
94. Joint compound at hallway by 403
95. Joint compound at woodshop right
96. Linoleum type IAAA brown at auditorium entrance vestibule
97. Interior window glazing caulking at auditorium entrance vestibule
98. 12" x 12" Red vinyl floor tile at pool building lobby
99. Adhesive on 12" x 12" red vinyl floor tile at pool building lobby
100. 12" x 12" black trim tile at pool building lobby
101. 12" x 12" black trim tile at main lobby
102. 12" x 12" black trim tile at third floor west main lobby

103. 12" x 12" Red spots vinyl floor tile at main lobby
104. 12" x 12" Red spots vinyl floor tile at main lobby
105. 12" x 12" Grey vinyl floor tile type I at hall outside performing arts
106. Black mastic on 12" x 12" grey vinyl floor tile type I at hall outside performing arts
107. 12" x 12" Grey vinyl floor tile type I at room 520
108. Black mastic on 12" x 12" grey vinyl floor tile type I at room 520
109. 12" x 12" Crème vinyl floor tile type II at second floor top of stairs
110. 12" x 12" White w/brown spots vinyl floor tile type III at hall 371 wing
111. 12" x 12" White w/brown spots vinyl floor tile type III at lobby, 256 wing
112. Adhesive on 12" x 12" White w/brown spots vinyl floor tile type III at lobby, 256 wing
113. Coating in wall speaker enclosure at room 77
114. Black mastic for rubber flooring at ramp to gymnasium
115. Grey window framing caulking at exterior cafeteria window
116. Rubber floor at gymnasium
117. 12" x 12" Grey vinyl floor tile type I at hall to PIC wing
118. Black mastic on 12" x 12" grey vinyl floor tile type I at hall to PIC wing
119. Painted finish on CMU at cafeteria red/black concession stand
120. Painted finish on CMU at room 106
121. Carpet glue at library
122. Carpet glue at second floor main office
123. Carpet glue at 261 wing
124. 12" x 12" White w/brown spots vinyl floor tile type III at hall by room 400
125. 12" x 12" Older grey vinyl floor tile type IV at room 400 sophomore office
126. Tan leveler on 12" x 12" Older grey vinyl floor tile type IV at room 400
127. 12" x 12" Crème w/colors vinyl floor tile type V at library T.V. classroom
128. Hard brown lab table sink at library T.V. studio
129. Thick grey caulking between exterior window at concrete column
130. Hard lime green adhesive for Styrofoam panel at outside wall over gypsum
131. Joint compound as skim at outside wall, hall outside second floor custodian
132. Hard lime green adhesive for Styrofoam panel at gypsum wall

**Sample Results:**

**Type and Location of Suspect Material**

**Sample Result**

1. Tar and gravel roof at center auditorium at metal deck	No Asbestos Detected
2. Tar and gravel roof at center auditorium at metal deck	No Asbestos Detected
3. Residue in channel of metal deck at first floor roof	No Asbestos Detected
4. Coating on concrete deck at over 85	No Asbestos Detected
5. Associated paper with coating on concrete deck at over 85	No Asbestos Detected
6. Coating on concrete deck at over 460	<1% Asbestos
7. Coating on concrete deck at over 433	No Asbestos Detected
8. Coating on concrete deck at over 404	No Asbestos Detected
9. White glazing for type II windows at roof over 51-82	No Asbestos Detected
10. White glazing for type II windows at roof over 51-82	No Asbestos Detected
11. Exterior fireproofing at rear of cafeteria as debris	No Asbestos Detected
12. Exterior fireproofing at rear of cafeteria as debris	No Asbestos Detected
13. Exterior fireproofing at rear of cafeteria as debris	No Asbestos Detected
14. Exterior fireproofing at main entrance covered walkway	No Asbestos Detected
15. Exterior fireproofing at main entrance covered walkway	No Asbestos Detected
16. Grey door framing caulking at main entrance	No Asbestos Detected
17. Grey door framing caulking at door 5	No Asbestos Detected
18. Brown interior door framing caulking for exterior door at rear of cafeteria	No Asbestos Detected
19. Brown interior door framing caulking for exterior door at exit door by 134	No Asbestos Detected
20. Plaster over exterior window at rear pool building	No Asbestos Detected
21. Exterior transite siding as debris at 373	10% Asbestos

22. Exterior transite siding at gymnasium	10% Asbestos
23. Grey window framing caulking at west main entrance	No Asbestos Detected
24. Grey window framing caulking at 147	No Asbestos Detected
25. Window glazing caulking for original window west main entrance	20% Asbestos
26. Window glazing caulking for original window at door 25	No Asbestos Detected
27. Soft grey glazing caulking for new window at registrar's -supply	No Asbestos Detected
28. Ceiling plaster type I at auditorium in projector booth	No Asbestos Detected
29. Ceiling plaster type I at auditorium in projector booth	No Asbestos Detected
30. Ceiling plaster type I at varsity girl's locker room	No Asbestos Detected
31. Ceiling plaster type I at girl's locker room by PE	No Asbestos Detected
32. Ceiling plaster type I at girl's locker room at bathrooms	No Asbestos Detected
33. Ceiling plaster type I at electric room by 515	No Asbestos Detected
34. Ceiling plaster type I at custodian room at hall to shops	No Asbestos Detected
35. Ceiling plaster type I at boy's locker room by showers	No Asbestos Detected
36. Exposed glue daub on CMU wall at chalkboard/tack board	No Asbestos Detected
37. Mastic for wood block floor at room 55 woodshop	No Asbestos Detected
38. Mastic in cork running perimeter of room 55 wood block floor	No Asbestos Detected
39. Mastic for wood block floor at room 56 former woodshop	No Asbestos Detected
40. Mastic in cork running perimeter of room 56 wood block floor	No Asbestos Detected
41. Interior door framing caulking at classroom 115	10% Asbestos
42. Interior door framing caulking at rear of stage workroom	10% Asbestos
43. Interior door framing caulking at catwalk entrance	10% Asbestos
44. Interior door framing caulking at girls' varsity locker room	10% Asbestos
45. Interior door framing caulking at electric room by 515	10% Asbestos
46. Interior door framing caulking at room 520 former nurse room	10% Asbestos
47. Glazing for mesh window in metal door at classroom 134	5% Asbestos
48. Glazing for mesh window in metal door at classroom 130	5% Asbestos
49. Glazing for mesh window in metal door at classroom 302	2% Asbestos
50. Glazing caulking for interior window at room 520	No Asbestos Detected
51. Non suspect pressed wood lab table at room 311/312	No Asbestos Detected
52. Non suspect pressed wood lab table at room 307	No Asbestos Detected
53. Hard brown lab counter table at room 311/312	No Asbestos Detected
54. Hard brown lab counter table at room 302	No Asbestos Detected
55. Hard brown lab counter table at room 4 <sup>th</sup> floor science room	No Asbestos Detected
56. 1' x 1' Acoustical ceiling tile at freshman class office	No Asbestos Detected
57. 1' x 1' Acoustical ceiling tile at wrestle room off gymnasium	No Asbestos Detected
58. 1' x 1' Acoustical ceiling tile at IT room	No Asbestos Detected
59. Resin floor at girl's locker room	No Asbestos Detected
60. Resin floor at room 111	No Asbestos Detected
61. Orange linoleum at hallway by 62	40% Asbestos
62. Adhesive on orange linoleum at hallway by 62	No Asbestos Detected
63. Linoleum type I greenish at 112 storage	30% Asbestos
64. Linoleum type IA grey at cafeteria	3% Asbestos
65. Linoleum type IA grey at rear cafeteria	30% Asbestos
66. Linoleum type I grey at registrar's	40% Asbestos
67. Linoleum type IAA grey at PIC wing	40% Asbestos
68. Linoleum type IAAA brown at boy's locker room	40% Asbestos
69. Linoleum type II red spots at classroom 123	No Asbestos Detected
70. Hard joint elbows off fiberglass at room 146 break room	No Asbestos Detected
71. Hard joint elbows off fiberglass at room 146 break room valve	No Asbestos Detected
72. Hard joint elbows off fiberglass at custodial storage by 227	No Asbestos Detected
73. Duct insulation at pool building basement boiler room	10% Asbestos
74. Duct insulation at pool building basement boiler room	No Asbestos Detected
75. Duct insulation at pool building basement boiler room	No Asbestos Detected
76. Debris beside boiler at behind metal jacketing	No Asbestos Detected
77. Debris beside boiler at behind metal jacketing	No Asbestos Detected

78.	Black sink damproofing at classroom 130	5% Asbestos
79.	Black sink damproofing at room 520	3% Asbestos
80.	Black sink damproofing at room 346 lounge	5% Asbestos
81.	Tape on metal duct at pool building roof mechanical room	No Asbestos Detected
82.	Tape on metal duct at pool building roof mechanical room	No Asbestos Detected
83.	Vertical expansion joint in CMU at pool building roof mechanical room	2% Asbestos
84.	Hard joint elbow debris on metal duct at gymnasium building roof mechanical	No Asbestos Detected
85.	Mud at flange end of fiberglass pipe insulation gym building roof mechanical	No Asbestos Detected
86.	Roof drain hard joint elbow off fiberglass at gym building roof mechanical	No Asbestos Detected
87.	Adhesive for fancy gymnasium wall at classroom 363	No Asbestos Detected
88.	Adhesive for fancy gymnasium wall at classroom 362	No Asbestos Detected
89.	Joint compound at classroom 385	No Asbestos Detected
90.	Joint compound at classroom 314	No Asbestos Detected
91.	Joint compound at classroom 362	No Asbestos Detected
92.	Joint compound at library	No Asbestos Detected
93.	Joint compound at lobby at main entrance	No Asbestos Detected
94.	Joint compound at hallway by 403	No Asbestos Detected
95.	Joint compound at woodshop right	No Asbestos Detected
96.	Linoleum type IAAA brown at auditorium entrance vestibule	40% Asbestos
97.	Interior window glazing caulking at auditorium entrance vestibule	No Asbestos Detected
98.	12" x 12" Red vinyl floor tile at pool building lobby	No Asbestos Detected
99.	Adhesive on 12" x 12" red vinyl floor tile at pool building lobby	No Asbestos Detected
100.	12" x 12" black trim tile at pool building lobby	No Asbestos Detected
101.	12" x 12" black trim tile at main lobby	No Asbestos Detected
102.	12" x 12" black trim tile at third floor west main lobby	No Asbestos Detected
103.	12" x 12" Red spots vinyl floor tile at main lobby	No Asbestos Detected
104.	12" x 12" Red spots vinyl floor tile at main lobby	No Asbestos Detected
105.	12" x 12" Grey vinyl floor tile type I at hall outside performing arts	No Asbestos Detected
106.	Black mastic on 12" x 12" grey vinyl floor tile type I at hall outside performing arts	No Asbestos Detected
107.	12" x 12" Grey vinyl floor tile type I at room 520	No Asbestos Detected
108.	Black mastic on 12" x 12" grey vinyl floor tile type I at room 520	No Asbestos Detected
109.	12" x 12" Crème vinyl floor tile type II at second floor top of stairs	No Asbestos Detected
110.	12" x 12" White w/brown spots vinyl floor tile type III at hall 371 wing	No Asbestos Detected
111.	12" x 12" White w/brown spots vinyl floor tile type III at lobby, 256 wing	No Asbestos Detected
112.	Adhesive on 12" x 12" White w/brown vinyl floor tile type III at lobby, 256 wing	No Asbestos Detected
113.	Coating in wall speaker enclosure at room 77	5% Asbestos
114.	Black mastic for rubber flooring at ramp to gymnasium	No Asbestos Detected
115.	Grey window framing caulking at exterior cafeteria window	No Asbestos Detected
116.	Rubber floor at gymnasium	No Asbestos Detected
117.	12" x 12" Grey vinyl floor tile type I at hall to PIC wing	No Asbestos Detected
118.	Black mastic on 12" x 12" grey vinyl floor tile type I at hall to PIC wing	No Asbestos Detected
119.	Painted finish on CMU at cafeteria red/black concession stand	No Asbestos Detected
120.	Painted finish on CMU at room 106	2% Asbestos
121.	Carpet glue at library	No Asbestos Detected
122.	Carpet glue at second floor main office	No Asbestos Detected
123.	Carpet glue at 261 wing	No Asbestos Detected
124.	12" x 12" White w/brown spots vinyl floor tile type III at hall by room 400	No Asbestos Detected
125.	12" x 12" Older grey vinyl floor tile type IV at room 400 sophomore office	No Asbestos Detected
126.	Tan leveler on 12" x 12" Older grey vinyl floor tile type IV at room 400	No Asbestos Detected
127.	12" x 12" Crème w/colors vinyl floor tile type V at library TV. classroom	No Asbestos Detected
128.	Hard brown lab table sink at library TV. studio	No Asbestos Detected
129.	Thick grey caulking between exterior window at concrete column	No Asbestos Detected
130.	Hard lime green adhesive for Styrofoam panel at outside wall over gypsum	5% Asbestos
131.	Joint compound as skim at outside wall, hall outside second floor custodian	No Asbestos Detected
132.	Hard lime green adhesive for Styrofoam panel at gypsum wall	5% Asbestos



**Observations and Conclusions:**

The condition of ACM is very important. ACM in good condition does not present a health issue unless it is disturbed. Therefore, it is not necessary to remediate ACM in good condition unless it will be disturbed through renovation, demolition or other activity.

Refer to the AHERA Management Plan for condition of ACM.

1. Coating on concrete deck was found to contain <1% Asbestos. Per DEP regulations the coating would have to be disposed as asbestos. Additional sampling is recommended.
2. Exterior transite siding as debris was found to contain asbestos. The debris would need to be removed.
3. Exterior transite siding was found to contain asbestos.
4. Window glazing caulking for original windows was found to contain asbestos.
5. Interior door framing caulking was found to contain asbestos.
6. Glazing for mesh window in metal door was found to contain asbestos.
7. Various types of linoleum floor covering were found to contain asbestos.
8. Duct insulation at pool building basement boiler room was found to contain asbestos.
9. Sink coating was found to contain asbestos.
10. Vertical expansion joint in CMU at pool building roof mechanical room was found to contain asbestos.
11. Coating in wall speaker enclosure was found to contain asbestos.
12. Painted finish on CMU was found to contain asbestos. Additional sampling is recommended.
13. Hard lime green adhesive for Styrofoam panel at outside wall over gypsum was found to contain asbestos.
14. Adhesive holding Tectum roof deck ceiling at the gymnasium and pool buildings was assumed to contain asbestos.
15. Transite inside fume hoods was assumed to contain asbestos.
16. Transite panels at custodian storage room were assumed to contain asbestos.
17. Stage fire curtain was assumed to contain asbestos.
18. Chalkboard/tackboard glue was assumed to contain asbestos.
19. Underground sewer pipes were assumed to contain asbestos.
20. Dampproofing on exterior and foundation walls was assumed to contain asbestos. The demolition contractor will have to comply with new DEP regulations.
21. Thru-wall flashing was assumed to contain asbestos. The demolition contractor will have to comply with new DEP regulations.
22. All other suspect materials were found not to contain asbestos. Hidden ACM may be found during renovation and demolition activities.

