Table of Contents

1.0 Executive Summary……1
1.1 Introduction……1
1.2 Proposed Project……2
1.2.1 Project Site and Context……2
1.2.2 Project Description……3
1.3 Summary of Project Impacts & Mitigation……4
1.3.1 Urban Design……4
1.3.2 Transportation Impacts……5
1.3.3 Wind……5
1.3.4 Shadow……6
1.3.5 Daylight……6
1.3.6 Solar Glare……6
1.3.7 Air Quality Impacts……6
1.3.8 Noise Impacts……6
1.3.9 Wetlands/Flood Hazard Zones……7
1.3.10 Stormwater Management/Water Quality……7
1.3.11 Solid and Hazardous Materials……7
1.3.12 Geotechnical & Groundwater Impacts……7
1.3.13 Construction Analysis……8
1.3.14 Historic Resources……8
1.3.15 Infrastructure Systems……9

2.0 General Information……10
2.1 Proponent Information……10
2.1.1 Project Proponent……10
2.2.1 Project and Team Information……11
2.2 Public Benefits……13
2.3 Regulatory Controls & Permits……13
2.3.1 Current Zoning and Proposed Uses……13
2.3.2 Zoning and Dimensional Requirements……13
2.3.3 Anticipated Permits and Approvals……15
2.4 Legal Information……16
2.5 Public Review Process……16

3.0 Urban Design Component……18
3.1 Introduction……18
3.2 Site Context……18
3.3 Building Design……18
3.3.1 Design Concept……18
3.3.2 Height and Massing……19
3.3.3 Façade Design, Fenestration, and Building Materials……19
3.4 Site Design……19
3.4.1 Open Space and Landscaped Areas……17
3.4.2 Pedestrian Circulation……18
3.4.3 Parking and Vehicular Circulation……20

3.5 Sustainable Design and Energy Conservation Measures……20
3.5.1 Sustainable Design Strategies……...20
3.6 Urban Design Submission & Project Drawings……... 22

4.0 Environmental Protection Component……23
4.1 Wind……23
4.2 Shadow……23
4.3 Daylight……23
4.4 Solar Glare……..24
4.5 Air Quality Impacts……24
4.6 Noise Impacts…….. 24
4.7 Wetlands/Flood Hazard Zones…….. 25
4.8 Stormwater Management/ Water Quality……26
4.8.1 DEP Stormwater Management Policy Standards…… 26
4.8.2 Mitigation Measures…… 28
4.9 **Geotechnical & Groundwater Impacts……28**
4.9.1 Project Site and Groundwater Impacts…… 28
4.9.2 Groundwater Conditions……...28
4.9.3 Excavation and Foundation Construction…… 29
4.9.4 Probable Project Impact and Mitigation Measures…….. 29
4.10 Solid and Hazardous Materials…… 30
4.10.1 Solid Materials……..30
4.10.2 Hazardous Materials…… 30
4.11 Construction Impacts…… 30
4.11.1 Construction Management Plan……30
4.11.2 Construction Practices…….. 31
4.11.3 Transportation Impacts During Construction……... 32
4.11.4 Construction Air Quality……..33
4.11.5 Construction Noise……33
4.11.6 Rodent Control……..34

5.0 Transportation Component…….... 35
5.1 Introduction……35
5.1.1 Purpose of the Report……35
5.1.2 Project Description……35
5.1.3 Study Methodology……..36
5.1.4 Study Area…… 36
5.2 Existing Transportation Conditions……..36
5.2.1 Roadway Conditions……36
5.2.2 Intersection Conditions……37
5.2.3 Traffic Conditions……39
5.2.4 Existing Traffic Operations……..39
5.2.5 Existing Parking/Curbside Inventory……43
5.2.6 Existing Public Transportation…… 43

5.3 Evaluation of Long Term Traffic Impacts……... 44
5.3.1 No-Build Scenario…… 44
5.3.2 Build Scenario……...47

5.3.2.1 Site Access and Circulation…… 47
5.3.2.2 Trip Generation…….. 47
5.3.2.3 Mode Split…….. 48
5.3.2.4 Trip Distribution……..50
5.3.2.5 Build Traffic Operations…… 50
5.3.2.6 Build Conditions Parking…… 53
5.3.2.7 Build Conditions Public Transportation……..53
5.3.2.8 Pedestrian Access and Operations……..54
5.3.2.9 Bicycle Accommodations……54
5.3.2.10 Loading and Service…….. 54
5.4 Transportation Mitigation Measures……55
5.5 Transportation Demand Management…… 55
5.6 Conclusions……..55

6.0 Historic Resources Component…… 57

7.0 Infrastructure Systems Component……..58
7.1 Introduction……58
7.2 Existing Sewer System……58
7.3 Water System…….. 59
7.4 Storm Drainage System……..60
7.4.1 Existing Storm Drainage System……..60
7.4.2 Proposed Storm Drainage…… 60
7.5 Electric System……61
7.5.1 Existing Electric Systems…… 61
7.5.2 Proposed Electric Connections…..…….. 61
7.6 Telephone System……... 61
7.7 Cable System…….. 61
7.8 Gas/Steam Systems…… 62
7.9 Utility Protection During Construction…… 62

8.0 Coordination with Government Agencies…… 63
8.1 Agency Coordination…… 63

9.0 Project Certification…….. 64

Figures:
Section 5- Transportation
Appendices:
Appendix A- Letter of Intent to File Project Notification Form
Appendix B- Geotechnical Report
Appendix C-1 to C-4- Transportation
Appendix D- Shadow Study
Appendix E- FEMA Map

1.0 Executive Summary

1.1 Introduction

The Project Notification Form is submitted this day of February 15, 2008 in accordance with Article 80 of the Boston Zoning Code. The Proponent, The Seville on Boston Harbor LLC is a Joint Venture of the Lombardo Companies and Global Property Developers Corporation. The Joint Venture is a limited liability corporation formed between a long time East Boston landowner—The Lombardo Companies and Global Property Developers Corporation, its developer. The Proponent will be represented by the Honorable Joseph Tierney Esq.

The Development Team has collaborated on several projects across the State including the Liberty Plaza in East Boston. The site located at 248-270 Meridian Street extends one city block west from Meridian Street to Border Street. The proposed Project is a mixed-use building to be located on site of the old Seville Theater. The Seville Theater will be demolished to make way for the construction of a six-story building, which will accommodate retail/commercial space, as well as 65 one and two bedroom residential condominiums with structured parking.

The site is a 17,841sf urban parcel in East Boston that extends from Meridian Street to the east to Border Street to the west. It is close to Central Square and opposite Liberty Plaza on the Border Street side. It is located in the Overlay Community Commercial District.

The proposed commercial/retail spaces will enhance existing storefronts now active on both streetscapes. Five (5) floors of residential space will be developed above the commercial and retail spaces providing prime new space. Most condominiums will have outstanding views of Boston Harbor, Charlestown Navy Yard, or Logan International Airport.

The privately funded Project represents an investment in the future growth of the Meridian Street Business District. The Project will provide excellent new harbor view residential opportunities for those interested in East Boston's revitalized housing sector.

As a mixed-use redevelopment near the waterfront, the commercial and residential mid-rise Project will reinforce/continue the ongoing modernization of East Boston's new waterfront developments. The new retail/commercial spaces should encourage the community to modernize and upgrade their street fronts. The upscale modern residential component will increase property values and help promote/sustain the area's economic viability.

The Proponent has filed a letter of intent with Boston Redevelopment Authority notifying them that the Project Notification Form will be filed February 15, 2008. The Proponent has started the Large Project review process under Article 80 with the filing of the Letter of Intent. The Proponent has also spoken to city agencies, politicians, the Mayor's Office,

and neighborhood groups per the direction of the BRA and Mayor's Office of Neighborhood Affairs. The Proponent has also held a well-attended open public forum.

1.2 Proposed Project

1.2.1 Project Site and Context

The Project Site is located at 248-270 Meridian Street with commercial/retail storefronts on both Meridian Street and Border Street. The Seville Theater occupies the site, an imposing masonry building built in the late 1920's. It has not functioned as a theatre since the 1980's. The building is currently utilized for limited commercial and retail purposes, comprising two stories on each street front elevation.

The parcel occupies 17,481sf- WARD1, Map 1058, Parcel 5937. It is abutted to the north by City of Boston land, on which the East Boston Library sits. A public stair connects Border and Meridian Streets on the library site close to the northern property line. The stairs traverse the grade differential between gently sloping Meridian Street and relatively level Border Street, an elevation difference of approximately 14 feet. Sidewalks exist on both streets, as do curb cuts for deliveries; (a) Meridian Street via a private alley easement and (b) overhead doors to the theater, previously used for shipping/deliveries.

To the east—the Meridian Street elevation faces retail/commercial mixed-use buildings of older construction with various fenestration types. On the Meridian Street side of the site on the northeast corner there is a private alley that is a light and air easement on this site, which separates the property from 272-274 Meridian Street, owned by Bruce Yochum. The northerly return of this private alley terminates where the adjacent properties converge and the theater's rear wall serves as a two story recorded common party wall to the northerly end of each buildings foundation visible from the public way on the library site.

The southerly elevation of the property is an independent wall system abutted by two commercial and mixed-use properties, one owned by the Lombardo Companies and occupied by Tello's and, the other by Luis Vasco at, 244 Meridian Street. A small alleyway separates those abutter properties at their rear lot lines.

The westerly elevation along Border Street, opposite the Liberty Plaza, is East Boston's economic hub. The westerly boundary of Liberty Plaza is on Boston Harbor and is the primary shopping area for East Boston.

The site is 100% covered by building mass, abutted on two sides by sidewalks and asphalt roads. The site's redevelopment will utilize the entire footprint of the current building parcel.

1.2.2 Project Description

The Project proposes the redevelopment of the site with a mixed-use residential and retail/commercial center. It has two primary street façades, edging Border and Meridian Streets, with a substantial grade difference between the two streets. The new Seville will have two ground level floors providing a range of potential retail and commercial uses. This enhancement should stimulate other new street façade improvements. East Boston Main Street and the Chamber of Commerce have enthusiastically/positively endorsed the revitalization of the Seville Theater site.

As an established neighborhood, East Boston has engaged in several development discussions and many existing property renovations over the last several years. It should be noted that East Boston overall, has lower housing values as compared to other city neighborhoods and also the volume of new construction condominiums in the neighborhood has been significantly less than in other parts of the city. This unique Project therefore, with its prime location, access to the harbor, shopping and the T-bus routes place the Seville in a much sought after location in East Boston. The site provides panoramic views of many of the city's best known attractions/sites: an active Harbor, Downtown, Logan Airport, the Charlestown Navy Yard, Tobin Bridge, Zachim Bridge, the Old North Church, the TD North Garden, etc. The Seville Site is close to Central Square, and is only a four-block walk from Maverick Square's Blue Line and there are also multiple bus line services on its Meridian Street elevation**.**

Table 1-1: Approximate Dimensions

Lot Area (square feet):	17,481 ± SF
Number of Housing Units	
Studio:	4 units
One Bedroom:	38 units
Two-Bedroom:	23 units
Total:	65 units
Total Gross Floor Area	
Parking Levels:	14,640 ± SF
Retail Space:	13,028 ± SF
Residential Housing:	73,899 ± SF
Total:	101,567 ± SF
Building Height:	69'- 6" Feet/ 6 stories
Parking Spaces:	40
Floor Area Ratio:	4.97

1.3 Summary of Project Impacts

1.3.1 Urban Design

Careful consideration has been given to the design of this new mixed use building by the Development Team. The massing of the proposed building is similar to the masonary building it replaces, however the form and multiple facets of the new facades together with a palette of bright, cast/stone and generous fenestration will endow this site with a much needed transformation. The residential units are stepped back on the upper floors to maintain the scale of the local neighborhood. Many of the units will have balconies or terraces with views of the Inner Harbor or Airport. 13% of the units will be affordable and available to households that meet the BRA's affordable housing income limits. The Seville at Boston Harbor is graphically illustrated by ICON architecture with plans, perspectives and photographs (**Figures 3-1** through **3-17**) that are included at the end of Section 3.

The site is located in the Community Commercial District that overlooks Boston Harbor to the west and at higher elevations to the east, the throngs of Logan's airport traffic patterns. The residential units take advantage of these exceptional viewpoints. Further the location of the building with entries provided on both streets, with direct access to north and south bound routes permits easy commercial access.

The proposed mixed-use development will be an investment in an eco-centric area of the city that will benefit greatly from economic stimulation. The concept meets the intent of local zoning and will balance a cadre of site elements needed to provide economic stimulus in the area.

The existing building's massive masonry presence and façades will be replaced with a new structure of similar mass but incorporating a modern architectural vocabulary with traditional materials. This retail/commercial and residential function will create urban energy in a formerly underutilized site overlooking the Harbor and Central Square.

The design of the new structure will blend elements of the existing area and building's masonry character with an architecturally pleasing modern new residential styling. The building's name and orientation will radiate a central theme, Boston Harbor. The schematic elevations submitted for your review reflect a commitment to the future end users. We have integrated neighborhood elements and history and embraced a change for the future of East Boston's harbor front/cityscape.

Design is projected to include maximized views of the harbor, concern for the environment, use of green LEED concept and energystar design, city security and utilization of minimized parking elements.

The Project plan intends to build roughly 74,000sf of residential space and 13,000-14,000sf of commercial- retail/flex space on the site. The Project is planned to

incorporate 40 parking spaces serving residential owners. Many residential owners will enjoy harbor or airport views from decks, either common or for their exclusive use.

1.3.2 Transportation Impacts

Section 5.0 of this PNF provides a transportation study completed recently by Howard/ Stein-Hudson Associates Inc. (HSH). The study was performed to meet the BTD Transportation Access Plan Guidelines (2001).

Transportation issues remain the most discussed issues of any new project. Due to the densities of traffic in the Central Square area the current Project has no significant impact on the area. It is never quite that simple and HSH presents its study for a complete review. The study outlines actual traffic counts at the building as well as proposed new vehicle trips during peak times.

The transportation plan proposed addresses the integration of the revitalized site with its road systems. Improvements, mitigation and justification with existing road systems are presented for review.

Parking as part of the transportation impact review has also been addressed. A parking ratio of 0.7 vehicles per residential market rate unit is proposed. This proposal is consistent with master plan recommendations and meets the LEED process design intent to reduce urban footprint carbon emissions.

Due to the unique parking situation that exists across Border Street at the Liberty Plaza, overflow parking can be addressed without impact to the local on street parking through a licensed sticker system.

The Proponent will explore proactive transportation demand management measures (TDM). The Applicant will consider the use of amenities to encourage and support resident use of mass transit, walking and bicycling in an effort to minimize the Project's carbon footprint.

1.3.3 Wind

The proposed Project is similar in mass and therefore does not significantly modify existing wind patterns established in the 1920s. The redevelopment of the site is projected to mass in a similar fashion along the north, south and west facing elevations. Building height will not exceed 70 feet from average grade, classifying the structure as a mid-rise. The current building's heights range from 50 to 88 feet from the streets, with the main portion of the largest building's flat roof at 80 feet off a street elevation of 19.

There are no hi-rise buildings in the Project's vicinity. Since the Project and its surroundings do not historically create any wind velocities that are dangerous or exceed acceptable levels, the overall wind environment is not expected to change as a result of the Project.

1.3.4 Shadow

The Project shadow profile will remain similar to the historic structures. Shadow lines cast in the afternoon are currently the only ones that effect residential units in mixed-use buildings along Meridian Street. The commercial area is abutted on all sides by two-story street level retail, institutional and some second story retail with village/urban residential at the second through fourth stories of several abutting structures along Meridian. There are no residential abutters along Border Street.

1.3.5 Daylight

No adverse impact from daylight on streets or pedestrian ways is noted, or has been noted from the existing structure into public record. Therefore the proposed building mass and size provides no noted daylight obstruction. The existing structure creates the context for the area. No significant massing change for the proposed building indicates there will be no variation in potential daylight obstructions keeping the Project consistent in its relationship with the commercial mixed-use neighborhood setting,

1.3.6 Solar Glare

No solar glare impacts will result from the Project because traditional building materials are to be considered.

1.3.7 Air Quality Impacts

The proposed Project will not require preparation of a micro scale (carbon monoxide) air quality analysis, because there is no intersection abutting the site. Transportation study information will indicate nearby traffic grids are near impact status and the level of service impacts cannot deteriorate to a 10% impact in traffic. The Project is on two bus routes that stop at Central Square, which is one block away from the site.

Construction air quality impacts will be addressed in the Construction Management Plan.

1.3.8 Noise Impacts

The Project will comply with Mass DEP noise policy and City of Boston noise regulations. The site sits on a 24/7 eco-center one block from Central Square. The noise routinely received includes busses along Meridian, vehicle traffic at Central Square and foot traffic. Logan does not contribute as the flight path patterns are outside this section of East Boston. The Project's traffic and functional uses will require zero known mitigation to meet City of Boston and Mass DEP noise regulations. The Project design will not have any adverse impact on existing sound levels of the surrounding environment. Construction impacts will be addressed in the Construction Management Plan.

1.3.9 Wetlands/Flood Hazard Zones

The existing Project Site is not part of any wetland resource area regulated by the Mass Wetlands Protection Act. No portion of the Project lies within the FEMA flood zones (See Appendix E).

The Project will not require conservation review. It exists on an urban block with no existing flood plane issues and is outside the jurisdiction of the Wetlands Protection Act.

1.3.10 Stormwater Management/Water Quality

The Project will include a Stormwater Management program designed to meet compliance with Boston Water and Sewer Commission (BWSC) requirements. As a mature urban site, demolition drainage of stormwater and construction will include per-treatment prior to discharge into the stormwater municipal system. The Construction Management Plan will include detailed operational procedure to assure no adverse impact to local water quality.

Erosion and sediment control measures during construction will eliminate the transport of on site soils off site. Controls to local catch basins will be inspected and maintained throughout construction until all disturbed areas have been stabilized.

Future building mitigation plans include the use of catch basins with sumps, potentially an oil/water/grease trap, and use of an operations and maintenance plan. Signage will be placed at garage areas once built and where construction work is done bearing the phrase, “Don’t dispose oil – it will drain to Boston Harbor.”

1.3.11 Solid and Hazardous Materials

The Proponent will accommodate recycling measures meeting or exceeding the city’s recycling guidelines. Construction contracts will include specific requirements for contractor compliance with recycling.

The Project Site is not in violation of the Mass Contingency Plan (MCP) and is not listed on the List to Be Investigated, LTBI, nor is it a known RCRA polluter or superfund listed site. Due to the age of the structure, asbestos and PCB light ballasts exist and will be removed prior to any demolition to remain in compliance with the EPA NESHAPS, The Clean Air Act as well as EPA - The Toxic Substance Control Act, (TSCA).

1.3.12 Geotechnical & Groundwater Impacts

Existing subsurface conditions and geotechnical impacts of the Project are detailed in section 4.9, Geotechnical and Groundwater Impacts. Subsurface conditions have been reviewed to the extent possible:

Based on the knowledge of the subsurface soil conditions it is known that the existing structure is a traditional foundation supported on, what appears to be, spread footings. The footings are supported by continuous bearing. Borings indicate compact to dense sand and silt, some gravel with cobbles and boulders under the glacial outwash. New building support needs will substantially mirror those of the existing building and portions of the foundation are tentatively planned to remain.

The groundwater sheds from Meridian Street toward the harbor at levels that are not currently proposed to be disturbed. Discharge to BSW of site storm water should not be required, however if site treatment becomes needed a dewatering permit will be applied for prior to "discharging to the system." No blasting is anticipated for the Project.

1.3.13 Construction Analysis

The Seville on Boston Harbor will be built and staged over a projected sixteen to eighteen (16-18) months. The Construction Management Plan (CMP) will be the center of construction control policy. The CMP is created to safeguard the process through strict adherence to schedule and gaining contractor synergies. As a site with a common party wall, and by being an urban setting, only methodologies that ensure public safety across the site will be accepted. Only general contractors with an ability to show a history of safety on urban settings will be given consideration in contractor selection.

The CMP will be submitted to BTD for review and acknowledgement prior to construction commencement. The CMP will address the following:

1. Safety Policy
2. Schedule
3. Construction worker commuting
4. Construction worker parking
5. Delivery routes for trucks and idling
6. Acceptable delivery schedule times
7. Site dust control—maintenance
8. Staging of materials
9. Impact analysis to abutters with mitigation
10. Control policies for noise, air quality, and storm water (if necessary)

1.3.14 Historic Resources

The Project does not contain historic structures that are listed on the National or State Register of Historic Places, or in the MA Historic Commission's (MHC) Inventory of Historic and Archeological Assets of the Commonwealth.

The abutting, City of Boston property, know as the East Boston Public Library is known as the oldest branch library in the city, per conversations with local abutters. The city and neighborhood civic groups are discussing library options for the future.

The Proponent will confer with the Boston Landmarks Commission regarding the need for filing a Request for Determination of Applicability under Article 85 Demolition Delay of the Boston Zoning Code prior to building demolition.

1.3.15 Infrastructure Systems

Infrastructure systems review of this PNF contains existing information regarding water, sewer, gas, electric and other utilities. Preliminary contact and subsequent research have been initiated with the agencies responsible for the area's utility systems including BWSC to preview the availability of utilities to serve the Project.

The Proponent will submit a site plan and general service application to BWSC for review and approval. In addition, a site preparation plan will be submitted specifying best management measures for protecting the BWSC drainage system during construction. All engineering work for utility connection, including BWSC will continue as design finalization moves forward.

2.0 GENERAL INFORMATION

2.1 Proponent Information

2.1.1 Project Proponent

The proponent for The Seville on Boston Harbor is a joint venture between two family owned and operated companies, Global Property Developers Corporation and The Lombardo Companies. Global has included its history of its lineage under separate section but it provides an overview of our development line of services. The Lombardo Companies, as most know, are long time property owners in East Boston. Founded by Salvatore Lombardo, the Lombardo Companies have owned and operated significant businesses and properties in East Boston for over 60 years. As proud members of the East Boston community, we again look to augment the community by proposing investment in bettering the existing building site and adding new taxable property to the community. The project should add value to the properties surrounding Central Square and bring additional revenues by adding residential buyers and new businesses.

The Callahan Companies and the Lombardo's have a thirty-five, (35) yearlong association. The Lombardo's and Callahan's have built, renovated and developed in multiple locations across the state, but have a long history in East Boston.

The two firm's association includes the renovation, re-construction and development of the Lombardo's properties, including the original Lombardo's Function Facility in East Boston (ballroom, kitchens, bars), Liberty Market, Liberty Plaza, and the newer Lombardo's Function Facility in Randolph. Most recently the East Boston redevelopment of the Plaza included the construction of the Shaw's Supermarket and a realignment of the Plaza's infrastructure.

The Lombardo Companies and Global have also developed together on a grander scale. Ballymeade Country Club and Estates is a thousand acre plus community located in Falmouth on Cape Cod. Together the Callahan and Lombardo Companies completed a golf and housing community, one of the largest private projects built on the Cape. Between the efforts in urban and suburban communities, our teams have a track record for achieving success in real estate development. As a development team, the two firms provide a long time history of working well together and their staffs compliment one another.

For the proposed program, The Lombardo Companies and Global will create a JV and re-develop the old Seville Theater into a Commercial and Residential mixed use structure. The project will bring new retail to Central Square and add new housing to East Boston that better serves current market owners. The new Seville will orient itself toward Boston Harbor and create new life on the under utilized parcel that is so convenient to the eco-center Liberty Plaza and its size will capture and highlight the exceptional views of the Harbor and overlook much of the cityscape and landmarks synonymous to Boston.

We, at Global and The Lombardo Companies are pleased to introduce The Seville on Boston Harbor. Thank you for your consideration.

2.2.1 Project and Team Information

Project Name:	**The Seville Mixed-Use Project**
Location	248-270 Meridian Street; The Seville Theatre, East Boston, MA
Property Owner:	The Lombardo Companies, LLC 6 Billings Street Randolph, MA 02368
Project Proponent:	Global Property Developers Corporation 80 First Street Bridgewater, MA 02324 Tel: 508-697-9300 Fax: 508-697-9206
Architect:	ICON architecture, Inc. 38 Chauncy Street Boston, MA 02111 Tel: 617-451-3333 Fax: 617-451-1328 *Richard O'Dwyer AIA (rodwyer@iconarch.com)* *Kendra Halliwell (khalliwell@iconarch.com)* *Matthew Marotta (mrmarotta@iconarch.com)*
Landscape Architect:	ICON Parks Design
Structural Engineer:	Vietas and Vietas Engineers 639 Granite Avenue Braintree, MA 02184 Tel: 781-843-2863 Fax: 781-849-2065 *Rimas Veitas, P.E. (rimas@veitas.com)*
Transportation Consultant:	Howard/Stein-Hudson Associates, Inc. 38 Chauncy Street, 9th Floor Boston, MA 02111 Tel: 617-482-7080 Fax: 617-482-7417 *Keri Pyke, P.E., PTOE (KPyke@hshassoc.com)*

Legal Counsel:	Joseph M. Tierney Attorney at Law 60 Commercial Wharf Boston, MA 02110 Tel: 617-723-4572 Fax: 617-362-0002
Civil Engineer:	Global Property Developers 80 First Street Bridgewater, MA 02324 Tel: 508-697-9300 Fax: 508-697-9206 *Bob Sanda, P.E.*
Geotechnical Consultant:	McPhail Associates 2269 Massachusetts Avenue Cambridge, MA 02140 Tel: 617-868-1420 *Tom Fennick (tfennick@mcphailgeo.com)*
Estimated Construction Commencement:	1st Quarter 2009
Estimated Construction Completion:	3rd Quarter 2010
Approximate Project Cost:	$15 Million
Status of Project Design:	Schematic

2.2 Public Benefits

Redevelopment of the Seville Theatre site will result in a number of public benefits for the Central Square and East Boston neighborhoods and overall for the City of Boston. These benefits include:

- Converting the underutilized former Seville Theater site into a 24/7 mixed-use building;
- Bring new life to the neighborhood with active retail storefronts on two streets;
- Offering opportunities for affordable housing by creating up to 8 new affordable homeownership units and a total of 65 new housing units in the City of East Boston;
- Promoting a safe 24-hour use on a site that has been underused since the 1980's;
- Creating construction phase employment opportunities, creating new permanent jobs in the retail and management positions upon completion.

2.3 Regulatory Controls and Permits

2.3.1 Current Zoning and Proposed Uses

The Project Site is located in the Central Square Neighborhood Business Subdistrict, and designated Community Commercial Subdistrict (CC) as established under the Boston Zoning Code and as shown on Zoning Map 3A/3B. This subdistrict is intended to provide a diversified commercial environment to serve a large market, and to encourage the development of neighborhood businesses that provide essential goods and services as well as jobs and entrepreneurial opportunities for the community. The Proponent proposes two floors of new retail space accessible from both Meridian Street and Border Street, with multifamily housing above, and parking below, all of which are allowed uses by Article 53, Table B.

2.3.2 Zoning and Dimensional Requirements

The Proponent will seek Board of Appeal relief for a building height variance to authorize the proposed height, which is similar in scale to the existing building. The Proponent may apply for such incidental dimensional and similar relief as may be required to accommodate the design of the improvements developed during the Article 80 process. The proponent will also seek relief for an increase in Floor Area Ratio, as the proposed Project is located in a highly active shopping district and near public transportation. **Table 2-1** presents the zoning data.

Table 2-1: Zoning Table

	Project Dimensional Requirements	Proposed Development
Maximum Floor Area Ratio (FAR):	1	4.97
Maximum Building Height:	35 feet	69'-6"
Minimum Lot Size:	None	17,481 SF
Minimum Usable Open Space/ Square Foot Per Dwelling Unit:	50 SF per unit 3250 SF Total	4430 SF Total (Private Deck Access)
Minimum Lot Frontage:	None	None
Minimum Lot Width:	None	None
Minimum Front Yard Setback:	Coextensive with Street front	Coextensive with Street front
Minimum Side Yard Setback:	None	None
Minimum Rear Yard Setback:	20	Not Applicable
Parking Spaces:	0.7 - 1.25 per dwelling unit [4] 40 - 81 spaces	0.7 per market rate dwelling unit 40 spaces

2.3.3 Anticipated Permits and Approvals

Agency Name	Required Permit or Action
Federal	
U.S. Environmental Protection Agency	NPDES Notice of Intent for Construction
State	
Massachusetts Department of Environmental Protection, Division of Water Pollution Control	Sewer Connection Permit
Massachusetts Department of Environmental Protection, Division of Air Quality Control	Notice of Commencement of Demolition and Construction; Notice of Asbestos Removal
Massachusetts Historical Commission	Determination of No Adverse Impact
Local	
Boston Redevelopment Authority	Article 80 Review and Execution of Related Agreements
Boston Zoning Board of Appeal	Height and Open Space variances
Boston Civic Design Commission	Not Applicable
Boston Landmarks Commission	Article 85 Demolition Delay – Request for Determination of Applicability
Boston Conservation Commission	Not Applicable
Boston Transportation Department	Transportation Access Plan Agreement; Construction Management Plan
Boston Department of Public Works/ Public Improvements Commission	Approval of Specific Repair Plans; Curb Cut and Sidewalk Occupancy Permits
Boston Water and Sewer Commission	Water and Sewer Connection Permit; Drainage Discharge Permit
Boston Department of Inspectional Services	Building Permits; Certificates of Occupancy; Other Construction Related Permits

*This is a preliminary list based on project information currently available. It is possible that not all of these permits or actions will be required, or that additional permits may be needed.

2.4 Legal Information

Legal Judgments or Actions Pending Concerning the Proposed Project

The Proponent is not aware of any legal judgments or other actions pending which involve the development of the Project.

History of Tax Arrears on Property Owned in Boston by the Applicant

The Proponent owns no real estate in Boston on which real estate tax payments are in arrears.

Evidence of Site Control over the Project Area

The Project Site is currently owned by the Proponent. The Site addresses are Numbers 248-270 Meridian Street, 239-245 Border Street, and 221-227 Border Street. The plat information is Ward 1, Map 1058, Parcel 5937.

Nature and Extent of Easements and Agreements

The Project Site is not subject to any easements for public use. The northeast corner of the site, adjacent to the A-1 Hardware store is subject to an Area to be kept open for Light and Air. (Book 4992, Pg 328) Additionally, an Agreement is in effect as a Party Wall Agreement with the owner of the property, Bruce Yochum (Book 4992, Pg 328).

2.5 Public Review Process

Global Property Developers Corporation are working closely with the neighborhood and local organizations to discuss and develop the Project. This effort will include regular meetings with the neighbors and the community at large. Below is a list of the meetings attended by the various members of the Project team in the community.

- November 20, 2007 Preliminary Outreach meeting with community members, local political leaders, and Boston Transportation Department.

  Mayor's Office
  BRA- Acting Director MacCann
  East Boston Chamber of Commerce
  Main Streets
  State Senator Anthony Petrucceli
  State Representative Carlo Basile
  District One City Counselor Salvatore Lamattina
  Mayor's Office of Neighborhood Affairs
  Abutting Neighbors
  Public Meeting

The Proponent has also initiated review with the public agencies, and will continue to outreach to public agencies, elected officials and community groups/interested parties throughout the Article 80 review process. Some of the groups the Proponent will interact with include:

- Boston Redevelopment Authority
- Boston Landmarks Commission
- Boston Transportation Department
- Boston Department of Neighborhood Development
- Boston Environment Department
- Boston Conservation Commission
- Boston Department of Public Works
- Boston Water and Sewer Commission
- Executive Office of Environmental Affairs, Division of Conservation and Recreation

3.0 Urban Component

3.1 Introduction

This section presents the urban design elements of the proposed Project. Plans, perspectives, and photographs are included at the end of this section (see **Figures 3-1** through **3-17**).

3.2 Site Context

The Project Site is bounded on the East by Meridian Street, and to the West by Border Street. To the South, the parcel meets "Tello's" clothing store and "Taco Mania" restaurant. The Site abuts the East Boston Public Library to the North, and shares a party-wall with the back of the property addressed at 272-274 Meridian Street. The lot area is approximately 17,481 square feet, and consists of the underused Seville Theatre, and several storefronts on Meridian Street. Approximately 14 feet of grade differentiates the two public streets.

Located directly across from the Liberty Plaza parking area at Central Square and Shaw's grocery store, the site has views toward Boston's Inner Harbor. On Border Street to the North and beyond the 3-4 story Library are a number of tightly spaced three-and-a-half story multifamily homes, and to the South is the two-story brick Tello's clothing store. Along Meridian Street, the streetscape is made up of primarily three- and four- story masonry and wood-frame buildings, with attractive retail on the ground level.

The nearby MTBA station at Maverick Square is currently being rebuilt, enhancing the transit service for the short ride to downtown Boston, and a number of residential and mixed-use projects are underway or are being evaluated for future use in the East Boston neighborhood. The new Seville will enliven these streetscapes, as well as bring greater activity to Central Square.

3.3 Building Design

3.3.1 Design Concept

The proposed Project has two primary street faces, edging Border and Meridian Streets, with a large grade change between the two streets. The new Seville will have a "ground" and "street level" commercial floor, providing a range of potential retail uses. These two floor plans are shown with their street context in **Figures 3-6 and 3-7**. The Project commercially will provide a mix of uses, with the two levels of retail, and 65 residential units above. The lobby will be accessible from both street levels and serve as a marketing feature.

3.3.2 Height and Massing

The overall massing strategy for the proposed Project is to maintain the sidewalk/street edge and to step back on the upper floors to maximize upper level views.

The proposed Project will approximately match the height of the tallest section of the existing Seville Theatre building. Facing Border Street, the building façade will rise commercially with a portion of the façade at a two story height. The residential stories of the building will step back significantly from the street, in three vertical segments on the southeast corner. The sixth floor will also be set back from the street, creating outdoor space for the residents (Figure 3-12).

Along Meridian Street, the majority of the building will read as a four story building; the two uppermost floors will be set back approximately eight feet from the sidewalk edge. While the significant setback on Border Street maximizes views, on Meridian Street, the northern corner is held at one story to minimize the new building's impact on the abutter (Figure 3-15).

3.3.3 Façade Design, Fenestration, and Building Materials

The architectural character and use of materials on the new Seville will create an elegant addition to the neighborhood. The building will be primarily masonry on the facades of the lower floors, while the top levels will include a proposed composite metal panel system.

Cast stone bands are planned to delineate a strong base to distinguish the retail levels from the residential above, with proposed inset cast/stone banding and exterior lighting to add scale and interest between storefront windows. The retail spaces will be further highlighted on the Border Street elevation with vertically connected fenestration and a signage band between the two retail levels, while on the Meridian Street elevation, the single story storefronts will be heightened with signage bands above the windows. The northern façade will have inset balconies of glass and metal, and the masonry on each side will have cast stone banding and decorative brick detailing.

The top two floors will be a light-colored metal panel system, resting on a cast stone cap which wraps the proposed building.

3.4 Site Design

The Project Site is bounded by existing streets on two sides (Meridian and Border Streets), the East Boston Public Library to the Northwest, the multi-use building at the Northeast, and retail buildings to the South. The proposed Project will be built to existing lot lines on all sides, except for respecting the Light and Air Easement near the multi-use building. Various pedestrian entrances for both residents and retail users will increase activity and safety at the street level.

3.4.1 Open Space and Landscaped Areas

This Project Site has a natural amenity based on its proximity to the Boston Harbor and the East Boston Harborwalk. Many of the residences will have gracious decks or patios.

3.4.2 Pedestrian Circulation

The Proposed building design, program, and scale will enhance pedestrian activity on the Project Site. Residential and several retail entrances will be on both Meridian and Border Streets. Pedestrian activity on the site will add a sense of security to the neighborhood and increase the "eyes" on the street.