**Polychlorinated Biphenyls (PCB's)-Electrical Equipment and Light Fixtures:**

**Observations and Conclusions**

Visual inspection of various equipments such as light fixtures, thermostats, exit signs and switches was performed for the presence of PCB's and mercury. Ballasts in light fixtures were assumed not to contain PCB's since there were labels indicating that "No PCB's" was found. Tubes in light fixtures, thermostats, signs and switches were assumed to contain mercury. It would be very costly to test those equipments and dismantling would be required to access. Therefore, the above mentioned equipments should be disposed in an EPA approved landfill as part of the demolition project.

**PCB's in Caulking:**

PCB's are manmade chemicals that were widely produced and distributed across the country from the 1950s to 1977 until the production of PCB's was banned by the US Environmental Protection Agency (EPA) law which became effective in 1978. PCB's are a class of chemicals made up of more than 200 different compounds. PCB's are non-flammable, stable, and good insulators so they were widely used in a variety of products including: electrical transformers and capacitors, cable and wire coverings, sealants and caulking, and household products such as television sets and fluorescent light fixtures. Because of their chemical properties, PCB's are not very soluble in water and they do not break down easily in the environment. PCB's also do not readily evaporate into air but tend to remain as solids or thick liquids. Even though PCB's have not been produced or used in the country for more than 30 years, they are still present in the environment in the air, soil, and water and in our



food. EPA requires that all construction waste including caulking be disposed as PCB's if PCB's level exceed 50 mg/kg (ppm). An abatement plan might also be required as part of renovations.

**Observations and Conclusions:**

Caulking was assumed to contain PCB's.

**Lead Based Paint (LBP):**

**Observations and Conclusions**

LBP was assumed to exit on painted surfaces. A school is not considered a regulated facility. All LBP activities performed, including waste disposal, should be in accordance with applicable Federal, State, or local laws, ordinances, codes or regulations governing evaluation and hazard reduction. In the event of discrepancies, the most protective requirements prevail. These requirements can be found in OSHA 29 CFR 1926-Construction Industry Standards, 29 CFR 1926.62-Construction Industry Lead Standards, 29 CFR 1910.1200-Hazards Communication, 40 CFR 261-EPA Regulations. According to OSHA, any amount of LBP triggers compliance.

**Airborne Mold:**

Airborne mold testing was performed utilizing Zefon International Incorporated's Air-O-Cell® sampling device following all manufacturer supplied recommended sampling procedures.

The Air-O-Cell® is a direct read total particulate air sampling device. It works using the inertial impaction principle similar to other spore trap devices. It is designed for the rapid collection and analysis of airborne particulate including bioaerosols. The particulate includes fibers (e.g. asbestos, fiberglass, cellulose, clothing fibers) opaque particles (e.g. fly ash, combustion particles, copy toner, oil droplets, paint), and bioaerosols (e.g. mold spores, pollen, insect parts, skin cell fragments).<sup>1</sup>

The method involves drawing a known quantity of air through a sterile sampling cassette. Subsequent to sampling, the cassette is sealed and transferred to a microbiology laboratory under chain of custody protocol for microscopic analysis. This method counts both viable and nonviable mold spores.

Outside sample was collected outside at rear of building.

**AIRBORNE MOLD and PARTICULATE**

Lab ID #	Location	Total Mold Counts/M <sup>3</sup>	Pollen	Insect Fragment	Hyphal Fragments
131700327-0001	Weight Room	20	ND	ND	ND
131700327-0002	Room 520	40	ND	ND	ND
131700327-0003	Registrar's Office	34	ND	ND	ND
131700327-0004	Cafeteria Storage	70	ND	ND	ND
131700327-0005	Classroom 130	60	ND	ND	ND
131700327-0006	Classroom 106	40	ND	ND	ND
131700327-0007	Classroom 139	60	ND	ND	ND
131700327-0008	Classroom 112	80	ND	ND	ND
131700327-0009	Classroom 115	80	ND	ND	ND
131700327-0010	Outside	90	ND	ND	ND

<sup>1</sup> Zefon International Inc. <www.zefon.com>

**AIRBORNE MOLD and PARTICULATE  
(Subjective Scales)**

Lab ID #	Location	Skin Fragment Density (SFD)	Fibrous Particulates (FP)	Total Background Particulate (TBP)
131700327-0001	Weight Room	2	2	2
131700327-0002	Room 520	2	2	2
131700327-0003	Registrar's Office	3	2	2
131700327-0004	Cafeteria Storage	2	2	2
131700327-0005	Classroom 130	2	3	2
131700327-0006	Classroom 106	3	2	2
131700327-0007	Classroom 139	2	1	2
131700327-0008	Classroom 112	2	1	2
131700327-0009	Classroom 115	2	1	2
131700327-0010	Outside	2	1	2

**Legend:**

ND - Not Detected

**Observations:**

There are currently no guidelines or standards promulgated by a government agency or widely recognized scientific organization for the interpretation of airborne mold spore levels. The most commonly employed tool used to assess if mold growth is occurring in a structure is to compare quantities and species of mold outdoors to indoor. If there were more mold indoor, and/or if species were present indoor which were not present outdoors, then growth is occurring and remediation is recommended.

Indoor airborne mold spore concentrations were lower than the outside sample. Based on comparisons with historical data from projects of similar type, building utilization, geographic location and season, the indoor airborne levels are considered low. Indoor mold spore counts in the winter are typically in the 500-2,500-spores/cubic meter range.

Pollen, insect fragments and Hyphal fragments were either not present or low in the samples. Hyphal fragment is a non-reproductive part of the mold.

Total background particulate on all samples was assessed as "2" on a scale of 1-5 where 1 is low and 5 is high. Skin fragment density on all samples was assessed as "2-3" on a scale of 1-4 where 1 is low and 4 is high. The total background levels are measured to determine airborne dust not related to airborne mold. Skin fragments are measured to determine proper housing cleaning.

**Mercury in Rubber Flooring:**

***Number of Samples Collected***

Two (2) bulk samples were collected from the following.

**Type and Location of Suspect Material**

1. Rubber flooring at the gymnasium
2. Rubber flooring at the wrestling room

### **Sample Results**

#### **Type and Location of Suspect Material**

1. Rubber flooring at the gymnasium
2. Rubber flooring at the wrestling room

#### **Sample Result**

37 mg/kg  
16 mg/kg

#### **Observations and Conclusions:**

Samples results indicated the presence of high level of mercury. Mercury was assumed to have leached into the concrete slab. Sampling would be required to determine extent of contamination/leaching.

#### **Radon:**

#### **Number of Samples Collected**

Ten (10) air samples were collected at the following locations:

#### **Location of Sample**

1. First floor room 521
2. First floor registrar office
3. First floor security
4. First floor cafeteria storage
5. First floor classroom 130
6. First floor classroom 106
7. First floor classroom 139
8. First floor classroom 112
9. First floor classroom 115
10. First floor classroom 127/124

#### **Location of Sample**

1. First floor room 521
2. First floor registrar office
3. First floor security
4. First floor cafeteria storage
5. First floor classroom 130
6. First floor classroom 106
7. First floor classroom 139
8. First floor classroom 112
9. First floor classroom 115
10. First floor classroom 127/124

#### **Sample Result**

<0.4 pCi/L  
0.5 pCi/L  
0.7 pCi/L  
<0.4 pCi/L  
0.7 pCi/L  
0.6 pCi/L  
0.5 pCi/L  
0.5 pCi/L  
0.5 pCi/L  
0.7 pCi/L

#### **Observations and Conclusions:**

The measured radon concentrations of the samples were found to be much lower than the EPA guideline of 4 picoCuris of radon per liter of air (pCi/L). No further action is required.

#### **Creosol Flooring:**

#### **Observations and Conclusions**

Wood shops block flooring was assumed to contain Creosol. The wood flooring would have to properly removed and disposed.

### 3.0 COST ESTIMATES:

The cost includes removal and disposal of all accessible ACM, other hazardous material and an allowance for removal of inaccessible or hidden ACM that may be found during renovation or demolition project.

Location	Material	Approximate Quantity	Cost Estimate (\$)
Throughout	Linoleum Floor Covering	76,800 SF	192,000.00
	Interior Windows	125 Total	12,500.00
	Interior Doors with Windows	750 Total	75,000.00
	Interior Caulking on Doors	30,000 LF	90,000.00
	Sinks	92 Total	9,200.00
	Transite Fume Hoods	14 Total	14,000.00
	Interior Transite Panels	3,000 SF	15,000.00
	Speaker Boxes	100 Total	5,000.00
	Adhesive for Styrofoam Panels	15,000 SF	75,000.00
	Paint on CMU Walls	Unknown	600,000.00
	Miscellaneous Hazardous Materials	Unknown	50,000.00
	Miscellaneous Hidden ACM	Unknown	50,000.00
	Tubes in Light Fixtures	13,000 Total	100,000.00
	Blackboards	1,400 Total	140,000.00
Wood Shops	Wood Block Flooring	6,250 SF	62,500.00
Gymnasium	Rubber Flooring/Cement	26,400 SF	264,000.00
Wrestling/Weight Rooms	Rubber Flooring/Cement	2,900 SF	29,000.00
Ramp to Gymnasium	Rubber Matting/Cement	2,500 SF	25,000.00
Mechanical Rooms	Vertical Caulking	500 LF	5,000.00
Cafeteria Storage Room	Transite Panels	100 SF	1,000.00
Stage	Fire Curtain	1 Total	8,500.00
Gymnasium/Pool Building	Adhesive on Tectum Deck	40,000 SF	160,000.00
Pool Building Boiler Room	Duct Insulation	250 SF	12,500.00
Exterior	Old Windows	150 Total	30,000.00
	Transite Panels	120,000 SF	600,000.00
	Metal Panels	70 Total	7,000.00
	Doors	120 Total	12,000.00
	Transite Sewer Pipes	Unknown <sup>1</sup>	50,000.00
	Damproofing on Exterior/Foundation Walls	Unknown <sup>1</sup>	250,000.00
Estimated costs for NESHAP Inspection, Destructive and Testing Services			17,500.00
Estimated costs for Design, Construction Monitoring and Air Sampling Services			233,300.00
<b>TOTAL:</b>			<b>\$ 3,195,000.00</b>

<sup>1</sup>: Part of selective demolition/addition.

#### 4.0 DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

**Asbestos:**

Asbestos samples were collected using a method that prevents fiber release. Homogeneous sample areas were determined by criteria outlined in EPA document 560/5-85-030a. Bulk material samples were analyzed using PLM and dispersion staining techniques with EPA method 600/M4-82-020.

**Airborne Mold:**

The samples were analyzed by an EPA approved laboratory EMSL, Woburn, MA.

**Mercury in Rubber Flooring:**

The bulk sample was analyzed in accordance with EPA method 7471B.

**Radon:**

Radon samples were analyzed by an EPA licensed laboratory AccuStar, Medway, MA.

Inspected By:



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Leonard J. Busa  
Asbestos Inspector  
(AI-030673)

## **5.0 LIMITATIONS AND CONDITIONS:**

This report has been completed based on visual and physical observations made and information available at the time of the site visits, as well as an interview with the Owner's representatives. This report is intended to be used as a summary of available information on existing conditions with conclusions based on a reasonable and knowledgeable review of evidence found in accordance with normally accepted industry standards, state and federal protocols, and within the scope and budget established by the client. Any additional data obtained by further review must be reviewed by UEC and the conclusions presented herein may be modified accordingly.

This report and attachments, prepared for the exclusive use of Owner for use in an environmental evaluation of the subject site, are an integral part of the inspections and opinions should not be formulated without reading the report in its entirety. No part of this report may be altered, used, copied or relied upon without prior written permission from UEC, except that this report may be conveyed in its entirety to parties associated with Owner for this subject study.



## Asbestos Identification Laboratory

165 New Boston St., Ste 227  
Woburn, MA 01801  
781-932-9600

Web: [www.asbestosidentificationlab.com](http://www.asbestosidentificationlab.com)  
Email: [mikemanning@asbestosidentificationlab.com](mailto:mikemanning@asbestosidentificationlab.com)

Batch: 19657



February 10, 2017

Ammar Dieb  
Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

**Project Number:**

**Project Name:** Durfle HS, Fall River, MA

**Date Sampled:** 2017-02-03

**Work Received:** 2017-02-06

**Work Analyzed:** 2017-02-08

**Analysis Method:** BULK PLM ANALYSIS EPA/600/R-93/116

Dear Ammar Dieb,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project .

The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Ammar Dieb for your business.

Michael Manning  
Owner/Director



February 10, 2017

Ammar Dieb  
Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

**Project Number:**

**Project Name:** Durfle HS, Fall River, MA

**Date Sampled:** 2017-02-03

**Work Received:** 2017-02-06

**Work Analyzed:** 2017-02-08

**Analysis Method:** BULK PLM ANALYSIS EPA/600/R-93/116

FieldID	Material	Location	Color	Non-Asbestos %		Asbestos %
LabID						
1	Tar & Gravel Roof	~ Ctr Auditorium @ Metal Deck	black	Cellulose	10	None Detected
219663				Non-Fibrous	90	
2	Tar & Gravel Roof	~ Ctr Auditorium @ Metal Deck	multi	Cellulose	10	None Detected
219664				Non-Fibrous	90	
3	Residue in Channel of Metal Deck	1st FL Roof Over 533	black	Non-Fibrous	100	None Detected
219665						
4	Coating on Concrete Deck	Over 85	black	Non-Fibrous	100	None Detected
219666						
5	Assoc Paper #4	Over 85	black	Fiberglass	10	None Detected
219667				Cellulose	65	
				Non-Fibrous	25	
6	Coating on Concrete Deck	Over 460	black	Non-Fibrous	100	Detected Chrysotile < 1
219668						
7	Coating on Concrete Deck	Over 433	black	Non-Fibrous	100	None Detected
219669						
8	Coating on Concrete Deck	Over 404	black	Non-Fibrous	100	None Detected
219670						
9	White Glazing for Type-II Windows	@ Roof Over 51-82	white	Non-Fibrous	100	None Detected
219671						
10	White GL for Type-II Wins	@ Roof Over 51-82	white	Non-Fibrous	100	None Detected
219672						
11	Fire Proofing (FP)	@ Rear of Cafe as Debris, Exterior	white	Cellulose	100	None Detected
219673						
12	(FP)	@ Rear of Cafe as Debris, Exterior	white	Cellulose	100	None Detected
219674						
13	(FP)	@ Rear of Cafe as Debris, Exterior	multi	Cellulose	95	None Detected
219675				Non-Fibrous	5	
14	(FP)	Main Entrance Covered Walk-Way, Exterior	multi	Cellulose	98	None Detected
219676				Non-Fibrous	2	

Friday 10 February

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FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
15	(FP)	Main Entrance Covered Walk-Way, Exterior	multi	Cellulose 98 Non-Fibrous 2	None Detected
219677					
16	Door Frame Caulk (Grey)	Main Entrance, Exterior	gray	Non-Fibrous 100	None Detected
219678					
17	Door Fr (Grey)	Door #5, Exterior	gray	Non-Fibrous 100	None Detected
219679					
18	Interior Door Fr (Brown) for Exterior Door	Rear Cafe SW Door, Exterior	gray	Non-Fibrous 100	None Detected
219680					
19	Interior Door Fr (Brown) for Exterior Door	Exit Door by 134 T, Exterior	gray	Non-Fibrous 100	None Detected
219681					
20	Plaster Over Exterior Window	Pool Bldg, Rear, Exterior	white	Non-Fibrous 100	None Detected
219682					
21	Transite Siding as Debris	By 373, Exterior	brown	Non-Fibrous 90	Detected Chrysotile 10
219683					
22	Transite Siding~ Gym	Gym	brown	Non-Fibrous 90	Detected Chrysotile 10
219684					
23	Grey Win Fr (New Win)	W Main Entrance	gray	Non-Fibrous 100	None Detected
219685					
24	Grey Win Fr (New Win)	By 147	gray	Non-Fibrous 100	None Detected
219686					
25	Window GL for Orig Win	W Main Entrance	gray	Non-Fibrous 80	Detected Chrysotile 20
219687					
26	Window GL for Orig Win	Door #25 Ass'y	gray	Non-Fibrous 100	None Detected
219688					
27	Soft Grey GL for New Win	Rear Registrar's- Supply (As Patch Material?)	gray	Non-Fibrous 100	None Detected
219689					
28	CP-I	Auditorium in Proj Booth	white	Non-Fibrous 100	None Detected
219690					
29	CP-I	Auditorium in Proj Booth	white	Non-Fibrous 100	None Detected
219691					
30	CP-I	Girl's Locker- Varsity	multi	Non-Fibrous 100	None Detected
219692					
31	CP-I	Girl's Locker by PE	white	Non-Fibrous 100	None Detected
219693					
32	CP-I	Girl's Locker @ Bathrms	multi	Hair 2 Non-Fibrous 98	None Detected
219694					

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
33	CP-I	Elect Rm by 515	multi	Hair 2	None Detected
219695				Non-Fibrous 98	
34	CP-I	Cust Rm @ Hall to Shops	multi	Hair 2	None Detected
219696				Non-Fibrous 98	
35	CP-I	Boy's Locker by Showers	multi	Hair 2	None Detected
219697				Non-Fibrous 98	
36	Exposed Glue Daub on CMU Wall	Assumed Former Chalkboard/Tackboard	brown	Non-Fibrous 100	None Detected
219698					
37	Mastic for Wood Block Floor	Rm 55 Wood Shop	black	Cellulose 10	None Detected
219699				Non-Fibrous 90	
38	Mastic in Cork Running Perimeter	Of Rm 55 Wood Block Floor	black	Cellulose 10	None Detected
219700				Non-Fibrous 90	
39	Mastic for Wood Block Floor	Rm 56 Former Wood Shop	black	Cellulose 10	None Detected
219701				Non-Fibrous 90	
40	Mastic in Cork Running Perimeter	Of Rm 56 Wood Block Floor	black	Cellulose 10	None Detected
219702				Non-Fibrous 90	
41	Interior Door Frame Caulk	C'rm 115	tan	Non-Fibrous 90	Detected Chrysotile 10
219703					
42	In Door Fr	Rear of Stage- Work Room	tan	Non-Fibrous 90	Detected Chrysotile 10
219704					
43	In Door Fr	Catwalk Entrance	tan	Non-Fibrous 90	Detected Chrysotile 10
219705					
44	In Door Fr	Girl's Locker- Varsity Rm	tan	Non-Fibrous 90	Detected Chrysotile 10
219706					
45	In Door Fr	Elect Rm by 515	tan	Non-Fibrous 90	Detected Chrysotile 10
219707					
46	In Door Fr	Rm 520 (Former Nurse)	tan	Non-Fibrous 90	Detected Chrysotile 10
219708					
47	Glazing for Mesh Window in Metal Door	C'rm 124	tan	Non-Fibrous 95	Detected Chrysotile 5
219709					
48	GL for Mesh Win in Metal Door	C'rm 130	tan	Non-Fibrous 95	Detected Chrysotile 5
219710					
49	GL for Mesh Win in Metal Door	C'rm 302	gray	Non-Fibrous 98	Detected Chrysotile 2
219711					
50	Glazing for Interior Window	Rm 520	gray	Other 2	None Detected
219712				Non-Fibrous 98	

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
51	Non-Suspect Pressed Wood Lab Table	311/312	brown	Cellulose 95 Non-Fibrous 5	None Detected
219713					
52	Non-Susp PW Lab Table	307	brown	Cellulose 95 Non-Fibrous 5	None Detected
219714					
53	Hard Brown Lab Counter Table	311/312 (Wollastonite?)	brown	Non-Fibrous 100	None Detected
219715					
54	Hd Br Lab Counter Table	302	brown	Non-Fibrous 100	None Detected
219716					
55	Hd Br Lab Counter Table	4th FL Science Rm, Unknown	brown	Non-Fibrous 100	None Detected
219717					
56	1x1 AT	Freshman Class Office	gray	Mineral Wool 20 Cellulose 70 Non-Fibrous 10	None Detected
219718					
57	1x1 AT	Wrestle Rm, Off Gym	gray	Mineral Wool 20 Cellulose 70 Non-Fibrous 10	None Detected
219719					
58	1x1 AT	IT Rm	multi	Mineral Wool 30 Cellulose 60 Non-Fibrous 10	None Detected
219720					
59	Resin Floor	Girl's Lockers	multi	Non-Fibrous 100	None Detected
219721					
60	Resin Floor	Rm 111	multi	Non-Fibrous 100	None Detected
219722					
61	Orange Lino	Hall by 62	multi	Non-Fibrous 60	Detected Chrysotile 40
219723					
62	Adhesive #61	Hall by 62	yellow	Non-Fibrous 100	None Detected
219724					
63	Lino-I (Greenish)	112- Storage	multi	Non-Fibrous 70	Detected Chrysotile 30
219725					
64	Lino-IA (Grey)	Cafe	multi	Non-Fibrous 97	Detected Chrysotile 3
219726					
65	Lino-IA	Cafe @ Rear	multi	Non-Fibrous 70	Detected Chrysotile 30
219727					
66	Lino-I	Registrar's	multi	Non-Fibrous 60	Detected Chrysotile 40
219728					
67	Lino-IAA (Grey)	PIC Wing	multi	Non-Fibrous 60	Detected Chrysotile 40
219729					
68	Lino-IAAA (Brown)	Boy's Lockers	multi	Non-Fibrous 60	Detected Chrysotile 40
219730					

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
69	Lino-II (Red Spots-New?)	C'rm 123	multi	Cellulose 40 Non-Fibrous 60	None Detected
219731					
70	E Off FG	146- Break Rm (CL)	gray	Mineral Wool 40 Non-Fibrous 60	None Detected
219732					
71	E Off FG	146- Break Rm (Valve)	gray	Mineral Wool 30 Cellulose 10 Non-Fibrous 60	None Detected
219733					
72	E Off FG	Cust Storage by 227	gray	Mineral Wool 35 Non-Fibrous 65	None Detected
219734					
73	Duct Insulation (DI)	Pool Bldg Bsmt Boiler Rm	multi	Mineral Wool 30 Non-Fibrous 60	Detected Chrysotile 10
219735					
74	DI	Pool Bldg Bsmt Boiler Rm	white	Synthetic 30 Non-Fibrous 70	None Detected
219736					
75	DI	Pool Bldg Bsmt Boiler Rm	white	Synthetic 20 Non-Fibrous 80	None Detected
219737					
76	Debris Beside Boiler	Assumed From Behind Metal Jacketing, Pool Bldg Bsmt Boiler Rm	gray	Mineral Wool 35 Non-Fibrous 65	None Detected
219738					
77	Debris Beside Boiler	Assumed From Behind Metal Jacketing, Pool Bldg Bsmt Boiler Rm	gray	Non-Fibrous 100	None Detected
219739					
78	Black Sink Damp Proofing	C'rm 130	black	Non-Fibrous 95	Detected Chrysotile 5
219740					
79	Black Sink DP	Rm 520	black	Non-Fibrous 97	Detected Chrysotile 3
219741					
80	Black Sink DP	346-Lounge	black	Non-Fibrous 95	Detected Chrysotile 5
219742					
81	Tape on Metal Duct	Pool Bldg Roof Mech Room	multi	Cellulose 40 Non-Fibrous 60	None Detected
219743					
82	Tape on Metal Duct	Pool Bldg Roof Mech Room	multi	Cellulose 45 Non-Fibrous 55	None Detected
219744					
83	Vert X-Joint in CMU	Pool Bldg Roof Mech Room	tan	Non-Fibrous 98	Detected Chrysotile 2
219745					
84	Assumed E Debris on Metal Duct	Gym Bldg Roof Mech Room	gray	Mineral Wool 30 Non-Fibrous 70	None Detected
219746					
85	Mud @ Flange End of FG PI	Gym Bldg Roof Mech Room	gray	Mineral Wool 25 Cellulose 5 Non-Fibrous 70	None Detected
219747					
86	Roof Drain E Off FG	Gym Bldg Roof Mech Room	gray	Mineral Wool 35 Non-Fibrous 65	None Detected
219748					

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
87	Adhesive for Fancy Gyp Wall	C'rm 363	tan	Non-Fibrous 100	None Detected
219749					
88	Adh for Fancy Gyp Wall	C'rm 362	tan	Non-Fibrous 100	None Detected
219750					
89	Joint Compound (JP)	C'rm 385	white	Non-Fibrous 100	None Detected
219751					
90	JC	C'rm 314	white	Non-Fibrous 100	None Detected
219752					
91	JC	C'rm 362	white	Non-Fibrous 100	None Detected
219753					
92	JC	Library	white	Non-Fibrous 100	None Detected
219754					
93	JC	Lobby @ Main Entrance	white	Non-Fibrous 100	None Detected
219755					
94	JC	Hall by 403	white	Non-Fibrous 100	None Detected
219756					
95	JC	Wood Shop- Right #56	white	Non-Fibrous 100	None Detected
219757					
96	Lino-IAAA Brown	Aud Entrance Vestibule	multi	Non-Fibrous 60	Detected Chrysotile 40
219758					
97	Int Win GL	Aud Entrance Vestibule	gray	Other Non-Fibrous 2 98	None Detected
219759					
98	12" Red VT Plain	Pool Bldg Lobby	red	Non-Fibrous 100	None Detected
219760					
99	Adhesive #98	Pool Bldg Lobby	yellow	Non-Fibrous 100	None Detected
219761					
100	12" Black Trim Tile	Pool Bldg Lobby	black	Non-Fibrous 100	None Detected
219762					
101	12" Black Trim Tile	Main Lobby	black	Non-Fibrous 100	None Detected
219763					
102	12" Black Trim Tile	3rd FL W Main Lobby	black	Non-Fibrous 100	None Detected
219764					
103	12" Red VT (Spots)	Main Lobby	multi	Non-Fibrous 100	None Detected
219765					
104	12" Red VT (Spots)	Main Lobby	red	Non-Fibrous 100	None Detected
219766					

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
105	12" VT-I (Grey)	Hall Outside Performing Art Wing	white	Non-Fibrous 100	None Detected
219767					
106	Black M #105	Hall Outside Performing Art Wing	black	Non-Fibrous 100	None Detected
219768					
107	VT-I	Rm 520	white	Non-Fibrous 100	None Detected
219769					
108	Black M #107	Rm 520	black	Non-Fibrous 100	None Detected
219770					
109	12" VT-II (Creme)	2nd FL, Top of Main Stairs	tan	Non-Fibrous 100	None Detected
219771					
110	12" VT-III (White w/ Brown Spots)	Hall, 371 Wing	tan	Non-Fibrous 100	None Detected
219772					
111	VT-III	Lobby, 256 Wing	tan	Non-Fibrous 100	None Detected
219773					
112	Adhesive #111	Lobby, 256 Wing	multi	Cellulose 5 Non-Fibrous 95	None Detected
219774					
113	Coating in Wall Speaker Enclosure	Rm 77	black	Non-Fibrous 95	Detected Chrysotile 5
219775					
114	Black Mastic for Rubber Flooring	@ Ramp to Gym	black	Non-Fibrous 100	None Detected
219776					
115	Grey Win Fr	Cafe Window~ Exterior	gray	Non-Fibrous 100	None Detected
219777					
116	Rubber Floor	Gym	tan	Non-Fibrous 100	None Detected
219778					
117	VT-I	Hall to PIG Wing	white	Non-Fibrous 100	None Detected
219779					
118	BL M #117	Hall to PIG Wing	black	Cellulose 5 Non-Fibrous 95	None Detected
219780					
119	Painted Finish on CMU	Cafe Red-Black Concession Stand	multi	Non-Fibrous 100	None Detected
219781					
120	Painted Finish on CMU	Rm 106	white	Non-Fibrous 98	Detected Chrysotile 2
219782					
121	Carpet Glue	Library	yellow	Non-Fibrous 100	None Detected
219783					
122	Carpet Glue	2nd FL Main Office	yellow	Non-Fibrous 100	None Detected
219784					



FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
123	Carpet Glue	261 Wing	yellow	Non-Fibrous 100	None Detected
219785					
124	VT-III	Hall by Rm 400	white	Non-Fibrous 100	None Detected
219786					
125	VT-IV (Older? Grey)	Rm 400~ Sophomore Office	tan	Non-Fibrous 100	None Detected
219787					
126	Tan Leveler? #125	Rm 400~ Sophomore Office	multi	Non-Fibrous 100	None Detected
219788					
127	VT-V Creme w/ Colors	(Library) TV Classroom	white	Non-Fibrous 100	None Detected
219789					
128	Hard Brown Lab Table Sink	(Library) TV Studio	brown	Non-Fibrous 100	None Detected
219790					
129	Thick Grey Caulk Between (Ext) Window & Conc Column	From Interior From Room 100	gray	Non-Fibrous 100	None Detected
219791					
130	Hard Lime Green Adhesive for Styrofoam Panel	Outside Wall, Over Gyp Room 100	gray	Non-Fibrous 95	Detected Chrysotile 5
219792					
131	JC as Skim	On Outside Wall, Hall Outside 2nd FL Cust Office	white	Non-Fibrous 100	None Detected
219793					
132	Hard Lime Green Adhesive	For Styrofoam Panel Over Gyp Wall	gray	Non-Fibrous 95	Detected Chrysotile 5
219794					

Friday 10 February

Analyzed by:



End of Report

Batch: 19657

Page 8 of 8

# CHAIN OF CUSTODY

Samples #12 → #10  
ROOF SAMPLES

<b>Universal Environmental Consultants</b>
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: FALL RIVER, MA Building Name: DURFEE H.S.