3.4.3 Parking and Vehicular Circulation

The Project Site is located one block away from Central Square. The new Border Street retail spaces will be directly across the street from the Liberty Plaza, the Shaw's grocery store and parking at Liberty Plaza. Both Meridian and Border Streets allow two-way vehicle traffic. Retail parking will be on-street only. Residential vehicular traffic will enter the building via an entrance at each face of the building. On Border Street traffic will ramp into the parking levels. Overall, the proposed parking ratio will be 0.7 parking spaces per market rate residential unit, with 40 spaces in two below-grade levels.

Trash from the proposed Project will be collected and compacted in an enclosed trash and recycling room within the parking area of the building, and will be rolled out to Boarder Street for pickup. This procedure mirrors the operational process in place for the building.

3.5 Sustainable Design and Energy-Conservation Measures

3.5.1 Sustainable Design Strategies

The Project will meet the City of Boston's Rule 37 Green design requirements.

The Project will be replacing an underused building transitioning Meridian and Border Streets, commercial district. ICON's design fulfills several goals of smart growth strategy by providing a range of housing options (both by type and price); creating a cohesive design that incorporates efficient unit layouts with pedestrian and transportation convenient site. The Proponent is proposing the formation of a condominium association to ensure the future viability of the Project; and offering a financially feasible high-quality residential community to replace the existing structure in an existing mixed-use neighborhood. Specific strategies promoting sustainability and energy-conservation include:

- Creating a Range of Housing Opportunities and Choices: The Project offers homeownership opportunities offered at diverse price levels.

- Fostering Distinctive, Attractive Communities with a Strong Sense of Place: The design of the Project is cohesive and creates an overarching identity for the new section of the neighborhood.
- Strengthening and Directing Development Towards Existing Communities: The Project proposes the redevelopment and elimination of an underused building, and new construction of a residential development that will provide public commercial amenities to the whole neighborhood.
- Providing Compact Building Design: The Project offers efficient unit layouts at minimal footprint with amenities that correspond to those offered by conventional typologies.

Energy-Efficient Measures and Practices

Global and its design team are considering a broad range of green and sustainable features for the Project. The Proponent has been actively following the development of the Leadership in Energy & Environmental Design ("LEED$^{R"}$) green building rating system. In addition, the Proponent intends to meet Rule 37 targets for the energy-efficiency of the proposed new buildings to the greatest extent possible.

Specific characteristics of the Project and suggested measures are briefly listed below. In some of these areas, the Project will commit to the incorporation of the noted green features. In others, it is anticipated that the team will implement an integrated design process to fully evaluate and explore the feasibility of the proposed measures.

Siting and Land Use Issues

- Location close to shopping and public transportation
- Urban infill
- Previously built site
- Pedestrian-friendly
- Bicycle storage
- Low impact development techniques for storm water management
- Erosion control during development

Building Design

- Day lighting
- Siting to take advantage of solar gain
- Quality/Durability
- Moisture control on slabs, footings
- Extended life roof
- Effective flashing
- Energy efficient windows
- Non-wood exterior doors

Energy Use

- Energy Star^{R} threshold
- Low-e glass
- Energy Star^{R} lighting and appliances
- Energy efficiency, tight building envelope, alternative HVAC

Healthy Home

- Low- or no VOC paints and adhesives
- Outside vents for combusting appliances
- Carbon Monoxide (CO) detectors
- Vapor retarder under slab
- Low VOC sheet goods
- Minimal carpet

3.6 Urban Design Submission and Project Drawings

Figures 3-1 through **3-17** more fully illustrate the Urban Design narrative and include the following figures and photographs:

Figure 3-1 Locus Map
Figure 3-2 Context Photos
Figure 3-3 Existing Building Photos
Figure 3-4 Site Plan – Border Street
Figure 3-5 Site Plan – Meridian Street
Figure 3-6 Lower Ground Floor Plan – Border Street
Figure 3-7 Ground Floor Plan – Meridian Street
Figure 3-8 Second Floor Plan
Figure 3-9 Third Floor Plan
Figure 3-10 Fourth Floor Plan
Figure 3-11 Fifth Floor Plan
Figure 3-12 Sixth Floor Plan
Figure 3-13 Border Street Looking North
Figure 3-14 Border Street Looking South
Figure 3-15 Meridian Street Looking South
Figure 3-16 Meridian Street Looking North
Figure 3-17 Existing/Proposed Height Comparison

4.0 Environmental Protection Component

4.1 Wind

The Project is not expected to create adverse wind impacts on adjacent buildings, open space or pedestrian areas since the current building mass is in similar form. The current building has been in place since the late 1920's.

No high-rise buildings exist in proximity to the Project that create wind velocities exceeding BRA guidelines at or on an effective 31 mph gust. Overall, the wind environment in this East Boston location is not expected to have a significant impact as a result of the modification of the Seville site.

4.2 Shadow

As is typically required by the BRA, a shadow impact analysis was conducted to investigate shadow impacts from the proposed project. The study tracked the sun and resulting shadow during three time periods (9:00 AM, 12:00 noon and 3 PM) during the vernal equinox (March 21), summer solstice (June 21), autumnal equinox (September 21) and the winter solstice (December 21). In addition, shadow studies were conducted for the 6:00 PM time period during the summer solstice and autumnal equinox.

The shadow analysis presents net new shadow from the building, as well as existing shadows and illustrates the incremental impact of the project (see Appendix D). The analysis focuses on the public spaces and major pedestrian areas adjacent to and in the vicinity of the site.

The site is oriented between Border and Meridian Street, which both run on a North-South axis. In the morning the shadow will remain relatively similar to the one cast by the existing Seville Theater. The proposed building will create very little new shadow on the Shaw's supermarket across Border St to the West. The new building will also cast less shadow than the existing building in the South-West corner sidewalk due to the stepping-back of the proposed building. The shadow cast during the middle of the day is almost exactly the same due to the similar mass and proportion on the Northern side of the proposed and existing buildings. As the sun comes around into the evening sunset the amount of new shadow cast increases, but mostly is a combined shadow that would have previously been cast by existing buildings.

Overall the additional shadow cast by the proposed building is negligible and will not affect the surrounding buildings in an adverse manner.

4.3 Daylight

No adverse impact from the Seville exits from daylight obstruction on streets or pedestrian ways. The Proposed Seville Project is modeled not to have daylight impact on its neighbors. Design set backs of the top two floors, per preliminary BRA discussion,

maintain the general perception and feel of the current environment and building's massing. The Project's height and massing are consistent and slightly higher than the current structure. Its general context will not change.

4.4 Solar Glare

No solar glare impacts will result from the Project. Traditional building materials are proposed for the building. No highly reflective glass materials are planned for the residential floors.

4.5 Air Quality Impacts

The Project does not require a micro scale air quality analysis. Project traffic projections do not impact existing car counts causing a 10% increase to traffic. The Project is on two bus routes that run into Central Square.

4.6 Noise Impacts

The acoustic levels found in an urban environment typically result from sounds generated by motor vehicle traffic on local roadways. MBTA commuter trains and busses as well as surrounding building mechanical systems will contribute to acoustic levels. Attached is a common table of sound and decibel levels that one finds around the city.

DEP policy addresses noise as an air pollution control issue. The DEP DAQC Policy Statement interprets a violation to have occurred if an increase of 10 dBA above ambient levels occurs. The DEP does not regulate noise from motor vehicles and only applies the policy to sources of generation following construction of the proposed project.

City of Boston Environmental Department regulates noise through their Air Pollution Control Commission. The Project will be located in a mixed-use, community commercial zone. The primary use of the area, by square footage, is commercial followed closely by residential. The attached table outlines noise levels for Residential Zoning Districts. Primary zoning and ambient area backgrounds find noise levels that occasionally surpass those of the maximum allowable amount during activity in daytime hours. Nighttime hours tend to see significant reductions and fall within the guidelines for residential zoning districts.

The Project will comply with regulation 2.2 for noise levels in evening and parts of the daytime for Residential Zoning Districts. The Projects mechanical equipments impacts will be the only added sounds to ambient noise levels of the surrounding mixed-use commercial area. The major additions will have no significant source impact to the surrounding conditions. Individually, small heating package units and 1-3 ton AC unit condensers are generally not considered in sound level impact analysis.

Small equipment located on roofs at Meridian elevation 2 and building rooftops are anticipated to be equipment with low noise design. Emergency Generator Equipment is

only anticipated if sprinkler system design requires a fire pump. It will be housed inside the buildings parking area and vented to the exterior. Operational restrictions will be programmed for the automatic tests of the Emergency Generator so it is not an atmospheric contributor to noise. Mechanical exhaust equipment for the parking system will be treated similarly.

Projected mechanical equipment on the second story roof when added, should total well under 30 decibels when running simultaneously, which is the worst-case scenario. Noise impacts are therefore predicted to be insignificant to background urban levels.

Predicted increases in sound levels during the day generally fall well below City of Boston and Mass DEP Regulations. Anticipating full loads of mechanical equipments a net increase should not exceed 4 dBA, which leaves levels well below the 50 dBA maximum sounds level to assure compliance with DEP/Boston sound metrics – maximum sound levels.

The Proponent anticipates through the choice of mechanical equipment and its placement that the standards for sound levels will not exceed City of Boston and DEP noise policies. Projections from equipment suppliers indicated the placement of mechanical sound levels will keep outputs of the project well below threshold noise regulations for maximum sound levels.

Table 1-2 Maximum Allowable Sound Pressure Levels (dB) City of Boston

	Residential Zoning District	
Octave Band (Hz)	**(Daytime)**	**(All Other Times)**
32 Hz	76	68
63 Hz	75	67
125 Hz	69	61
250 Hz	62	52
500 Hz	56	46
1000 Hz	50	40
2000 Hz	45	33
4000 Hz	40	28
8000 Hz	38	26
Broadband (dBA)	**60**	**50**

4.7 Wetlands/Flood Hazard Zones

The Seville site slopes naturally from Meridian Street towards Boston Harbor. The Seville property does not have any wetlands and falls outside the FEMA Coastal and Flood Plain Management bounds. Since the site abuts The Liberty Plaza, which is at the edge of Boston Harbor, its tidal variations are well catalogued. While final engineering will determine process, standard erosion and sedimentation control measures will be

utilized during earthwork and construction phases of the project to minimize impact on local streets and the abutting properties.

4.8 Stormwater Management

The project will not affect the water quality of any nearby water bodies. The project will include a Construction Stormwater Management Program and mitigation measures during demolition and construction.

4.8.1 DEP Stormwater Management Policy Standards

A Stormwater Management Policy to address non-point source pollution will be developed for the site prior to construction. The project will incorporate Best Management Practices (BMP) to satisfy the DEP's Stormwater Management Standards. The plan will address no net runoff from the site. The site does not have any wetlands and will utilize the existing buildings stormwater runoff capacity.

Project Design Addresses DEP Stormwater Policy

Standard #1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly or cause erosion in wetlands or waters of the Commonwealth.

Compliance-

No new untreated stormwater will be discharged to wetlands or waters of the Commonwealth as a result of the project.

Standard #2: Stormwater Management Systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

Compliance-

The site is an urban one that essentially has a 100% impervious surface. No net increase in peak discharge rate is anticipated.

Standard #3: Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site should approximate the annual recharge from the pre-development or existing site condition(s), based on soil types.

Compliance-

No net increase in impervious surface will be generated for the Project Site. Site geotechnical data indicates urban fill, silts, cobbles, and some sandy silts.

Standard #4: For new development, Stormwater Management Systems must be designed to remove 80% of the average annual load (post-development conditions) of totally suspended solids, (TSS). It is presumed that this standard is met when:

- *Suitable non-structural practices for source control and pollution prevention are implemented;*
- *Stormwater management best practice (BMPs) are sized to capture the prescribed runoff volume; and*
- *Stormwater management BMPs are maintained as designed.*

Compliance-

The site redevelopment starts with a 100% impervious cover. BMP will be maintained.

Standard #5: Stormwater discharges from areas with potential pollutant loads require the use of specific stormwater management BMPs, (see chart). The use of infiltration practices without pretreatment is prohibited.

Compliance-

The site is 100% impervious to begin and not considered a source of higher potential pollutant load.

Standard #6: Stormwater discharge to critical areas must utilize certain stormwater BMP approved for critical areas. Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.

Compliance-

The project is not within a critical area, nor will discharge be released to a critical area.

Standard #7: Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all standards, new Stormwater Management Systems must be designed to improve existing conditions.

Compliance-

The Seville is considered a redevelopment project. The project will meet the standards to the maximum extent practicable.

Standard #8: Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.

Compliance-

The BMP will be implemented during construction to minimize adverse environmental effects. Controls such as hay bales, trap rock, silt fence and catch basin fabrics will be utilized along the site perimeter and at catch basins.

Standard #9: A long term BMP operation and maintenance plan is required to ensure proper functioning of the SWM.

Compliance-

Final system management of installed equipment used will include the BMP operation and maintenance plan should it be required.

4.8.2 Mitigation Measures

The Stormwater Management System will be comprised of standard drainage structures outside the building. The parking entries and internal parking areas are subject to receiving non-point source pollutants such as paved way urban pollutants, or construction oriented pollutant runoffs.

Several BMPs could be implemented, however the Project Site does not impact wetlands and will continue to utilize relief in the city stormwater system. Mitigation measures anticipated for the parking garage will follow BMP.

4.9 Geotechnical and Groundwater Impacts

4.9.1 Project Site and Groundwater Impacts

Based on the data collected from 4 soil borings subsurface conditions at the Project Site, please see the attached descriptions of consistent conditions.

- Fill- The Project Site is underlain with a thin layer of 4 to 5 feet of fill.
- Subsoil- Below the fill lies natural, compact to dense glacial outwash varying from sand, some gravel, and trace silt to a sand and gravel.
- Glacial Till-Glacial till consisting of a dense to very dense sand and silt, some gravel, with cobbles and boulders was encountered at depths ranging from 30-43 feet below existing ground surface, under the glacial outwash deposits.

4.9.2 Groundwater Conditions

Groundwater was encountered at depths ranging from 15/16’ off Meridian Street and 10/13’ off Border Street.

4.9.3 Excavation and Foundation Construction

Soil boring logs and strategic graphic cross sections are attached. Geotechnical Engineers indicated the outwash deposit is well suited for a spread footing foundation system.

Report/Logs indicate current foundation and footings should be above the water table and proposed new foundations are designed to continue that design option.

The design team has been directed to avoid water table impact and minimize excavation by utilizing existing foundations as retaining walls where possible.

A spread footing foundation system will allow a slab on grade basement parking level floor without need for uplift groundwater engineering. An under slab gravity relief system will be used to protect slabs from intrusion.

Foundation and utility excavations for the proposed construction should not require dewatering. However should it be required for short-term periods, sumps and excavation pits on site will be used. BWSC requires a construction-dewatering permit should use of their system be necessary. It is also not anticipated that a permit will be required for the project from the Massachusetts Water Resource Authority for construction dewatering. No blasting of bedrock is anticipated; (Commonwealth of MA regulation 57).

4.9.4 Probable Project Impact and Mitigation Measures

The Seville buildings are abutted on two sides by Meridian and Border Streets. Along the Seville's north elevation the property abuts the City of Boston's East Boston Public Library. The buildings are separated by open space of approximately 40 feet, building to building. No adverse impact is expected on it or utilities to it.

On the direct north, another abutter exists. The mixed-use house is addressed at 272-274 Meridian Street and owned by Mr. Bruce Yochum. Approximately 62 feet 44 inches east from the Border Street property corner, running on a North-South line, a common party wall exists as a property line. The wall is by record the original wall of the Seville. The project recognizes the challenges with new construction. The project intends to minimize the impact with the abutter during the new construction. Project plans do not include any structural disturbance of the existing wall. Visual impacts and fenestration applications to the wall may be required. Some decorative adaptive measures at high elevations are anticipated.

On the south elevation, the Seville buildings have two abutters. A two story commercial structure with alley that is owned by like ownership and off Meridian Street by a mixed-use 3-story structure. The ownership is by Luis Vasco. He purchased the 3 story wooden structure, which stands independent of the Seville. No adverse impacts are expected on either structure or the utilities that run to them.

4.10 Solid and Hazardous Materials

4.10.1 Solid Materials

The Seville buildings occupy space and configuration that will require safety oriented urban deconstruction. Project estimates to date provide for internal site demolition by section, with external yard recycling and staging. The key exterior component of both buildings is masonry. Other internal construction materials exist, but volumetric analysis indicates 65-70% of all materials removed from the site will be masonry based. Private waste and recycling management will be the responsibility of the demolition contractor. Their contractual responsibility will include meeting the DEP solid construction waste target, and integrating the city and developers recycling goals into the site's waste management program.

4.10.2 Hazardous Materials

The Project Site is not currently a generator of hazardous materials. Preliminary review of the site indicates it is not on the USEPA CERCLA lists of superfund sites or the DEP Massachusetts Contingency Plan, (MCP) list of sites to be investigated.

Available historical and surficial evidence doesn't recognize any above surface environmental condition that would result in the presence of hazardous materials at this site. Residual fuel oil may be present in active heating equipment and some grease and solvents may be active in the shop area of the buildings. Based on the age of the theater it is known to have building materials containing asbestos. All ACBM materials will be identified and removed prior to demolition in accordance with EPA NESHAPS and MA DEP policy.

4.11 Construction Impacts

The Proponent will employ a construction manager that will be responsible for the development of a construction program. The construction program will include phasing, staging, coordination, safety and regulatory sub programs to manage the project.

4.11.1 Construction Management Plan

A Construction Management Plan will be developed that outlines project phasing, sequence hours of operation, regulatory compliance and documentation requirements, BTD and BINS policy compliance, staging and safety policy. The Proponent will contractually bind its construction manager and their contractors to work to the intent of the project manual. Construction Management Plan methodologies and safety policy will clearly define the communication process listing contacts, signage and emergency 24/7 contact information.

The Proponent recognizes that City of Boston code ordinance 16-26.4 allows construction from 7am to 6pm Monday through Friday. If work is proposed outside those

hours, the Boston Air Pollution Control Commissioner will be notified at the time a permit is sought from the Commissioner of Inspectional Services Department.

Preliminary estimates on project start and completion are 18 months for a single phased construction.

4.11.2 Construction Practices

Building Demolition

Demolition will take place with multiple technologies in sections as the building is disassembled inbound to facilitate safety to the urban environment. Most work will be done by crane and excavator with debris loaded to trucks for removal. Demolition materials will be loaded and removed via Border Street. It is expected the Project Site will be wetted down during the deconstruction and as per regulation during debris removal to help control dust. Prior to leaving the Project Site, trucks will cover their loads in order to prevent materials from being lost. If feasible, much of the masonry materials in the existing buildings will be recycled.

Asbestos-containing materials will be removed from the existing buildings by a Massachusetts licensed asbestos abatement contractor and disposed of as required by law prior to demolition.

Perimeter Protection/Public Safety

The CMP will describe barrier placements and/or fencing, any necessary sidewalk closures, and other measures deemed necessary to ensure safety around the site perimeter. The nearby area sidewalks are expected to remain open to pedestrian traffic during the construction period. Barricades and secure fencing will be used to isolate construction areas from pedestrian activity

Construction Staging Areas

The Contractor will maintain a safe environment for both pedestrians and passing vehicles. Staging is expected to occur on the Project Site above the fencing. All construction activity will be kept within the designated areas approved by the Construction Management Plan. There will be no stockpiling of fill, equipment or materials, overnight or on weekends on public property or public ways unless prior approval is granted through permitting for utility upgrades and repairs.

Best Management Practices

During construction, Best Management Practices for the control of erosion and the discharge of sediment will be followed. Typically this will include the use of filter fabrics around slopes and catch basins, stabilization of all slopes, the use of trap rock for

construction vehicles entering and leaving the site, and mechanical street sweeping as necessary at the Project Site.

During the design and permitting process for the Project guidelines and specific measures will be developed to ensure that during construction mitigation of sediments off of the site is minimized or eliminated. Project specifications and plans will be developed during this phase that will indicate and detail control measures and standards. Prior to the start of construction a detailed Stormwater Pollution Prevention Plan (SWPPP) will be developed. The SWPPP will include detailed site specific measures to be followed during construction including: use restrictions for impact areas of the site and the standards to be met.

Recycling of Construction and Demolition Debris

The Proponent will take an active role with regard to the reprocessing and recycling of construction waste. Construction procedures will allow for the segregation, reprocessing, reuse, and recycling of materials or donation to the Building Materials Resource Center, where feasible. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility, per DEP's Regulations for Solid Waste Facilities, 310 CMR 19.00. This requirement will be specified in the disposal contract.

4.11.3 Transportation Impacts During Construction

Construction Vehicles and Routes

Trucks will be required to deliver supplies to the Project Site or its designated staging area. The volume of trucks will be heavier during the site preparation and foundation phase. The Construction Management Plan will prohibit greater than 5 minute vehicle idling; it will be strictly controlled in accordance with Commonwealth of Massachusetts law. Concrete pours and certain large volume deliveries will be the only known exceptions at this time.

Specific truck routes will be established and made known to BTD through the CMP. Construction contracts will include clauses restricting truck travel to routes established. Maps showing approved truck routes will be provided to all suppliers, contractors, and sub-contractors by the Construction Manager.

These established truck routes will prohibit travel on streets that penetrate any area deemed sensitive to truck travel by BTD during planning. The Proponent will direct all construction vehicles, delivery trucks, and employee vehicles to access and egress. The Project Site will allow parking at the Liberty Plaza, and staging of some materials will also occur there.

Construction Worker Access and Parking

It is anticipated that all construction workers will arrive and depart prior to peak traffic periods. Limited parking in designated areas at the Liberty Plaza abutting the Project Site will serve also as a lay down area. Parking will be discouraged or prohibited in the immediate neighborhood side streets. Public transit use will be encouraged with the Proponent and Construction Manager working aggressively to ensure the construction workers are informed of the public transportation options serving the area. Space will be made available for workers' supplies and tools to be securely stored on-site once construction begins so that workers will not have to transport them on a daily basis, further allowing workers to commute via public transit.

4.11.4 Construction Air Quality

The generation of dust occurs from construction activities. The following measures will be employed to reduce potential generation of dust and airborne particles:

- Wetting agents will be used regularly to control and suppress dust that may come from the construction materials and from demolition;
- All trucks for transportation of construction debris will be fully covered;
- Storage of construction debris on site will be kept to a minimum;
- Actual construction practices will be monitored to ensure those unnecessary transfers and mechanical disturbances of loose materials are minimized and to ensure that emissions of dust are negligible; and
- To minimize dust and mud accumulations in city streets periodic sweeping may be utilized to maintain an acceptable street/sidewalk condition.

4.11.5 Construction Noise

Every reasonable effort will be made to minimize the noise impact of construction activities. Mitigation measures will include:

- Scheduling of work during daytime hours;
- Using appropriate mufflers on equipment and providing ongoing maintenance of any intake and exhaust mufflers;
- Maintaining muffling enclosures on continuously operating equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques by less noisy ones where feasible- e.g. using vibration pile driving instead of impact driving if practical;
- Selecting the quietest practical items of equipment- e.g., electric instead of diesel powered equipment;
- Selecting equipment operations to keep average levels low, to synchronize noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;

- Turn off idle equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

4.11.6 Rodent Control

The City of Boston has declared that the infestation of rodents is a serious problem in the community. In order to control this infestation, the city enforces requirements established under the Massachusetts State Sanitary Code, Chapter 11, 105 CMA 410.550 and the State Building Code, Section 108.6 Policy number 87-4 established that extermination of rodents shall be required for issuance of permits of demolition, excavation, foundation, and basement rehabilitation.

The first construction activity prior to demolition will be to treat the existing buildings and surrounding areas for rodent activity. A formal rodent control program will be established prior to the start of demolition, and all areas of the Project will be treated to comply with all city and regulatory requirements.

5.0 Transportation Component

5.1 Introduction

The Project site is located in the East Boston neighborhood of Boston and is bounded to the north by the East Boston Public Library, to the east by Meridian Street, to the south by retail, and to the west by Border Street (see **Figure 1).** This section of the Project Notification Form (PNF) details the transportation conditions around the site for the Existing, No-Build, and Build conditions.

5.1.1 Purpose of the Report

This study was commissioned by the Proponent in an effort to meet the requirements of the Boston Redevelopment Authority (BRA) and in accordance with the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* (2001). The study team conducted a transportation analysis for the proposed Project that includes the following:

- Definition and presentation of existing traffic, including roadway capacities, parking, transit, pedestrian circulation, loading, and overall Project site conditions.
- An evaluation of the Project's long-term impacts on traffic, including roadway capacities, parking, transit, pedestrian circulation, loading, and overall Project site conditions.
- An evaluation of the Project's short-term traffic impacts related to construction activity.
- Identification of appropriate measures to mitigate Project impacts, including but not limited to roadway improvements, pedestrian amenities, a transportation demand management program, and participation in Transportation Management Associations.

5.1.2 Project Description

The proposed Project involves construction of a new structure consisting of approximately 65 residential condominium units and approximately 14,000 square feet of ground-floor retail space. Resident parking for 40 vehicles will be provided on-site in a garage. The proposed building will replace the existing Seville Theater building, formerly used as office, retail, and theater.

The transportation study evaluates the transportation impacts resulting from the proposed structure consisting of approximately 65 residential condominium units, approximately 15,000 square feet of retail space, and 40 parking spaces for residential use.

5.1.3 Study Methodology

This section describes the transportation components of the proposed Project in accordance with BTD *Transportation Access Plan Guidelines* (2001). The transportation study was conducted in three parts. The first constitutes an inventory of existing transportation conditions, including roadway capacities, parking, transit, pedestrian, circulation, loading, and site conditions. The second evaluates future transportation conditions and assesses potential traffic impacts associated with the Project. Long-term impacts were evaluated for the year 2012, five years from when the data collection and analysis were conducted. Expected roadway, parking, transit, pedestrian, and loading capacities and deficiencies were identified. This section of the transportation impact study includes the following scenarios:

- A No-Build Scenario, including general background growth;
- A Build Scenario, including specific travel demand forecasts for the Project at the site; and
- An evaluation of short-term traffic impacts associated with construction activity.

The final section of this transportation impact study evaluates the findings to determine whether there are any issues that require mitigation.

5.1.4 Study Area

The study area is generally bounded by Central Square to the north and south, Meridian Street to the east, and Border Street to the west. The study area, shown in **Figure 2,** includes the following six intersections:

- Meridian Street/Saratoga Street/Central Square;
- Porter Street/Bennington Street/Central Square;
- Liverpool Street/Central Square/Meridian Street;
- Border Street (South)/Liberty Plaza Driveway (South)/Central Square;
- Border Street (North)/Central Square; and
- Liberty Plaza Driveway (North)/Border Street.

5.2 Existing Transportation Conditions

5.2.1 Roadway Conditions

The study area includes the following roadways, which are categorized according to Massachusetts Executive Office of Transportation Office of Transportation Planning (EOT-OTP) functional classifications:

Meridian Street, an urban minor arterial, runs north from Maverick Square to the Andrew P. McArdle Bridge. Parking is allowed on both sides of Meridian Street in the vicinity of the site. The majority of parking on Meridian Street is unrestricted parking.

Saratoga Street, a local street, runs one-way westbound in the vicinity of the site and terminates at Central Square. Unrestricted and 2-hour parking is allowed on both sides of the street throughout the study area.

Central Square, an urban minor arterial, constitutes the roadway that encircles the public park in the center of the Square. Central Square has several areas of both parallel and head-in on-street parking. Travel is provided in both directions and includes several channelized turns to and from the surrounding streets.

Porter Street is a two-way urban minor arterial in the vicinity of the site, running southeast from Central Square to the entrance of the Sumner Tunnel, which carries the East Boston Expressway into downtown Boston. Along the block between Central Square and London Street, the eastbound and westbound sides of Porter Street are separated by a median, with parking allowed parallel to the direction of travel on both the curb and the median sides of the travel lanes. Within the study area, a mixture of 2-hour, unrestricted, and handicapped parking is provided on Porter Street.

Bennington Street, an urban minor arterial, runs eastward from the intersection with Meridian and Porter Streets near the site in Central Square. Parking is permitted in both directions and is generally unrestricted.

Liverpool Street, a local road, begins at Maverick Street and terminates at Central Square. In the vicinity of the site, unrestricted parking is permitted on both sides of Liverpool Street.

Border Street is a minor urban arterial south of Central Square and a local road north of Central Square. The street runs along the waterfront from Maverick Street to the south, past the site, to Condor Street to the north. Unrestricted parking is available on both sides of the street in the vicinity of the site.

Liberty Plaza Driveway North is a privately owned driveway for the Liberty Plaza parking area on the west side of Border Street. Liberty Plaza Driveway North intersects Border Street north of the intersection of Border Street and Central Square (North).

Liberty Plaza Driveway South is a privately owned driveway for the Liberty Plaza parking area on the west side of Border Street. Liberty Plaza Driveway South intersects Border Street and Central Square (South).

5.2.2 Intersection Conditions

The following descriptions of the study area intersections include lane geometry, pedestrian facilities, and intersection traffic control.

Meridian Street/Saratoga Street/Central Square is a signalized intersection. The Central Square eastbound approach consists of one 16-foot left-turn lane and an exclusive 16-foot, channelized right-turn lane. Eastbound through movements onto Saratoga Street

are prohibited. The Saratoga Street westbound approach consists of one 12-foot, shared left-turn/through/right-turn lane. The Meridian Street northbound approach consists of one 11-foot, shared left-turn/through lane; right turns onto Saratoga Street are prohibited. The Meridian Street southbound approach consists of one 12-foot, shared through/right-turn lane; left turns onto Saratoga Street are prohibited. Crosswalks and handicapped ramps are located along all approaches. On-street parking is provided on both sides of Saratoga Street, on both sides of Meridian Street north of the intersection, and along the right side of the channelized right-turn lane from eastbound Central Square. Head-in parking is available along westbound Central Square as well as northbound Meridian Street on the south side of the intersection.

Porter Street/Bennington Street/Central Square is a four-leg, unsignalized intersection. The Porter Street westbound approach consists of a single, 16-foot, shared left-turn/right-turn lane. The Bennington Street westbound approach consists of one 10-foot, combined left-turn/right-turn lane. The Central Square northbound approach consists of a 16-foot through lane and an exclusive, channelized 16-foot right-turn lane used to access both Bennington Street and Porter Street. The Central Square southbound approach consists of an 11-foot through lane and an 11-foot left-turn lane used to access both Bennington Street and Porter Street. Crosswalks and handicapped ramps are provided at the Porter Street, Bennington Street, and Central Square northbound approaches. Parking is allowed along both sides of Bennington Street and on both the curb and median sides of Porter Street. Parking is also available on both sides of Central Square south of the intersection and on the southbound side of Central Square north of the intersection. North of the intersection, head-in parking is provided in the Central Square northbound direction.

Liverpool Street/Central Square/Meridian Street is an unsignalized intersection with four approaches. The Central Square eastbound approach is a single, 16-foot, shared left-turn/right-turn lane. The Meridian Street northbound approach is a single, 12-foot, shared left-turn/through lane. The Liverpool Street northbound approach consists of a single, 7-foot, shared left-turn/right-turn lane. The Central Square southbound approach consists of a 12-foot through lane and a channelized, exclusive right-turn lane. Cross-walks and handicapped ramps are located along all approaches. Parking is allowed on both sides of both Meridian Street and Liverpool Street, and along the southbound-to-westbound movement of Central Square. Head-in parking is available along the channelization island for the Central Square southbound right turn.

Border Street (South)/Liberty Plaza Driveway (South)/Central Square is an unsignalized intersection with four approaches. The Liberty Plaza Driveway eastbound consists of a single, 15-foot left-turn/ through/right-turn lane. Two movements—a parking lot aisle on the north side and a drive-through on the south side—branch off the Liberty Plaza Driveway approximately 20 feet west of the intersection. Central Square westbound consists of a 16-foot left-turn/through lane and a 16-foot right-turn lane. The Border Street northbound approach is a single, 10-foot left-turn/through/right-turn lane. The Border Street southbound approach is a 16-foot, combined left-turn/through/right-turn lane. Crosswalks and handicapped ramps are provided on the south and west sides

of the intersection, with mid-block crossings nearby providing access across the other two intersection approaches. Parking is allowed on both sides of Border Street and along westbound Central Square. Head-in parking is found along eastbound Central Square.

Border Street (North)/Central Square is a three-leg, unsignalized intersection. The Central Square westbound approach is a single, 16-foot left-turn/right-turn lane. The Border Street northbound approach consists of a single, 16-foot right-turn/through lane. The Border Street southbound approach consists of a single, 10-foot through/left-turn lane. Crosswalks are provided across Border Street on both sides of the intersection. Handicapped ramps are provided on all corners.

Liberty Plaza Driveway (North)/Border Street is an unsignalized T intersection. The Liberty Plaza Driveway provides a 15-foot lane in each direction on the west side of the intersection. A parking aisle branches off both the south and the north sides of the Liberty Plaza Driveway approximately 20 feet west of the intersection. Border Street consists of a single 10-foot lane in each direction, northbound and southbound, through the intersection. A crosswalk is provided across the driveway. Parking is allowed on both sides of Border Street.

5.2.3 Traffic Conditions

Due to the residential nature of the Project, turning movement counts were conducted during typical residential peak travel periods from 7:00 to 9:00 a.m. and from 4:00 to 6:00 p.m. on Thursday, September 13, 2007. Based on the turning movement counts, the study team identified the weekday peak hours as 8:00–9:00 a.m. and 4:30–5:30 p.m. The existing peak-hour turning movement volumes for the study area intersections are shown in **Figure 3** and **Figure 4** for the a.m. and p.m. peak hours, respectively. Complete traffic count data are included in **Appendix C-1.**

5.2.4 Existing Traffic Operations

Traffic operations are determined through an analysis of intersection ***Level of Service*** (LOS). The study team analyzed LOS and delay at the intersections, using Trafficware's Synchro 6 software, which is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM). LOS and delay (in seconds) are determined based on intersection geometry and available traffic data for each intersection. Signal timings and phasing used in this analysis were obtained from BTD. Derived from the HCM, **Table 1** provides LOS criteria for signalized and unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition (unacceptable), with significant traffic delay. LOS D is generally considered acceptable in an urban environment.

Table 1. Intersection Level of Service Criteria (HCM Excerpt)

Level of Service	Average Stopped Delay (sec./veh.)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

The ***volume-to-capacity ratio*** ("v/c") ratio is a measure of congestion at an intersection approach. A v/c ratio of 1 or greater indicates that the intersection approach exceeds capacity.

The ***95th percentile queue*** represents the farthest extent of the queue (to the last stopped vehicle) upstream from the stop line over 95% of all cycles. The 95th percentile queue is not seen during every cycle. The study team performed field observations to establish intersection geometry (i.e., number of turning lanes, lane length, and lane width). Signal phasing and timing data were provided by BTD.

A level of service analysis evaluating existing intersection operations was calibrated based on field observations of actual queues and delays. **Table 2** and **Table 3** show existing intersection LOS results for the study area during the a.m. and p.m. peak hours, respectively. Complete Synchro reports are provided in **Appendix C-2.**

Table 2. Existing Conditions (2007) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C	95th Percentile Queue (feet)
Signalized Intersections				
Meridian Street/Saratoga Street/ Central Square	**C**	**31.9**	—	—
Central Square EB left	C	25.6	0.15	33
Central Square EB right	A	0.1	0.06	0
Saratoga Street WB left/through/right	C	24.2	0.31	73
Meridian Street NB left/through	D	46.6	0.89	#395
Meridian Street SB through/right	C	26.6	0.69	306
Unsignalized Intersections				
Porter Street/Bennington Street/ Central Square	—	—	—	—
Porter/Bennington Street WB left	F	>50.0	>1.0	329
Porter/Bennington Street WB right	B	11.8	0.36	42
Meridian Street NB thru	A	0.0	0.11	0
Meridian Street NB right	A	0.0	0.10	0
Meridian Street SB left	A	9.2	0.26	25
Meridian Street SB thru	A	0.0	0.22	0
Liverpool Street/Central Square/ Meridian Street	—	—	—	—
Central Square EB left	D	28.7	0.28	28
Central Square EB right	B	12.8	0.22	20
Meridian Street NB left	A	8.9	0.13	11
Meridian Street NB thru	A	0.0	0.19	0
Meridian Street SB thru	A	0.0	0.28	0
Meridian Street SB right	A	0.0	0.06	0
Border Street/Liberty Plaza Driveway (South)/Central Square	—	—	—	—
Liberty Plaza driveway EB left/through/right	A	8.3	0.07	—
Central Square WB left/thru/right	A	8.9	0.22	—
Border Street NB left/thru/right	A	8.9	0.22	—
Border Street SB left/thru/right	A	9.5	0.28	—
Border Street (North)/Central Square	—	—	—	—
Central Square WB left	A	0.0	0.03	0
Central Square WB right	A	0.0	0.07	0
Border Street NB thru	A	7.9	0.11	9
Border Street NB right	A	0.0	0.04	0
Border Street SB left/thru	B	11.6	0.35	39
Liberty Plaza Driveway (North)/Border Street	—	—	—	—
Liberty Plaza driveway EB left/right	B	10.9	0.14	12
Border NB left/through	A	2.3	0.05	4
Border SB thru/right	A	0.0	0.13	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
**De facto* turn lane.