Sample	Result	Description of Material	Sample Location
1		TAR: GRAVEL ROOF	≈ CTR Auditorium & metal deck
2		TAR: GRAVEL ROOF	≈ CTR Auditorium & metal deck
3		residue in channel of metal deck	1 <sup>ST</sup> FL ROOF OVER 53:
4		COATING ON CONCRETE DECK	OVER 85
5		ASSOC. paper # 4	OVER 85
6		COATING ON CONCRETE DECK	OVER 460
7		COATING ON CONCRETE DECK	OVER 433
8		COATING ON CONCRETE DECK	OVER 404
9		white glazing for type-II windows	& roof over 51-82
10		white gl for type-II wins	& roof over 51-82
11		Fireproofing (FP)	& rear of CAEE AS debris <span style="float: right;">EXTENSIVE</span>
12		(FP)	& rear of CAEE AS debris
13		(FP)	& rear of CAEE AS debris
14		(FP)	MAIN ENTRANCE COVERED WALK-WAY
15		(FP)	MAIN ENTRANCE COVERED WALK-WAY
16		Door frame caulk (grey)	MAIN ENTRANCE
17		Door fr (grey)	Door # 5 (IT)
18		interior Door fr (brown) for exterior Door	rear CAEE S.W. door
19		interior Door fr (brown) for exterior Door	exit door by 134 (IT)
20		plaster over exterior window	Pool Bldg, rear

Reported By: Leonard Bana Date: 2/3/17 Due Date: 72-hr  
Received By: Mr Upd Date: 2/6/17

2.7

# CHAIN OF CUSTODY

<b>Universal Environmental Consultants</b>
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: Fall River, MA Building Name: Durfee H.S.

Sample	Result	Description of Material	Sample Location
21		Transite siding as debris	373 <u>EXTERIOR</u>
22		Transite siding ~ Gym	Gym
23		Grey win fr (new win)	W/ main entrance
24		Grey win fr (new win)	by 147
25		windough for orig win	W/ main entrance
26		win gl for orig win	Door #25 assy
27		soft grey gl for new win	near Registrar's - supply (AS PATCH MATERIAL?)
28		CP-I	Auditorium in proj bath
29		CP-I	Auditorium by proj bath
30		CP-I	Girl's Locker - Varsity
31		CP-I	Girl's Locker by PE
32		CP-I	Girl's Locker @ bathroom
33		CP-I	ELECT. rm by 515
34		CP-I	CUST. rm @ hall to Shops
35		CP-I	Boy's Locker by showers
36		exposed glue dash on cmu wall, assumed <sup>Formed</sup> chalkboard / tackboard	
37		mastic for wood block floor cm 55 Woodshop	
38		mastic in cork running perimeter of cm 55 wood block floor	
39		mastic for wood block floor cm 56 <sup>Formed</sup> Woodshop	
40		mastic in cork running perimeter of cm 56 Wood Block floor	

Reported By: James R. Berra Date: 2/3/17 Due Date: 72-hr

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

307

# CHAIN OF CUSTODY

<b>Universal Environmental Consultants</b>
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: Fall River, MA Building Name: Durfee H.S.

Sample	Result	Description of Material	Sample Location
41		interior door frame caulk	rm 116
42		INT. door fr	rear of stage - walk room
43		INT. door fr	CATWALK ENTRANCE
44		INT. door fr	Girl's Locker - Varsity rm
45		INT. door fr	ELECT rm by 515
46		INT. door fr	rm 520 (Former Nurse)
47		glazing for mesh windows in metal door	rm 134
48		gl for mesh win in metal door	rm 130
49		gl for mesh win in metal door	rm 302
50		glazing for interior window	rm 520
51		NON-suspect pressed wood LAB TABLE	311/312
52		NON-SUSP PW LAB TABLE	307
53		hard Brown LAB COUNTER TABLE	311/312 (Wollastonite?)
54		hd Br LAB COUNTER TABLE	302
55		hd Br LAB COUNTER TABLE	4th Fl Science rm, unknown
56		1x1 [AT]	Freshman Class Office
57		1x1 [AT]	Wrighton Wastec rm, off gym
58		1x1 [AT]	IT rm
59		Resin Floor	Girl's Lockers
60		Resin Floor	rm 111

Reported By: [Signature] Date: 2/3/17 Due Date: 72-hr  
Received By: \_\_\_\_\_ Date: \_\_\_\_\_

# CHAIN OF CUSTODY

407

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: Fall River, MA Building Name: DURFEE H.S.

Sample	Result	Description of Material	Sample Location
61		ORANGE Lino	hall by 62
62		Adhesive #61	" "
63		Lino - I (greenish)	112 - storage
64		Lino - I A (grey)	CAFE
65		Lino - I A	CAFE & REAR
66		Lino - I	REGISTRAR'S
67		Lino - I A A (grey)	P.T.C. wing
68		Lino - I A A A (Brown)	Boys' lockers
69		Lino - II (red spots - NEW?)	21m 123
70		(E) OFF FG	146 - Break rm (CL)
71		(E) OFF FG	146 - Break rm (valuc)
72		(E) OFF FG	CUST. STORAGE by 227
73		Duct insulation (DI)	Pool Bldg Bsm't Boiler rm
74		(DI)	T
75		(DI)	T
76		debris beside Boiler	assumed from behind metal jacketing
77		debris beside Boiler	" ↓ " " ↓ "
78		Black sink damp proofing	21m 130
79		" sink dp	100 521
80		" sink dp	346 - Lounge

Reported By: Lemuel Berra Date: \_\_\_\_\_ Due Date: \_\_\_\_\_

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

# CHAIN OF CUSTODY

<b>Universal Environmental Consultants</b>
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: Fall River, MA Building Name: Durfee H.S.

Sample	Result	Description of Material	Sample Location
81		Tape on metal duct	Pool Bldg roof mech room
82		Tape on metal duct	" " " "
83		VERT X-JOINT in CON	" " " "
84		assumed ② debris on metal duct	Gym Bldg roof mech room
85		mid c. Flange end of FG (PI)	" " "
86		roof drain ② SEE FG	" " "
87		adhesive for FANG gypsum wall	Room 363
88		adh for FANG gypsum wall	Room 362
89		Joint Compound (JC)	Room 385
90		JC	Room 314
91		JC	Room 362
92		JC	Library
93		JC	LOBBY @ MAIN ENTRANCE
94		JC	hall by 403
95		JC	Woodshop - right #56
96		Line - 1AAA Brown	and ENTRANCE VESTIBULE
97		ant. wing	and ENTRANCE VESTIBULE
98		12" red vt plain	Pool Bldg Lobby
99		adhesive #98	" " "
100		12" Black Trim Tile	" " "

Reported By: Thomas W. Davis Date: 2-3-17

Due Date: 7-2-17

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

609

# CHAIN OF CUSTODY

<b>Universal Environmental Consultants</b>
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: Fall River, MA Building Name: Judge H.S.

Sample	Result	Description of Material	Sample Location
101		12" Black Trim Tile	main lobby
102		12" Black Trim Tile	3 <sup>rd</sup> Fl. w/ main lobby
103		12" red VT (spots)	main lobby
104		12" red VT (spots)	main lobby
105		12" VT-II (grey)	hall outside Performing Arts wing
106		Black @ #105	" " " "
107		VT-II	rm 520
108		Black @ #107	" "
109		12" VT-II (creme)	2 <sup>nd</sup> Fl. Top of main stairs
110		12" VT-III (white w/ brown spots)	hall, 371 wing
111		VT-III	lobby, 256 wing
112		Adhesive #111	" " "
113		coating in wall speaker enclosure	rm 77
114		Black mastic for rubber flooring @ ramp to Gym	
115		grey win fr	cafe windows ~ exterior
116		rubber floor	Gym
117		VT-I	hall to PIC wing
118		BL @ #117	" " "
119		painted finish on cmu	cafe red-black concession stand
120		painted finish on cmu	rm 106

Reported By: Thomas R. Bunn Date: 3/3/17 Due Date: 72 hr

Received By: \_\_\_\_\_ Date: \_\_\_\_\_



7-7

# CHAIN OF CUSTODY

<b>Universal Environmental Consultants</b>
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieeb@uec-env.com

Town/City: Fall River, MA Building Name: Durfee High School

Sample	Result	Description of Material	Sample Location
121		carpet glue	Library
122		carpet glue	2 <sup>nd</sup> FL. main OFFICE
123		carpet glue	2 <sup>nd</sup> FL. wing
124		VT-III	hall by rm 400
125		VT-IV (older? grey)	rm 400 - Sophomore Office
126		Tan leather? #125	" " " "
127		VT-V. same w/ colors	(Library) T.V. classroom
128		hard Brown Lab Table <sup>sink</sup>	(Library) T.V. studio
129		thick grey caulk between (ext) window & conc. columns, from interior	From room 100
130		lime green hard <del>gyp</del> adhesive for styrofoam panel, outside wall, over gyp	room 100 OFFICE
131		NC AS skin	on outside wall, hall outside 2 <sup>nd</sup> FL. COSTA
132		hard lime green adhesive for styrofoam panel over gyp wall	" " " "
133		" " "	on outside wall, 1 <sup>st</sup> FL rm 100
		" " "	
		" " "	
		" " "	
		" " "	
		" " "	
		" " "	
		" " "	

Reported By: [Signature] Date: 2-3/17 Due Date: 7-2-17  
Received By: \_\_\_\_\_ Date: \_\_\_\_\_

OrderID: 131700327

131700327

## CHAIN OF CUSTODY

**Universal Environmental Consultants**  
12 Brewster Road  
Framingham, MA 01702  
Tel: (508) 628-5486 - Fax: (508) 628-5488  
[adieb@uec-env.com](mailto:adieb@uec-env.com)

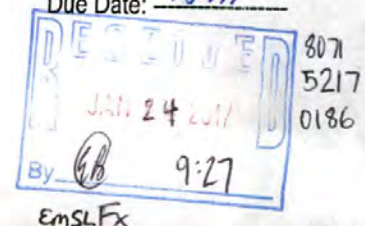
Town/City: Fall River, MA Building Name: Yusef High School

[illegible]

Reported By: Shawn B. Bunn Date: 1/23/17

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

Due Date: 48-hr





# EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801  
Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com / bostonlab@emsl.com>

**EMSL Order:** 131700327  
**Customer ID:** UEC63  
**Customer PO:**  
**Project ID:**

**Attn:** Ammar Dieb  
Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

**Phone:** (617) 984-9772

**Fax:** (508) 628-5488

**Collected:**

**Received:** 01/24/2017

**Analyzed:** 01/25/2017

**Project:** Durfee High School - Fall River, MA

## Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	131700327-0001 23561065 150 Weight Room			131700327-0002 23561127 150 Rm 520			131700327-0003 23560878 150 Registrars Office @ Lino Hall		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	1*	7*	20.6
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	1	20	100	1	20	50	1	20	58.8
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	3*	20*	50	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	1*	7*	20.6
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	1	20	100	4	40	100	3	34	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	22	-	-	22	-	-	22	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	3	-
Fibrous Particulate (1-4)	-	2	-	-	2	-	-	2	-
Background (1-5)	-	2	-	-	2	-	-	2	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum  
Myxomycetes++ = Myxomycetes/Periconia/Smuts

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC -EMLAP Accredited #180179

Initial report from: 01/25/2017 14:12:01

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



## EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801  
Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com / bostonlab@emsl.com>

EMSL Order: 131700327

Customer ID: UEC63

Customer PO:

Project ID:

Attn: Ammar Dieb

Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

Phone: (617) 984-9772

Fax: (508) 628-5488

Collected:

Received: 01/24/2017

Analyzed: 01/25/2017

Project: Durfee High School - Fall River, MA

### Test Report: Air-O-Cell<sup>TM</sup> Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	131700327-0004 22906044 150 Café Storage			131700327-0005 23560766 150 C'rm 130			131700327-0006 23560793 150 C'rm 106		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	2	40	66.7	-	-	-
Basidiospores	3	70	100	1	20	33.3	2	40	100
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	3	70	100	3	60	100	2	40	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	22	-	-	22	-	-	22	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	3	-
Fibrous Particulate (1-4)	-	2	-	-	3	-	-	2	-
Background (1-5)	-	2	-	-	2	-	-	2	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum  
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*- Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

Initial report from: 01/25/2017 14:12:01

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



**EMSL Analytical, Inc.**

5 Constitution Way, Unit A Woburn, MA 01801  
Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com / bostonlab@emsl.com>

**EMSL Order:** 131700327  
**Customer ID:** UEC63  
**Customer PO:**  
**Project ID:**

**Attn:** Ammar Dieb  
Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

**Phone:** (617) 984-9772

**Fax:** (508) 628-5488

**Collected:**

**Received:** 01/24/2017

**Analyzed:** 01/25/2017

**Project:** Durfee High School - Fall River, MA

**Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)**

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	131700327-0007 23560762 150 C'rm 139			131700327-0008 23560767 150 C'rm 112			131700327-0009 23561198 150 C'rm 115		
Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	4*	30*	37.5
Aspergillus/Penicillium	1	20	33.3	-	-	-	1	20	25
Basidiospores	2	40	66.7	2	40	50	2*	10*	12.5
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	2	40	50	1	20	25
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	3	60	100	4	80	100	8	80	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	22	-	-	22	-	-	22	-
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-	7*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	2	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum  
Myxomycetes++ = Myxomycetes/Periconia/Smuts

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

Initial report from: 01/25/2017 14:12:01

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)





# EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801  
Tel/Fax: (781) 933-8411 / (781) 933-8412  
<http://www.EMSL.com / bostonlab@emsl.com>

EMSL Order: 131700327

Customer ID: UEC63

Customer PO:

Project ID:

Attn: Ammar Dieb

Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

Phone: (617) 984-9772

Fax: (508) 628-5488

Collected:

Received: 01/24/2017

Analyzed: 01/25/2017

Project: Durfee High School - Fall River, MA

## Test Report: Air-O-Cell<sup>TM</sup> Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	131700327-0010				
Client Sample ID:	23560844				
Volume (L):	150				
Sample Location	Directly Outside Main Entrance				
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total		
Alternaria	-	-	-	-	-
Ascospores	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-
Basidiospores	3	70	77.8	-	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	1	20	22.2	-	-
Curvularia	-	-	-	-	-
Epicoecum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	-	-
Pithomyces	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis	-	-	-	-	-
Stachybotrys	-	-	-	-	-
Torula	-	-	-	-	-
Ulocladium	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
<b>Total Fungi</b>	<b>4</b>	<b>90</b>	<b>100</b>	-	-
Hyphal Fragment	-	-	-	-	-
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-
Analyt. Sensitivity 600x	-	22	-	-	-
Analyt. Sensitivity 300x	-	7*	-	-	-
Skin Fragments (1-4)	-	2	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	-
Background (1-5)	-	2	-	-	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum  
Myxomycetes++ = Myxomycetes/Periconia/Smut

No discernable field blank was submitted with this group of samples.

Steve Grise, Laboratory Manager  
or other approved signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*- Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

Initial report from: 01/25/2017 14:12:01

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)

OrderID: 011700627

ID: 011700627  
011700627

## CHAIN OF CUSTODY

BY for MERC.

**Universal Environmental Consultants**  
12 Brewster Road  
Framingham, MA 01702  
Tel: (508) 628-5486 - Fax: (508) 628-5488  
[adieb@uec-env.com](mailto:adieb@uec-env.com)

Town/City: Fall River, MA Building Name Justice High School

[illegible]

RECEIVED  
ETHS  
CINNAMINSON, N.J.  
2017 JUN 24 A 11:09

Reported By: Frank W. Jones Date: 1/23/17 Due Date: 7-day

Received By: [Signature] Date: 1/24/17 09:30:20.3

emailed for sample date 10/1/24  
per client sampled 1/23/17 - me 1/24

(2)





**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn:

**Ammar Dieb**  
**Universal Environmental Consultants**  
**12 Brewster Road**  
**Framingham, MA 01702**

1/30/2017

Phone: (508) 628-5486

Fax: (508) 628-5488

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 1/24/2017. The results are tabulated on the attached data pages for the following client designated project:

**Fall River, MA / Durfee High School**

The reference number for these samples is EMSL Order #011700627. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Chemistry Laboratory Manager



The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.

NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 187

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the NELAP, unless specifically indicated. All results for soil samples are reported on a dry weight basis, unless otherwise noted. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.



**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (856) 303-2500 / (856) 858-4571

<http://www.EMSL.com>

[EnvChemistry2@emsl.com](mailto:EnvChemistry2@emsl.com)

EMSL Order: 011700627

CustomerID: UEC63

CustomerPO:

ProjectID:

Attn: **Ammar Dieb**  
**Universal Environmental Consultants**  
**12 Brewster Road**  
**Framingham, MA 01702**

Phone: (508) 628-5486  
Fax: (508) 628-5488  
Received: 01/24/17 9:30 AM

Project: **Fall River, MA / Durfee High School**

**Analytical Results**

Client Sample Description 1		Collected:			1/23/2017	Lab ID: 0001		
Gym								
Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
7471B	Mercury	37	2.4	mg/Kg	1/27/2017	CM	1/27/2017	CM

Client Sample Description 2		Collected:			1/23/2017	Lab ID: 0002		
Wrestling Room								
Method	Parameter	Result	RL	Units	Prep Date	Analyst	Analysis Date	Analyst
7471B	Mercury	16	2.1	mg/Kg	1/27/2017	CM	1/27/2017	CM

**Definitions:**

ND - indicates that the analyte was not detected at the reporting limit

RL - Reporting Limit (Analytical)



## Radon in Air

NELAC NY 11769  
NRPP 101193 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Liquid Scintillation  
NRPP Device Code 8088  
NRSB Device Code 12193

### Laboratory Report for:

Universal Environmental Consultant  
12 Brewster Road  
Framingham MA 01702

### Property Tested:

Durfee High School  
Not Indicated 3297215 3297217  
Fall River MA

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
2035196	3297215	01/23/2017 10:45 am 01/25/2017 1:25 pm	First Floor Room 521	< 0.4
2035197	3297224	01/23/2017 10:50 am 01/25/2017 12:05 pm	First Floor Registrar Office	0.5
2035198	3297229	01/23/2017 10:54 am 01/25/2017 12:07 pm	First Floor Security	0.7
2035199	3297234	01/23/2017 11:00 am 01/25/2017 12:11 pm	First Floor Café Storage	< 0.4
2035200	3297226	01/23/2017 11:16 am 01/25/2017 1:45 pm	First Floor Crm 130 Green	0.7
2035201	3297240	01/23/2017 11:20 am 01/25/2017 1:40 pm	First Floor Crm 106	0.6
2035202	3297219	01/23/2017 11:24 am 01/25/2017 1:55 pm	First Floor Crm 139	0.5
2035203	3297218	01/23/2017 11:33 am 01/25/2017 1:30 pm	First Floor Crm 112	0.5
2035204	3263374	01/23/2017 11:40 am 01/25/2017 1:35 pm	First Floor Crm 115	0.5
2035205	3297217	01/23/2017 11:44 am 01/25/2017 1:59 pm	First Floor Crm 127 and 124	0.7

**Comment:** Universal Environmental Consultant was emailed a copy of this report.

Test Performed By: Leonard J Busa

Distributed by: Universal Environmental Consultant

Date Received: 01/26/2017 Date Logged: 01/26/2017 Date Analyzed: 01/27/2017 Date Reported: 01/27/2017

Report Reviewed By: Michelle Cleveland

Report Approved By: Carolyn D. Koke

#### Disclaimer:

The uncertainty of this radon measurement is  $\sim \pm 10\%$ . Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

# GEOTECHNICAL AND GEO-ENVIRONMENTAL ANALYSIS



October 31, 2017

Mr. Troy L. Randall, AIA, LEED AP BD+C  
Ai3 Architects, LLC  
526 Boston Post Road  
Wayland, MA 01778  
Phone: (508) 358-0790  
Fax: (508) 358-0791  
E-mail: randall@ai3architects.com

**Re: Preliminary Geotechnical Report  
Proposed B.M.C. Durfee High School  
Fall River, Massachusetts  
LGCI Project No. 1712**

Dear Mr. Randall:

Lahlaf Geotechnical Consulting, Inc. (LGCI) has completed preliminary subsurface explorations at the site of the proposed B.M.C. Durfee High School in Fall River, Massachusetts. This preliminary report contains the results of our preliminary subsurface explorations and our preliminary foundation design and construction recommendations. We are submitting our report electronically. Please notify us if you require a hard copy.

The soil samples and rock cores from our explorations are currently stored at LGCI for further analysis, if requested. Unless notified otherwise, we will dispose of the soil samples after three months.

Thank you for choosing LGCI as your geotechnical engineer.

Very truly yours,

**Lahlaf Geotechnical Consulting, Inc.**

Abdelmadjid M. Lahlaf, Ph.D., P.E.  
Principal Engineer



**PRELIMINARY GEOTECHNICAL REPORT  
PROPOSED B.M.C. DURFEE HIGH SCHOOL  
FALL RIVER, MASSACHUSETTS**  
LGCI Project No. 1712  
October 31, 2017

Prepared for:

**Ai3 ARCHITECTS, LLC**  
526 Boston Post Road  
Wayland, MA 01778  
Phone: (508) 358-0790  
Fax: (508) 358-0791

**PRELIMINARY GEOTECHNICAL REPORT  
PROPOSED B.M.C. DURFEE HIGH SCHOOL  
FALL RIVER, MASSACHUSETTS**

LGCI Project No. 1712  
October 31, 2017

Prepared for:

**Ai3 ARCHITECTS, LLC**

526 Boston Post Road  
Wayland, MA 01778  
Phone: (508) 358-0790  
Fax: (508) 358-0791

Prepared by:

**LAHLAF GEOTECHNICAL CONSULTING, INC.**

100 Chelmsford Road, Suite 2  
Billerica, MA 01862  
Phone: (978) 330-5912  
Fax: (978) 330-5056



Abdelmadjid M. Lahlaf, Ph.D., P.E.  
Principal Engineer

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**Preliminary Geotechnical Report  
Proposed B.M.C. Durfee High School  
Fall River, Massachusetts  
LGCI Project No. 1712**

## **1. PROJECT INFORMATION**

### **1.1 Project Authorization**

This report presents the results of our preliminary subsurface explorations and a preliminary geotechnical evaluation performed by Lahlaf Geotechnical Consulting, Inc. (LGCI) for the proposed B.M.C. Durfee High School in Fall River, Massachusetts.

We performed our services in general accordance with our proposal No. 17004 dated February 10, 2017. Mr. Troy L. Randall of Ai3 Architects, LLC (Ai3) authorized our preliminary services by signing our proposal on March 20, 2017.

### **1.2 Purpose and Scope of Services**

The purpose of this study was to obtain preliminary subsurface information at the site and to provide preliminary recommendations for foundation design and construction.

LGCI performed the following services:

- Reviewed the existing information about the site.
- Coordinated our preliminary field explorations with Ai3; Left Field LLC, the Owner Project Manager (OPM), the school staff, and representatives of the City of Fall River.
- Engaged an excavation subcontractor to excavate fourteen (14) test pits.
- Engaged a drilling subcontractor to advance ten (10) soil borings.
- Provided a geotechnical field engineer at the site to coordinate and observe the borings and test pits, describe the soil samples, and prepare field logs.
- Submitted five (5) soil samples for grain-size analysis.
- Prepared this preliminary geotechnical report containing the results of our preliminary subsurface explorations and our preliminary recommendations for foundation design and construction.



**Preliminary Geotechnical Report  
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Fall River, Massachusetts  
LGCI Project No. 1712**

We understand that additional explorations will be performed at the site, including performing additional soil borings and test pits, and installing groundwater observation wells.

LGCI did not perform environmental services for this project. LGCI did not perform an assessment to evaluate the presence or absence of hazardous or toxic materials above or below the ground surface at or around the site. Any statement about the color, odor, or the presence of suspicious materials included in our boring and test pit logs or report were made by LGCI for information only and to support our geotechnical services. No environmental recommendations and/or opinions are included in this report.

Our scope did not include preparing or reviewing specifications, performing contract document review, or providing construction services. LGCI would be pleased to perform these services when needed at an additional fee. Recommendations for stormwater management, erosion control, pavement design, slope stability analyses, and detailed cost or quantity estimates are not included in our scope of work.

### **1.3 Site Description**

Our understanding of the existing conditions is based on our field observations, our discussions with Ai3, and on the following documents:

- Historic topographic maps of Fall River from <https://ngmdb.usgs.gov>.
- Drawing titled: “Proposed Site Plan, Fall River High School, Elsbree Street, Fall River, Massachusetts,” (Site Plan) prepared by Robert Charles Associates Inc. and dated May 4, 1973.
- MS Word document titled: “Durfee Sites Analysis,” provided to us by Ai3 Architects, LLC by e-mail on January 17, 2017.
- “Aerial Mapping Survey B.M.C Durfee High School Fall River, Massachusetts,” (Aerial Mapping Survey) provided to LGCI by Pare Corporation via email on July 31, 2017.

The existing high school is located at 360 Elsbree Street in Fall River, Massachusetts as shown in Figure 1. The site is bordered by Elsbree Street on the eastern side; by private properties and Langley Street on the northern side; by the James Tansey Elementary School and Ray Street on the western side; and by residential properties and the Spencer Borden Elementary School on the southern side. Surficial boulders are visible in the wooded area near the parking lot strip off of Elsbree Street.

We understand that the existing school was opened in 1978. The existing school is comprised of several one- to three-story buildings. The site is about 68.9 acres in size and is occupied by the



**Preliminary Geotechnical Report  
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existing school buildings, athletic fields, and parking lots and driveways. The existing athletic fields, located on the northern side of the site, include a track and field, a football field, tennis courts, and three (3) softball/baseball fields. Based on the Durfee Sites Analysis, the existing grades at the site drop from about El. 230 feet near the southwestern corner to about El. 155 feet along the eastern boundary of the site. These grades are generally consistent with those shown on the Site Plan and the Aerial Mapping Survey.

We understand that the area near the northeastern corner of the site is a wetland. The Durfee Sites Analysis document indicated that a portion of the site is within a 200 foot riverfront buffer zone and a 100 foot wetland buffer zone.

We understand that the existing athletic fields were constructed after 2005.

#### **1.4 Background**

During a site meeting attended by representatives of Ai3, the OPM, the City of Fall River, Pare Corporation, the project civil engineer, and Birchwood Design Group (Birchwood), the project landscape architect on January 24, 2017, LGCI obtained the information about the site. The information is summarized below.

- Ai3 indicated to us that rock was blasted during the construction of the existing school.
- The representative of the City indicated to us that during construction of the athletic fields, nested large boulders, buried in the existing fill, were encountered in many areas.
- The representative of Birchwood indicated that the football field is generally saturated following precipitation events. The representative of Pare reported that school maintenance staff indicated to Pare that the ground surface in the field remains wet several days after precipitation events. He indicated that standing water pockets can be observed in the baseball/softball fields, evidencing poor drainage of the fields and the possible presence of shallow groundwater due to the proximity to wetlands. The representative further indicated that during heavy rain, the synthetic turf lifts at several locations.
- The representative of the City indicated that sinkholes often form in the athletic fields and are patched as part of field maintenance.
- The representative of the City indicated to us that, reportedly, a stream used to run across the site before the site grades were reconfigured to the current condition.

#### **1.5 Historic Maps**

To explore for possible reasons why boulders were buried in the existing athletic fields, LGCI reviewed historic topographic maps of the site. We reviewed topographic maps from 1985, 1979, 1967, 1949, 1944, and 1893 and we included portions of the maps in Figures 3 to 8, respectively. Below are our observations based on our review of these historic maps.

- The historic topographic maps show that the site grades have generally changed very little since 1893 and that, other than within the existing building footprint and possibly within the



**Preliminary Geotechnical Report  
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LGCI Project No. 1712**

athletic field, no substantial change in grade occurred as a result of the construction of the existing school in the 1970s.

- The 1944 and 1949 maps, i.e., Figures 7 and 6, respectively, show two streams flowing across the site: one stream near the northeast corner and one stream near the center of the site in what is currently athletic fields. The historic maps subsequent to 1949 show the stream near the northeastern corner but not the one near the center, indicating that the site topography was altered.
- In conjunction with the stream near the center no longer existing near the center of the site, the historic topographic maps starting from 1967, i.e., Figures 3, 4, and 5, show a gravel pit near the center of the site in what is currently athletic fields. Figures 5 and 3 indicate that the site grades appear to have been slightly altered between 1967 and 1985, respectively. The changes are possibly related to and consistent with the operations of a gravel pit. Please note that the actual date of the alteration may not correspond to the dates of the topographic maps as the publications of the maps may lag the actual changes in topography.