Table 3. Existing Conditions (2007) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C	95th Percentile Queue (feet)
Signalized Intersections				
Meridian Street/Saratoga Street/ Central Square	**F**	**>80.0**	—	—
Central Square EB left	C	32.8	0.45	73
Central Square EB right	A	0.1	0.09	0
Saratoga Street WB left/through/right	C	27.3	0.49	108
Meridian Street NB left/through	F	>80.0	>1.0	#678
Meridian Street SB through/right	C	23.7	0.61	257
Unsignalized Intersections				
Porter Street/Bennington Street/ Central Square	—	—	—	—
Porter/Bennington Street WB left	F	>50.0	>1.0	443
Porter/Bennington Street WB right	C	16.3	0.52	77
Meridian Street NB thru	A	0.0	0.22	0
Meridian Street NB right	A	0.0	0.17	0
Meridian Street SB left	B	10.5	0.27	27
Meridian Street SB thru	A	0.0	0.22	0
Liverpool Street/Central Square/ Meridian Street	—	—	—	—
Central Square EB left	F	>50.0	>1.0	361
Central Square EB right	C	16.3	0.44	56
Meridian Street NB left	A	10.0	0.29	31
Meridian Street NB thru	A	0.0	0.34	0
Meridian Street SB thru	A	0.0	0.29	0
Meridian Street SB right	A	0.0	0.07	0
Border Street/Liberty Plaza Driveway (South)/Central Square	—	—	—	—
Liberty Plaza driveway EB left/through/right	B	10.6	0.23	—
Central Square WB left/thru/right	B	13.5	0.50	—
Border Street NB left/thru/right	B	11.3	0.31	—
Border Street SB left/thru/right	B	13.7	0.47	—
Border Street (North)/Central Square	—	—	—	—
Central Square WB left	A	0.0	0.03	0
Central Square WB right	A	0.0	0.15	0
Border Street NB thru	A	8.6	0.21	19
Border Street NB right	A	0.0	0.03	0
Border Street SB left/thru	C	23.6	0.70	139
Liberty Plaza Driveway (North)/Border Street	—	—	—	—
Liberty Plaza driveway EB left/right	C	17.9	0.47	62
Border Street NB left/through	A	3.6	0.12	11
Border Street SB thru/right	A	0.0	0.16	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
**De facto* turn lane.

Intersection approaches in the study area operate at acceptable overall levels of service (LOS D or better) during the a.m. and p.m. and peak hours, with the following exceptions:

Meridian Street/Saratoga Street/Central Square. Overall, this signalized intersection operates at LOS F during the p.m. peak hour. The Meridian Street northbound approach operates at LOS F, with all other approaches operating at LOS C or better during the p.m. peak hour.

Porter Street/Bennington Street/Central Square. During the a.m. and p.m. peak hours, the Porter Street/Bennington Street westbound approach operates at LOS F at this unsignalized intersection.

Liverpool Street/Central Square/Meridian Street. The Central Square eastbound left-turn approach operates at LOS D in the a.m. peak hour and LOS F in the p.m. peak hour.

5.2.5 Existing Parking/Curbside Inventory

Existing On-Street Parking

A summary of on-street parking within a quarter-mile of the Project site is shown in **Figure 5.** The majority of parking spaces are unrestricted and 2-hour. In the immediate vicinity of the Project site, on-street parking is mostly unrestricted on both Border and Meridian Streets. Observations by the study team indicate that double-parking frequently occurs at businesses along Central Square, often impeding traffic flow.

Existing Off-Street Parking

The existing site supplies no off-street parking.

The only off-street parking in the area is private Massport parking lots at the entrance to the Callahan Tunnel, shown in **Figure 6.**

5.2.6 Existing Public Transportation

The Project site is approximately one-half mile (a ten-minute walk) from Maverick Station, providing access to the MBTA Blue Line, and several MBTA local bus routes.

Weekday bus and subway service is provided between approximately 5:00 a.m. and 1:00 a.m. Actual service times vary by route or line. **Table 4** summarizes train and bus routes and frequencies. MBTA public transportation services, exclusive of commuter rail lines, are shown in **Figure 7.**

Table 4. Transit Service in the Study Area

Transit Service	Description	Rush-hour Headway (minutes)
Rapid Transit Routes		
Blue Line	Wonderland–Bowdoin	4
Local Bus Routes		
114	Bellingham Square/Mystic Mall–Maverick Station	limited service
116	Wonderland Station–Maverick Station	20
117	Wonderland Station–Maverick Station	20
120	Orient Heights Station–Maverick Station	20
121	Wood Island Station/Eagle Square–Maverick Station	30

5.3 Evaluation of Long-Term Traffic Impacts

5.3.1 No-Build Scenario

Background Traffic Growth

No-Build traffic conditions are independent of the proposed Project and include all existing traffic and any new traffic resulting from both general background growth and any identified development projects in the area. The No-Build condition is used to evaluate the cumulative impacts of the anticipated future traffic increases, while providing a baseline of comparison for the proposed Project.

Two procedures are used to determine background traffic growth. The first is to apply a general growth rate to account for changes in demographics, auto usage, and ownership. This analysis assumes a general background growth rate of 2% per year, as directed by BTD.

The second procedure is to estimate traffic generated by planned new major developments and anticipated roadway changes. Due to the fact that there are no planned developments on file with the City in the area of the proposed project, no area projects were used for background traffic growth.

No-Build Traffic Operations

The 2012 No-Build analysis uses the methodology described for Existing Conditions. No-Build traffic volumes are shown in **Figure 8** and **Figure 9** The resulting intersection operations, assuming the mitigation described above, are shown in **Table 5** and **Table 6.** Complete Synchro reports are provided in **Appendix C-2.**

Table 5. No-Build Conditions (2012) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C	95th Percentile Queue (feet)
Signalized Intersections				
Meridian Street/Saratoga Street/ Central Square	**D**	**51.4**	—	—
Central Square EB left	C	25.9	0.17	35
Central Square EB right	A	0.1	0.07	0
Saratoga Street WB left/through/right	C	25.0	0.35	80
Meridian Street NB left/through	F	>80.0	>1.0	#478
Meridian Street SB through/right	C	30.2	0.76	#361
Unsignalized Intersections				
Porter Street/Bennington Street/ Central Square	—	—	—	—
Porter/Bennington Street WB left	F	>50.0	>1.0	457
Porter/Bennington Street WB right	B	12.5	0.41	50
Meridian Street NB thru	A	0.0	0.13	0
Meridian Street NB right	A	0.0	0.11	0
Meridian Street SB left	A	9.5	0.29	30
Meridian Street SB thru	A	0.0	0.25	0
Liverpool Street/Central Square/ Meridian Street	—	—	—	—
Central Square EB left	E	36.6	0.37	40
Central Square EB right	B	13.7	0.25	25
Meridian Street NB left	A	9.2	0.14	13
Meridian Street NB thru	A	0.0	0.21	0
Meridian Street SB thru	A	0.0	0.30	0
Meridian Street SB right	A	0.0	0.07	0
Border Street/Liberty Plaza Driveway (South)/Central Square	—	—	—	—
Liberty Plaza driveway EB left/through/right	A	8.5	0.07	—
Central Square WB left/thru/right	A	9.3	0.24	—
Border Street NB left/thru/right	A	9.3	0.25	—
Border Street SB left/thru/right	A	9.9	0.31	—
Border Street (North)/Central Square	—	—	—	—
Central Square WB left	A	0.0	0.03	0
Central Square WB right	A	0.0	0.07	0
Border Street NB thru	A	8.0	0.12	10
Border Street NB right	A	0.0	0.04	0
Border Street SB left/thru	B	12.3	0.40	48
Liberty Plaza Driveway (North)/Border Street	—	—	—	—
Liberty Plaza driveway EB left/right	B	11.3	0.16	14
Border Street NB left/through	A	2.4	0.05	4
Border Street SB thru/right	A	0.0	0.15	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
**De facto* turn lane.
Cell shading indicates that LOS has worsened from the previous condition.

Table 6. No-Build Conditions (2012) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C	95th Percentile Queue (feet)
Signalized Intersections				
Meridian Street/Saratoga Street/ Central Square	**F**	**>80.0**	—	—
Central Square EB left	D	35.2	0.51	80
Central Square EB right	A	0.2	0.10	0
Saratoga Street WB left/through/right	C	28.9	0.53	120
Meridian Street NB left/through	F	>80.0	>1.0	#782
Meridian Street SB through/right	C	25.9	0.67	292
Unsignalized Intersections				
Porter Street/Bennington Street/ Central Square	—	—	—	—
Porter/Bennington Street WB left	F	>50.0	>1.0	587
Porter/Bennington Street WB right	C	19.0	0.61	102
Meridian Street NB thru	A	0.0	0.24	0
Meridian Street NB right	A	0.0	0.19	0
Meridian Street SB left	B	11.2	0.31	34
Meridian Street SB thru	A	0.0	0.25	0
Liverpool Street/Central Square/ Meridian Street	—	—	—	—
Central Square EB left	F	>50.0	>1.0	—
Central Square EB right	C	18.9	0.52	74
Meridian Street NB left	B	10.5	0.34	38
Meridian Street NB thru	A	0.0	0.38	0
Meridian Street SB thru	A	0.0	0.32	0
Meridian Street SB right	A	0.0	0.08	0
Border Street/Liberty Plaza Driveway (South)/Central Square	—	—	—	—
Liberty Plaza driveway EB left/through/right	B	11.5	0.27	—
Central Square WB left/thru/right	C	16.1	0.58	—
Border Street NB left/thru/right	B	12.6	0.37	—
Border Street SB left/thru/right	C	16.1	0.55	—
Border Street (North)/Central Square	—	—	—	—
Central Square WB left	A	0.0	0.03	0
Central Square WB right	A	0.0	0.16	0
Border Street NB thru	A	8.9	0.23	23
Border Street NB right	A	0.0	0.03	0
Border Street SB left/thru	E	35.2	0.83	212
Liberty Plaza Driveway (North)/Border Street	—	—	—	—
Liberty Plaza driveway EB left/right	C	21.8	0.56	86
Border Street NB left/through	A	3.8	0.14	12
Border Street SB thru/right	A	0.0	0.18	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
**De facto* turn lane.
Cell shading indicates that LOS has worsened from the previous condition.

Under No-Build Conditions, LOS worsens from Existing Conditions to LOS D or lower for the following intersections and approaches:

Meridian Street/Saratoga Street/Central Square. During the a.m. peak hour, the overall LOS worsens from LOS C to LOS D. In addition, the Meridian Street northbound approach worsens from LOS D to LOS F. In the p.m. peak hour, the Central Street eastbound left-turn approach worsens from LOS C to LOS D.

Liverpool Street/Central Square/Meridian Street. The Central Square eastbound left-turn approach worsens from LOS D to LOS E.

Border Street/Central Square. In the p.m. peak hour, the Border Street southbound approach worsens from LOS C to LOS E.

As noted previously, No-Build Conditions include a 2% annual growth rate to account for new development in the area. Although this rate seems high for an urban area, it was recommended by BTD.

5.3.2 Build Scenario

The proposed Build scenario assumes construction of a new building with approximately 65 residential condominium units and 15,000 square feet of retail. Parking for 40 vehicles will be provided on-site in a garage. To provide a conservative estimate, this analysis includes no credit for the trips associated with the existing building; all person trips and vehicle trips associated with the proposed residential units and restaurant use are assumed to be new trips.

5.3.2.1 Site Access and Circulation

Vehicular Access and Circulation

Vehicular access and egress to the proposed building will be provided on both Meridian and Border Streets (see **Figure 10).** Parking will be provided only for residents of the condominiums.

Pedestrian Access

Pedestrian access to and from the residential component of the building is provided on Meridian Street. Access to the retail components will be from Meridian and Border Streets.

5.3.2.2 Trip Generation

Appendix C-3 presents detailed trip generation for the proposed Project land uses. Trip generation data were derived from the Institute of Transportation Engineers (ITE) *Trip Generation*, 7th Edition (2003), trip rates. This analysis uses a vehicle occupancy rate of 1.2 for residential uses and 1.8 for retail uses, based on 2001 National Household Travel

Survey occupancy rates, to convert the unadjusted ITE vehicle trips into person trips. The assignment of person trips to the various transportation modes is presented in the following section. For person trips assigned to auto use, the analysis uses a local vehicle occupancy rate of 1.17 for residential and 1.8 for retail to convert the person trips into vehicle trips. This local rate is based on the 2000 U.S. Census data and the 2001 National Household Travel Survey. The analysis uses the following ITE land use code to estimate Project trips:

LUC 230—Residential Condominium/Townhouse: Residential condominiums/townhouses are defined as ownership units that have at least one other owned unit within the same building structure. Both condominiums and townhouses are included in this land use. Due to the inherent characteristics of the proposed residential uses, including:

- proximity to public transportation and the downtown area
- low residential occupancy per unit (i.e., mostly one-bedroom units); and
- provision of a resident shuttle service.

It is likely that overall auto ownership and vehicle trip generation per unit will be lower than that of the typical "condominium" use; however, the study team believes this LUC provides the best match in terms of trip generation characteristics. This trip generation analysis provides a conservative estimate.

Land Use Code 820—Shopping Center. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Specialty retail center (Land Use 814) and factory outlet center (Land Use 823) are related uses.

5.3.2.3 Mode Split

The mode split for the Project was based on 2000 U.S. Census data and BTD data for Area 7 around the site. Vehicle occupancies were based on the 2001 National Household Travel Survey rates and the 2000 Census data for local trips. Mode use is presented in **Table 7** and **Appendix C-4.** Transit/ walk trips account for approximately 55% of residential and retail peak-hour trips; the transit and walk mode shares are due largely to the proximity of the site to public transportation and the downtown East Boston area. Many residents do not use their cars for work; the vehicles remain in the garage until used for evening on weekend errands, trips, etc.

Table 7. Mode Split

Land Use	Transit Share	Walk/Bike Share	Auto Share	Local Vehicle Occupancy Rate
Daily				
Residential	17%	29%	54%	1.17
Retail	13%	35%	52%	1.80
a.m. Peak Hour				
Residential	25%	30%	45%	1.17
Retail	24%	32%	44%	1.80
p.m. Peak Hour				
Residential	25%	30%	45%	1.17
Retail	24%	32%	44%	1.80

Vehicle trip generation for the Project is shown in **Table 8,** which compares the retail, residential, and total new Project trips. To provide a conservative estimate of the Project trip generation, no credit was taken for the existing use on-site. Detailed trip generation for the proposed Project is included in **Appendix C-3.**

Table 8. Vehicle Trip Generation

Period	Direction	Project Trips		
		Residential (65 Units)	Retail	Total
Daily	In	115	126	241
	Out	115	126	241
	Total	230	252	482
a.m. Peak Hour	In	3	3	6
	Out	13	2	15
	Total	16	5	21
p.m. Peak Hour	In	12	9	21
	Out	6	10	16
	Total	18	19	37

As the table shows, estimated daily vehicle trips to and from the site total 482, with 241 trips in and 241 out. In the a.m. peak hour, an estimated 6 vehicle trips in and 15 out will occur; in the p.m. peak hour, 16 vehicles in and 37 out.

To provide a conservative analysis, no credit was taken for the vehicle trips associated with the existing uses on-site. Therefore, all trips associated with the proposed uses were assumed to be new trips. Also, in order to be conservative, the trip generation includes retail vehicle trips, even though parking is not included for retail uses. The patrons and employees of the new retail uses would operate in a fashion similar to those of the existing retail space, parking in available spaces on the adjacent streets.

5.3.2.4 Trip Distribution

Based on BTD guidelines, the study team developed vehicular trip distribution data using origin–destination characteristics for Area 7. The distribution appears in **Figure 11.** The new Project-generated trips added to study area intersections during the peak hours are shown in **Figure 12** and **Figure 13.**

5.3.2.5 Build Traffic Operations

Figure 14 and **Figure 15** show the 2012 Build morning and evening peak-hour traffic volumes, accounting for the background growth rate, anticipated development by others, and Project-generated trips. The LOS analysis conducted using the methodology described for Existing Conditions appears in **Table 9** and **Table 10.**

Table 9. Build Conditions (2012) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C	95th Percentile Queue (feet)
Signalized Intersections				
Meridian Street/Saratoga Street/ Central Square	**D**	**54.3**	—	—
Central Square EB left	C	25.9	0.17	35
Central Square EB right	A	0.1	0.07	0
Saratoga Street WB left/through/right	C	25.0	0.35	80
Meridian Street NB left/through	F	>80.0	>1.0	#486
Meridian Street SB through/right	C	30.7	0.77	#374
Unsignalized Intersections				
Porter Street/Bennington Street/ Central Square	—	—	—	—
Porter/Bennington Street WB left	F	>50.0	>1.0	471
Porter/Bennington Street WB right	B	12.5	0.41	51
Meridian Street NB thru	A	0.0	0.13	0
Meridian Street NB right	A	0.0	0.11	0
Meridian Street SB left	A	9.6	0.30	32
Meridian Street SB thru	A	0.0	0.25	0
Liverpool Street/Central Square/ Meridian Street	—	—	—	—
Central Square EB left	E	37.3	0.38	40
Central Square EB right	B	13.9	0.26	26
Meridian Street NB left	A	9.2	0.15	13
Meridian Street NB thru	A	0.0	0.21	0
Meridian Street SB thru	A	0.0	0.30	0
Meridian Street SB right	A	0.0	0.07	0
Border Street/Liberty Plaza Driveway (South)/Central Square	—	—	—	—
Liberty Plaza driveway EB left/through/right	A	8.5	0.07	—
Central Square WB left/thru/right	A	9.3	0.25	—
Border Street NB left/thru/right	A	9.3	0.25	—
Border Street SB left/thru/right	A	10.0	0.32	—
Border Street (North)/Central Square	—	—	—	—
Central Square WB left	A	0.0	0.03	0
Central Square WB right	A	0.0	0.07	0
Border Street NB thru	A	8.0	0.12	10
Border Street NB right	A	0.0	0.04	0
Border Street SB left/thru	B	12.6	0.41	51
Liberty Plaza Driveway (North)/Border Street	—	—	—	—
Liberty Plaza driveway EB left/right	B	11.4	0.16	15
Border Street NB left/through	A	2.4	0.05	4
Border Street SB thru/right	A	0.0	0.15	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
**De facto* turn lane.
Cell shading indicates that LOS has worsened from the previous condition.

Table 10. Build Conditions (2012) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C	95th Percentile Queue (feet)
Signalized Intersections				
Meridian Street/Saratoga Street/ Central Square	**F**	**>80.0**	—	—
Central Square EB left	D	35.2	0.51	80
Central Square EB right	A	0.2	0.11	0
Saratoga Street WB left/through/right	C	28.9	0.53	120
Meridian Street NB left/through	F	>80.0	>1.0	#592
Meridian Street SB through/right	C	26.2	0.68	298
Unsignalized Intersections				
Porter Street/Bennington Street/ Central Square	—	—	—	—
Porter/Bennington Street WB left	F	>50.0	>1.0	605
Porter/Bennington Street WB right	C	19.4	0.61	105
Meridian Street NB thru	A	0.0	0.24	0
Meridian Street NB right	A	0.0	0.19	0
Meridian Street SB left	B	11.4	0.33	36
Meridian Street SB thru	A	0.0	0.25	0
Liverpool Street/Central Square/ Meridian Street	—	—	—	—
Central Square EB left	F	>50.0	>1.0	—
Central Square EB right	C	19.0	0.52	75
Meridian Street NB left	B	10.6	0.35	40
Meridian Street NB thru	A	0.0	0.38	0
Meridian Street SB thru	A	0.0	0.32	0
Meridian Street SB right	A	0.0	0.08	0
Border Street/Liberty Plaza Driveway (South)/Central Square	—	—	—	—
Liberty Plaza driveway EB left/through/right	B	11.6	0.27	—
Central Square WB left/thru/right	C	16.5	0.59	—
Border Street NB left/thru/right	B	12.6	0.37	—
Border Street SB left/thru/right	C	16.2	0.55	—
Border Street (North)/Central Square	—	—	—	—
Central Square WB left	A	8.9	0.24	23
Central Square WB right	A	0.0	0.03	0
Border Street NB thru	A	0.0	0.03	0
Border Street NB right	A	0.0	0.16	0
Border Street SB left/thru	E	41.0	0.87	240
Liberty Plaza Driveway (North)/Border Street	—	—	—	—
Liberty Plaza driveway EB left/right	C	22.6	0.58	89
Border Street NB left/through	A	3.8	0.14	12
Border Street SB thru/right	A	0.0	0.19	0

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.
**De facto* turn lane.
Cell shading indicates that LOS has worsened from the previous condition.

Due to the low volume of traffic generated by the Project, minimal changes occur under Build Conditions. With the Project in place, no LOS for overall intersections, intersection approaches, or lane groups is expected to worsen. It should again be noted that to provide a conservative estimate of intersection operations, no credit was taken for vehicle trips associated with the existing use of the site. The anticipated changes from No-Build to Build Conditions consist of only a small increase in delay at study area intersections.

5.3.2.6 Build Conditions Parking

The proposed building will provide approximately 40 parking spaces for residents within a new parking garage. Garage parking will be accessed from either Meridian Street or Border Street. Tenants will be assigned spaces. Parking provisions are consistent with BTD guidelines for the area (0.75–1.25 spaces per residential unit). No parking will be provided for the retail space. Workers associated with the retail space will be encouraged to take public transit or walk, given its close proximity to MBTA bus and rapid transit services.

The Proponent will explore utilizing a shared-car service, such as Zipcar, to determine the feasibility of establishing shared-car spaces within the parking garage, which will further help to reduce residents' need for automobiles.

5.3.2.7 Build Conditions Public Transportation

The study team estimates that nearly one-quarter of all trips made to and from the building will occur via public transportation. As shown in **Table 11,** the Proposed Project will add an estimated 198 transit trips per day, with 15 new transit trips (10 boarding and 5 alighting) during the a.m. peak and 30 new trips (13 boarding and 17 alighting) during the p.m. peak. These trips will be dispersed to the various inbound and outbound transit and bus lines in the study area.

Table 11. Transit Trip Generation

Period	# of Trips
Daily	
In	99
Out	99
Total	198
a.m. Peak Hour	
In	5
Out	10
Total	15
p.m. Peak Hour	
In	17
Out	13
Total	30

5.3.2.8 Pedestrian Access and Operations

On a daily basis, the Project will generate an estimated 450 new walk trips and an additional 198 new transit trips that require a walk to or from the Site. This results in an additional 648 new pedestrian trips per day. Approximately 19 walk trips in and out of the site will occur during the a.m. peak hour, and 38 walk trips in and out will occur during the p.m. peak hour, plus 15 and 30 transit trips, respectively. When combined, this averages to approximately 1 additional pedestrian trip per minute during the a.m. and p.m. peak hours. The new walk trip generation is summarized in **Table 12.**

Table 12. Walk Trip Generation

Period	# of Trips
Daily	
In	225
Out	225
Total	450
a.m. Peak Hour	
In	6
Out	13
Total	19
p.m. Peak Hour	
In	21
Out	17
Total	38

5.3.2.9 Bicycle Accommodations

The Proponent will explore making secure bicycle storage available to residents, workers, and visitors of the building. All bicycle racks, signs, and parking areas would conform to BTD standards and be sited in safe, secure locations. The Proponent will explore placing bicycle racks within the parking garage to provide safe and convenient storage for residents and one rack outside the building for visitors and guests. The Proponent will work with BTD to identify the most appropriate location for bicycle racks close to the Project site.

5.3.2.10 Loading and Service

All recycling, trash collection, and loading activities will occur on-street as they do today.

Most residential deliveries are in smaller vehicles—cars, vans, or small panel trucks. Deliveries in this sized vehicle will be made from the street, as they are today. Trash will be stored within a separate enclosure and wheeled out for curbside pickup on Border Street.

All retail servicing, including trash pick-up, will occur at the curb on Border Street, as it does today. Access to the retail will be provided through an internal hallway. Trash will be collected and stored within the designated trash room.

5.4 Transportation Mitigation Measures

The proposed redevelopment of the existing site will have a negligible impact on area roadways, as summarized in **Table 9** and **Table 10,** above. Since residents and patrons in the area commute predominantly on foot, by bike, or by public transportation, potential impacts on peak-hour vehicular traffic are minimal. Therefore, no traffic mitigation is warranted on the street network adjacent to the Project site.

5.5 Transportation Demand Management

The Proponent is committed to implementing a TDM program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the nature of the Project and its proximity to public transit alternatives.

The Proponent is prepared to take advantage of the Site's convenient transit and pedestrian access to market to future residents and workers within the building. The property management company will provide transit information (schedules, maps, fare information) in the building lobby for residents, workers, and guests. The property management company will also work with residents as they move in to raise awareness of public transportation alternatives.

Additional TDM measures may include the following:

- ***Tenant and Resident Orientation Packet.*** These packets will provide all new tenants with information concerning available TDM programs and public transportation in the area, including route maps, schedules, and fare information.
- ***Bicycle Storage.*** The Project Proponent will explore providing secure bicycle storage and making it available to residents, workers, and visitors.
- ***Car-sharing Service.*** The Proponent will also evaluate the feasibility of establishing a shared-car space on-site within the parking garage in coordination with a car-sharing service.

5.6 Conclusions

The vehicular traffic generated by the Project will have a negligible impact on the surrounding roadways. The intersection LOS does not degrade at any location under 2012 Build Conditions. The Project intends to take advantage of its proximity to transit, particularly local bus routes and Maverick Station on the MBTA Blue Line. Many trips to and from the Project are expected to be made on foot or via transit, with a combined 43% and 45% of all Project-generated trips being made via these modes in the a.m. and p.m. peak hours, respectively.

The Proponent is limiting the number of parking spaces to be provided on-site to 40 spaces, a ratio of 0.7 spaces/unit of residential housing, which is within the BTD guidelines for parking in East Boston. No off-street parking will be provided for the retail component, which is consistent with the parking situation for the existing retail uses on the site.

Based on these elements of the Project, no off-site traffic mitigation is required of the Project since it has no adverse impact on the surrounding roadway network.

6.0 Historic Resources Component

The Project Site does not contain historical structures that are listed on the National or State Register of Historic Places or in the Massachusetts Historical Commission (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

According to a review of local historic properties, the nearest historical structure is in the Princeton Street Architectural Conservation District, located at 39-41 Princeton Street, approximately 371 feet from the Seville site. Various other historic structures exist from between 1/3 of a mile to 1.4 miles away from the Project Site. These structures include, Trinity Neighborhood House at 406 Meridian Street (1/3 mile), the Donald McKay House at 78-80 White Street (.4 miles), the Street Clock at 9 Chelsea Street (1/2 mile), and the Baker Congregational Church at 760 Saratoga Street (1.4 miles). The Seville redevelopment will not adversely impact these historical structures, which are separated from the Project Site by other properties or streets.

The two existing buildings on the Project Site are the Seville Theater, 248-270 Meridian Street. Both of these buildings are believed to be over 50 years old. The Proponent will confer with the Boston Landmarks Commission regarding the need for filing of a Request for Determination of Applicability under Article 85 Demolition Delay of the Boston Zoning Code prior to building demolition.

Archaeological Resources

There are no known or designated archaeological properties on the Project Site. Given the previous site development, there is little potential for the presence of archaeological resources that might be disturbed by the Project.

7.0 Infrastructure System Component

7.1 Introduction

The following analysis describes the existing utility systems servicing the Project area. The East Boston site will be reviewed for probable impacts that the Proposed Project may have on the utilities, and identifies mitigation measures to address potential impacts of the Proposed Project.

The Proponent has initiated contact with those responsible for the area's utility systems, including the Boston Water and Sewer Commission (BWSC) to understand and evaluate each system and design the Proposed Project to prevent disruption of utility services. A BWSC Site Plan and General Service Application is required for the proposed new water, sewer and drain connections. In addition, a Pollution Prevention Plan will be submitted specifying best management measures for protecting the BWSC drainage system during construction. A Drainage Discharge permit will also be required prior to discharge of any construction dewater.

Meetings will be scheduled as necessary during building design and permitting processes, Updated design and reuse of connections as appropriate, will be provided as the project plans develop. Sewer, water, storm drainage, and electric utilities are discussed below.

The project consists of a parcel with frontage on Meridian and Border Streets. It includes approximately 17,481 square feet of land. The Site is located on the east side of Border Street and the west side of Meridian Street. The site is one block from Central Square. The proposed project includes 65 units of housing to be constructed on this parcel.

7.2 Existing Sewer System

The BWSC owns, operates and maintains the sewer system in the vicinity of the overall Project Site. The Seville is served by a 20 inch combined sewer/drain line in Border Street that flows in a southerly direction from the Project Site. The Border Street combined sewer/drain lines connect to combined sewer/drain lines that run to Central Square, parallel to a 15 inch MWRA sewer line in Border Street, that flows in a northerly direction from the Project Site (see survey). The sanitary sewage system ultimately connects to the MWRA system where it is treated at the MWRA Deer Island Treatment Plant.

<u>Project-Generated Sewage Flow</u>

The Proposed Project's sanitary sewage system will connect to the area's existing BWSC sanitary sewage system. The Proposed Project will generate an estimated flow in gallons per day (gpd) as calculated below. This calculation was based on 314 CMR 7.15 (Sewer System Connection and Extension Permit Program), which provides design flow parameters for various building uses.

Proposed Project

85 bedrooms @ 110 gallons per bedroom	=9350 gpd
Proposed Retail/office 18,000^{2}ft @ 75g/1000^{2}ft	=1350 gpd
	10,700 gpd

Sanitary Sewage Connection

Sanitary sewage connections from the project site will be made to the existing combine sewers in Border Street, which currently service the building. A Massachusetts Department of Environmental Protection (DEP) Sewer Connection Permit will not be required for any of these sites since the calculated sewage flow is below 15,000 gpd. In order to obtain service approval, the Proponent will submit a General Service Application and Connection Plan to the BWSC for review and approval.

Sewer System Mitigation

To help conserve water and reduce the amount of wastewater generated by the Proposed Project, LEED design standards and in compliance with code, water conservation devices will be planned for using 1.6 gallons/flush water closets for future project applications.

7.3 Water System

Existing Water Service

The BWSC provides water service to the City of Boston through a well developed network of pipes, which is supplied by the MWRA transmission system. There are two existing water mains in the vicinity of the Project Site. There are two 20 inch service mains in both Border and Meridian Streets. Service to the Project Site will most likely come from the service main in Border Street, however, Meridian is an option based on BWSC final system choices.

Anticipated Water Consumption

Water consumption is based on sewage generation with an added factor for consumption. Based on the projected combined project total sewage generation of 10,700 gpd, it is estimated that the Proposed Project will require approximately 12,000 gpd of water. The heating and cooling systems for the building have not yet been designed; however air condition make-up water requirements are anticipated to be minimal if any, given the relatively small project scope for the Site.

Proposed Water Service

Domestic water and fire service will be provided from existing services supplying water from mains in either Border or Meridian Street.

BWSC has indicated more than adequate capacity in the water supply system to serve the Proposed Project. Flow tests will be performed for final design of the proposed building fire suppression system during the detailed design phases.

Water service to the building will be metered in accordance with the Commission's Site Plan Requirements. The Project Proponent will provide for the connection of the meter to the Commission's automatic meter reading system consistent with current BWSC policy. Backflow prevention devices will be installed on all fire services where required to protect from cross-connection hazards. Water supply systems servicing the Project will be gated so as to minimize public hazard or inconvenience in the event of a water main break. The Proponent will also submit a General Service Application and Site Plan to the BWSC for review and approval.

Water Supply System Mitigation

The State Building Code requires the use of water conserving fixtures. Water conservation measures such as low flow water closets and restricted flow showerheads will help reduce the domestic water demand on the existing distribution system. These systems will be installed consistent with the code requirements.

7.4 Storm Drainage System

7.4.1 Existing Storm Drainage System

The Seville is serviced by stormwater systems located in both Meridian and Border Streets. The drainage system is owned and maintained by the BWSC. Existing runs are 20 inches in Border Street and 24 inches in Meridian Street. The Seville is projected to connect to both lines.

7.4.2 Proposed Storm Drainage

The project site consists of a fully impervious group of surfaces. Redevelopment plans will modify the site, however there will be no net change. Rainwater from roofs will be collected, relieved internally and sent by gravity to a to be determined connection- either currently in place or designed new. Currently, some alternative relief uses with green design options are under consideration for clean-water reuse.

Garage proposed drainage will utilize an oil water separator prior to release of product to the BSW distribution system. Existing sewer and drain connections not deemed for reuse will be terminated in accordance with BWSC standard. The proponent will work with the

BWSC during review and submit its modification request under a General Service Application and site plan.

7.5 Electric System

7.5.1 Existing Electric Systems

NStar provides electric service in the City of Boston. There are existing lines in both streets abutting the project with services (multiple) active in the structures.

7.5.2 Proposed Electric Connections

The electrical, space heating and energy systems for the proposed Project have not yet been designed. However, it is not expected that the Project will require modest power requirements. No capacity issues are anticipated as the Project is in a dense, commercial and mixed-use developed area. Electric power supply design will be further coordinated with NStar as the Project design progresses and electric consumption is determined.

In addition, to the extent possible, energy-saving measures will be incorporated into building design and construction. Transformer placement is not expected to disrupt pedestrian paths in the vicinity of, or abutting the Project Site.

The Proponent will investigate the installation of energy efficient lighting, heating and cooling systems in the design for the Project. It is not expected that solar energy is cost-effective and feasible for use in the project.

7.6 Telephone System

Verizon New England provides telephone service in the Project area. There is overhead telephone service in the area.

Telephone service will be brought into the Project Site and distributed through the Project via underground facilities.

7.7 Cable System

Comcast and RCN provide cable service in the Project area. Cable lines already exist in both Border and Meridian Streets to service the Project.

It is anticipated that Comcast or RCN who currently provide cable service in the Project area will provide cable to the Project Site by way of underground vaults and cables installed through the Project Site. No capacity issues are anticipated.

7.8 Gas/Steam Systems

KeySpan Energy provides natural gas service in the Project area. There are existing gas lines in both Border and Meridian Streets to service the project.

It is not expected that the Project would require excessive amounts of gas. In addition, to the extent possible, energy-saving measures will be incorporated into the building design and construction.

7.9 Utility Protection During Construction

During construction, infrastructure will be protected using sheeting and shoring, temporary relocations, and construction staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The contractor will also be required to provide adequate notification to the utility owner prior to work commencing on their utility. Also, in the event a utility cannot be maintained in service during switch over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility owners and Project abutters to minimize impacts and inconveniences accordingly.