### **1.6 Project Description**

Our understanding of the proposed construction is based on our discussions with Ai3, and on the following sketch and drawing:

- “Option 1E,” (Option 1E Sketch) provided to us by Ai3 on May 30, 2017 via e-mail.
- “Overall Site Improvements Plan,” (Drawings C2.0), prepared by Pare Corporation and dated October 2017.

We understand that the proposed construction will consist of a new building that will be located in the existing parking lot and grass athletic fields on the southern and eastern sides of the existing track field which will remain. The proposed building will be accessible from Elsbree Street.

We understand that most of the existing building will be demolished to allow for the construction of new athletic fields; however, the existing performing arts building will remain and will be connected to the proposed new building.

We understand that the proposed building will have a footprint of about 165,000 square feet and a finished floor elevation (FFE) of El. 160 feet.

Information about building loads and site grades was not available at the time of this report.

### **1.7 Elevation Data**

We understand that the elevation in the Aerial Mapping Survey and in the Option 1E Sketch are referenced to the National American Vertical Datum of 1988 (NAVD 88).



Preliminary Geotechnical Report  
Proposed B.M.C. Durfee High School  
Fall River, Massachusetts  
LGCI Project No. 1712

## 2. SITE AND SUBSURFACE CONDITIONS

### 2.1 Surficial Geology

LGCI reviewed the following surficial geological map: “Surficial Geologic Map of the Norton-Manomet-Westport-Sciticut Neck 23-Quadrangle Area in Southeast Massachusetts,” prepared by Stone, B.D., Stone, J.R., DiGiacomo-Cohen, M.L., and Kincare, K.A., for the U.S. Geological Survey (Open-File Report 2006–1260–F, 2011). The surficial geologic map of the general area of the site is shown in Figure 2.

The surficial geologic map indicates that the subsurface conditions within and in the general vicinity of the site consist of coarse deposits near the center and northern sides of the site, i.e., in the area of the existing athletic fields, and thin till on the southern side of the site, i.e., within and near the footprint of the existing buildings.

The coarse deposits consist of gravel deposits that contain sand, cobbles, and boulders. These deposits also include sand and gravel and sand deposits. The finer (sand) deposits may contain fines materials, including fine sand, silt, and clay. The thin till consists of a matrix of sand, some silt and little clay and contains scattered gravel clasts and a few large boulders. The surficial geologic map indicated that the till is typically 10 to 15 feet thick, indicating shallow rock.

### 2.2 Previous Explorations

Ai3 provided us with a copy of a previous geotechnical report prepared for the track field (listed below):

- Geotechnical letter report titled: “Durfee High School Athletic Complex, 360 Elsbree Street, Fall River, Massachusetts,” (Athletic Field Report) prepared by MGA Inc. and dated December 2005.

The Athletic Field Report contained the logs of fifteen (15) borings advanced in what is currently athletic fields. The borings extended to depths ranging between 2.5 and 20.5 feet with most borings extending deeper than 10 feet beneath the ground surface. The logs of these borings and a boring location plan are included in Appendix A.

The previous borings indicated topsoil, overlying 2.5 to 16 feet of fill, overlying natural glacial till. Based on the Standard Penetration Test (SPT) N-values, the existing fill was described as loose to very dense. We believe that the high SPT N-values were caused by obstructions in the fill and do not reflect the true density of the fill. The fill contained up to 25 percent organics and a large number of boulders. The boulders were described as fragmented and were reported to have possibly resulted from blasting at the site during the former development of the site.

The previous borings indicated refusal in six (6) of the fifteen (15) borings on rock or boulders.



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The previous borings indicated that the groundwater levels during drilling ranged between 3.8 and 11 feet beneath the ground surface with most levels shallower than 7 feet.

## **2.3 LGCI's Explorations**

### **2.3.1 General**

We staked our boring and test pit locations in the field in the presence of a representative of the OPM and the City. LGCI notified Dig Safe Systems, Inc. and the City of Fall River to assist with utility clearance.

LGCI representatives observed and logged the borings and test pits.

### **2.3.2 Soil Borings**

LGCI engaged Northern Drill Service (NDS) of Northborough, Massachusetts to advance ten (10) soil borings (B-1 to B-3, and B-7 to B13) at the site between July 10 and 13, 2017. Boring B-4 to B-6 were not performed. The borings were advanced with a Mobile Drill B-48 ATV-mounted drill rig using 4-inch cased wash boring techniques.

The borings extended to depths ranging between 8 and 21.1 feet beneath the ground surface. NDS performed Standard Penetration Tests (SPT) and obtained split spoon samples with an automatic hammer at typical depth intervals of 2 feet or 5 feet as noted on the boring logs in general accordance with ASTM D-1586. Unless notified otherwise, we will dispose of the soil samples after three months.

Upon completion, the boreholes were backfilled with the soil cuttings.

Appendix B contains LGCI's boring logs, and Figure 9A show the boring locations. Table 1 contains a summary of the borings.

The ground surface elevations shown in the boring logs were interpolated to the nearest ½ foot from the Aerial Mapping Survey. The interpolated ground surface elevations are approximate.

### **2.3.3 Test Pits**

LGCI engaged NDS to excavate fourteen (14) test pits (TP-1 to TP-10, TP-12, TP-13, TP-14, and TP-16) at the site on July 18 and 19, 2017 using a Komatsu PC 120 excavator. Test pits TP-11, and TP-15 were not performed. The test pits extended to depths ranging between 6.1 and 13.5 feet beneath the ground surface. The test pits were backfilled with





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the excavated materials which were placed and tamped with the excavator bucket in 2- to 3-foot lifts.

The ground surface elevations shown in the test pit logs were interpolated to the nearest ½ foot from the Aerial Mapping Survey. The interpolated ground surface elevations are approximate.

Appendix C contains LGCI's test pit logs, Table 2 contains the test pit summary, and Figures 9A and 9B show the test pit locations.

## **2.4 Subsurface Conditions**

The subsurface description in this report is based on a limited number of borings and test pits and is intended to highlight the major soil strata encountered during our borings and test pits. The subsurface conditions are known only at the actual boring and test pit locations. Variations may occur and should be expected between boring and test pit locations. Boring and test pit logs represent conditions that we observed at the time of our borings and test pits, and are edited based on the results of the laboratory test data as appropriate. The strata boundaries shown in our boring and test pit logs are based on our interpretations and the actual transition may be gradual. Graphic soil symbols are for illustration only.

The soil strata encountered in our borings and test pits were as follows, starting from the ground surface.

Asphalt – Asphalt was encountered at the ground surface in borings B-1, B-2, and B-3. The asphalt ranged between 3 and 8 inches.

Topsoil/Subsoil – A layer of surficial organic soil (topsoil/subsoil) was encountered at the ground surface in the test pits and in all borings except borings B-1 to B-3. This layer was 0.3 to 2.3 feet thick.

Fill – A layer of fill was encountered in the test pits and borings beneath the asphalt or the surficial organic soil except in test pit TP-7.

The fill extended to depths ranging between 2 and 10.9 feet beneath the ground surface. The fill consisted mostly of silty sand and occasionally of poorly graded sand, poorly graded gravel, or silty gravel. The fines content in the fill ranged up to 35 percent.

The fill contained traces of bricks, concrete, construction debris, asphalt, trash, roots, wood, organics, and traces of coal. The fill also contained numerous boulders. In a few test pits, the boulders were angular, indicating that blasted rock was possibly used in the fill. In test pit TP-2, buried topsoil was observed at the bottom of the fill. Excavation refusal was encountered at the bottom of the fill in test pit TP-14 and in borings B-2 and B-3.



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The relatively high standard penetration test (SPT) N-values recorded in the fill may be caused by obstructions and may not reflect the true density of the fill.

Sand and Gravel – A layer of sand and gravel was encountered beneath the fill or topsoil in all borings except in borings B-2 and B-3, and in all test pits except test pits TP-1, TP-5, and TP-14. The layer extended to the termination depths in borings B-8, B-10, and B-11; and the termination depths of all test pits except test pits TP-1, TP-5, and TP-14 where this layer was not encountered within the excavation depths. The samples in this layer were mostly described as silty sand, and occasionally as poorly graded sand, well graded gravel, or silty gravel. The fines content in the sand and gravel layer ranged up to 40 percent. The SPT N-values in this layer range between 10 and more than 100 bpf, with most values between 10 and 50 bpf, indicating medium dense to dense sand and gravel.

Refusal of the split spoon sampler or casing was encountered at the bottom of this layer in many explorations as described below.

Bedrock – Excavation refusal was encountered at the bottom of the fill in test pit TP-14 and in borings B-2 and B-3. Refusal of the split spoon sampler or casing was also encountered at the bottom of this layer in borings B-1, B-7 to B-10, B-12, and B-15, and in test pits TP-3 and TP-12. The refusal was on possible bedrock or a large boulder. To confirm and characterize the bedrock, a rock core was obtained in boring B-1. The rock consisted of hard, slightly weathered to fresh, slightly fractured to sound, coarse grained, pink with black mottles GRANITE. The rock recovery was 70 percent and rock quality designation was 53 percent.

## **2.5 Groundwater**

Groundwater was observed in the borings and the test pits, at depths ranging between 2.3 and 11 feet beneath the ground surface, except in test pits TP-12 to TP-14.

The groundwater data reported in this report is based on observations made during or shortly after the completion of our explorations and may not represent the actual groundwater levels, as additional time may be required for the groundwater levels to stabilize. Water was introduced into the boreholes during drilling, and the groundwater levels measured at the end of drilling in the borings may not be representative of the actual groundwater conditions. The groundwater levels presented in this report only represent the conditions encountered at the time and location of our explorations. Seasonal fluctuation should be anticipated.

In addition to monitoring the groundwater observation wells installed by others during the explorations for the existing track field, we recommend that groundwater observation wells be installed during the design develop (DD) phase of this project.



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**2.6 Laboratory Test Data**

LGCI submitted five (5) soil samples obtained from the test pits for grain-size analysis. The laboratory data sheets are included in Appendix D and the results are summarized below.

Test Pit/ Boring	Sample ID	Sample Depth	Material	Percent Gravel	Percent Sand	Percent Fines
TP-6	S3	20" – 4'9"	Fill	26.1	50	23.9
TP-7	S2	1'11" – 7'	Fill	27.8	50	22.2
TP-10	S2	2'4" – 5'10"	Fill	39.8	45.4	14.8
TP-13	S2	1'11" – 4'2"	Fill	52.7	36.2	11.1
TP-14	S2	1'3" – 6'	Fill	59.9	24.4	14.7



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### 3. EVALUATION AND RECOMMENDATIONS

#### 3.1 Foundation Recommendations

##### 3.1.1 General

Based on our field observations, our understanding of the proposed construction, our observation of our preliminary borings and test pits, and the results of our laboratory testing, there are a few issues that we would like to highlight for consideration and discussion.

Removal of Topsoil/Subsoil and Fill - The topsoil, the subsoil, and the existing fill are not suitable to support the proposed building and should be entirely removed from within the proposed building footprint. The topsoil and the subsoil should be removed from within the footprint of the paved areas. Based on our preliminary exploration, the topsoil/subsoil removal is anticipated to extend on average to about 1 foot. In a few locations, the removal of the subsoil will extend as deep as 2.3 feet. The removal of the existing fill is anticipated to extend to depths of up to 11 feet.

The proposed building foundations should bear on Structural Fill placed directly on the natural sand.

We anticipate that the major consideration during construction will be the removal of the existing fill, and the handling and stockpiling of the excavated materials, including the topsoil/subsoil.

Ground Improvements – We have considered improving the existing fill in place using aggregate piers or rigid inclusions. However, due to the presence of boulders in the fill, implementation of one of these ground improvement techniques would require pre-trenching for the boulders, i.e., excavating the existing fill to cull out the boulders. We dismissed this option as it would require excavating the fill and placing it back in place after the boulders are removed and before implementing the ground improvements. The existing fill should be removed and replaced with Structural Fill.

Processing Structural Fill on Site – Due to the relatively large quantities of boulders in the fill, we believe that the existing fill could be processed in a crusher with the boulders to produce granular fill that is lower in fines and that could be used as Structural Fill if blended with a sufficient proportion of rock. To augment the quantity of rock to process with the existing fill, the contractor may consider importing blasted rock to blend it with the existing fill and crush it.

Additional Explorations – To further explore the quality and depth of the existing fill, we recommend that additional explorations be performed during the DD Phase, including at least twelve (12) borings and twenty (20) test pits to cover portions of the proposed building



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footprint that were not explored during our preliminary explorations and to explore the subsurface conditions in the proposed fields. The explorations should include at least two (2) groundwater observation wells.

### **3.1.2 Footing Design**

- The topsoil/subsoil layer and the existing fill are not suitable to support the proposed footings and should be entirely removed from within the proposed building. The removal should extend beyond the proposed building a distance equal to the thickness of the distance between the bottom of the footings and the natural soil or 5 feet, whichever is greater.
- We recommend supporting the proposed building on spread and continuous footings bearing on Structural Fill placed directly over the natural soil.
- For footing design, we recommend using a preliminary net allowable bearing pressure of 4,000 pounds per square foot (psf).
- The subgrade of footings should be prepared in accordance with the recommendations in Section 4.1.
- All foundations should be designed in accordance with *The Commonwealth of Massachusetts State Building Code 780 CMR, Eighth Edition* (MSBC 8<sup>th</sup> Edition).
- Exterior footings and footings in unheated areas that are placed on the natural soil should be placed at a minimum depth of 4 feet below the final exterior grade to provide adequate frost cover protection. Interior footings in heated areas may be designed and constructed at a minimum depth of 2 feet below finished floor grades.
- We recommend that wall footings have a minimum width of 2 feet, and that column footings have a minimum width of 3 feet. For foundations with a least lateral dimension smaller than 3 feet, the allowable bearing pressure should be reduced to 1/3 of the recommended allowable bearing pressure times the least dimension in feet.
- Wall footings should be designed and constructed with continuous, longitudinal steel reinforcement for greater bending strength to span across small areas of loose or soft soils that may go undetected during construction.
- A representative of LGCI should observe the subgrade of footings to verify that the footing subgrade has been prepared in accordance with our recommendations.



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### 3.1.3 Settlement

We preliminarily estimate for foundations constructed in accordance with the recommendations contained in this report, that the total post-construction settlement will be less than about 1 inch and that the differential settlement will be 3/4 inch or less over a distance of 25 feet. Total and differential settlements of these magnitudes are usually considered tolerable for the anticipated construction. However, the tolerance of the proposed structure to the predicted total and differential settlements should be assessed by the structural engineer.