8.0 Coordination with Government Agencies

8.1 Agency Coordination

Boston Redevelopment Authority
Large Project Review

Tai Lim
Senior Project Manager
One City Hall Square
Boston, MA 02201-1007
Ph: (617) 918-4244
Fax: (617) 742-7783
E-mail: Tai.Lim.BRA@cityofboston.gov

Architectural Access Board Requirements

This Proposed Project will comply with the requirements of the Architectural Access Board.

Massachusetts Environmental Policy Act (MEPA)

Based on the information currently available, the Proposed Project will not generate any environmental impact that would trigger MEPA Environmental Impact Study Reporting.

9.0 Project Certification

This form has been circulated to the Boston Redevelopment Authority as required by Article 80 of the Boston Zoning Code.

_____ _____

Signature of Preparer and Proponent Date

Stephen R. Callahan Sr., President
Global Property Developers Corporation
80 First Street
Bridgewater, MA 02324

_____ _____

Signature of Proponent Date

Vincent J. Lombardo, President
The Lombardo Companies
6 Billings Street
Randolph, MA 02368

Figures-Table of Contents

Figure 1. Locus Map……...1
Figure 2. Study Area……..……..2
Figure 3. Existing Conditions (2007) Turning Movement Volumes, a.m. Peak Hour…..3
Figure 4. Existing Conditions (2007) Turning Movement Volumes, p.m. Peak Hour…. 4
Figure 5. On-Street Parking in the Study Area……... 5
Figure 6. Off-Street Parking in the Study Area……...6
Figure 7. Public Transportation in the Study Area……..…7
Figure 8. No-Build Conditions (2012) Turning Movement Volumes a.m. Peak Hour.…8
Figure 9. No-Build Conditions (2012) Turning Movement Volumes p.m. Peak Hour.…9
Figure 10. Site Plan…….10
Figure 11. Trip Distribution…….. 11
Figure 12. Project-Generated Trips, a.m. Peak Hour…….12
Figure 13. Project-Generated Trips, p.m. Peak Hour…….13
Figure 14. Build Conditions (2012) Turning Movement Volumes a.m. Peak Hour…….14
Figure 15. Build Conditions (2012) Turning Movement Volumes p.m. Peak Hour…….15

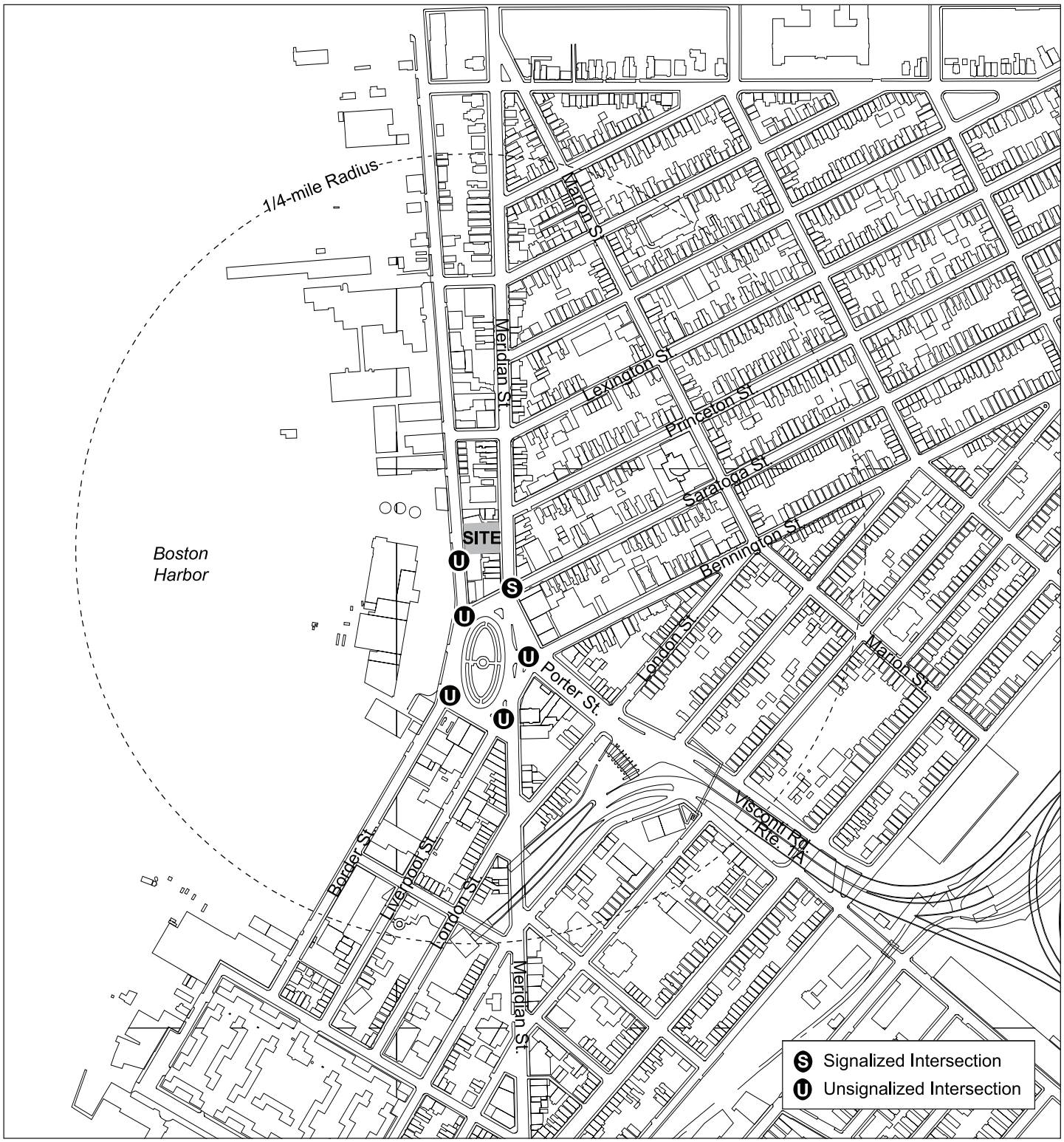
Figure 1. Locus Map

Source: Mass GIS

N

Not to Scale

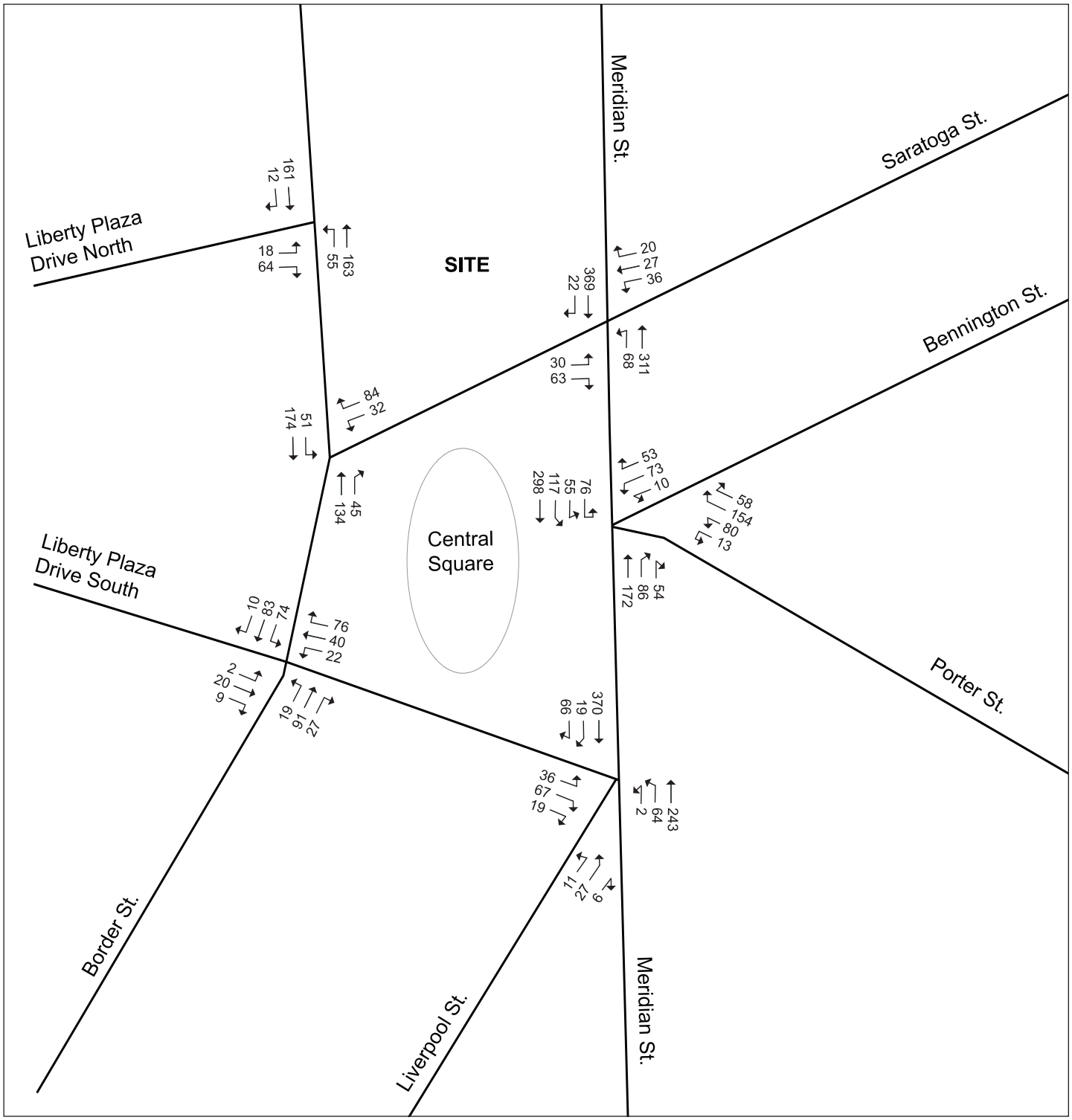
Figure 2. Study Area



N

Not to Scale

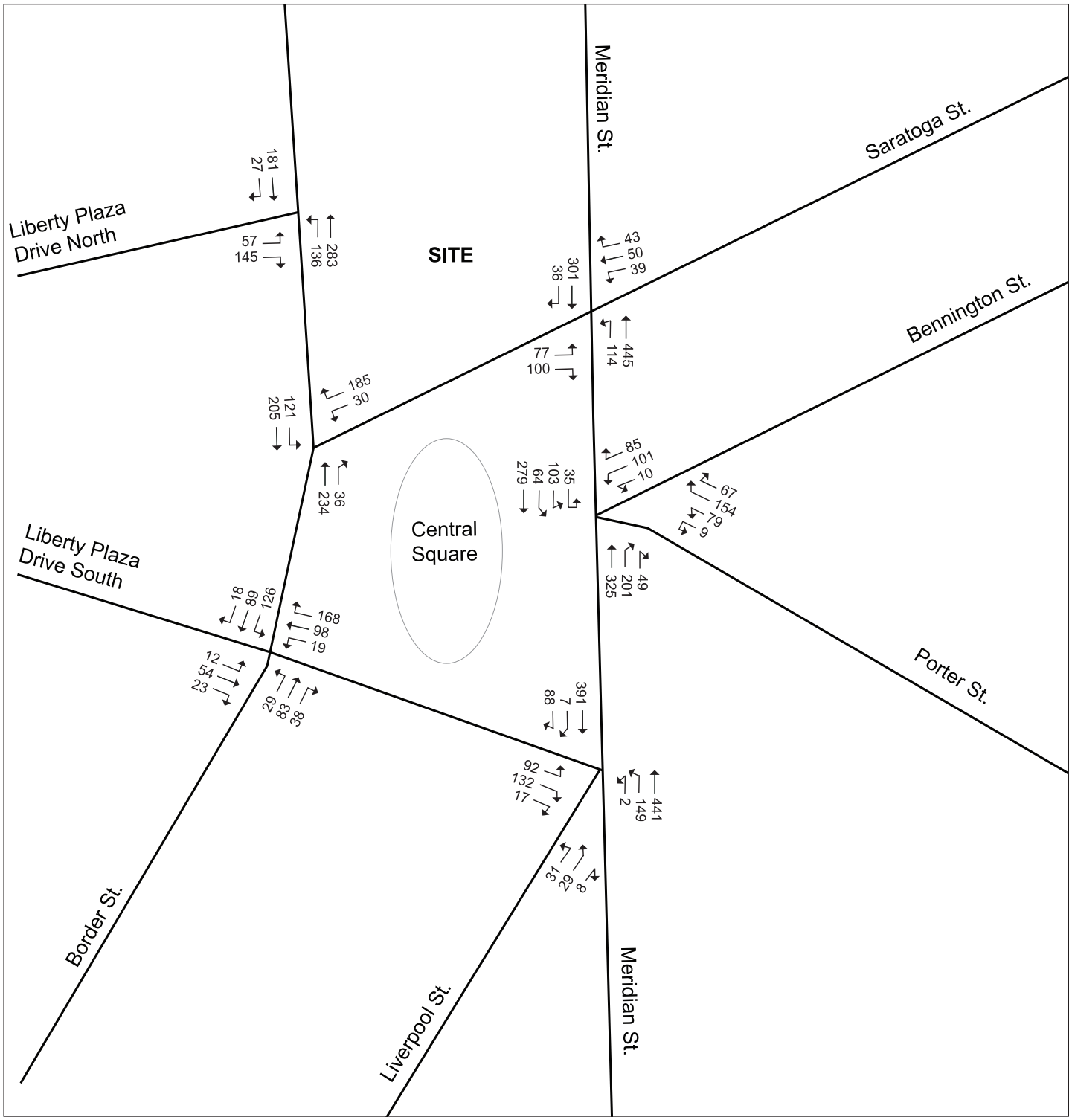
Figure 3. Existing Conditions (2007) Turning Movement Volumes, a.m. Peak Hour (8:00-9:00 a.m.)



N

Not to Scale

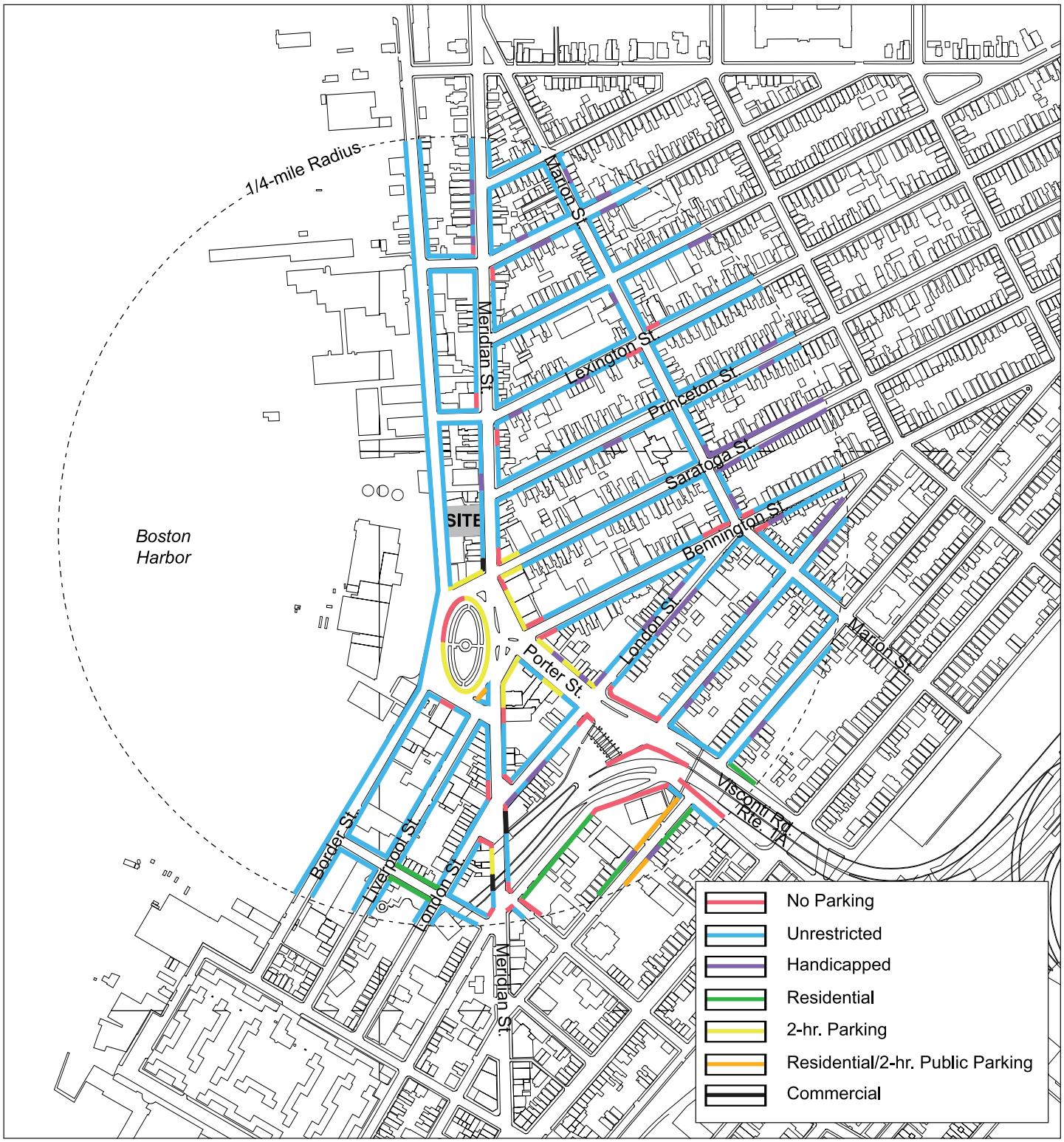
Figure 4. Existing Conditions (2007) Turning Movement Volumes, p.m. Peak Hour (4:30-5:30 a.m.)



N

Not to Scale

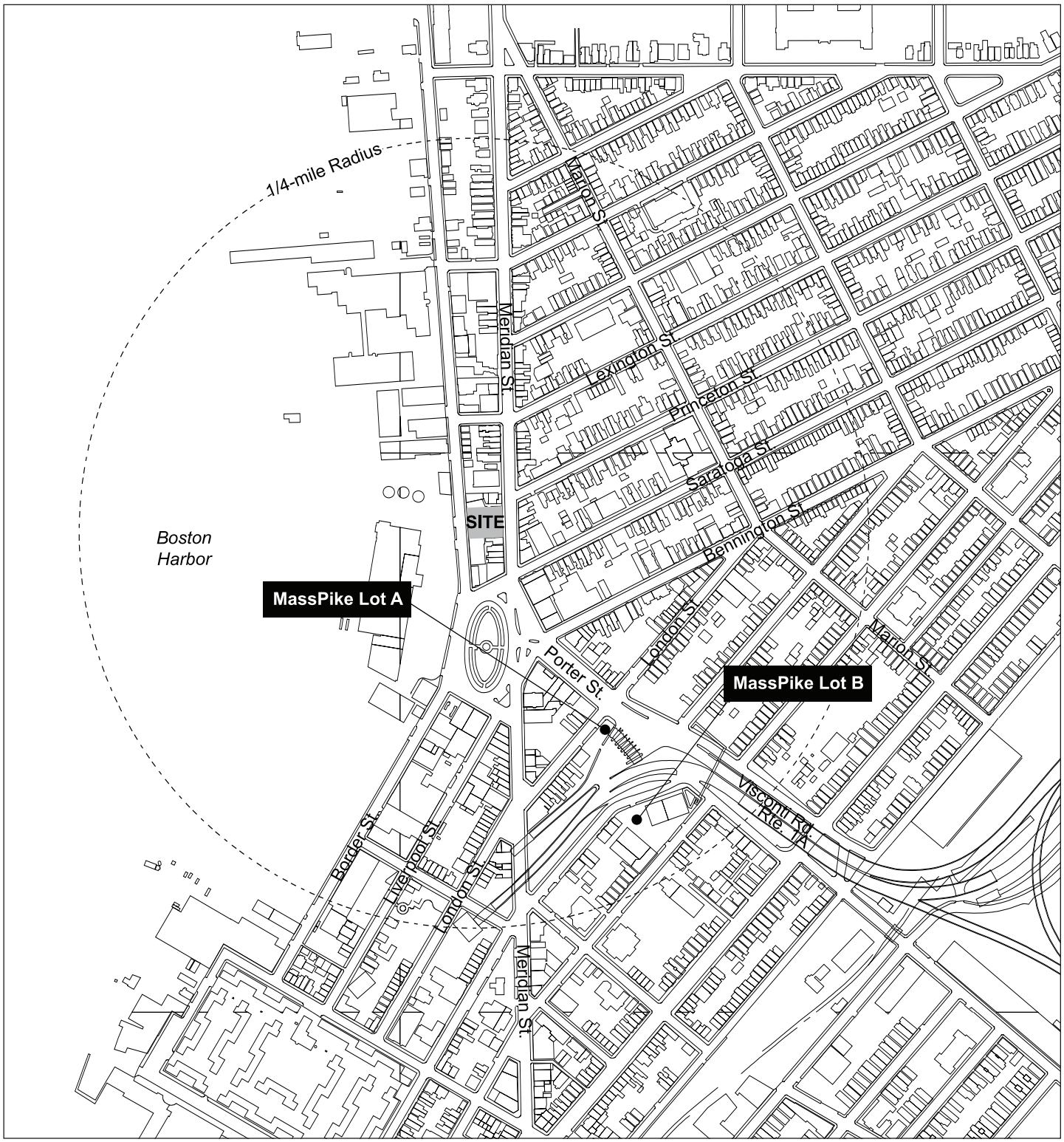
Figure 5. On-street Parking in the Study Area



N

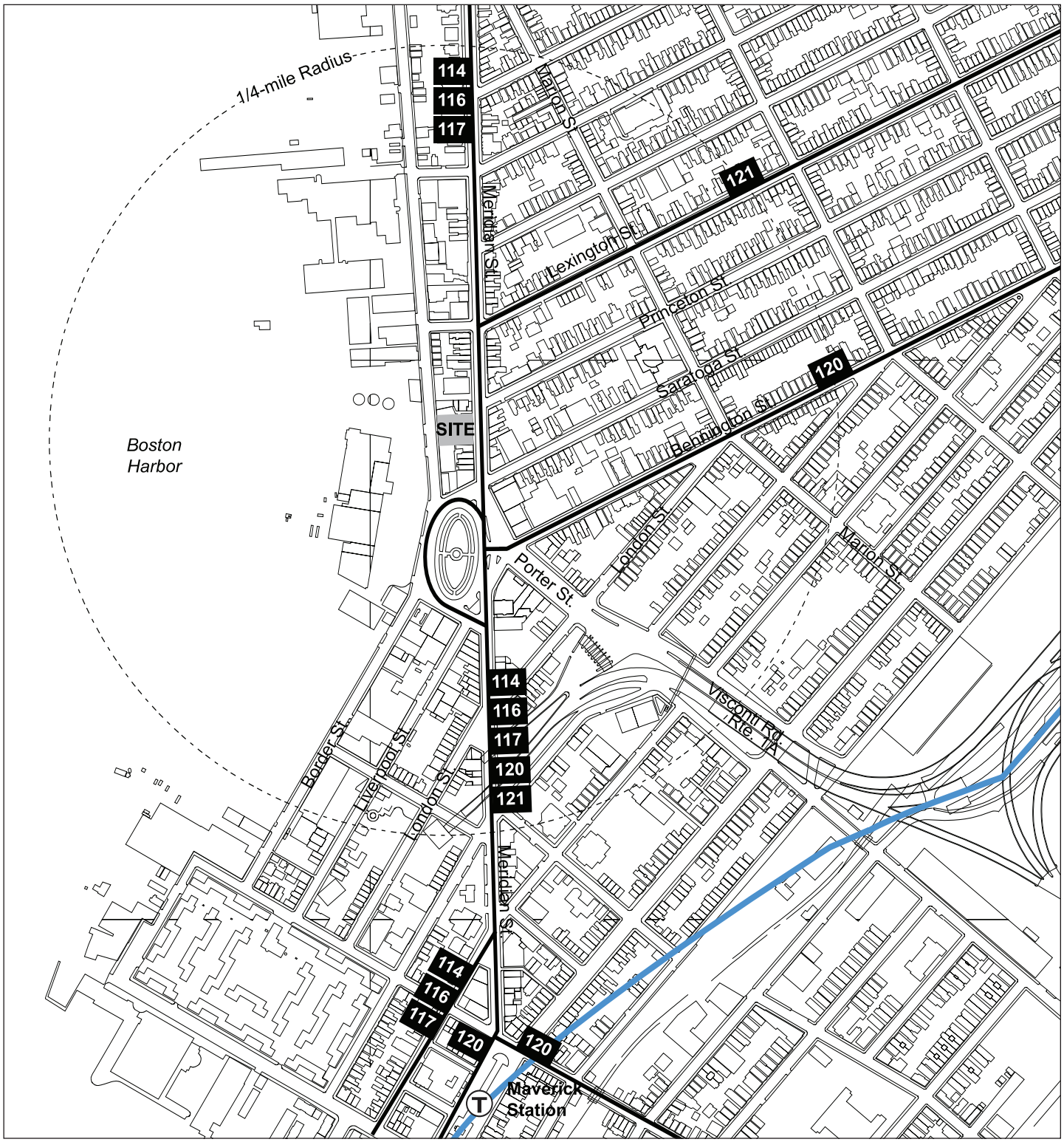
Not to Scale

Figure 6. Off-street Parking in the Study Area



Not to Scale

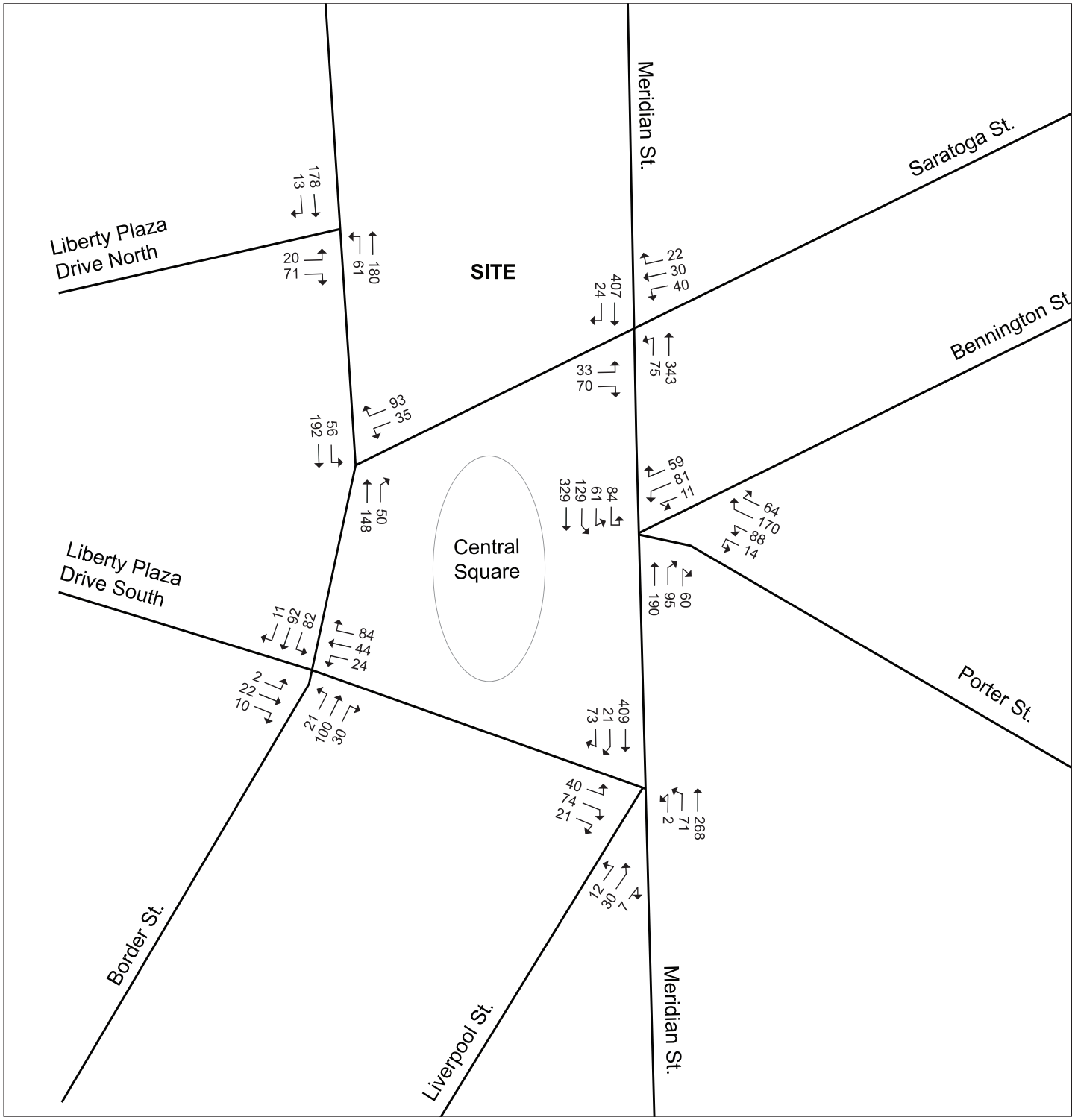
Figure 7. Public Transportation in the Study Area



N

Not to Scale

Figure 8. No-Build Conditions (2012) Turning Movement Volumes, a.m. Peak Hour



N

Not to Scale

Figure 9. No-Build Conditions (2012) Turning Movement Volumes, p.m. Peak Hour

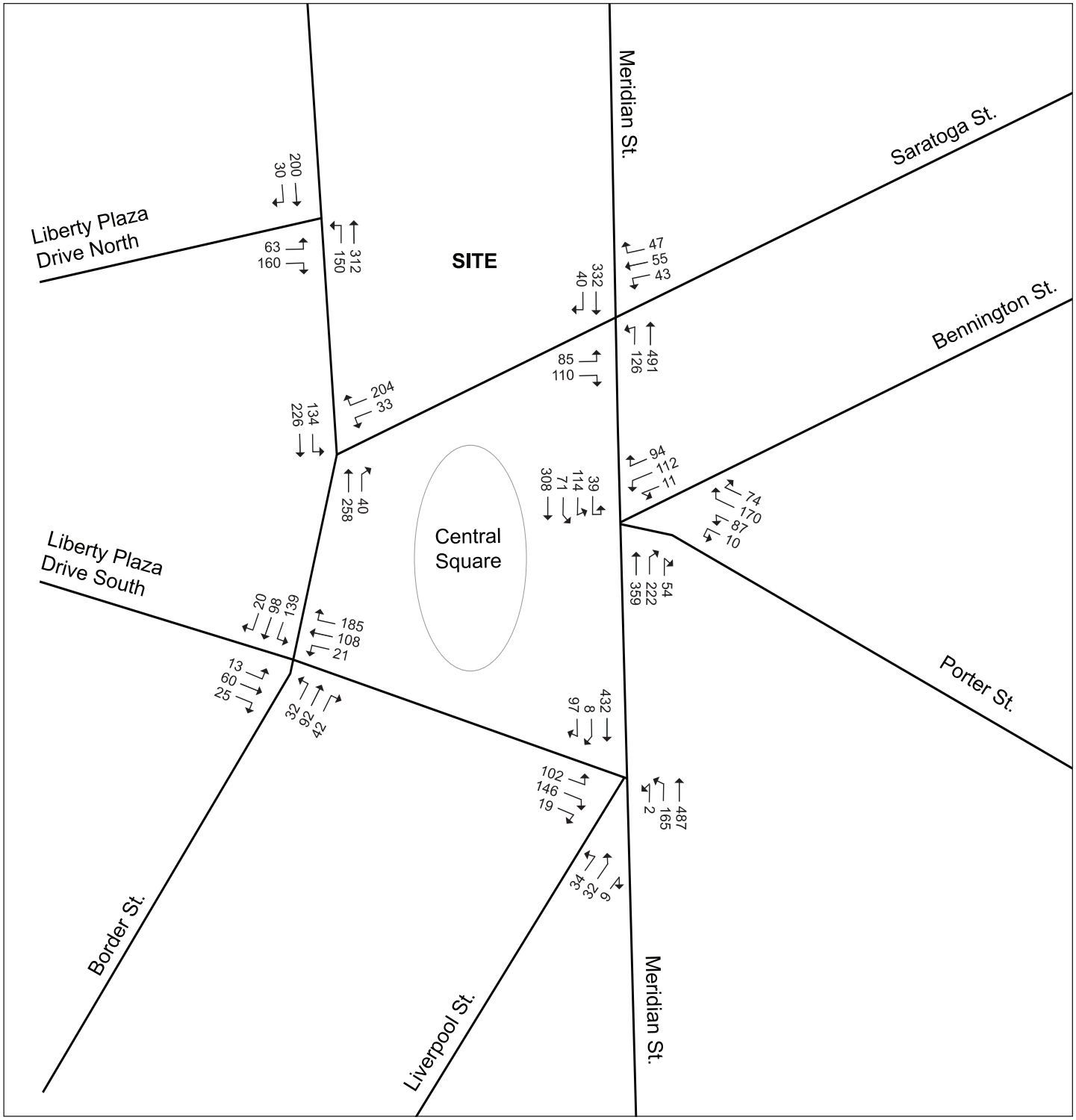


Figure 10. Site Plan

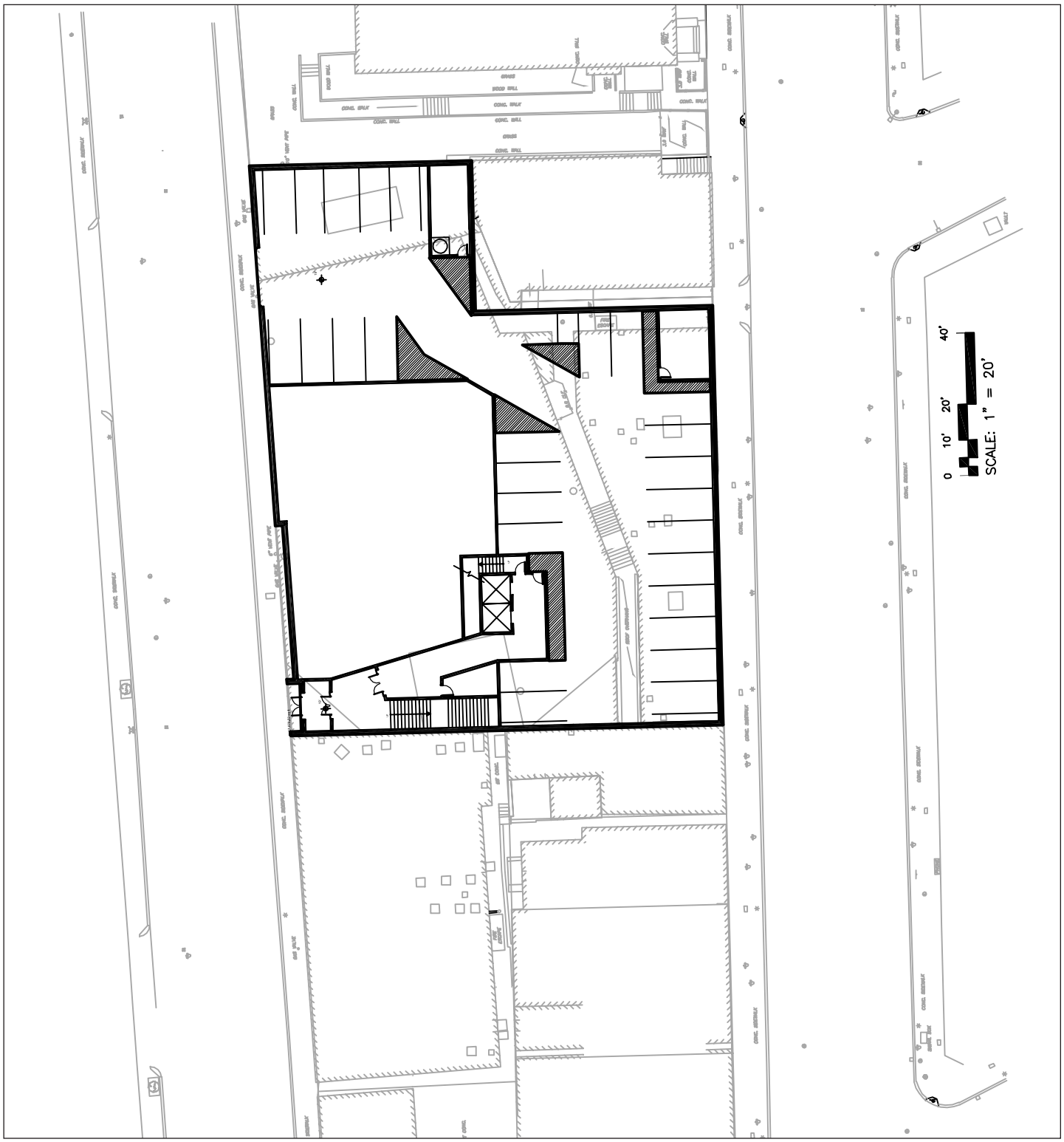
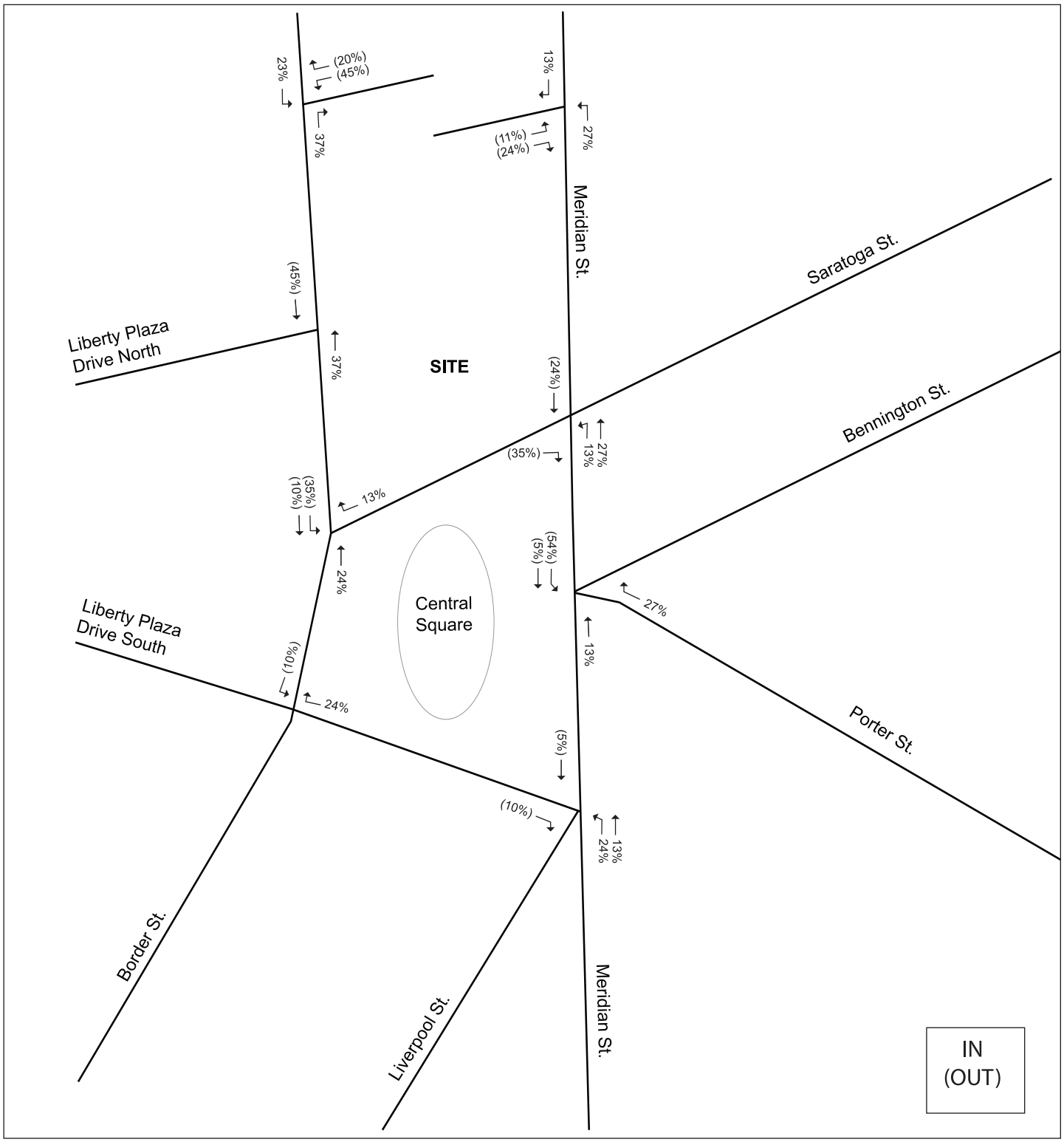


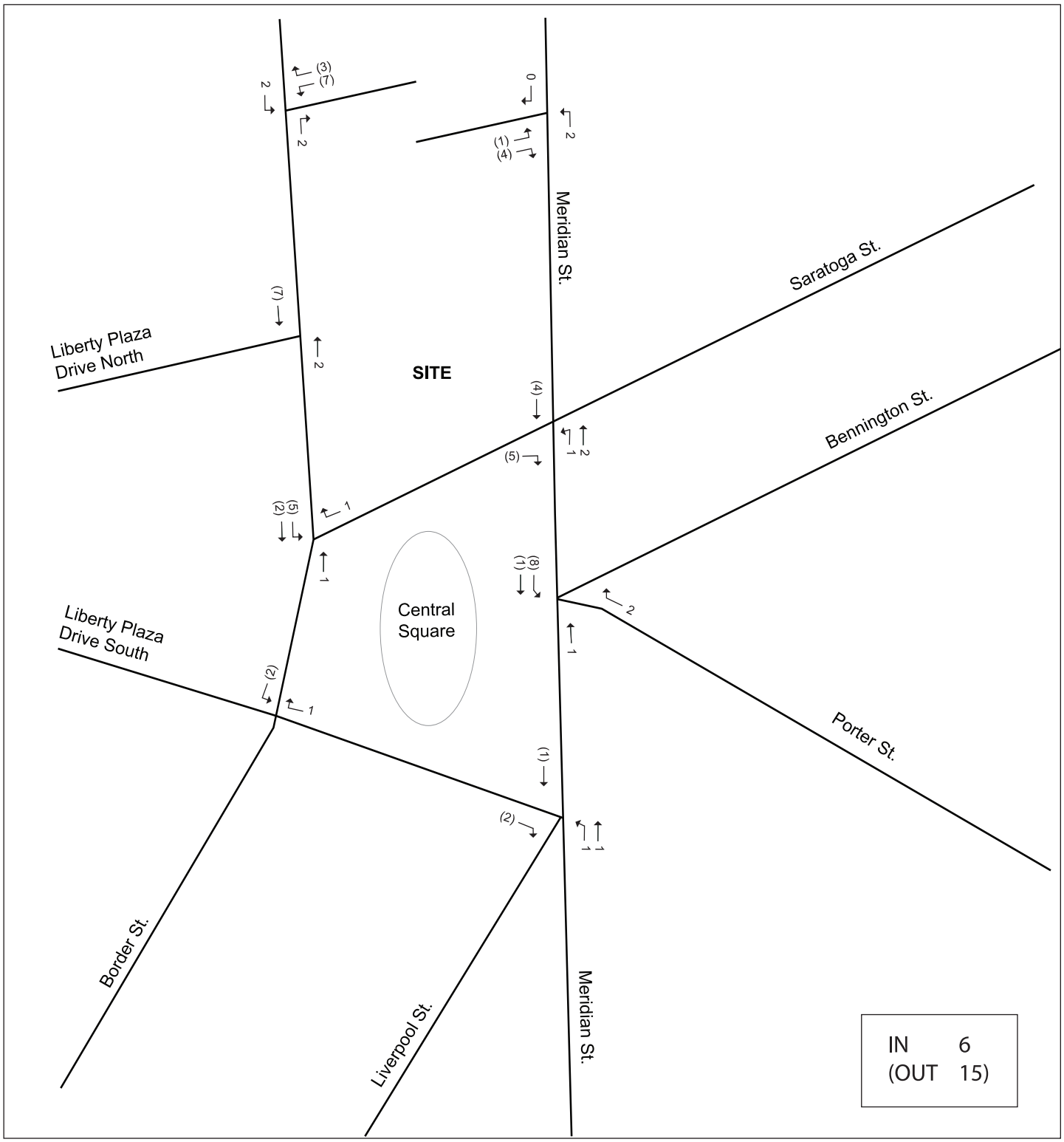
Figure 11. Trip Distribution



N

Not to Scale

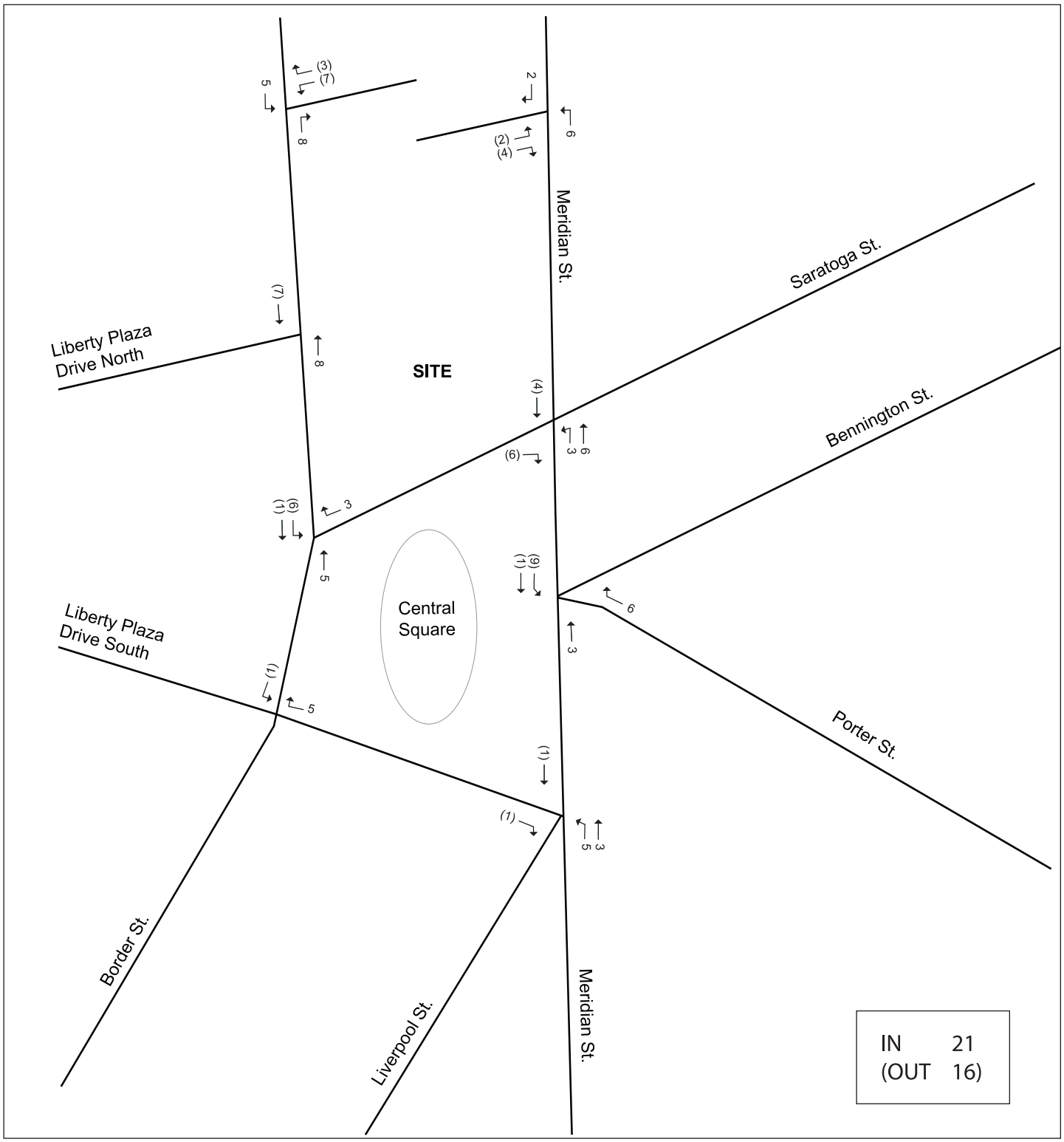
Figure 12. Project-generated Trips, a.m. Peak Hour



N

Not to Scale

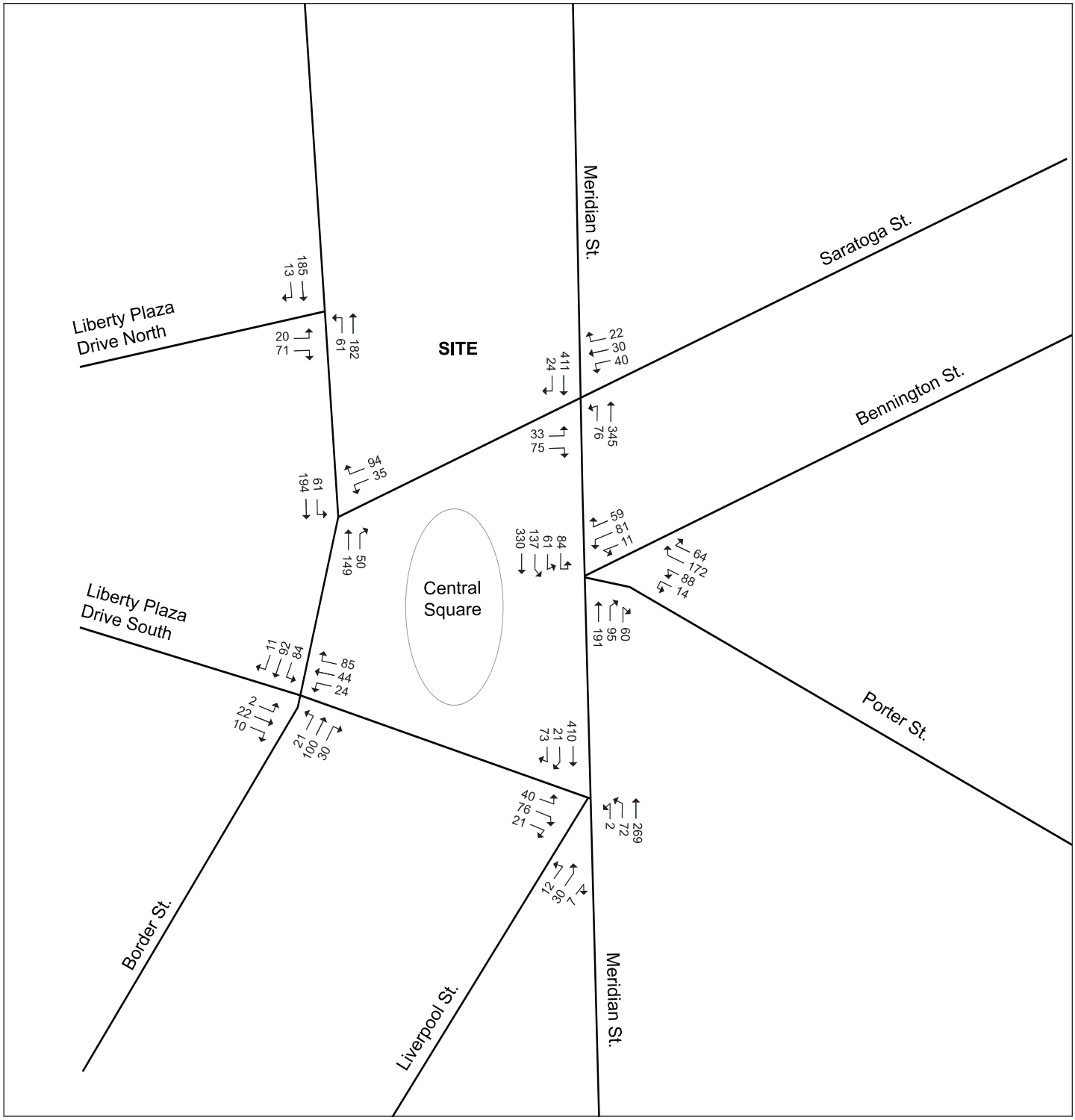
Figure 13. Project-generated Trips, p.m. Peak Hour



N

Not to Scale

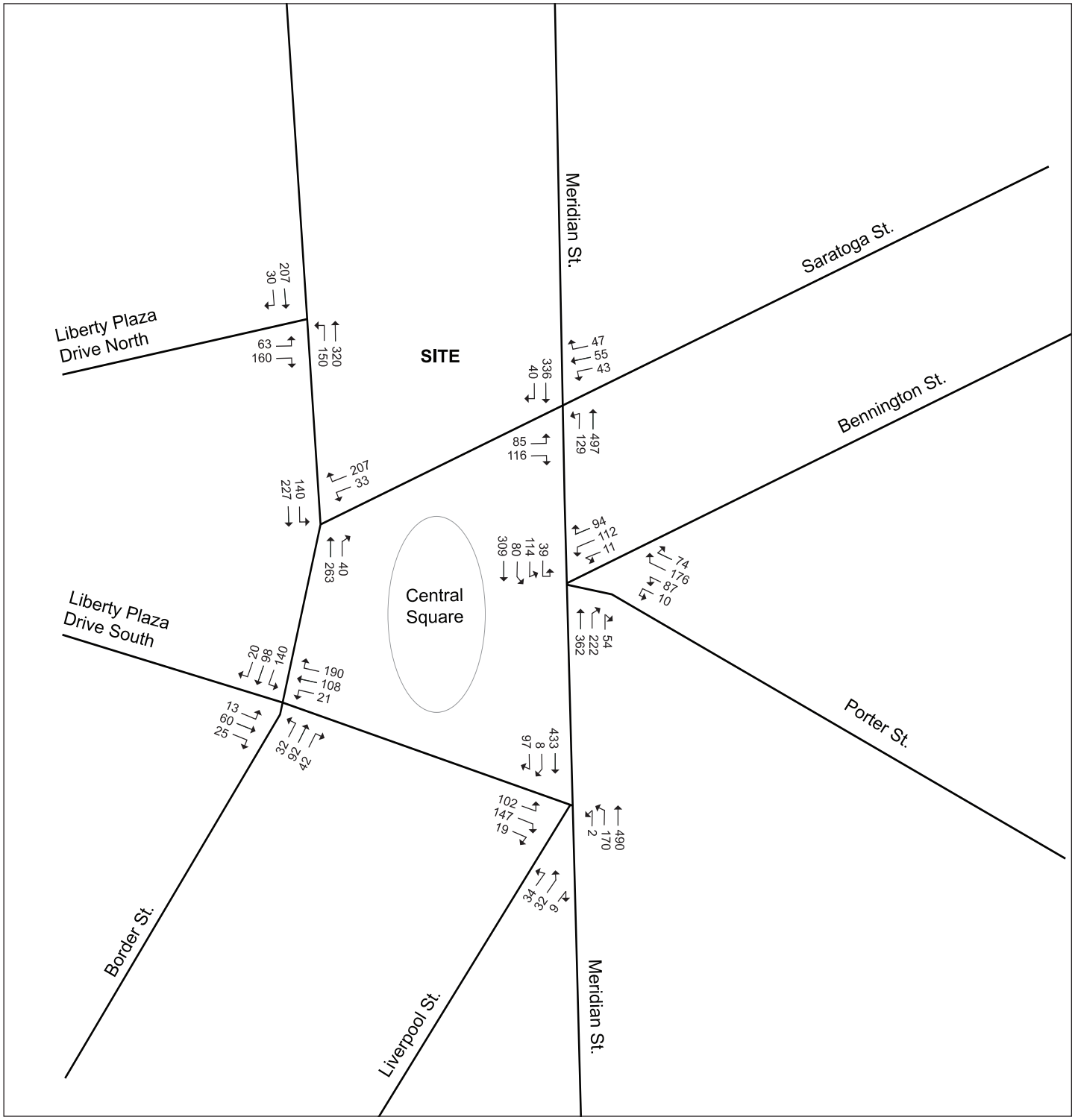
Figure 14. Build Conditions (2012) Turning Movement Volumes, a.m. Peak Hour



N

Not to Scale

Figure 15. Build Conditions (2012) Turning Movement Volumes, p.m. Peak Hour



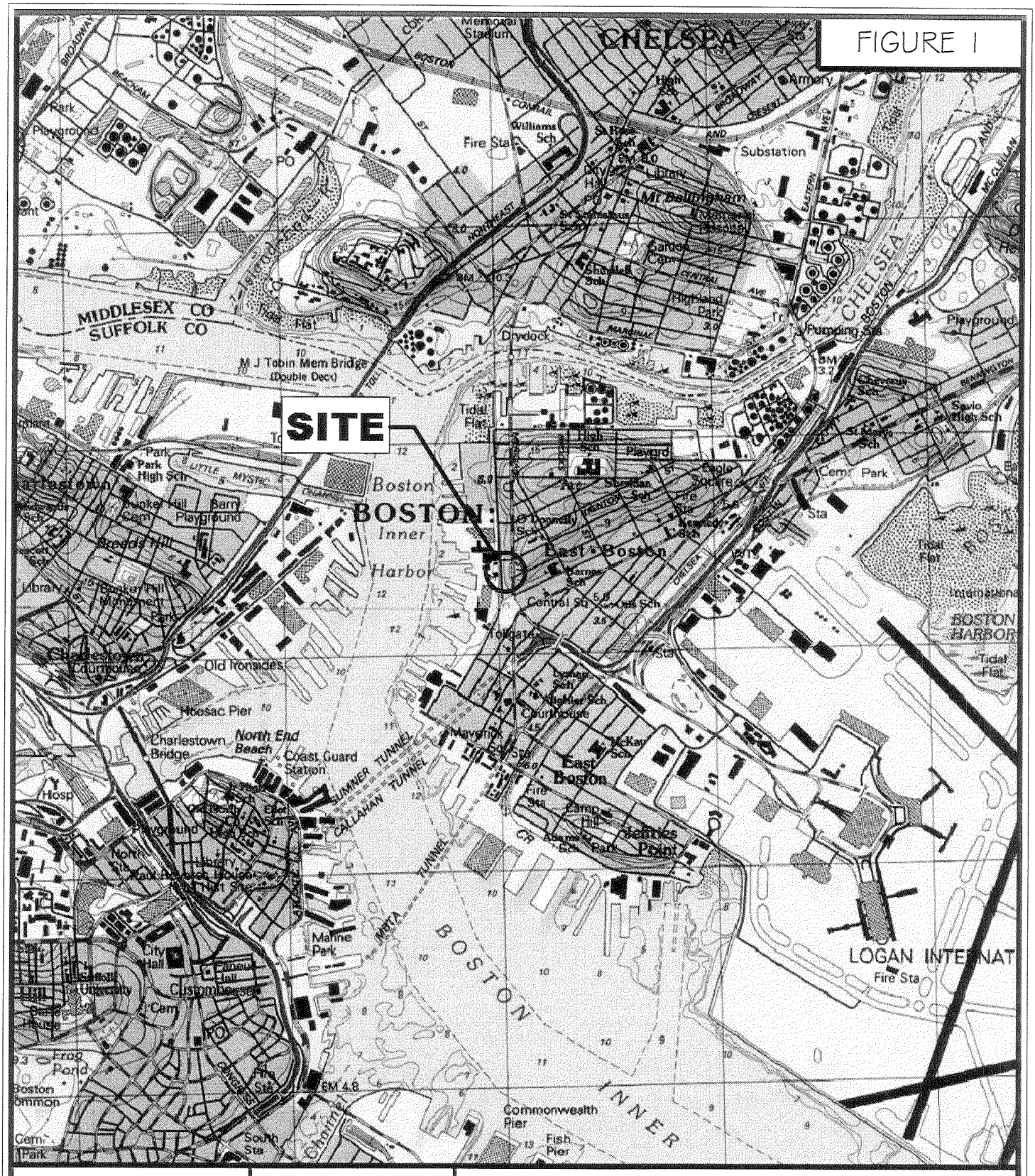
N

Not to Scale

APPENDIX A –LETTER OF INTENT

APPENDIX B –GEOTECHNICAL REPORT

FIGURE 1



McPHAIL ASSOCIATES, INC.
Geotechnical Engineers
30 Norfolk Street
Cambridge, MA 02139
617/868-1420
617/868-1423 (Fax)

SCALE 1:25,000

PROJECT LOCATION PLAN

SEVILLE THEATER

EAST BOSTON MASSACHUSETTS

FIGURE 2

BORDER (PUBLIC, 50' WIDE) STREET

MERIDIAN (PUBLIC, 60' WIDE) STREET

CENTRAL SQUARE

SARATOGA STREET (PUBLIC)

PRINCETON STREET (PUBLIC)

B-4

B-3

B-2

B-1

B

B'

TBM-A

TBM-B

NO. 215-217

NO. 219

179.98'

NO. 221-227
2 STORY
BRICK/STUCCO

FULL BASEMENT

TELLO'S MEN'S STORE

N/F
220 BORDER STREET
ASSOCIATES
LIMITED
PARTNERSHIP

S 88°27'39" W
121.33'
121.12'(DEED)

ROOF STRUCTURE

STEEL STRUCTURE

BK 0.25

OV 0.50

VENT PIPE

WATER METER

GAS VALVE

N 04°14'09" W
160.18'
160.08'(DEED)

NO. 239-245
VACANT SEVILLE THEATRE
BRICK/CONC.

NO BASEMENT

WARD 1
MAP 1058
PARCEL 5937
AREA=17,481 S.F.

N 88°27'39" E
62.44'
62.85'(DEED)

OV 0.10

10" VENT PIPE

GRASS

CONC. WALL

WOOD WALL

CONC.

N/F
CITY OF BOSTON

BOSTON PUBLIC LIBRARY
EAST BOSTON BRANCH

2 STORY BRICK

CONC. WALL

7.80' (DEED)

S 88°27'39" W
56.83'

N 88°27'39" E
56.83'

S 01°32'21" E
120.00'

S 01°32'21" E
120.08' (REC)
120.08' (DEED)
120.08' (CALC)

S 22°14'09" E
27.13' (REC)
27.13' (DEED)
27.13' (CALC)

N 14°58'
LINE CALC)

ENCLOSED PORCH AREA

CONC. RAMP

1 STORY

PARTY WALL AGREEMENT BK 4992 PG 328

N/F
BRUCE YOCHUM

LCC 20763
CERTIFICATE OF TITLE 505579

3 STORY
WOOD FRAME

NO. 272-274

N/F
LUIS E. VASCO

3 STORY
WOOD FRAME

NO. 244

NO. 228-230

NO. 236

NO. 240-242

NO. 244

129.17'

3 STORY
BRICK/STUCCO

NO. 248-270

AREA TO BE KEPT OPEN FOR LIGHT AND AIR. BK 4992, PG 328

N/C UNITS

6.0 CLF

6' PASONRY

10' CLF

GATE POST

CHIMNEY

VENT

A/C

ROOF OVERHANG

CONC. SIDEWALK

VGC

SIGNAL BOX

NORTH

LEGEND

— LOCATION OF BORINGS PERFORMED BY CARR-DEE CORP. ON APRIL 20 AND 21, 2006 FOR McPHAIL ASSOCIATES, INC.

REFERENCE: THIS PLAN WAS PREPARED FROM A 10-SCALE DRAWING ENTITLED "EXISTING CONDITIONS PLAN" DATED MARCH 27, 2006 PREPARED BY FELDMAN, PROFESSIONAL LAND SURVEYORS.

McPHAIL ASSOCIATES, INC.
Geotechnical Engineers
30 Norfolk Street
Cambridge, MA 02139
617/868-1420
617/868-1423 (Fax)

SEVILLE THEATER

EAST BOSTON MASSACHUSETTS

SUBSURFACE EXPLORATION PLAN

FOR

GLOBAL PROPERTY DEVELOPERS CORP.

BY

McPHAIL ASSOCIATES, INC.

CONSULTING GEOTECHNICAL ENGINEERS

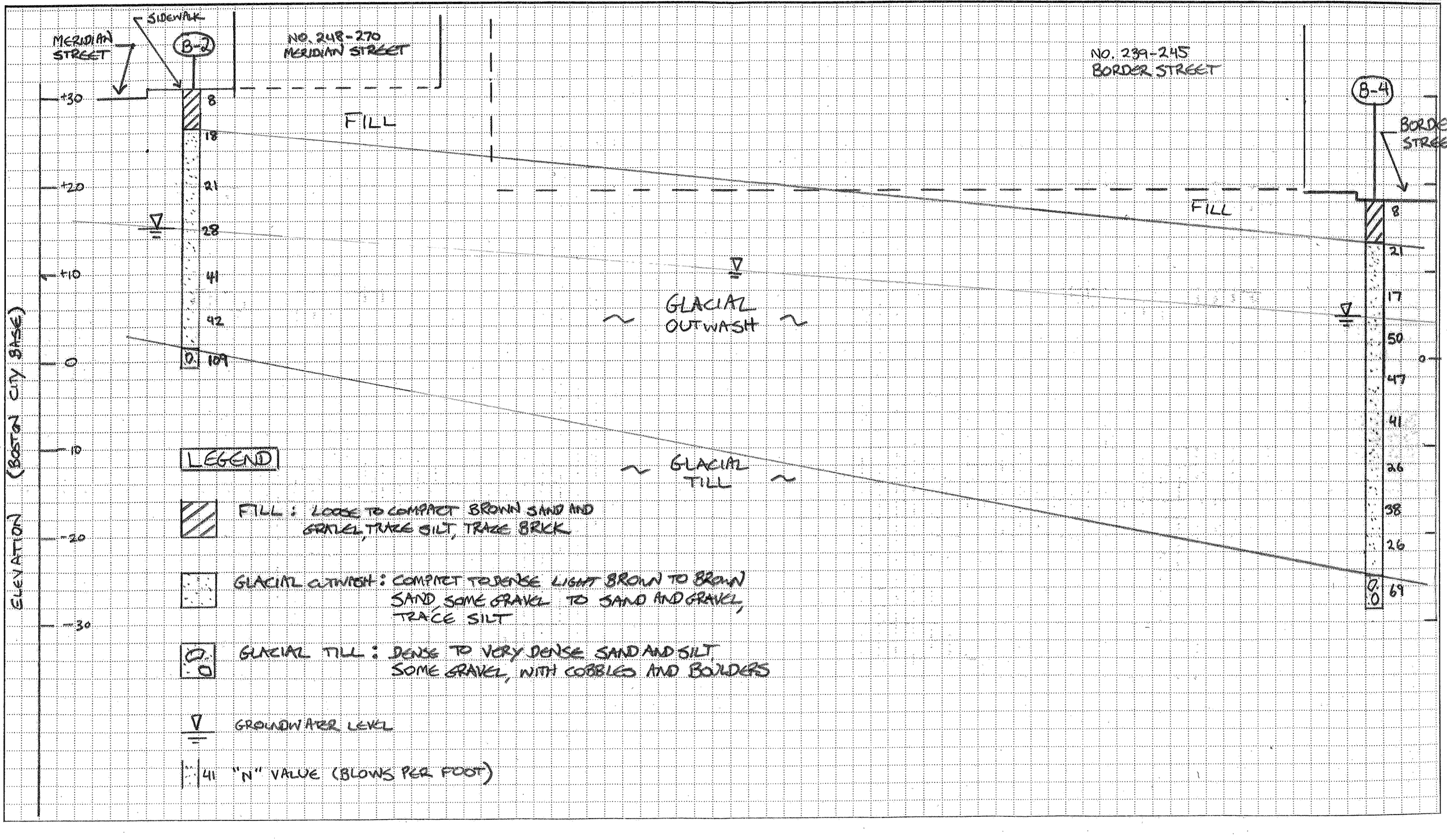
Date: APRIL 2006	Dwn: F.G.P.	Chkd: H.J.B.	Scale: 1" = 30'
Project No: 4515			

FILE NAME: 4515-FO2

McPHAIL ASSOCIATES, INC.
Consulting Geotechnical Engineers
30 Norfolk Street
CAMBRIDGE, MA 02139

JOB 7515 Seville Avenue
SHEET NO. 1 OF 2
CALCULATED BY TF DATE 5/22/08
CHECKED BY DATE
SCALE 1"=10' H&V

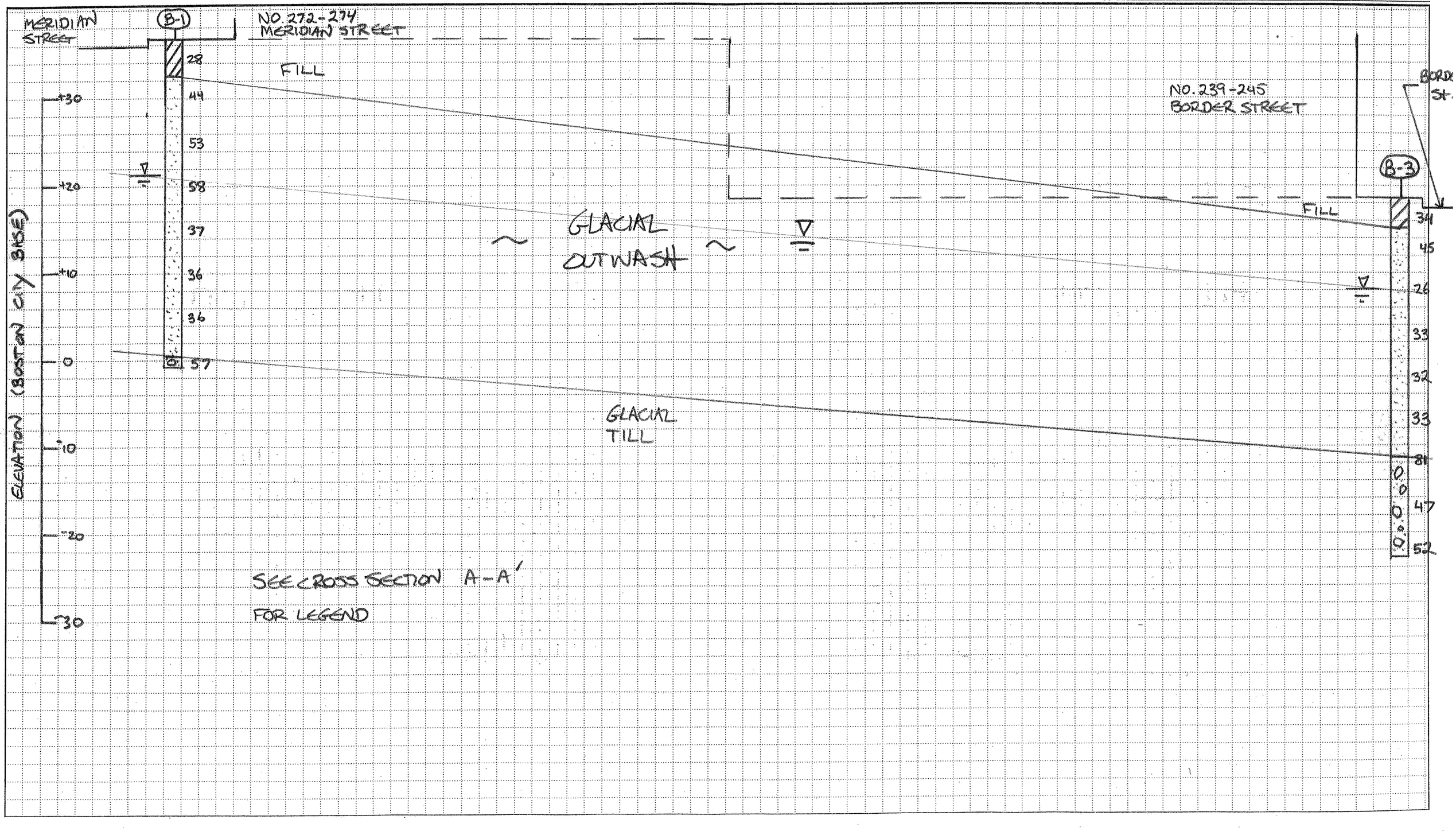
CROSS SECTION A-A'



McPHAIL ASSOCIATES, INC.
Consulting Geotechnical Engineers
30 Norfolk Street
CAMBRIDGE, MA 02139

CROSS SECTION B-B'

JOB 435 SEVILLE THEATRE
SHEET NO. 2 OF 2
CALCULATED BY TF DATE 5/22/06
CHECKED BY DATE
SCALE 1" = 10' HEV



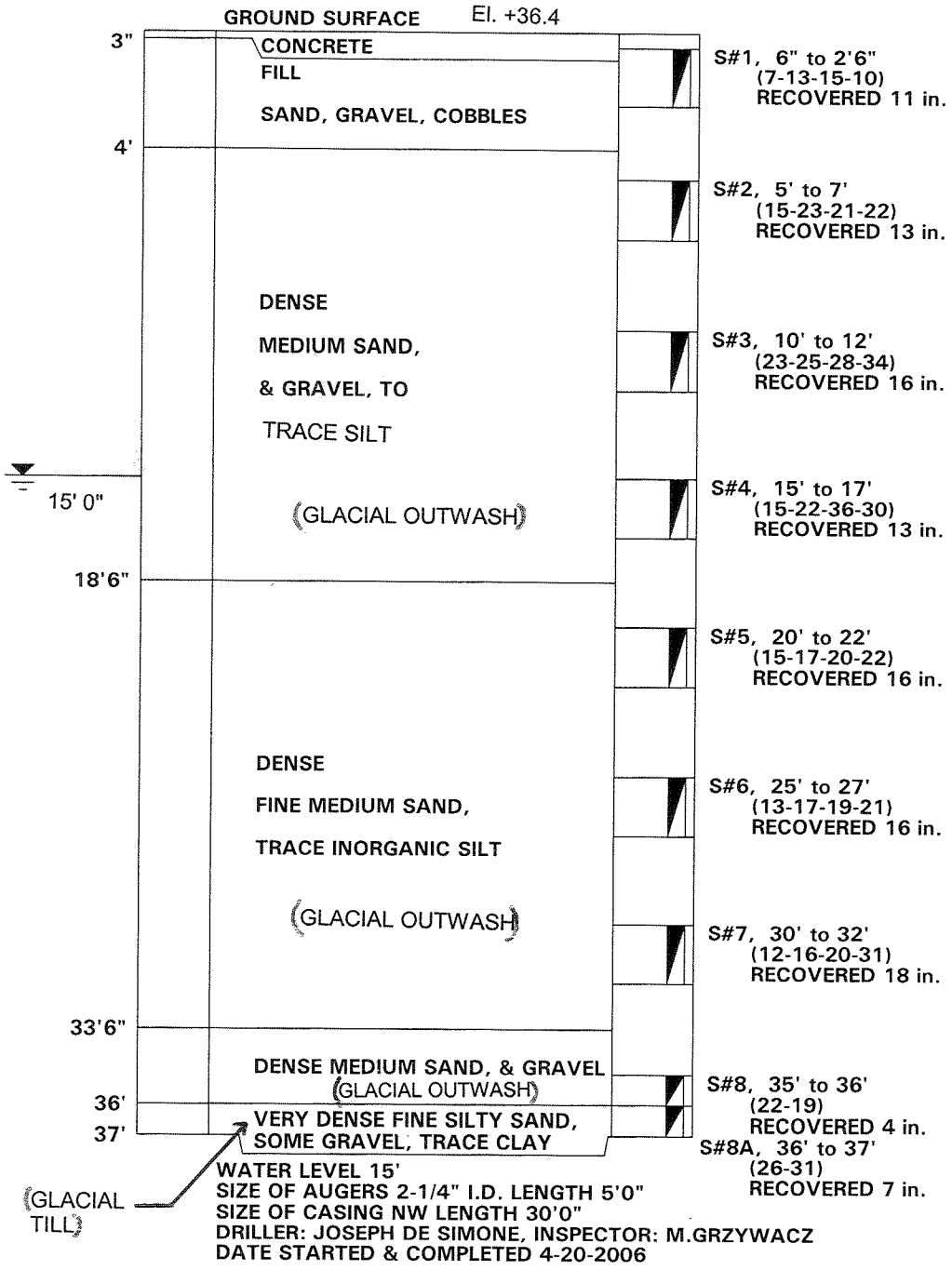
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC. 30 NORFOLK ST., CAMBRIDGE, MA Date: 4-14-2006 Job No.: 2006-81

Location: 248 MERIDIAN STREET, EAST BOSTON, MA Scale: 1 in.= 6 ft.