### 3.2 Concrete Slab Considerations

- The proposed floor slabs can be constructed as slabs-on-grade.
- The proposed floor slabs should be supported on a minimum of 12 inches of Structural Fill placed directly over the natural soil.
- Exposed boulders should be removed from the subgrade of the slab and the resulting excavation should be backfilled with Structural Fill.
- A vapor retarder membrane with a minimum thickness of 15 mils could be used beneath the slab. The need for such a membrane should be determined by the architect. The membrane should be protected from puncture during placement of the steel mesh and construction of the slabs.
- For the design of the floor slabs bearing on the materials described above, we recommend using a modulus of subgrade reaction,  $k_{s1}$ , of 100 tons per cubic foot (pcf) (116 pounds per cubic inch (pci)). Please note that the values of  $k_{s1}$  are for a 1 x 1 square foot area. These values should be adjusted for larger areas using the following expression:

$$\text{Modulus of Subgrade Reaction } (k_s) = k_{s1} * \left( \frac{B+1}{2B} \right)^2$$

where:

- $k_s$  = Coefficient of vertical subgrade reaction for loaded area,
- $k_{s1}$  = Coefficient of vertical subgrade reaction for 1 x 1 square foot area, and
- B = Width of area loaded, in feet.

Please note that cracking of slabs-on-grade can occur as a result of heaving or compression of the underlying soil, but also as a result of concrete curing stresses. To reduce the potential for cracking, the precautions listed below should be closely followed for construction of all slabs-on-grade:



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- Construction joints should be provided between the floor slab and the walls and columns in accordance with the American Concrete Institute (ACI) requirements, or other applicable code.
- Backfill in interior and exterior utility trenches should be properly compacted.
- In order for the movement of exterior slabs not to be transmitted to the building foundation or superstructure, exterior slabs such as approach slabs and sidewalks, should be isolated from the building superstructure.

### **3.3 Under-slab Drains**

Based on the groundwater level observed in the borings and test pit TP-8, we believe that an under-slab drainage system will be required beneath the slab, at least on the northern half of the proposed building footprint.

The under-slab drainage system should consist of: 1) a minimum of 9 inches of  $\frac{3}{4}$ -inch crushed stone placed below the entire concrete slab, and 2) 6-inch-diameter slotted PVC pipes installed with their inverts at least 12 inches below the bottom of the slab. The pipes should be installed in trenches with a maximum spacing of 20 feet. The trenches should be at least 12 inches wide and 12 inches deep (below the bottom of the 9 inches of crushed stone) to allow placing crushed stone around the PVC pipes.

A non-woven geotextile should be installed for separation between the crushed stone and the underlying soil. The slots on the PVC pipe should be placed facing downward to allow for entry of water at the bottom of the pipe. Clean-outs should be included at the end of each branch and at all changes in direction.

If possible, the water from the under-slab drain should be channeled to flow by gravity to a discharge area or to the City storm drainage system. If the water from the drainage system is channeled to the City storm drainage system, the owner should apply for a discharge permit and should perform analytical tests as required by the permits.

We will finalize our recommendation for an under-slab drainage system after we complete our explorations for the DD Phase, including the installation of groundwater observation wells at the site.

### **3.4 Seismic Design Criteria**

In accordance with Section 1613 of MSBC 8th Edition, the seismic criteria for the site are as follows:

- Site Class: D
- Spectral Response Acceleration at short period ( $S_s$ ): 0.23 g





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- Spectral Response Acceleration at 1 sec. ( $S_1$ ): 0.059g
- Site Coefficient  $F_a$  (Table 9.4.1.2.4a): 1.6
- Site Coefficient  $F_v$  (Table 9.4.1.2.4b): 2.4
- Adjusted spectral response  $S_{ms}$ : 0.368 g
- Adjusted spectral responses  $S_{m1}$ : 0.142 g

Based on our observations in the test pits and the results of the borings, the natural soil layer at the site is not susceptible to liquefaction during a seismic event.

### 3.5 Lateral Pressures for Wall Design and Perimeter Drains

#### 3.5.1 Lateral Earth Pressures

We recommend using the following values for the design of retaining walls:

Coefficient of Active Earth Pressure, $K_A$ :	0.31
Coefficient of At-Rest Earth Pressure, $K_o$ :	0.5
Coefficient of Passive Earth Pressure, $K_p$ :	3.3
Total Unit Weight, $\gamma$ :	125 pounds per cubic foot

Note: The values in the table are based on a friction angle for the backfill of 32 degrees and neglecting friction between the backfill and the wall. The design active and passive coefficients are based on horizontal surfaces (non-sloping backfill) on both the active and passive sides, and a vertical wall face.

- Exterior walls of below ground spaces and the wall separating the two slab levels should be designed using the “at-rest” pressure coefficient.
- Site retaining walls should be designed using the active earth pressure coefficient described above.
- Passive earth pressures should only be used at the toe of the wall where special measures or provisions are taken to prevent disturbance or future removal of the soil on the passive side of the wall, or in areas where the wall design includes a key.
- Where a permanent vertical uniform load will be applied on the active side immediately adjacent to the wall, a horizontal surcharge load equal to half of the uniform vertical load should be applied over the height of the wall. At a minimum, a temporary construction surcharge of 100 psf should be applied uniformly over the height of the wall.
- We recommend using an ultimate friction factor of 0.50 between the natural soil and the bottom of the retaining wall. Retaining walls should be designed for minimum factors of safety of 1.5 for sliding and 2.0 for overturning.



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### **3.5.2 Seismic Pressure**

- In accordance with the *Massachusetts State Building Code, 8<sup>th</sup> Edition*, Section 1610, a lateral earthquake force equal to  $0.100 \cdot (S_s) \cdot (F_a) \cdot \gamma \cdot H^2$  should be included in the design of the wall (for horizontal backfill), where  $S_s$  is the maximum considered earthquake spectral response acceleration (defined in Section 3.5.1),  $F_a$  is the site coefficient (defined in Section 3.5.1),  $\gamma$  is the total unit weight of the soil backfill, and  $H$  is the height of the wall.

The earthquake force should be distributed as an inverted triangle over the height of the wall. In accordance with MSBC 8<sup>th</sup> Edition, Section 1610.2, a load factor of 1.43 shall be applied to the earthquake force for wall strength design.

- Temporary surcharges should not be included when designing for earthquake loads. Surcharge loads applied for extended periods of time shall be included in the total static lateral soil pressure and their earthquake lateral force shall be computed and added to the force determined above.

### **3.5.3 Perimeter Drains**

- We recommend that free-draining material be placed within 3 feet of the exterior of walls of below ground spaces. To reduce the potential for dampness in below ground spaces, proposed below ground walls should be damp-proofed.
- We recommend that drains be provided behind the exterior of walls of below ground spaces, behind the wall separating the two slab levels, and behind site retaining walls. The drains should consist of 6-inch perforated PVC pipes installed with the slots facing down. Perimeter drains should be installed at the bottom of the wall in 18 inches of crushed stone wrapped in a geotextile for separation and filtration.
- Groundwater collected by the wall drains could be discharged in a lower area if gravity flow is possible. Alternatively, it should be discharged into the street drains. A permit would be required for discharge into street drains. For site retaining walls, the water collected from the drains could be discharged through weep holes. If wetness on the face of the wall is not desirable, the wall drains should be connected to the street drains.

## **3.6 Parking Lots, Driveways, and Sidewalks**

### **3.6.1 General**

The subsurface conditions encountered at the site are generally suitable to support the proposed driveways and parking lots after preparation of the subgrade as described in Section 4.1.



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- We recommend removing the topsoil and subsoil within the footprint of the proposed driveways and parking lots.
- Cobbles and boulders should be removed to at least 18 inches below the bottom of the pavement.
- The proposed driveways and parking areas should be constructed with minimum asphalt and subbase thicknesses in accordance with the recommendations and details prepared by the project civil engineer.
- Areas to receive relatively highly concentrated, sustained loads such as dumpsters, loading areas, and storage bins are typically installed over a rigid pavement section to distribute concentrated loads and reduce the possibility of high stress concentrations on the subgrade. Typical rigid pavement sections consist of 6 inches of concrete placed over a minimum of 12 inches of subbase material.

### **3.6.2 Sidewalks**

- Sidewalks should be placed on a minimum of 12 inches of Structural Fill with less than 5 percent fines.
- To reduce the potential for heave caused by surface water penetrating under the sidewalk, the sidewalk concrete sections should be sealed with a waterproof compound. The sidewalks should be sloped away from the building or other vertical surfaces to promote flow of water. To the extent possible, roof leaders should not discharge onto sidewalk surfaces.



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#### 4. CONSTRUCTION CONSIDERATIONS

##### 4.1 Subgrade Preparation

- The topsoil/subsoil layer, root balls, organic soil, the existing fill, and other deleterious matter should be entirely removed from within the proposed building footprint.
- The topsoil/subsoil, organic material, root balls, and other deleterious material should be entirely removed from within the paved areas.
- The site contractor should note that the subsoil and the underlying fill contain large boulders.
- Cobbles and boulders should be removed at least 6 inches from beneath footings, i.e., 4.5 feet beneath the proposed FFE within the entire building footprint, and 18 inches beneath the bottom of paved areas. The resulting excavations should be backfilled with compacted Structural Fill under the building and with Ordinary Fill under the subbase of paved areas.
- The base of the footing excavations in the natural soil should be compacted with a dynamic vibratory compactor weighing at least 200 pounds and imparting a minimum of 4 kips of force to the subgrade, before placing concrete.
- The subgrades of slabs and paved areas in the natural soil should be compacted with a heavy vibratory roller compactor imparting a dynamic effort of at least 40 kips.
- Where soft zones are revealed by the compaction effort and where organic soil is exposed, the soft materials or organic soil should be removed and replaced with Structural Fill within the building and with Ordinary Fill beneath the subbase of paved areas.
- Due to the high susceptibility of the natural soil for disturbance under foot and vehicular traffic, we recommend placing a minimum of 6 inches of Structural Fill under footings on top of the natural soil to provide a firm working surface during placement of formwork and rebar.
- Fill placed within the footprint of the proposed building should meet the gradation and compaction requirements of Structural Fill shown in Section 4.3.
- Fill placed under the subbase of paved areas, should meet the gradation and compaction requirements of Ordinary Fill shown in Section 4.3.
- Fill placed in the top 12 inches beneath sidewalks should consist of Structural Fill with less than 5 percent fines.
- When crushed stone is required in the drawings or it is used for the convenience of the contractor, it should be wrapped in a geotextile fabric for separation.



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- An LGCI geotechnical engineer or his representative should observe the exposed subgrades prior to fill and concrete placement to verify that the exposed bearing materials are suitable for the design soil bearing pressure. If soft or loose pockets are encountered in the footing excavations, the soft or loose materials should be removed, and the bottom of the footing should be placed at a lower elevation on firm soil, or the resulting excavation should be backfilled with Structural Fill, or crushed stone wrapped in geotextile for separation.

#### **4.2 Subgrade Protection**

The on-site sand may be frost susceptible. If construction takes place during freezing weather, special measures should be taken to prevent the subgrade from freezing. Such measures should include the use of heat blankets, or excavating the final six inches of soil just before pouring concrete. Footings should be backfilled as soon as possible after footing construction. Soil used as backfill should be free of frozen material, as should the ground on which it is placed. Filling operation should be halted in freezing weather.

Materials with high fines contents are typically difficult to handle when wet as they are sensitive to moisture content variations. Subgrade support capacities may deteriorate when such soils become wet and/or disturbed. The contractor should keep exposed subgrades properly drained and free of ponded water. Subgrades should be protected from machine and foot traffic to reduce disturbance.

#### **4.3 Fill Materials**

Structural Fill and Ordinary Fill should consist of inert, hard, durable sand and gravel, free from organic matter, clay, surface coatings and deleterious materials, and should conform to the gradation requirements shown below.

##### **4.3.1 Structural Fill**

The Structural Fill should have a plasticity index of less than 6, and should meet the gradation requirements shown below. Structural Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557), with moisture contents within  $\pm 2$  percentage points of optimum moisture content.



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Sieve Size	Percent Passing by Weight
3 inches	100
1 ½ inch	80 - 100
½ inch	50 - 100
No. 4	30 - 85
No. 20	15 - 60
No. 60	5 - 35
No. 200*	0 - 10

\* 0 - 5 Under sidewalks

#### 4.3.2 Ordinary Fill

Ordinary Fill should have a plasticity index of less than 6, and should meet the gradation requirements shown below. Ordinary Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557), with moisture contents within  $\pm 2$  percentage points of optimum moisture content.

Sieve Size	Percent Passing by Weight
6 inches	100
1 inch	50 - 100
No. 4	20 - 100
No. 20	10 - 70
No. 60	5 - 45
No. 200	0 - 20

#### 4.4 Reuse of Onsite Materials

Based on the grain-size analyses, and our field observations, the existing fill does not meet the gradation requirements for Structural Fill. Some of the fill may meet the gradation requirements for Ordinary Fill.

Materials to be used as fill should first be tested for compliance with the applicable gradation specifications.

Soils with more than 20 percent fines contents are generally very sensitive to moisture content variations and are susceptible to frost. Such soils are very difficult to compact at moisture contents that are much higher or much lower than the optimum moisture content determined from the laboratory compaction test. Therefore, strict moisture control should be implemented during stockpiling, placement, and compaction of the onsite soils.



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The contractor may consider mobilizing a rock crusher to the site. Boulders and imported blasted rock can be processed by blending them with the existing fill and natural soil and crushing them to produce a well graded material. Processed material obtained by crushing blasted rock, boulders, and soil should meet the gradation requirements of Ordinary Fill and Structural Fill. Material produced by the crushing operation should be well graded so as to reduce the potential for formation of honeycombs during its placement and compaction.

The reuse of the onsite materials as described in this section should be coordinated with the project environmental engineer.

#### **4.5 Groundwater Control Procedures**

Based on the groundwater levels encountered in our explorations, we anticipate that groundwater control procedures will be needed during removal of the existing fill and for footing and utility excavations. We anticipate that filtered sump pumps installed in pits located at least three feet below the bottom of the excavation may be sufficient to handle surface runoff that may enter the excavation. Please note that due to the presence of boulders in the fill, the fill is anticipated to be pervious. Accordingly, the contractor should be prepared to install multiple deep sump pumps to maintain a dry subgrade. Also, where deep trenches are required for utilities, multiple sump pumps would be required to maintain a dry excavation subgrade.

The contractor should be permitted to employ whatever commonly accepted means and practices as necessary to maintain the groundwater level below the bottom of the excavation, and to maintain a dry excavation during wet weather. Groundwater levels should be maintained at a minimum of 1-foot below the bottom of excavations during construction. Placement of reinforcing steel or concrete in standing water should not be permitted.

Proper permits should be obtained from authorities having jurisdiction over the work. At a minimum, the water collected from excavations should be filtered for fines in sedimentation basins before being discharged. The sedimentation basins could be constructed of hay bales wrapped in a geotextile fabric.

To reduce the potential for sinkholes developing over sump pump pits after the sump pumps are removed, the crushed stone placed in the sump pump pits should be wrapped in a geotextile for separation. Alternatively, the crushed stone should be entirely removed after the sump pump is no longer in use and the sump pump pit should be restored with suitable backfill.