BORING 1



WATER LEVEL 15'
SIZE OF AUGERS 2-1/4" I.D. LENGTH 5'0"
SIZE OF CASING NW LENGTH 30'0"
DRILLER: JOSEPH DE SIMONE, INSPECTOR: M.GRZYWACZ
DATE STARTED & COMPLETED 4-20-2006

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

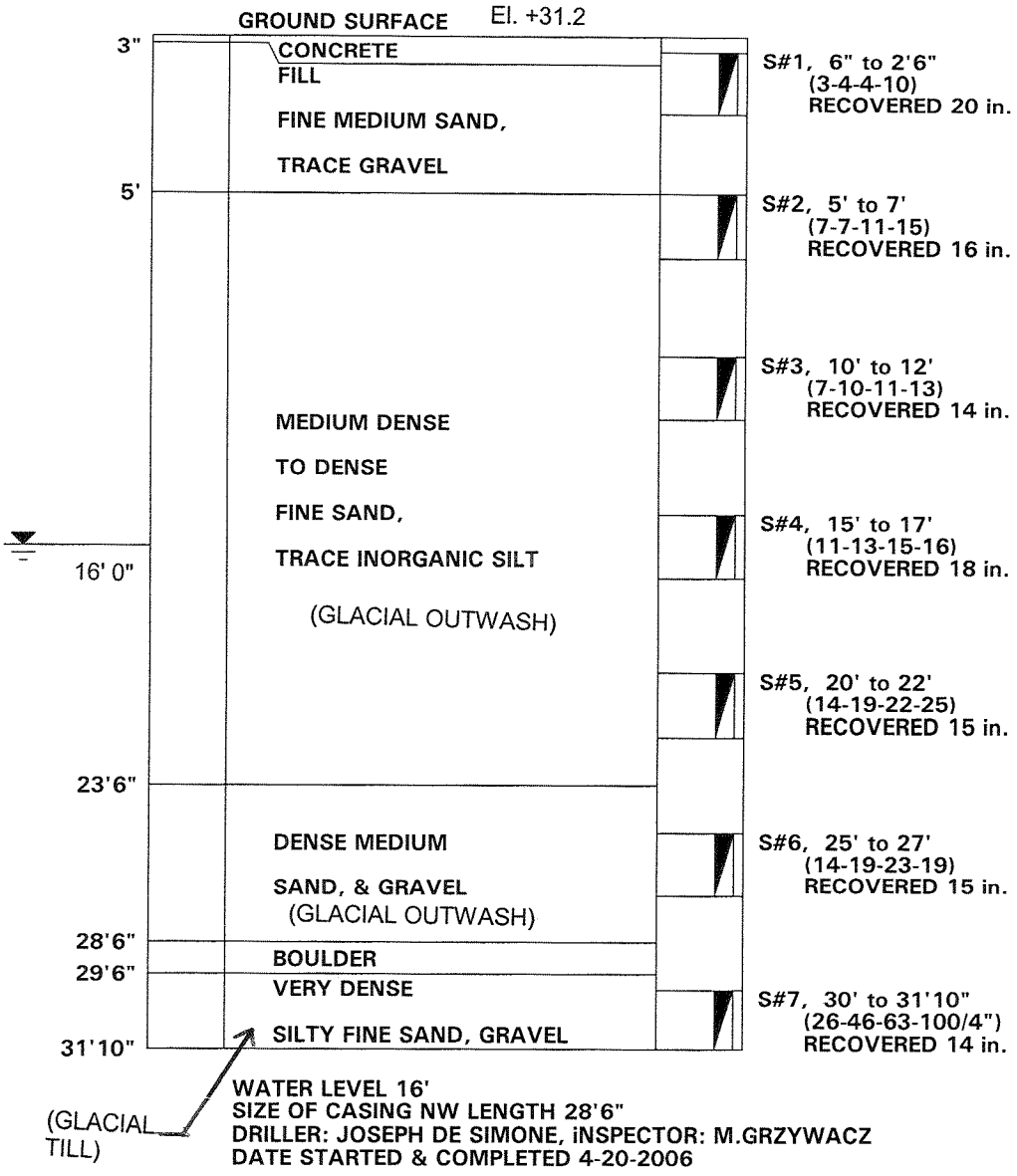
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC. 30 NORFOLK ST., CAMBRIDGE, MA Date: 4-14-2006 Job No.: 2006-81

Location: 248 MERIDIAN STREET, EAST BOSTON, MA Scale: 1 in.= 6 ft.

BORING 2



WATER LEVEL 16'
SIZE OF CASING NW LENGTH 28'6"
DRILLER: JOSEPH DE SIMONE, iNSPECTOR: M.GRZYWACZ
DATE STARTED & COMPLETED 4-20-2006

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

CARR-DEE CORP.

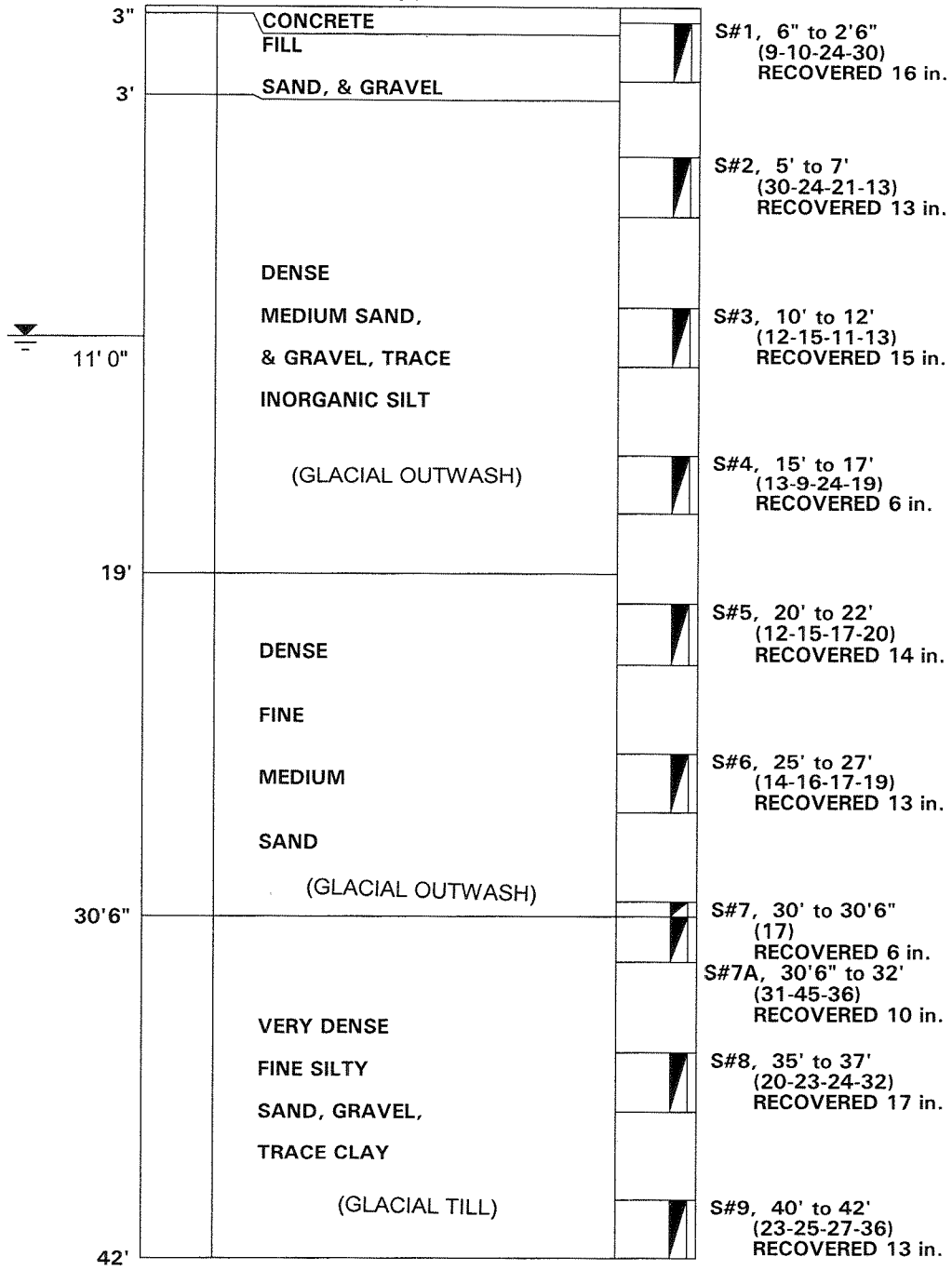
37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC. 30 NORFOLK ST., CAMBRIDGE, MA Date: 4-14-2006 Job No.: 2006-81

Location: 248 MERIDIAN STREET, EAST BOSTON, MA Scale: 1 in.= 6 ft.

BORING 3

GROUND SURFACE EL. +18.9



WATER LEVEL 11'
SIZE OF CASING NW LENGTH 35'0"
DRILLER: JOSEPH DE SIMONE, iNSPECTOR: M.GRZYWACZ
DATE STARTED & COMPLETED 4-21-2006

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

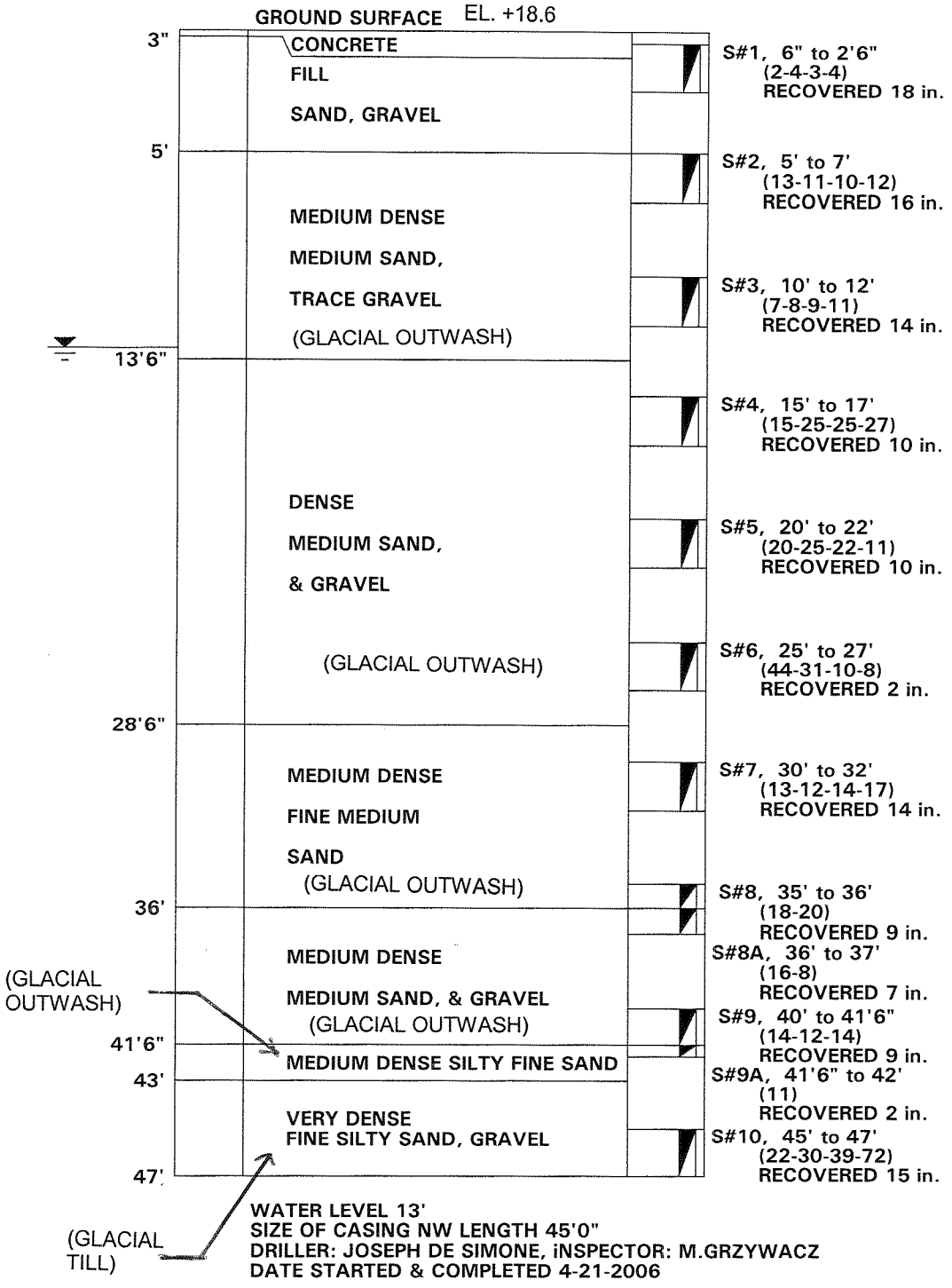
CARR-DEE CORP.

37 LINDEN STREET P.O. BOX 67 MEDFORD, MA 02155-0001 Telephone (617) 391-4500

To: McPHAIL ASSOCIATES, INC. 30 NORFOLK ST., CAMBRIDGE, MA Date: 4-14-2006 Job No.: 2006-81

Location: 248 MERIDIAN STREET, EAST BOSTON, MA Scale: 1 in.= 7 ft.

BORING 4



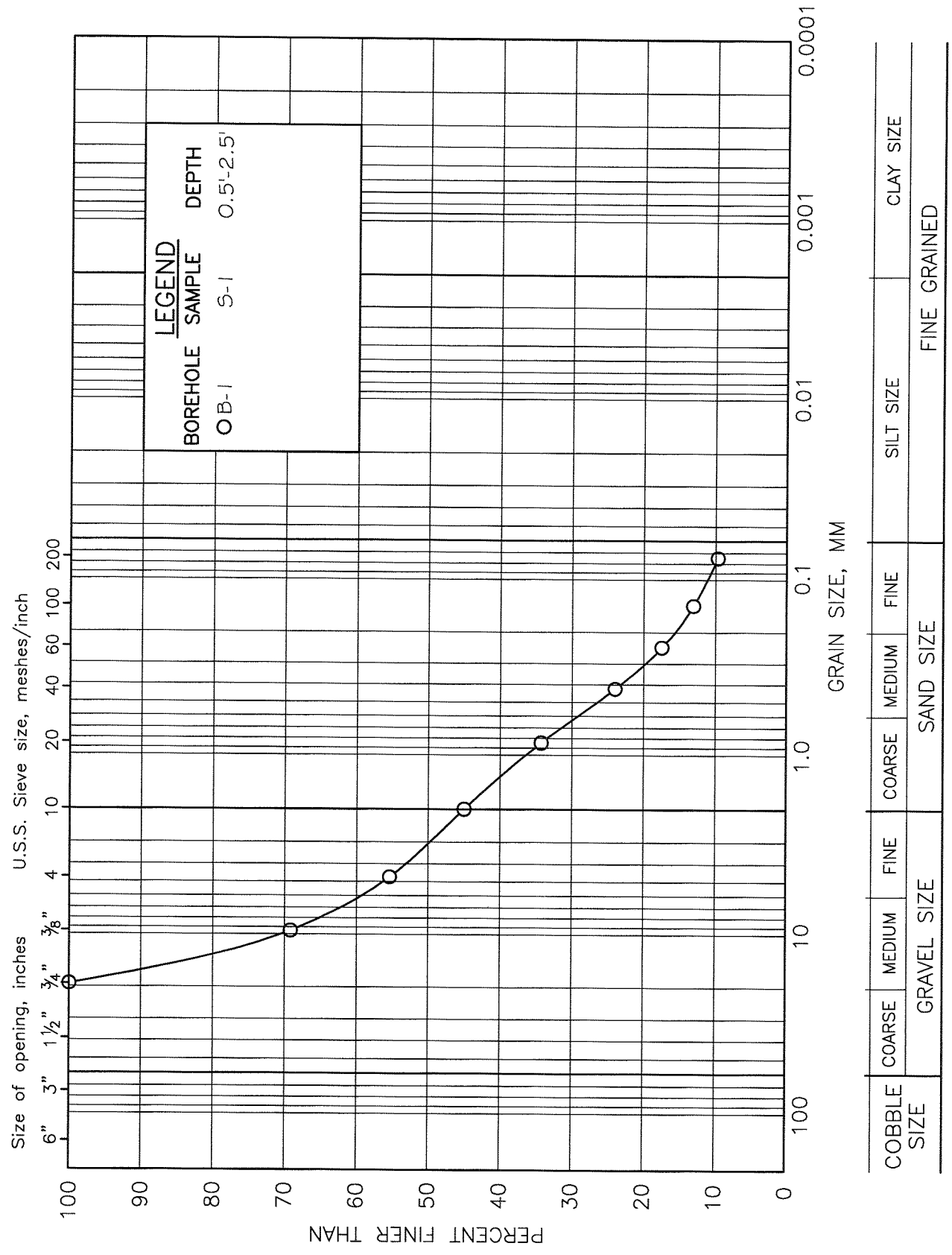
WATER LEVEL 13'
SIZE OF CASING NW LENGTH 45'0"
DRILLER: JOSEPH DE SIMONE, INSPECTOR: M.GRZYWACZ
DATE STARTED & COMPLETED 4-21-2006

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

PROJECT No. 4515

GRAIN SIZE DISTRIBUTION
FILL

FIGURE 3



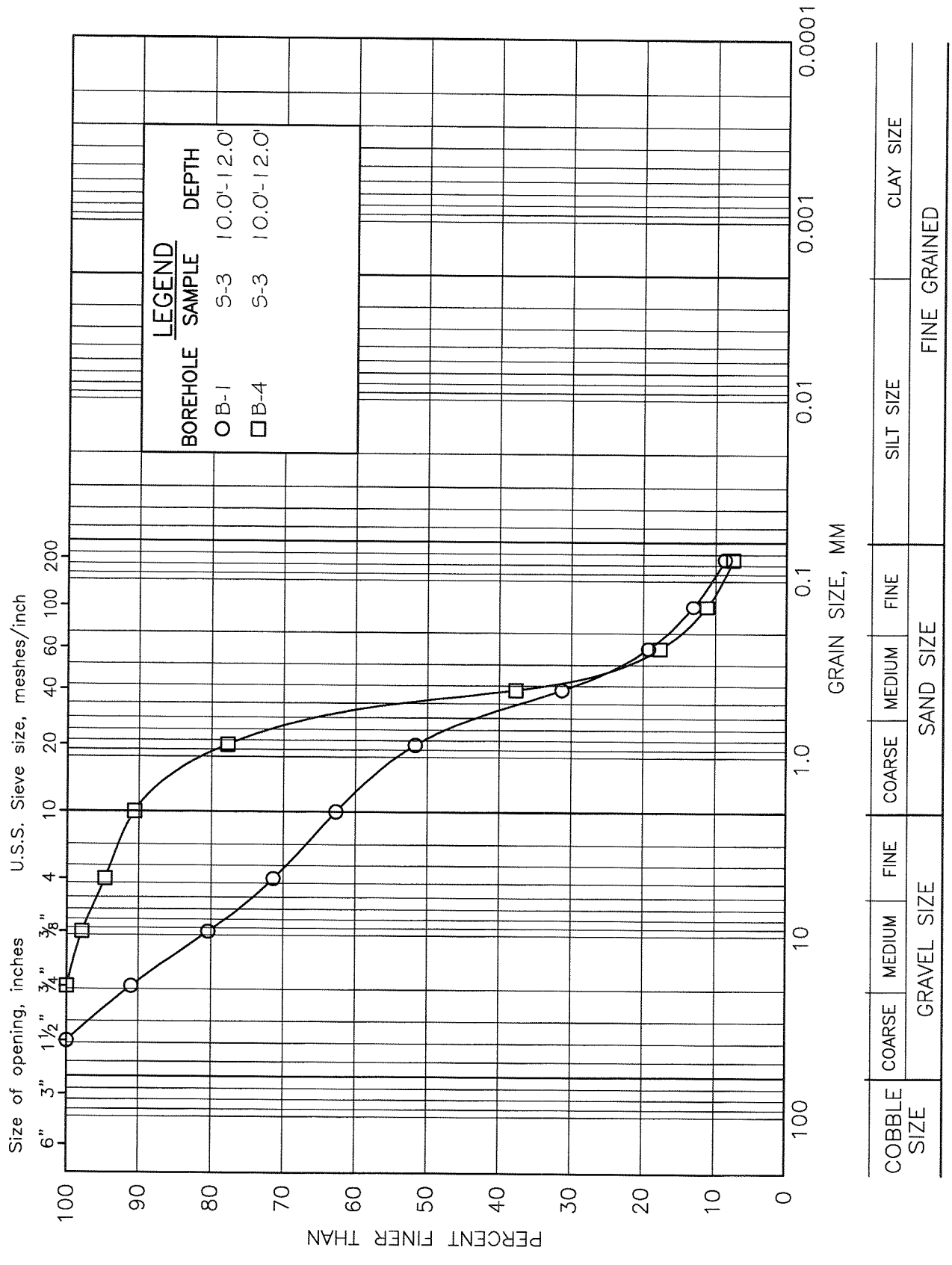
McPHAIL ASSOCIATES, INC.

FILE NAME: 4515-F03_Sieve

PROJECT No. 4515

GRAIN SIZE DISTRIBUTION
GLACIAL OUTWASH

FIGURE 4



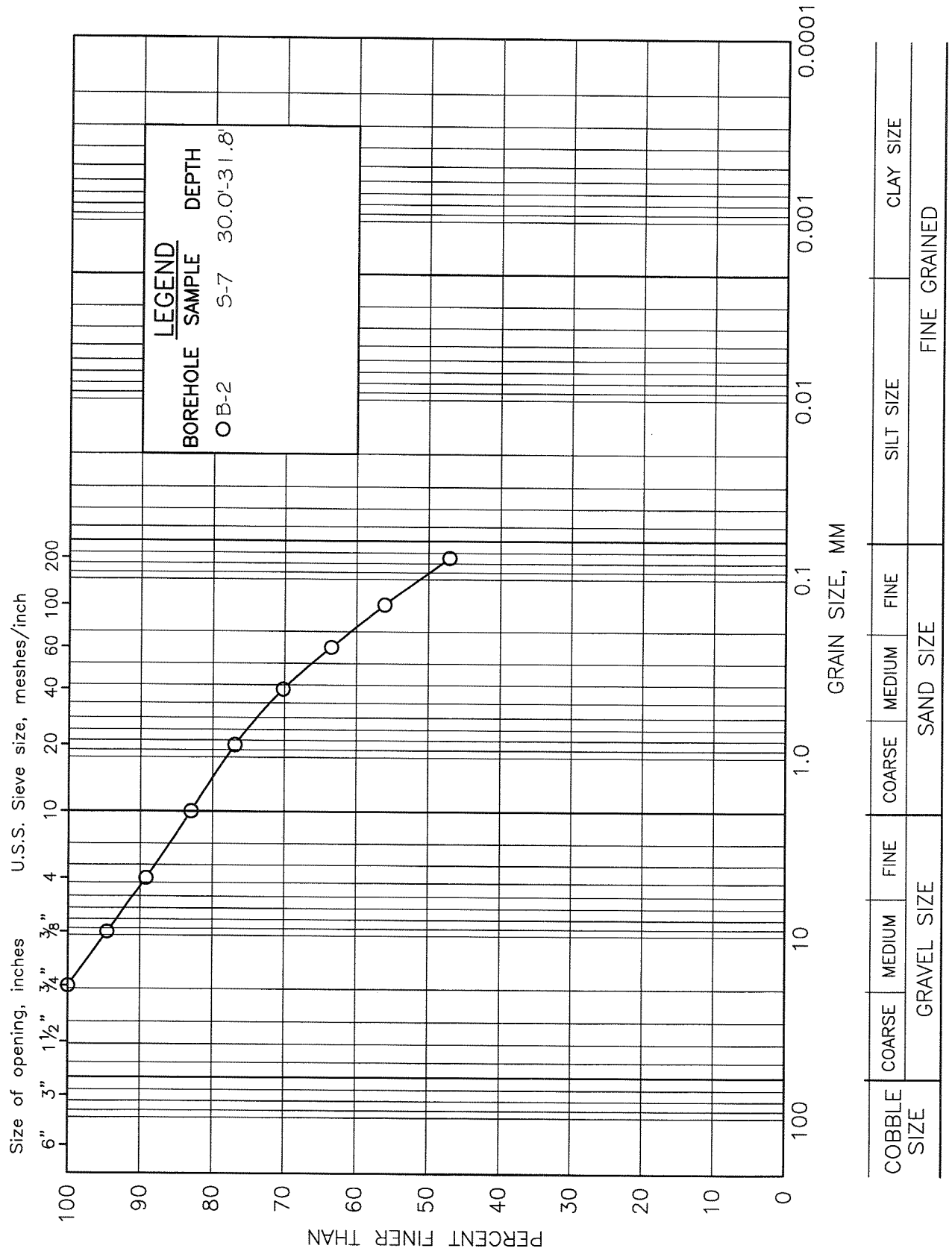
McPHAIL ASSOCIATES, INC.

FILE NAME: 4515-F04_Sieve

PROJECT No. 4515

GRAIN SIZE DISTRIBUTION
GLACIAL TILL

FIGURE 5



McPHAIL ASSOCIATES, INC.

FILE NAME: 4515-F05_Sieve

APPENDIX C –TRANSPORTATION APPENDIX

C-1 Traffic Count Data

Accurate Counts

Location : Border Street North of
Location : Tellos
978-664-2565

City/State: Boston, MA
71490001

Counter : 10109
Site Code: 71490001

Start	26-Sep-0	SB		Hour Totals		NB		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	89			2	48				
12:15		3	8			3	1				
12:30		2	14			4	2				
12:45		4	33	13	144	4	34	13	85	26	229
01:00		0	51			2	84				
01:15		0	55			5	59				
01:30		5	44			3	61				
01:45		0	52	5	202	4	63	14	267	19	469
02:00		0	57			2	73				
02:15		0	59			2	43				
02:30		1	53			1	28				
02:45		3	57	4	226	1	95	6	239	10	465
03:00		3	65			1	79				
03:15		1	37			3	57				
03:30		2	32			3	49				
03:45		1	43	7	177	1	64	8	249	15	426
04:00		5	38			3	49				
04:15		4	53			6	56				
04:30		6	51			6	50				
04:45		2	47	17	189	12	50	27	205	44	394
05:00		12	16			10	34				
05:15		15	23			13	42				
05:30		20	29			21	34				
05:45		19	24	66	92	19	51	63	161	129	253
06:00		23	31			29	39				
06:15		39	17			54	20				
06:30		47	16			58	28				
06:45		43	15	152	79	33	21	174	108	326	187
07:00		29	11			35	12				
07:15		32	15			37	16				
07:30		47	15			30	24				
07:45		45	7	153	48	45	8	147	60	300	108
08:00		42	9			34	12				
08:15		46	2			31	9				
08:30		33	9			36	6				
08:45		38	8	159	28	43	9	144	36	303	64
09:00		30	5			45	4				
09:15		22	5			38	11				
09:30		32	2			41	1				
09:45		31	2	115	14	54	3	178	19	293	33
10:00		24	3			33	5				
10:15		31	4			35	6				
10:30		22	5			57	2				
10:45		29	2	106	14	52	2	177	15	283	29
11:00		35	4			42	4				
11:15		35	0			68	2				
11:30		36	1			54	0				
11:45		40	3	146	8	51	0	215	6	361	14
Total		943	1221			1166	1450			2109	2671
Percent		43.6%	56.4%			44.6%	55.4%			44.1%	55.9%
Grand Total		943	1221			1166	1450			2109	2671
Percent		43.6%	56.4%			44.6%	55.4%			44.1%	55.9%

ADT Not Calculated

Accurate Counts
978-664-2565

Location : Border Street North of
Location : Tellos
City/State: Boston, MA
Counter : 10109

71490001
Site Code: 71490001

Start Time	24-Sep-07 SB	24-Sep-07 NB	Tue SB	Tue NB	Wed SB	Wed NB	Thu SB	Thu NB	Fri SB	Fri NB	Sat SB	Sat NB	Sun SB	Sun NB	Week Average SB	Week Average NB
12:00 AM	*	*	*	*	13	13	*	*	*	*	*	*	*	*	13	13
01:00	*	*	*	*	5	14	*	*	*	*	*	*	*	*	5	14
02:00	*	*	*	*	4	6	*	*	*	*	*	*	*	*	4	6
03:00	*	*	*	*	7	8	*	*	*	*	*	*	*	*	7	8
04:00	*	*	*	*	17	27	*	*	*	*	*	*	*	*	17	27
05:00	*	*	*	*	66	63	*	*	*	*	*	*	*	*	66	63
06:00	*	*	*	*	152	174	*	*	*	*	*	*	*	*	152	174
07:00	*	*	*	*	153	147	*	*	*	*	*	*	*	*	153	147
08:00	*	*	*	*	**159**	144	*	*	*	*	*	*	*	*	**159**	144
09:00	*	*	*	*	115	178	*	*	*	*	*	*	*	*	115	178
10:00	*	*	*	*	106	177	*	*	*	*	*	*	*	*	106	177
11:00	*	*	*	*	146	**215**	*	*	*	*	*	*	*	*	146	**215**
12:00 PM	*	*	*	*	144	85	*	*	*	*	*	*	*	*	144	85
01:00	*	*	*	*	202	**267**	*	*	*	*	*	*	*	*	202	**267**
02:00	*	*	*	*	**226**	239	*	*	*	*	*	*	*	*	**226**	239
03:00	*	*	*	*	177	249	*	*	*	*	*	*	*	*	177	249
04:00	*	*	*	*	189	205	*	*	*	*	*	*	*	*	189	205
05:00	*	*	*	*	92	161	*	*	*	*	*	*	*	*	92	161
06:00	*	*	*	*	79	108	*	*	*	*	*	*	*	*	79	108
07:00	*	*	*	*	48	60	*	*	*	*	*	*	*	*	48	60
08:00	*	*	*	*	28	36	*	*	*	*	*	*	*	*	28	36
09:00	*	*	*	*	14	19	*	*	*	*	*	*	*	*	14	19
10:00	*	*	*	*	14	15	*	*	*	*	*	*	*	*	14	15
11:00	*	*	*	*	8	6	*	*	*	*	*	*	*	*	8	6
Lane	0	0	0	0	2164	2616	0	0	0	0	0	0	0	0	2164	2616
Day	0		0		4780		0		0		0		0		4780	
AM Peak					08:00	11:00									08:00	11:00
Vol.					159	215									159	215
PM Peak					14:00	13:00									14:00	13:00
Vol.					226	267									226	267

Comb. Total	0	0	4780	0	0	0	0	4780

ADT Not Calculated

Accurate Counts
978-664-2565

Location : Meridian Street South of
Location : Library
City/State: Boston, MA
Counter : 18142

71490002
Site Code: 71490002

Start	26-Sep-0	SB		Hour Totals		NB		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		18	57			49	119				
12:15		15	57			37	115				
12:30		18	64			46	109				
12:45		13	50	64	228	28	106	160	449	224	677
01:00		16	62			32	119				
01:15		6	64			32	106				
01:30		9	66			22	112				
01:45		5	57	36	249	13	121	99	458	135	707
02:00		7	62			17	106				
02:15		5	91			31	111				
02:30		12	50			19	125				
02:45		6	47	30	250	15	129	82	471	112	721
03:00		7	67			7	128				
03:15		9	59			18	132				
03:30		8	72			11	103				
03:45		11	69	35	267	22	116	58	479	93	746
04:00		8	60			23	120				
04:15		10	62			19	140				
04:30		7	55			46	113				
04:45		22	82	47	259	60	110	148	483	195	742
05:00		23	70			59	130				
05:15		29	67			74	149				
05:30		37	33			76	142				
05:45		46	0	135	170	93	121	302	542	437	712
06:00		51	18			100	120				
06:15		54	68			90	94				
06:30		61	61			115	99				
06:45		58	66	224	213	108	107	413	420	637	633
07:00		57	60			97	110				
07:15		81	58			99	90				
07:30		89	57			122	106				
07:45		87	58	314	233	93	124	411	430	725	663
08:00		93	52			84	113				
08:15		79	54			98	97				
08:30		56	32			91	104				
08:45		74	51	302	189	89	99	362	413	664	602
09:00		72	40			88	101				
09:15		66	58			98	94				
09:30		68	52			82	81				
09:45		63	36	269	186	77	78	345	354	614	540
10:00		59	37			85	93				
10:15		65	44			104	83				
10:30		65	27			95	80				
10:45		61	47	250	155	88	65	372	321	622	476
11:00		61	41			79	66				
11:15		49	26			96	61				
11:30		52	31			123	59				
11:45		51	21	213	119	123	38	421	224	634	343
Total		1919	2518			3173	5044			5092	7562
Percent		43.2%	56.8%			38.6%	61.4%			40.2%	59.8%
Grand Total		1919	2518			3173	5044			5092	7562
Percent		43.2%	56.8%			38.6%	61.4%			40.2%	59.8%

ADT Not Calculated

Accurate Counts
978-664-2565

Location : Meridian Street South of
Location : Library
City/State: Boston, MA
Counter : 18142

71490002
Site Code: 71490002

Start Time	24-Sep-07 SB	24-Sep-07 NB	Tue SB	Tue NB	Wed SB	Wed NB	Thu SB	Thu NB	Fri SB	Fri NB	Sat SB	Sat NB	Sun SB	Sun NB	Week Average SB	Week Average NB
12:00 AM	*	*	*	*	64	160	*	*	*	*	*	*	*	*	64	160
01:00	*	*	*	*	36	99	*	*	*	*	*	*	*	*	36	99
02:00	*	*	*	*	30	82	*	*	*	*	*	*	*	*	30	82
03:00	*	*	*	*	35	58	*	*	*	*	*	*	*	*	35	58
04:00	*	*	*	*	47	148	*	*	*	*	*	*	*	*	47	148
05:00	*	*	*	*	135	302	*	*	*	*	*	*	*	*	135	302
06:00	*	*	*	*	224	413	*	*	*	*	*	*	*	*	224	413
07:00	*	*	*	*	**314**	411	*	*	*	*	*	*	*	*	**314**	411
08:00	*	*	*	*	302	362	*	*	*	*	*	*	*	*	302	362
09:00	*	*	*	*	269	345	*	*	*	*	*	*	*	*	269	345
10:00	*	*	*	*	250	372	*	*	*	*	*	*	*	*	250	372
11:00	*	*	*	*	213	**421**	*	*	*	*	*	*	*	*	213	**421**
12:00 PM	*	*	*	*	228	449	*	*	*	*	*	*	*	*	228	449
01:00	*	*	*	*	249	458	*	*	*	*	*	*	*	*	249	458
02:00	*	*	*	*	250	471	*	*	*	*	*	*	*	*	250	471
03:00	*	*	*	*	**267**	479	*	*	*	*	*	*	*	*	**267**	479
04:00	*	*	*	*	259	483	*	*	*	*	*	*	*	*	259	483
05:00	*	*	*	*	170	**542**	*	*	*	*	*	*	*	*	170	**542**
06:00	*	*	*	*	213	420	*	*	*	*	*	*	*	*	213	420
07:00	*	*	*	*	233	430	*	*	*	*	*	*	*	*	233	430
08:00	*	*	*	*	189	413	*	*	*	*	*	*	*	*	189	413
09:00	*	*	*	*	186	354	*	*	*	*	*	*	*	*	186	354
10:00	*	*	*	*	155	321	*	*	*	*	*	*	*	*	155	321
11:00	*	*	*	*	119	224	*	*	*	*	*	*	*	*	119	224
Lane	0	0	0	0	4437	8217	0	0	0	0	0	0	0	0	4437	8217
Day	0		0		12654		0		0		0		0		12654	
AM Peak					07:00	11:00									07:00	11:00
Vol.					314	421									314	421
PM Peak					15:00	17:00									15:00	17:00
Vol.					267	542									267	542
Comb. Total	0		0		12654		0		0		0		0		12654	

ADT Not Calculated

N/S Street : Border Street (North)
E/W Street: Central Square
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490003
Site Code : 71490003
Start Date : 9/13/2007
Page No : 1

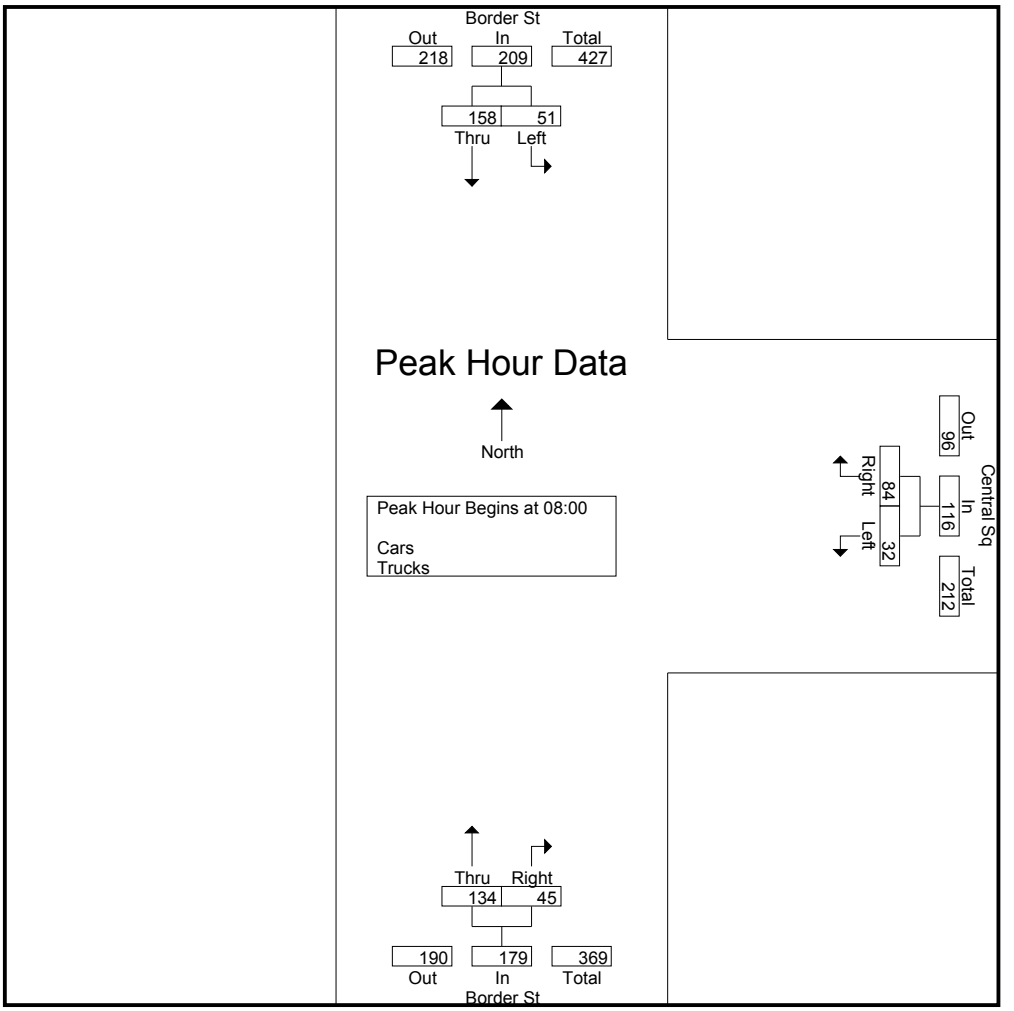
Groups Printed- Cars - Trucks

	Border St From North			Central Sq From East			Border St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	15	32	3	8	44	10	34	6	18	31	139	170
07:15	21	34	0	7	30	20	26	11	18	38	129	167
07:30	20	20	0	11	19	5	27	6	3	8	103	111
07:45	12	40	0	10	18	4	17	3	0	4	100	104
Total	68	126	3	36	111	39	104	26	39	81	471	552
08:00	12	29	0	5	28	1	36	8	1	2	118	120
08:15	15	52	0	7	21	7	26	16	1	8	137	145
08:30	8	40	0	7	14	9	35	11	2	11	115	126
08:45	16	37	0	13	21	15	37	10	8	23	134	157
Total	51	158	0	32	84	32	134	45	12	44	504	548
Grand Total	119	284	3	68	195	71	238	71	51	125	975	1100
Apprch %	29.5	70.5		25.9	74.1		77	23				
Total %	12.2	29.1		7	20		24.4	7.3		11.4	88.6	
Cars	106	261		61	186		224	54		0	0	1017
% Cars	89.1	91.9	100	89.7	95.4	100	94.1	76.1	100	0	0	92.5
Trucks	13	23		7	9		14	17		0	0	83
% Trucks	10.9	8.1	0	10.3	4.6	0	5.9	23.9	0	0	0	7.5

	Border St From North			Central Sq From East			Border St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00										
08:00	12	29	41	5	28	33	36	8	44	118
08:15	15	52	67	7	21	28	26	16	42	137
08:30	8	40	48	7	14	21	35	11	46	115
08:45	16	37	53	13	21	34	37	10	47	134
Total Volume	51	158	209	32	84	116	134	45	179	504
% App. Total	24.4	75.6		27.6	72.4		74.9	25.1		
PHF	.797	.760	.780	.615	.750	.853	.905	.703	.952	.920

Accurate Counts
978-664-2565

File Name : 71490003
Site Code : 71490003
Start Date : 9/13/2007
Page No : 2



N/S Street : Border Street (North)
E/W Street: Central Square
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490003
Site Code : 71490003
Start Date : 9/13/2007
Page No : 1

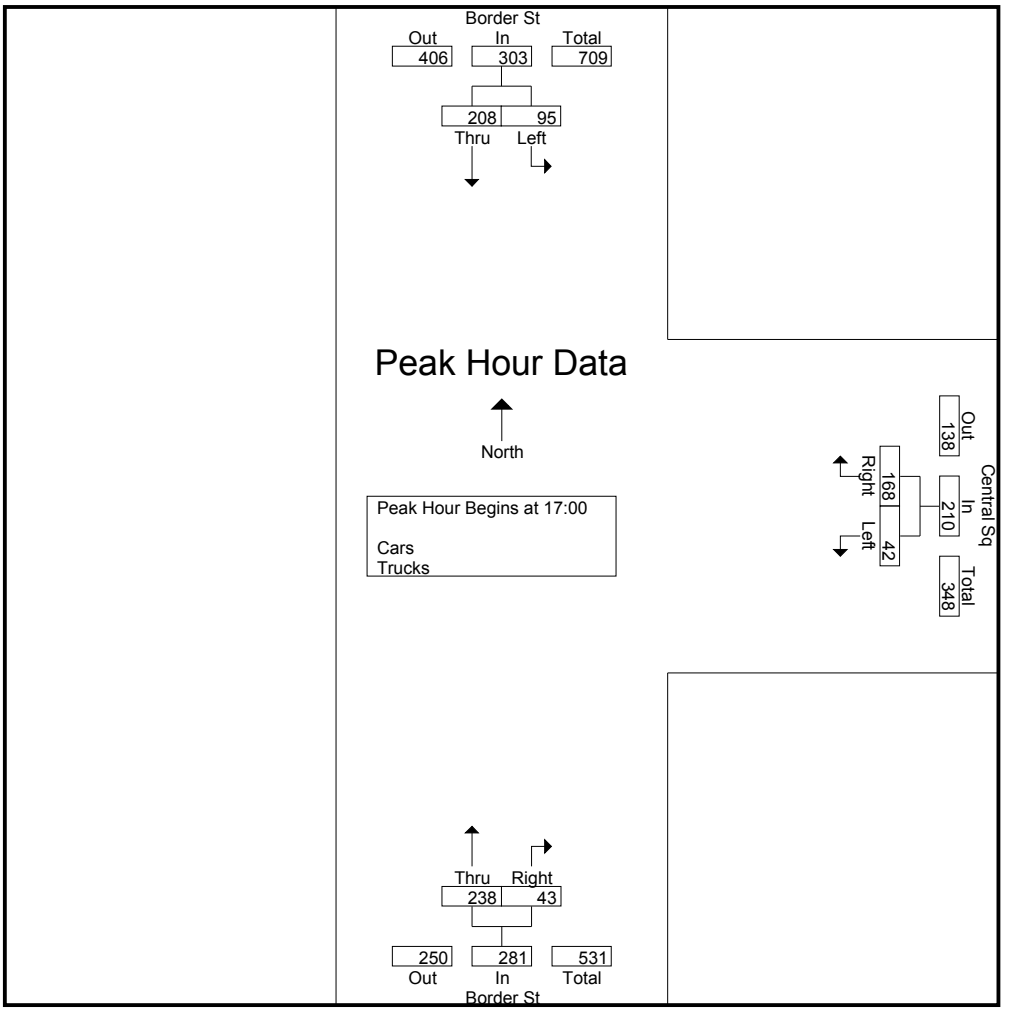
Groups Printed- Cars - Trucks

	Border St From North			Central Sq From East			Border St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	23	40	97	9	27	38	62	17	58	193	178	371
16:15	20	61	84	8	34	23	65	10	55	162	198	360
16:30	26	48	53	9	35	19	51	9	21	93	178	271
16:45	34	48	23	4	23	15	59	7	7	45	175	220
Total	103	197	257	30	119	95	237	43	141	493	729	1222
17:00	39	55	88	10	46	24	63	12	8	120	225	345
17:15	22	54	32	7	44	10	61	8	35	77	196	273
17:30	12	46	36	13	35	15	57	13	9	60	176	236
17:45	22	53	34	12	43	24	57	10	27	85	197	282
Total	95	208	190	42	168	73	238	43	79	342	794	1136
Grand Total	198	405	447	72	287	168	475	86	220	835	1523	2358
Apprch %	32.8	67.2		20.1	79.9		84.7	15.3				
Total %	13	26.6		4.7	18.8		31.2	5.6		35.4	64.6	
Cars	197	404		71	287		474	82		0	0	2350
% Cars	99.5	99.8	100	98.6	100	100	99.8	95.3	100	0	0	99.7
Trucks	1	1		1	0		1	4		0	0	8
% Trucks	0.5	0.2	0	1.4	0	0	0.2	4.7	0	0	0	0.3

	Border St From North			Central Sq From East			Border St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	39	55	94	10	46	56	63	12	75	225
17:15	22	54	76	7	44	51	61	8	69	196
17:30	12	46	58	13	35	48	57	13	70	176
17:45	22	53	75	12	43	55	57	10	67	197
Total Volume	95	208	303	42	168	210	238	43	281	794
% App. Total	31.4	68.6		20	80		84.7	15.3		
PHF	.609	.945	.806	.808	.913	.938	.944	.827	.937	.882

Accurate Counts
978-664-2565

File Name : 71490003
Site Code : 71490003
Start Date : 9/13/2007
Page No : 2



N/S Street : Border Street
E/W Street: Liberty Plaza South Drive
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490004
Site Code : 71490004
Start Date : 9/13/2007
Page No : 1

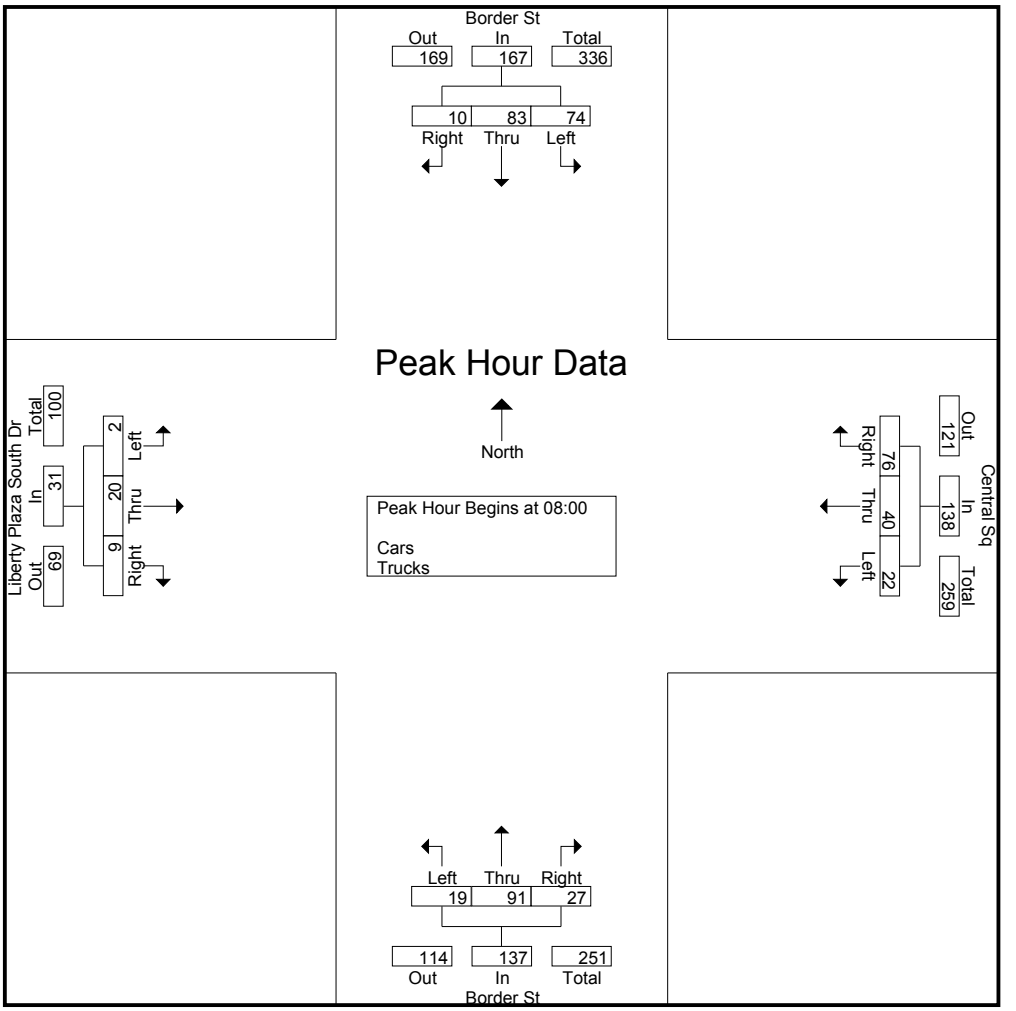
Groups Printed- Cars - Trucks

	Border St From North				Central Sq From East				Border St From South				Liberty Plaza South Dr From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	14	15	4	2	2	8	29	0	0	12	5	7	0	0	2	10	19	91	110
07:15	22	12	3	0	3	7	25	1	3	10	5	2	0	6	2	4	7	98	105
07:30	11	10	9	0	0	9	15	0	1	21	6	1	0	7	2	4	5	91	96
07:45	22	20	4	0	3	8	11	0	1	9	4	3	0	4	3	4	7	89	96
Total	69	57	20	2	8	32	80	1	5	52	20	13	0	17	9	22	38	369	407
08:00	15	18	5	0	2	13	21	0	4	24	10	4	0	5	3	2	6	120	126
08:15	23	25	1	1	6	8	18	4	1	21	3	9	1	8	1	2	16	116	132
08:30	22	17	1	0	8	9	16	0	8	21	7	1	1	3	3	6	7	116	123
08:45	14	23	3	3	6	10	21	0	6	25	7	2	0	4	2	0	5	121	126
Total	74	83	10	4	22	40	76	4	19	91	27	16	2	20	9	10	34	473	507
Grand Total	143	140	30	6	30	72	156	5	24	143	47	29	2	37	18	32	72	842	914
Apprch %	45.7	44.7	9.6		11.6	27.9	60.5		11.2	66.8	22		3.5	64.9	31.6				
Total %	17	16.6	3.6		3.6	8.6	18.5		2.9	17	5.6		0.2	4.4	2.1		7.9	92.1	
Cars	139	133	30		29	71	155		24	138	47		2	36	18		0	0	894
% Cars	97.2	95	100	100	96.7	98.6	99.4	100	100	96.5	100	100	100	97.3	100	100	0	0	97.8
Trucks	4	7	0		1	1	1		0	5	0		0	1	0		0	0	20
% Trucks	2.8	5	0	0	3.3	1.4	0.6	0	0	3.5	0	0	0	2.7	0	0	0	0	2.2

	Border St From North				Central Sq From East				Border St From South				Liberty Plaza South Dr From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	15	18	5	38	2	13	21	36	4	24	10	38	0	5	3	8	120
08:15	23	25	1	49	6	8	18	32	1	21	3	25	1	8	1	10	116
08:30	22	17	1	40	8	9	16	33	8	21	7	36	1	3	3	7	116
08:45	14	23	3	40	6	10	21	37	6	25	7	38	0	4	2	6	121
Total Volume	74	83	10	167	22	40	76	138	19	91	27	137	2	20	9	31	473
% App. Total	44.3	49.7	6		15.9	29	55.1		13.9	66.4	19.7		6.5	64.5	29		
PHF	.804	.830	.500	.852	.688	.769	.905	.932	.594	.910	.675	.901	.500	.625	.750	.775	.977

Accurate Counts
978-664-2565

File Name : 71490004
Site Code : 71490004
Start Date : 9/13/2007
Page No : 2



N/S Street : Border Street
E/W Street: Liberty Plaza North Drive
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490002
Site Code : 71490002
Start Date : 9/13/2007
Page No : 1

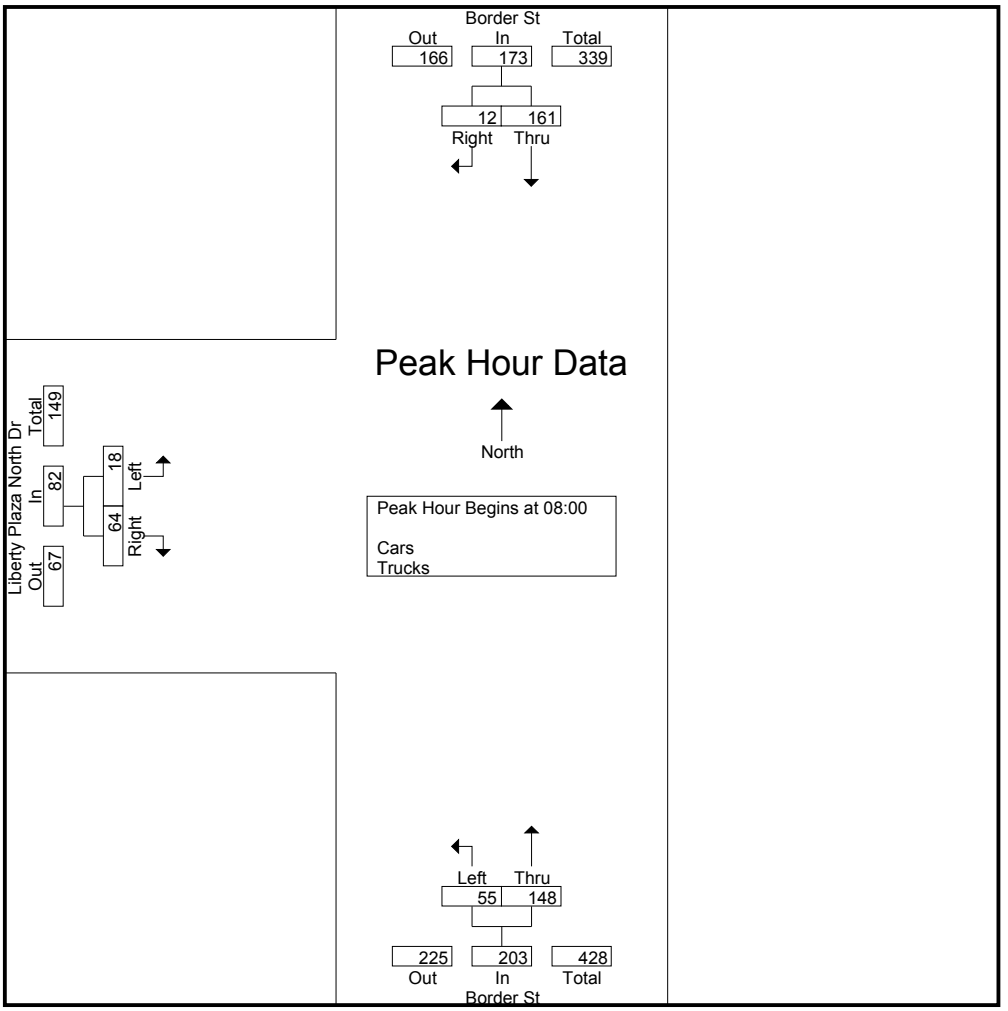
Groups Printed- Cars - Trucks

	Border St From North			Border St From South			Liberty Plaza North Dr From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	38	2	3	11	62	0	5	11	44	47	129	176
07:15	46	2	1	13	40	2	1	10	52	55	112	167
07:30	27	2	2	8	39	1	2	13	10	13	91	104
07:45	38	2	1	10	22	0	4	14	4	5	90	95
Total	149	8	7	42	163	3	12	48	110	120	422	542
08:00	33	1	1	14	41	2	4	18	9	12	111	123
08:15	52	4	1	15	27	1	5	16	1	3	119	122
08:30	38	2	2	10	38	4	5	10	7	13	103	116
08:45	38	5	2	16	42	1	4	20	7	10	125	135
Total	161	12	6	55	148	8	18	64	24	38	458	496
Grand Total	310	20	13	97	311	11	30	112	134	158	880	1038
Apprch %	93.9	6.1		23.8	76.2		21.1	78.9				
Total %	35.2	2.3		11	35.3		3.4	12.7		15.2	84.8	
Cars	287	19		86	292		30	96		0	0	968
% Cars	92.6	95	100	88.7	93.9	100	100	85.7	100	0	0	93.3
Trucks	23	1		11	19		0	16		0	0	70
% Trucks	7.4	5	0	11.3	6.1	0	0	14.3	0	0	0	6.7

	Border St From North			Border St From South			Liberty Plaza North Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00										
08:00	33	1	34	14	41	55	4	18	22	111
08:15	52	4	56	15	27	42	5	16	21	119
08:30	38	2	40	10	38	48	5	10	15	103
08:45	38	5	43	16	42	58	4	20	24	125
Total Volume	161	12	173	55	148	203	18	64	82	458
% App. Total	93.1	6.9		27.1	72.9		22	78		
PHF	.774	.600	.772	.859	.881	.875	.900	.800	.854	.916

Accurate Counts
978-664-2565

File Name : 71490002
Site Code : 71490002
Start Date : 9/13/2007
Page No : 2



N/S Street : Border Street
E/W Street: Liberty Plaza North Drive
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490002
Site Code : 71490002
Start Date : 9/13/2007
Page No : 1

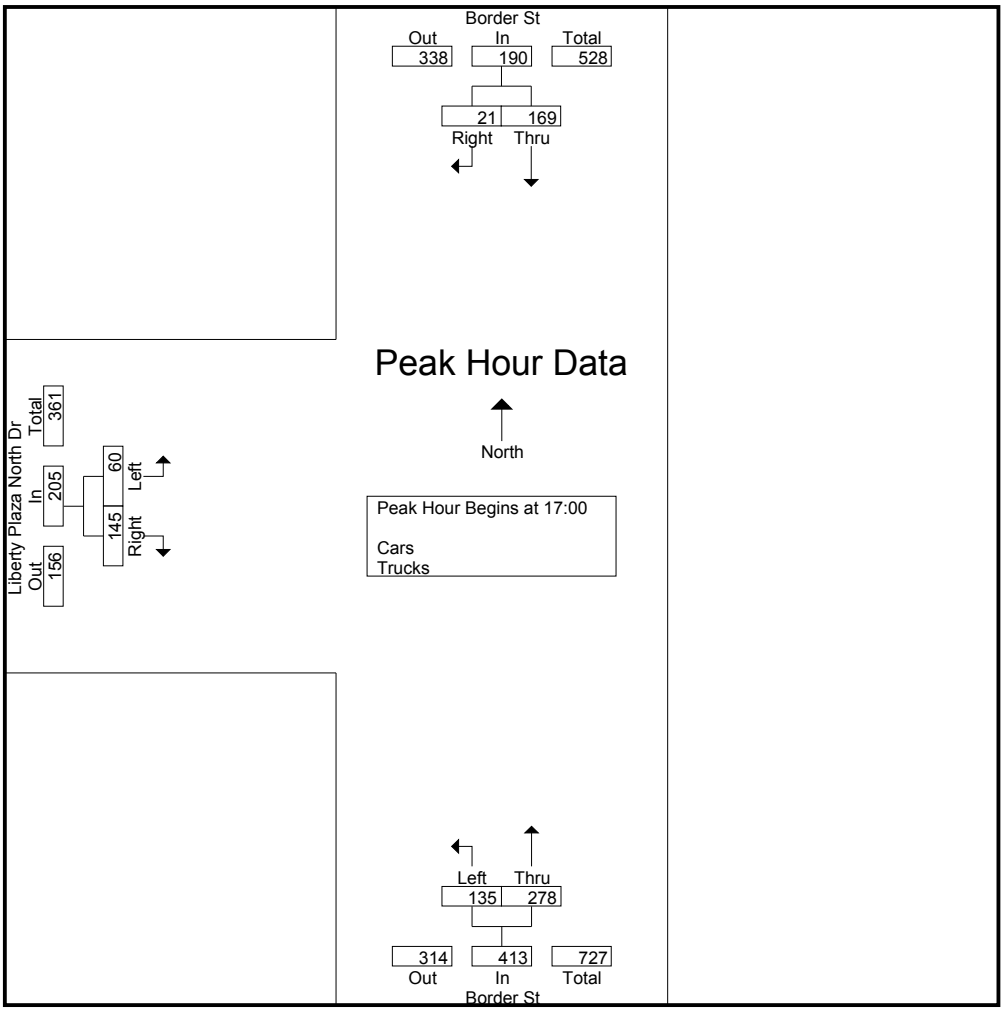
Groups Printed- Cars - Trucks

	Border St From North			Border St From South			Liberty Plaza North Dr From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	54	8	8	16	73	9	15	31	173	190	197	387
16:15	62	5	12	26	63	13	18	27	38	63	201	264
16:30	40	6	7	34	66	9	7	32	29	45	185	230
16:45	33	8	3	34	63	19	18	33	27	49	189	238
Total	189	27	30	110	265	50	58	123	267	347	772	1119
17:00	52	9	7	34	69	4	18	38	12	23	220	243
17:15	37	4	8	34	85	8	14	27	9	25	201	226
17:30	36	3	2	36	59	14	14	41	22	38	189	227
17:45	44	5	10	31	65	6	14	39	18	34	198	232
Total	169	21	27	135	278	32	60	145	61	120	808	928
Grand Total	358	48	57	245	543	82	118	268	328	467	1580	2047
Apprch %	88.2	11.8		31.1	68.9		30.6	69.4				
Total %	22.7	3		15.5	34.4		7.5	17		22.8	77.2	
Cars	346	48		243	539		118	264		0	0	2025
% Cars	96.6	100	100	99.2	99.3	100	100	98.5	100	0	0	98.9
Trucks	12	0		2	4		0	4		0	0	22
% Trucks	3.4	0	0	0.8	0.7	0	0	1.5	0	0	0	1.1

	Border St From North			Border St From South			Liberty Plaza North Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	52	9	61	34	69	103	18	38	56	220
17:15	37	4	41	34	85	119	14	27	41	201
17:30	36	3	39	36	59	95	14	41	55	189
17:45	44	5	49	31	65	96	14	39	53	198
Total Volume	169	21	190	135	278	413	60	145	205	808
% App. Total	88.9	11.1		32.7	67.3		29.3	70.7		
PHF	.813	.583	.779	.938	.818	.868	.833	.884	.915	.918

Accurate Counts
978-664-2565

File Name : 71490002
Site Code : 71490002
Start Date : 9/13/2007
Page No : 2



N/S Street : Border Street
E/W Street: Liberty Plaza South Drive
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490004
Site Code : 71490004
Start Date : 9/13/2007
Page No : 1

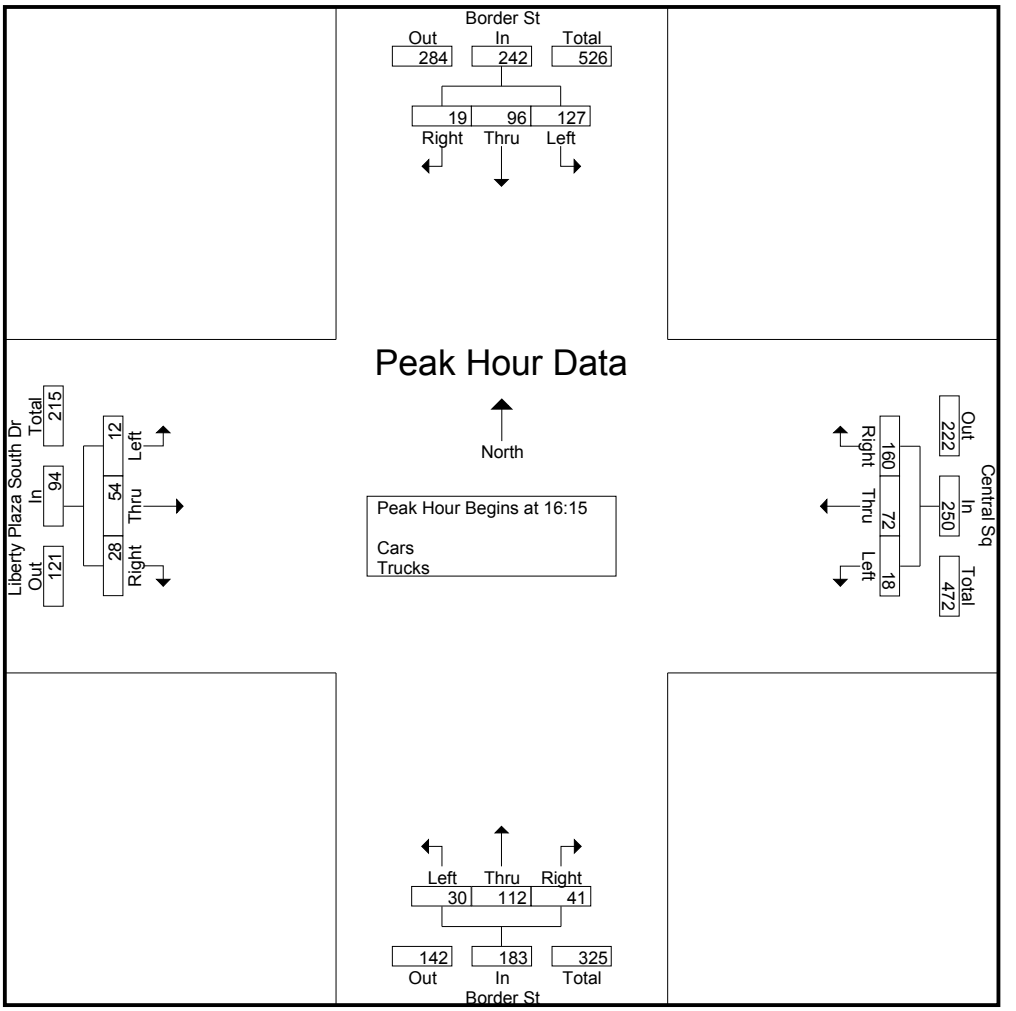
Groups Printed- Cars - Trucks

	Border St From North				Central Sq From East				Border St From South				Liberty Plaza South Dr From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	20	24	5	6	2	18	43	1	8	27	13	59	4	9	6	54	120	179	299
16:15	32	31	7	1	1	11	32	4	5	43	10	34	1	12	11	35	74	196	270
16:30	30	23	3	1	5	23	40	2	9	24	4	24	3	8	8	13	40	180	220
16:45	25	24	3	0	8	14	43	2	10	18	9	28	4	22	3	4	34	183	217
Total	107	102	18	8	16	66	158	9	32	112	36	145	12	51	28	106	268	738	1006
17:00	40	18	6	7	4	24	45	2	6	27	18	16	4	12	6	19	44	210	254
17:15	31	24	6	7	2	37	40	0	4	14	7	34	1	12	6	6	47	184	231
17:30	35	19	9	0	2	12	32	2	13	34	4	16	3	15	7	5	23	185	208
17:45	32	26	6	3	1	12	40	2	6	28	13	26	4	18	4	15	46	190	236
Total	138	87	27	17	9	85	157	6	29	103	42	92	12	57	23	45	160	769	929
Grand Total	245	189	45	25	25	151	315	15	61	215	78	237	24	108	51	151	428	1507	1935
Apprch %	51.1	39.5	9.4		5.1	30.8	64.2		17.2	60.7	22		13.1	59	27.9				
Total %	16.3	12.5	3		1.7	10	20.9		4	14.3	5.2		1.6	7.2	3.4		22.1	77.9	
Cars	242	187	45		25	151	313		61	214	77		24	108	51		0	0	1926
% Cars	98.8	98.9	100	100	100	100	99.4	100	100	99.5	98.7	100	100	100	100	100	0	0	99.5
Trucks	3	2	0		0	0	2		0	1	1		0	0	0		0	0	9
% Trucks	1.2	1.1	0	0	0	0	0.6	0	0	0.5	1.3	0	0	0	0	0	0	0	0.5