#### **4.6 Temporary Excavations**

All excavations to receive human traffic, including utility trenches, basement or footing excavations, or others (i.e. underground storage tanks, etc.), should be constructed in accordance with the OSHA guidelines.





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The site soils should generally be considered Type “C” and should have a maximum allowable slope of 1.5 Horizontal to 1 Vertical (1.5H:1V) for excavations less than 20 feet deep. Deeper excavations, if needed, should have shoring designed by a professional engineer.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of the excavation sides and bottom.

## **5. RECOMMENDATIONS FOR FUTURE WORK**

We recommend engaging LGCI to perform the following services:

- Perform DD Phase explorations including soil borings and test pits, install groundwater observation wells, and revise our geotechnical report.
- Assist Ai3 in preparing Earth Moving specifications and reviewing the geotechnical aspect of foundation drawings.
- Review the geotechnical aspects of contractor submittals and requests for information (RFIs).
- Provide a field representative during construction to observe the removal of the existing fill, the subgrades of footings, floor slabs, and paved areas, and submit daily field reports documenting our observations and field recommendations.



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## **6. REPORT LIMITATIONS**

Our analysis and recommendations are based on project information provided to us at the time of this report. If changes to the type, size, and location of the proposed structures or to the site grading are made, the recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions and recommendations modified in writing by LGCI. LGCI cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

It is not part of our scope to perform a more detailed site history; therefore, we have not explored for or researched the locations of buried utilities or other structures in the area of the proposed construction. Our scope did not include environmental services or services related to moisture, mold, or other biological contaminants in or around the site.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. We cannot accept responsibility for designs based on recommendations in this report unless we are engaged to 1) make site visits during construction to check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and 2) ascertain that, in general, the work is being performed in compliance with the contract documents.

Our report has been prepared in accordance with generally accepted engineering practices and in accordance with the terms and conditions set forth in our agreement. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of Ai3 Architects, LLC for the specific application to the proposed B.M.C. Durfee High School in Fall River, Massachusetts as conceived at this time.



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## **7. REFERENCES**

The Commonwealth of Massachusetts (2010), “The Massachusetts State Building Code, 780 CMR, Eighth Edition.”

The Department of Labor, Occupational Safety and Health Administration (1989), “Occupational Safety and Health Standards - Excavations; Final Rule,” 20 CFR Part 1926, Subpart P.

Massachusetts Highway Department (1988), “Standard Specifications for Highways and Bridges.”

Massachusetts Highway Department (2013), “Supplemental Specification to the 1988 Standard Specifications for Highways and Bridges.”

USGS – Fall River, MA topographic map from [www.digital-topo-maps.com](http://www.digital-topo-maps.com)



**Table 1 - Summary of LGCI's Borings  
Proposed B.M.C. High School  
Fall River, Massachusetts  
LGCI Project No. 1712**

Boring No.	Ground Surface Elevation (ft.) <sup>1</sup>	Groundwater Depth / El. (ft.) <sup>2</sup>	Bottom of Topsoil/ Subsoil Depth / El. (ft.)	Bottom of Fill Depth / El. (ft.)	Bottom of Sand and Gravel Depth / El. (ft.)	Refusal <sup>3</sup> Depth / El. (ft.)	Bottom of Boring Depth/ El. (ft.)
B-1	154.50	4.9 / 149.6	- / -	6 / <b>148.5</b>	8 / <b>146.5</b>	8 / <b>146.5</b>	15 / <b>139.5</b>
B-2	157.00	5.7 / 151.3	- / -	8 / <b>149.0</b>	- / -	8 / <b>149.0</b>	8 / <b>149.0</b>
B-3	156.50	6.6 / 149.9	- / -	9 / <b>147.5</b>	- / -	9 / <b>147.5</b>	11 / <b>145.5</b>
B-7	158.50	3.1 / 155.4	0.3 / <b>158.2</b>	10 / <b>148.5</b>	17 / <b>141.5</b>	17 / <b>141.5</b>	19 / <b>139.5</b>
B-8	160.50	6.3 / 154.2	0.5 / <b>160.0</b>	10 / <b>150.5</b>	20.6 / <b>139.9</b>	20.6 / <b>139.9</b>	20.6 / <b>139.9</b>
B-9	158.00	2.3 / 155.7	0.5 / <b>157.5</b>	4 / <b>154.0</b>	14.5 / <b>143.5</b>	14.5 / <b>143.5</b>	17.5 / <b>140.5</b>
B-10	156.00	4.2 / 151.8	0.7 / <b>155.3</b>	2 / <b>154.0</b>	18.7 / <b>137.3</b>	18.7 / <b>137.3</b>	18.7 / <b>137.3</b>
B-11	161.00	4.8 / 156.2	0.3 / <b>160.7</b>	10 / <b>151.0</b>	20 / <b>141.0</b>	- / -	20 / <b>141.0</b>
B-12	158.50	4.8 / 153.7	0.3 / <b>158.2</b>	6 / <b>152.5</b>	19 / <b>139.5</b>	19 / <b>139.5</b>	21 / <b>137.5</b>
B-13	160.00	6.1 / 153.9	2 / <b>158.0</b>	4 / <b>156.0</b>	20.1 / <b>139.9</b>	20.1 / <b>139.9</b>	21.1 / <b>138.9</b>

1. The ground surface elevation was interpolated to the nearest 1/2 foot using a drawing titled: "Aerial Mapping Survey B.M.C Durfee High School, Fall River, Massachusetts", provided to LGCI by Pare Corporation via email on July 31, 2017.

2. The groundwater level was measured at end of drilling unless otherwise noted on the boring logs.

3. Bedrock confirmed with a rock core in boring B-1.

**Table 2 - Summary of LGCI's Test Pits  
Proposed B.M.C. High School  
Fall River, Massachusetts  
LGCI Project No. 1712**

Test Pit No.	Ground Surface Elevation (ft.) <sup>1</sup>	Groundwater Depth / El. (ft.) <sup>2</sup>	Bottom of Topsoil/ Subsoil Depth / El. (ft.)	Bottom of Fill <sup>3</sup> Depth / El. (ft.)	Bottom of Sand and Gravel Depth / El. (ft.)	Refusal Depth / El. (ft.)	Bottom of Test Pit Depth/ El. (ft.)
TP-1	161.00	7.3 / 153.7	1.1 / <b>159.9</b>	9.4 / <b>151.6</b>	- / -	- / -	9.4 / <b>151.6</b>
TP-2	161.50	9.3 / 152.2	1.4 / <b>160.1</b>	10.1 / <b>151.4</b>	13.3 / <b>148.2</b>	- / -	13.3 / <b>148.2</b>
TP-3	160.50	10 / 150.5	2 / <b>158.5</b>	4.7 / <b>155.8</b>	10.2 / <b>150.3</b>	10.2 / <b>150.3</b>	10.2 / <b>150.3</b>
TP-4	164.50	6.1 / 158.4	0.9 / <b>163.6</b>	7.1 / <b>157.4</b>	10.5 / <b>154.0</b>	- / -	10.5 / <b>154.0</b>
TP-5	160.00	7 / 153.0	1.3 / <b>158.7</b>	7.7 / <b>152.3</b>	- / -	- / -	7.7 / <b>152.3</b>
TP-6	156.50	10.0 / 146.5	0.9 / <b>155.6</b>	4.8 / <b>151.7</b>	11.5 / <b>145.0</b>	- / -	11.5 / <b>145.0</b>
TP-7	157.00	10.2 / 146.8	1.1 / <b>155.9</b>	- / -	11.9 / <b>145.1</b>	- / -	11.9 / <b>145.1</b>
TP-8	162.50	5.5 / 157.0	0.5 / <b>162.0</b>	6 / <b>156.5</b>	13.5 / <b>149.0</b>	- / -	13.5 / <b>149.0</b>
TP-9	157.50	11 / 146.5	1 / <b>156.5</b>	4 / <b>153.5</b>	11.3 / <b>146.2</b>	- / -	11.3 / <b>146.2</b>
TP-10	157.00	8.8 / 148.2	2.3 / <b>154.7</b>	5.9 / <b>151.1</b>	9 / <b>148.0</b>	- / -	9 / <b>148.0</b>
TP-12	158.00	- / -	1.5 / <b>156.5</b>	10.9 / <b>147.1</b>	13 / <b>145.0</b>	13 / <b>145.0</b>	13 / <b>145.0</b>
TP-13	159.00	- / -	1.1 / <b>157.9</b>	7.1 / <b>151.9</b>	10 / <b>149.0</b>	- / -	10 / <b>149.0</b>
TP-14	154.50	- / -	1.3 / <b>153.2</b>	6.1 / <b>148.4</b>	- / -	6.1 / <b>148.4</b>	6.1 / <b>148.4</b>
TP-16	167.50	9.8 / 157.7	1 / <b>166.5</b>	7.1 / <b>160.4</b>	10.5 / <b>157.0</b>	- / -	10.5 / <b>157.0</b>


1. The ground surface elevation was interpolated to the nearest 1/2 foot using a drawing titled: "Aerial Mapping Survey B.M.C Durfee High School, Fall River, Massachusetts", provided to LGCI by Pare Corporation via email on July 31, 2017.
2. The groundwater level was measured during excavation and may not represent stabilized level.
3. Buried topsoil at bottom of Fill in Test pits TP-2.



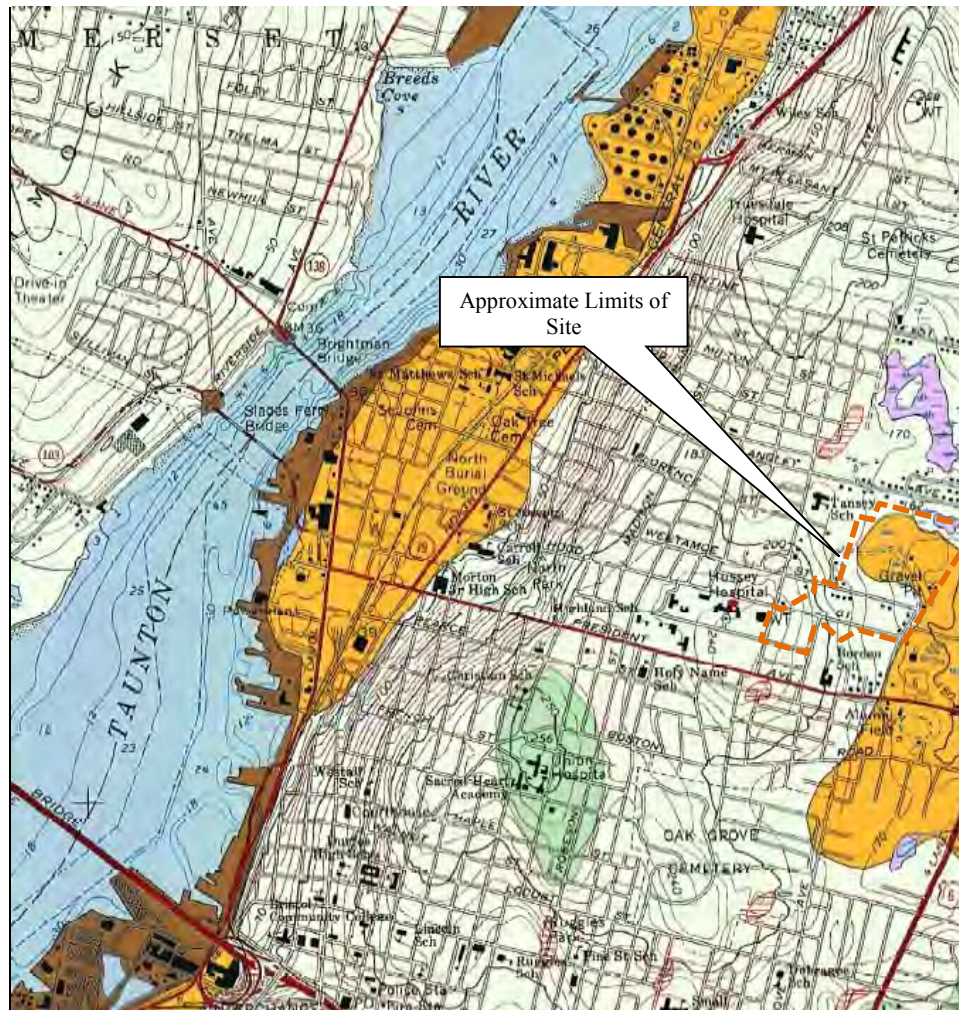


Contour intervals: 3 meters

Figure based on USGS topographic map of Fall River, MA obtained from [www.mytopo.com](http://www.mytopo.com)

Client:	Project:	Figure 1 – Site Location Map	
Ai3 Architects, LLC	Proposed B.M.C. Durfee High School		
 <b>LGCI</b> Lahlaf Geotechnical Consulting, Inc.	Project Location:	LGCI Project No.:	Date:
	Fall River, MA	1712	Oct. 2017






Coarse deposits include gravel deposits composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. Sand and gravel deposits occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range from 35 to 50 percent gravel particles and from 50 to 75 percent sand particles. Layers are well to poorly sorted, bedding may be distorted and faulted due to postdepositional collapse. Sand deposits are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay.



Thin till—Nonsorted, nonstratified matrix of sand, some silt, and little clay containing scattered gravel clasts and few large boulders, predominantly upper till of the last glaciation; loose to moderately compact, generally sandy, commonly stony. Till is mapped where it is generally less than 10 to 15 ft thick including areas of shallow bedrock. Two facies are present in some places: a looser, coarser grained ablation facies, melted out from supraglacial position; and an underlying more compact, finer grained lodgement facies deposited subglacially. Both ablation and lodgement facies of upper till are sandy and stony and are derived from coarse-grained crystalline rocks. Subsurface fill overlies fresh, nonweathered bedrock; this basal till varies in known thickness from ~5 to ~50 ft (Williams and Willey, 1973; Williams and Tasker, 1974; Hansen and Lapham, 1992; Masterson and others, 1997). Till may overlie older Pleistocene deposits locally.



Figure based on map titled: "Surficial Geologic Map of the Norton-Manomet-Westport-Sconticut Neck 23-Quadrangle Area in Southeast Massachusetts," prepared by Stone, B.D., Stone, J.R., DiGiacomo-Cohen, M.L., and Kincare, K.A., for the U.S. Geological Survey (Open-File Report 2006–1260–F, 2011).

Client:	Project:	Figure 2 – Surficial Geologic Map	
Ai3 Architects, LLC	Proposed B.M.C. Durfee High School		
 <b>LGCI</b> Lahlaf Geotechnical Consulting, Inc.	Project Location:	LGCI Project No.:	Date:
	Fall River, MA	1712	Oct. 2017