	Border St From North				Central Sq From East				Border St From South				Liberty Plaza South Dr From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:15																	
16:15	32	31	7	70	1	11	32	44	5	43	10	58	1	12	11	24	196
16:30	30	23	3	56	5	23	40	68	9	24	4	37	3	8	8	19	180
16:45	25	24	3	52	8	14	43	65	10	18	9	37	4	22	3	29	183
17:00	40	18	6	64	4	24	45	73	6	27	18	51	4	12	6	22	210
Total Volume	127	96	19	242	18	72	160	250	30	112	41	183	12	54	28	94	769
% App. Total	52.5	39.7	7.9		7.2	28.8	64		16.4	61.2	22.4		12.8	57.4	29.8		
PHF	.794	.774	.679	.864	.563	.750	.889	.856	.750	.651	.569	.789	.750	.614	.636	.810	.915

Accurate Counts
978-664-2565

File Name : 71490004
Site Code : 71490004
Start Date : 9/13/2007
Page No : 2



N/S Street : Meridian Street
E/W Street: Saratoga Street
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490001
Site Code : 71490001
Start Date : 9/13/2007
Page No : 1

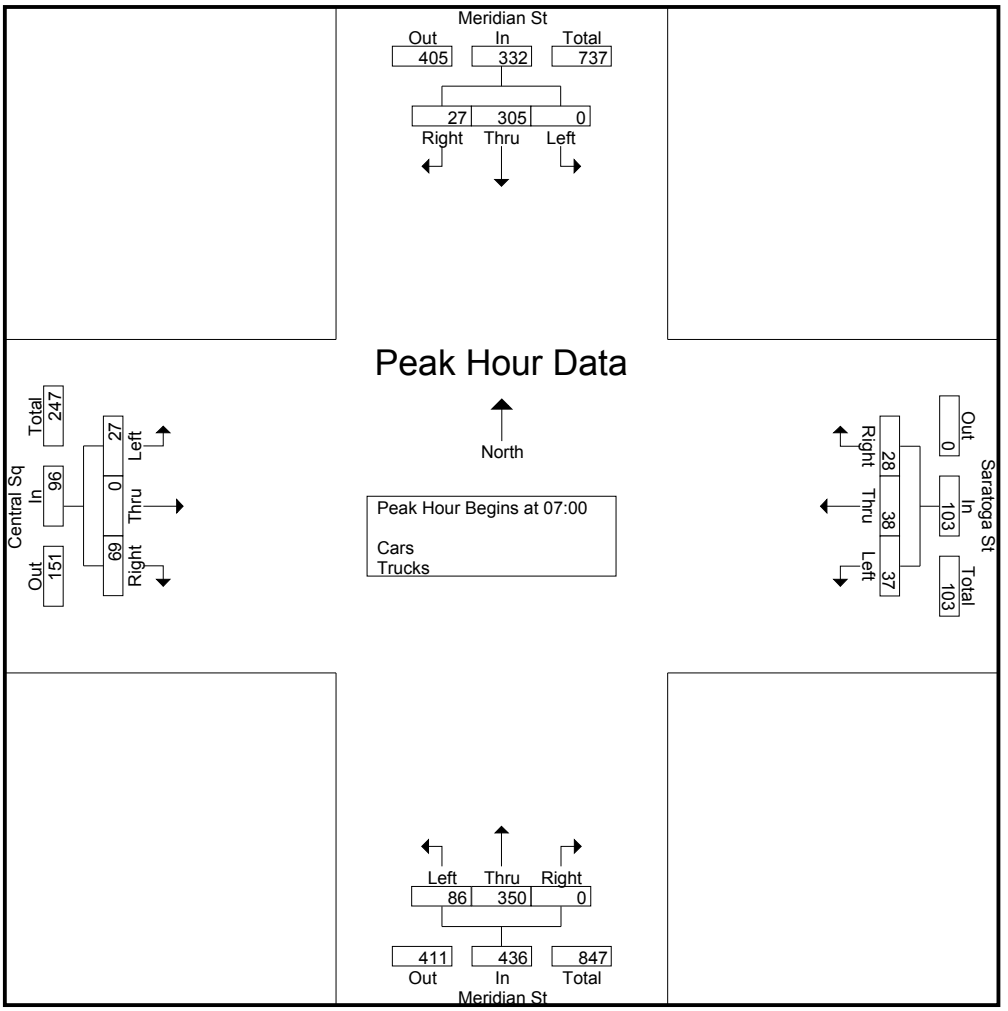
Groups Printed- Cars - Trucks

	Meridian St From North				Saratoga St From East				Meridian St From South				Central Sq From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	0	68	6	15	8	15	11	27	32	99	0	5	5	0	14	13	60	258	318
07:15	0	87	7	15	11	8	6	32	24	92	0	18	9	0	25	37	102	269	371
07:30	0	68	9	17	10	8	6	35	13	95	0	14	10	0	18	17	83	237	320
07:45	0	82	5	5	8	7	5	34	17	64	0	6	3	0	12	24	69	203	272
Total	0	305	27	52	37	38	28	128	86	350	0	43	27	0	69	91	314	967	1281
08:00	0	101	6	16	16	8	8	34	17	67	0	11	5	0	17	23	84	245	329
08:15	0	93	4	15	14	6	6	26	20	81	0	13	12	0	19	20	74	255	329
08:30	0	85	4	10	5	3	3	25	16	79	0	4	5	0	10	17	56	210	266
08:45	0	90	8	15	1	10	3	42	15	84	0	15	8	0	17	14	86	236	322
Total	0	369	22	56	36	27	20	127	68	311	0	43	30	0	63	74	300	946	1246
Grand Total	0	674	49	108	73	65	48	255	154	661	0	86	57	0	132	165	614	1913	2527
Apprch %	0	93.2	6.8		39.2	34.9	25.8		18.9	81.1	0		30.2	0	69.8				
Total %	0	35.2	2.6		3.8	3.4	2.5		8.1	34.6	0		3	0	6.9		24.3	75.7	
Cars	0	614	44		68	62	46		136	585	0		49	0	109		0	0	2327
% Cars	0	91.1	89.8	100	93.2	95.4	95.8	100	88.3	88.5	0	100	86	0	82.6	100	0	0	92.1
Trucks	0	60	5		5	3	2		18	76	0		8	0	23		0	0	200
% Trucks	0	8.9	10.2	0	6.8	4.6	4.2	0	11.7	11.5	0	0	14	0	17.4	0	0	0	7.9

	Meridian St From North				Saratoga St From East				Meridian St From South				Central Sq From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	0	68	6	74	8	15	11	34	32	99	0	131	5	0	14	19	258
07:15	0	87	7	94	11	8	6	25	24	92	0	116	9	0	25	34	269
07:30	0	68	9	77	10	8	6	24	13	95	0	108	10	0	18	28	237
07:45	0	82	5	87	8	7	5	20	17	64	0	81	3	0	12	15	203
Total Volume	0	305	27	332	37	38	28	103	86	350	0	436	27	0	69	96	967
% App. Total	0	91.9	8.1		35.9	36.9	27.2		19.7	80.3	0		28.1	0	71.9		
PHF	.000	.876	.750	.883	.841	.633	.636	.757	.672	.884	.000	.832	.675	.000	.690	.706	.899

Accurate Counts
978-664-2565

File Name : 71490001
Site Code : 71490001
Start Date : 9/13/2007
Page No : 2



N/S Street : Meridian Street
E/W Street: Bennington St / Porter St
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490006
Site Code : 71490006
Start Date : 9/13/2007
Page No : 1

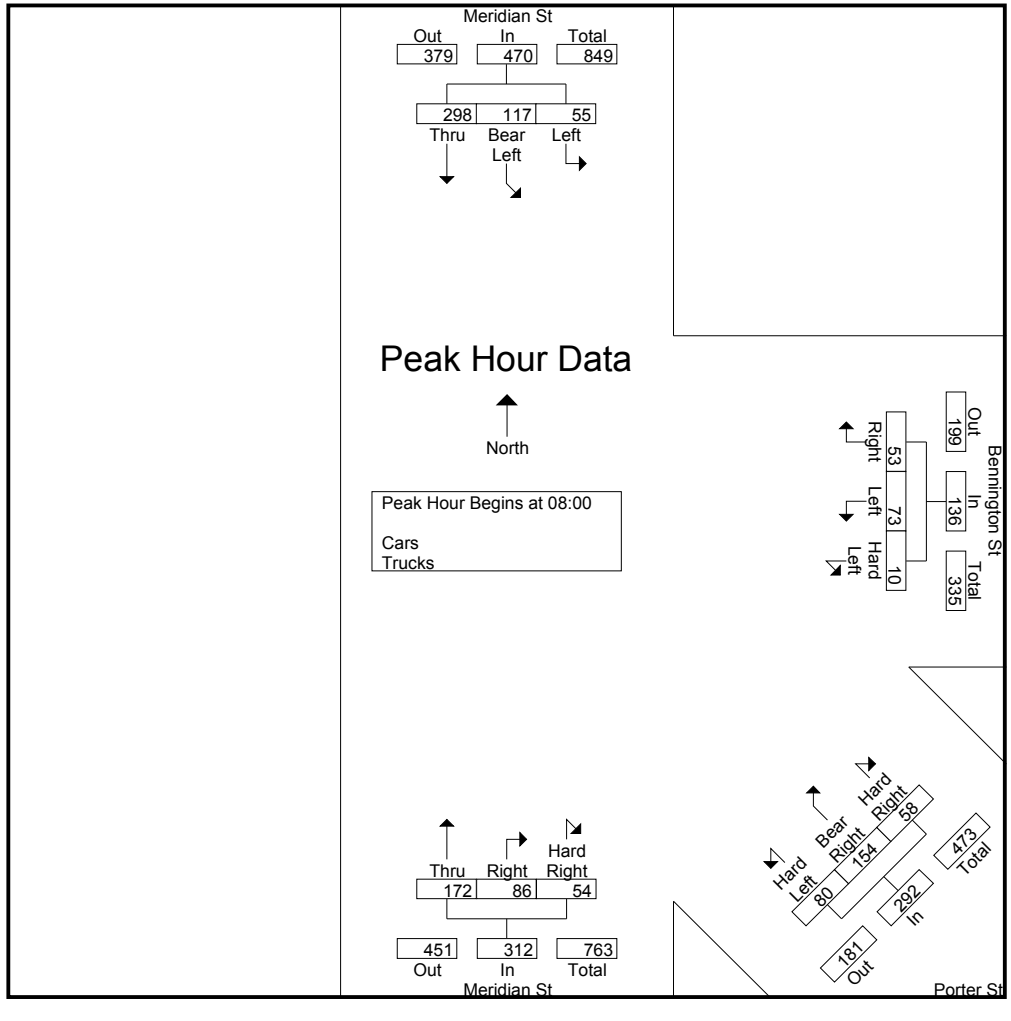
Groups Printed- Cars - Trucks

	Meridian St From North					Bennington St From East				Porter St From Southeast					Meridian St From South							
Start Time	Left	Bear Left	Thru	U-Trn	Peds	Hard Left	Left	Right	Peds	Hard Left	Bear Right	Hard Right	U-Trn	Peds	Thru	Right	Hard Right	U-Trn	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	14	24	49	3	9	2	14	18	35	13	52	6	1	25	63	9	6	0	2	75	270	345
07:15	26	29	71	5	4	2	21	7	43	16	58	5	1	46	48	20	12	0	13	112	315	427
07:30	11	32	47	7	4	4	11	9	41	11	43	3	2	39	39	18	14	0	3	96	242	338
07:45	11	25	67	2	19	4	18	6	32	7	41	5	2	40	29	19	14	1	3	99	246	345
Total	62	110	234	17	36	12	64	40	151	47	194	19	6	150	179	66	46	1	21	382	1073	1455
08:00	20	25	95	6	18	5	20	10	40	18	44	11	4	45	31	25	19	0	9	122	323	445
08:15	19	35	70	4	22	0	13	14	61	21	37	9	6	43	49	18	17	0	11	147	302	449
08:30	7	30	66	1	18	2	18	15	62	21	35	16	2	59	47	23	10	0	14	156	290	446
08:45	9	27	67	1	18	3	22	14	75	20	38	22	1	67	45	20	8	0	4	166	295	461
Total	55	117	298	12	76	10	73	53	238	80	154	58	13	214	172	86	54	0	38	591	1210	1801
Grand Total	117	227	532	29	112	22	137	93	389	127	348	77	19	364	351	152	100	1	59	973	2283	3256
Apprch %	13.4	25.9	60.7			8.7	54.4	36.9		23	63	13.9			58.2	25.2	16.6					
Total %	5.1	9.9	23.3			1	6	4.1		5.6	15.2	3.4			15.4	6.7	4.4			29.9	70.1	
Cars	94	215	476			21	124	83		119	324	75			290	138	90			0	0	3022
% Cars	80.3	94.7	89.5	100	100	95.5	90.5	89.2	100	93.7	93.1	97.4	100	100	82.6	90.8	90	100	100	0	0	92.8
Trucks	23	12	56			1	13	10		8	24	2			61	14	10			0	0	234
% Trucks	19.7	5.3	10.5	0	0	4.5	9.5	10.8	0	6.3	6.9	2.6	0	0	17.4	9.2	10	0	0	0	0	7.2

	Meridian St From North				Bennington St From East				Porter St From Southeast				Meridian St From South				
Start Time	Left	Bear Left	Thru	App. Total	Hard Left	Left	Right	App. Total	Hard Left	Bear Right	Hard Right	App. Total	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	20	25	95	140	5	20	10	35	18	44	11	73	31	25	19	75	323
08:15	19	35	70	124	0	13	14	27	21	37	9	67	49	18	17	84	302
08:30	7	30	66	103	2	18	15	35	21	35	16	72	47	23	10	80	290
08:45	9	27	67	103	3	22	14	39	20	38	22	80	45	20	8	73	295
Total Volume	55	117	298	470	10	73	53	136	80	154	58	292	172	86	54	312	1210
% App. Total	11.7	24.9	63.4		7.4	53.7	39		27.4	52.7	19.9		55.1	27.6	17.3		
PHF	.688	.836	.784	.839	.500	.830	.883	.872	.952	.875	.659	.913	.878	.860	.711	.929	.937

Accurate Counts
978-664-2565

File Name : 71490006
Site Code : 71490006
Start Date : 9/13/2007
Page No : 2



N/S Street : Meridian Street
E/W Street: Bennington St / Porter St
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490006
Site Code : 71490006
Start Date : 9/13/2007
Page No : 1

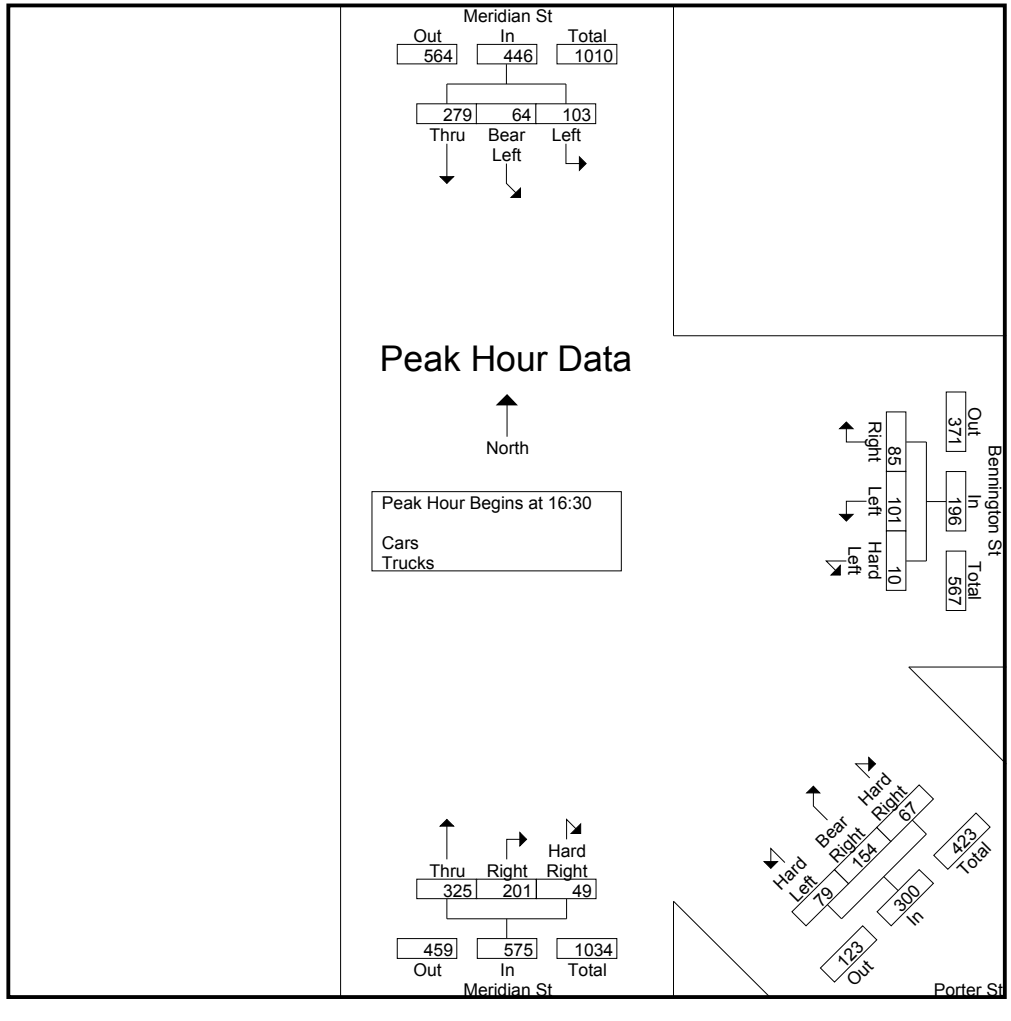
Groups Printed- Cars - Trucks

	Meridian St From North					Bennington St From East				Porter St From Southeast					Meridian St From South							
Start Time	Left	Bear Left	Thru	U-Trn	Peds	Hard Left	Left	Right	Peds	Hard Left	Bear Right	Hard Right	U-Trn	Peds	Thru	Right	Hard Right	U-Trn	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	24	15	56	4	52	5	24	15	127	17	31	19	1	100	78	30	4	0	0	284	318	602
16:15	28	22	64	3	5	2	14	14	88	18	41	12	3	114	82	54	14	0	0	213	365	578
16:30	30	18	63	7	5	4	22	18	87	28	48	17	1	113	82	52	9	0	0	213	391	604
16:45	38	14	65	10	5	2	31	21	88	20	39	17	3	103	76	48	10	0	0	209	381	590
Total	120	69	248	24	67	13	91	68	390	83	159	65	8	430	318	184	37	0	0	919	1455	2374
17:00	11	15	88	6	3	1	19	18	107	18	30	19	3	135	82	45	16	0	0	254	362	616
17:15	24	17	63	12	2	3	29	28	96	13	37	14	2	145	85	56	14	0	0	257	383	640
17:30	29	17	54	4	0	3	16	17	107	18	25	26	1	103	103	55	19	0	0	215	382	597
17:45	36	9	50	3	0	3	16	11	0	19	47	9	0	137	66	51	18	1	0	141	335	476
Total	100	58	255	25	5	10	80	74	310	68	139	68	6	520	336	207	67	1	0	867	1462	2329
Grand Total	220	127	503	49	72	23	171	142	700	151	298	133	14	950	654	391	104	1	0	1786	2917	4703
Apprch %	25.9	14.9	59.2			6.8	50.9	42.3		25.9	51.2	22.9			56.9	34	9.1					
Total %	7.5	4.4	17.2			0.8	5.9	4.9		5.2	10.2	4.6			22.4	13.4	3.6			38	62	
Cars	209	120	479			22	163	133		147	289	126			625	384	102			0	0	4534
% Cars	95	94.5	95.2	100	29.2	95.7	95.3	93.7	100	97.4	97	94.7	100	100	95.6	98.2	98.1	100	0	0	0	96.4
Trucks	11	7	24			1	8	9		4	9	7			29	7	2			0	0	169
% Trucks	5	5.5	4.8	0	70.8	4.3	4.7	6.3	0	2.6	3	5.3	0	0	4.4	1.8	1.9	0	0	0	0	3.6

	Meridian St From North				Bennington St From East				Porter St From Southeast				Meridian St From South				
Start Time	Left	Bear Left	Thru	App. Total	Hard Left	Left	Right	App. Total	Hard Left	Bear Right	Hard Right	App. Total	Thru	Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	30	18	63	111	4	22	18	44	28	48	17	93	82	52	9	143	391
16:45	38	14	65	117	2	31	21	54	20	39	17	76	76	48	10	134	381
17:00	11	15	88	114	1	19	18	38	18	30	19	67	82	45	16	143	362
17:15	24	17	63	104	3	29	28	60	13	37	14	64	85	56	14	155	383
Total Volume	103	64	279	446	10	101	85	196	79	154	67	300	325	201	49	575	1517
% App. Total	23.1	14.3	62.6		5.1	51.5	43.4		26.3	51.3	22.3		56.5	35	8.5		
PHF	.678	.889	.793	.953	.625	.815	.759	.817	.705	.802	.882	.806	.956	.897	.766	.927	.970

Accurate Counts
978-664-2565

File Name : 71490006
Site Code : 71490006
Start Date : 9/13/2007
Page No : 2



N/S Street : Meridian St / Liverpool St
E/W Street: Central Square
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490005
Site Code : 71490005
Start Date : 9/13/2007
Page No : 1

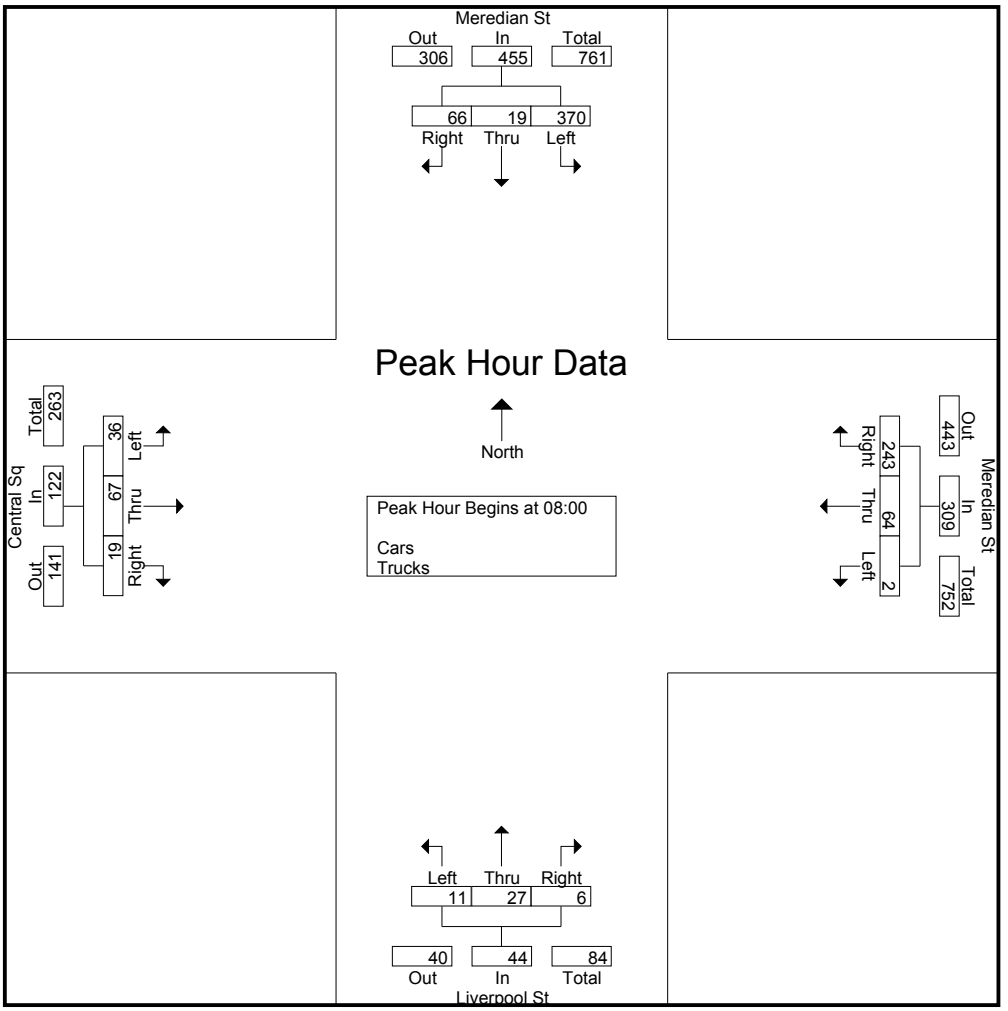
Groups Printed- Cars - Trucks

	Meredian St From North				Meredian St From East				Liverpool St From South				Central Sq From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00	65	5	5	4	0	25	67	6	0	5	1	9	7	3	10	0	19	193	212
07:15	97	1	5	0	0	19	69	7	0	0	1	8	10	9	13	1	16	224	240
07:30	73	2	4	0	0	13	57	4	5	0	0	5	12	2	8	1	10	176	186
07:45	83	6	6	1	0	14	47	3	1	8	0	7	4	19	5	0	11	193	204
Total	318	14	20	5	0	71	240	20	6	13	2	29	33	33	36	2	56	786	842
08:00	115	6	17	3	1	15	57	6	4	5	2	7	15	13	3	6	22	253	275
08:15	90	4	13	0	1	14	67	7	1	11	4	10	4	17	9	2	19	235	254
08:30	81	5	15	0	0	21	64	9	2	4	0	7	11	20	5	3	19	228	247
08:45	84	4	21	0	0	14	55	5	4	7	0	11	6	17	2	1	17	214	231
Total	370	19	66	3	2	64	243	27	11	27	6	35	36	67	19	12	77	930	1007
Grand Total	688	33	86	8	2	135	483	47	17	40	8	64	69	100	55	14	133	1716	1849
Apprch %	85.3	4.1	10.7		0.3	21.8	77.9		26.2	61.5	12.3		30.8	44.6	24.6				
Total %	40.1	1.9	5		0.1	7.9	28.1		1	2.3	0.5		4	5.8	3.2		7.2	92.8	
Cars	636	32	75		2	120	426		17	37	8		59	91	47		0	0	1683
% Cars	92.4	97	87.2	100	100	88.9	88.2	100	100	92.5	100	100	85.5	91	85.5	100	0	0	91
Trucks	52	1	11		0	15	57		0	3	0		10	9	8		0	0	166
% Trucks	7.6	3	12.8	0	0	11.1	11.8	0	0	7.5	0	0	14.5	9	14.5	0	0	0	9

	Meredian St From North				Meredian St From East				Liverpool St From South				Central Sq From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	115	6	17	138	1	15	57	73	4	5	2	11	15	13	3	31	253
08:15	90	4	13	107	1	14	67	82	1	11	4	16	4	17	9	30	235
08:30	81	5	15	101	0	21	64	85	2	4	0	6	11	20	5	36	228
08:45	84	4	21	109	0	14	55	69	4	7	0	11	6	17	2	25	214
Total Volume	370	19	66	455	2	64	243	309	11	27	6	44	36	67	19	122	930
% App. Total	81.3	4.2	14.5		0.6	20.7	78.6		25	61.4	13.6		29.5	54.9	15.6		
PHF	.804	.792	.786	.824	.500	.762	.907	.909	.688	.614	.375	.688	.600	.838	.528	.847	.919

Accurate Counts
978-664-2565

File Name : 71490005
Site Code : 71490005
Start Date : 9/13/2007
Page No : 2



N/S Street : Meridian St / Liverpool St
E/W Street: Central Square
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490005
Site Code : 71490005
Start Date : 9/13/2007
Page No : 1

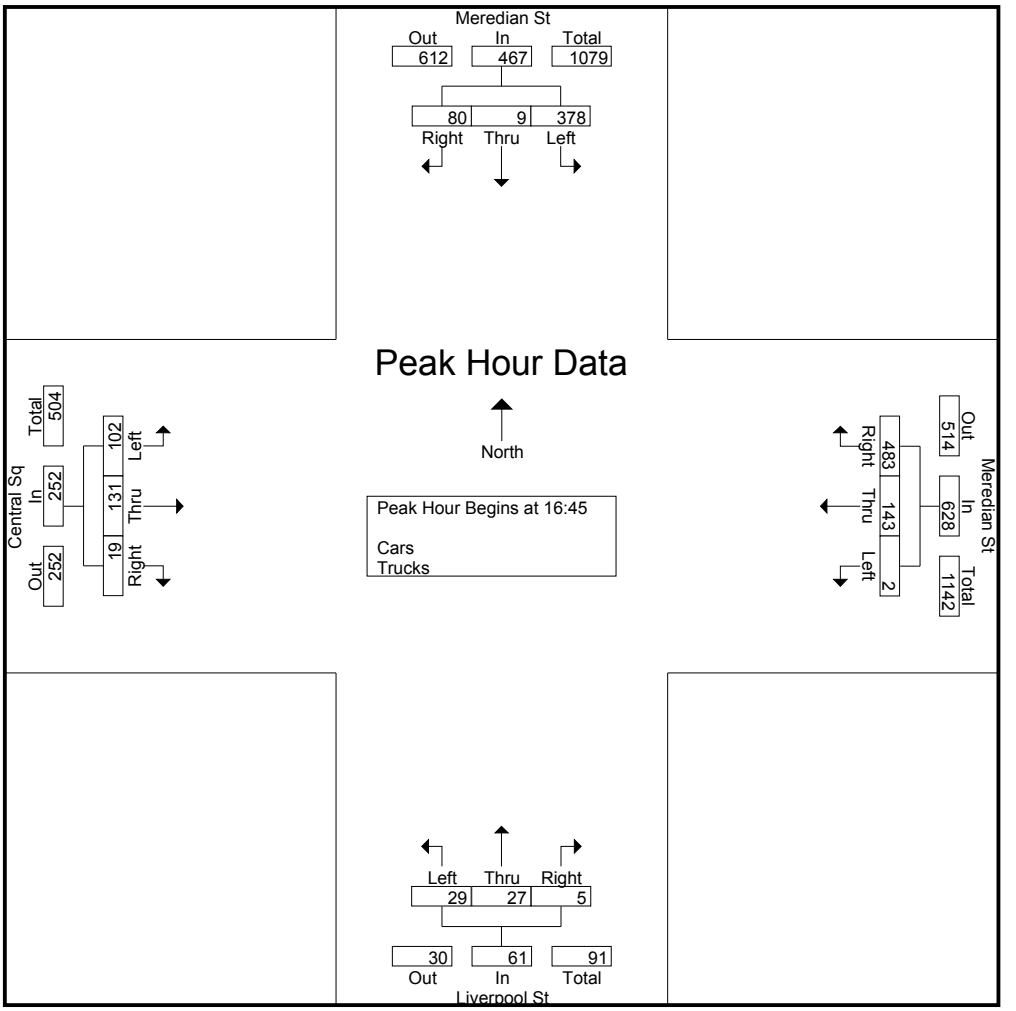
Groups Printed- Cars - Trucks

	Meredian St From North				Meredian St From East				Liverpool St From South				Central Sq From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	71	3	26	15	1	32	101	16	4	3	5	61	19	20	9	3	95	294	389
16:15	89	5	15	8	1	29	120	4	4	7	4	41	14	30	8	0	53	326	379
16:30	87	0	26	14	0	32	106	8	5	7	4	30	14	29	2	3	55	312	367
16:45	95	4	24	3	1	36	110	9	4	8	0	15	14	32	7	4	31	335	366
Total	342	12	91	40	3	129	437	37	17	25	13	147	61	111	26	10	234	1267	1501
17:00	111	0	21	5	0	36	101	6	15	8	2	25	39	36	2	1	37	371	408
17:15	98	3	17	2	1	45	124	5	7	6	2	28	25	35	6	7	42	369	411
17:30	74	2	18	6	0	26	148	12	3	5	1	32	24	28	4	0	50	333	383
17:45	71	2	18	4	0	29	111	7	4	2	0	22	19	43	5	2	35	304	339
Total	354	7	74	17	1	136	484	30	29	21	5	107	107	142	17	10	164	1377	1541
Grand Total	696	19	165	57	4	265	921	67	46	46	18	254	168	253	43	20	398	2644	3042
Apprch %	79.1	2.2	18.8		0.3	22.3	77.4		41.8	41.8	16.4		36.2	54.5	9.3				
Total %	26.3	0.7	6.2		0.2	10	34.8		1.7	1.7	0.7		6.4	9.6	1.6		13.1	86.9	
Cars	671	19	159		4	257	893		46	46	18		164	247	42		0	0	2961
% Cars	96.4	100	96.4	100	100	97	97	95.5	100	100	100	100	97.6	97.6	97.7	100	0	0	97.3
Trucks	25	0	6		0	8	28		0	0	0		4	6	1		0	0	81
% Trucks	3.6	0	3.6	0	0	3	3	4.5	0	0	0	0	2.4	2.4	2.3	0	0	0	2.7

	Meredian St From North				Meredian St From East				Liverpool St From South				Central Sq From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	95	4	24	123	1	36	110	147	4	8	0	12	14	32	7	53	335
17:00	111	0	21	132	0	36	101	137	15	8	2	25	39	36	2	77	371
17:15	98	3	17	118	1	45	124	170	7	6	2	15	25	35	6	66	369
17:30	74	2	18	94	0	26	148	174	3	5	1	9	24	28	4	56	333
Total Volume	378	9	80	467	2	143	483	628	29	27	5	61	102	131	19	252	1408
% App. Total	80.9	1.9	17.1		0.3	22.8	76.9		47.5	44.3	8.2		40.5	52	7.5		
PHF	.851	.563	.833	.884	.500	.794	.816	.902	.483	.844	.625	.610	.654	.910	.679	.818	.949

Accurate Counts
978-664-2565

File Name : 71490005
Site Code : 71490005
Start Date : 9/13/2007
Page No : 2



N/S Street : Meridian Street
E/W Street: Saratoga Street
City/State : Boston, MA
Weather : Clear

Accurate Counts
978-664-2565

File Name : 71490001
Site Code : 71490001
Start Date : 9/13/2007
Page No : 1

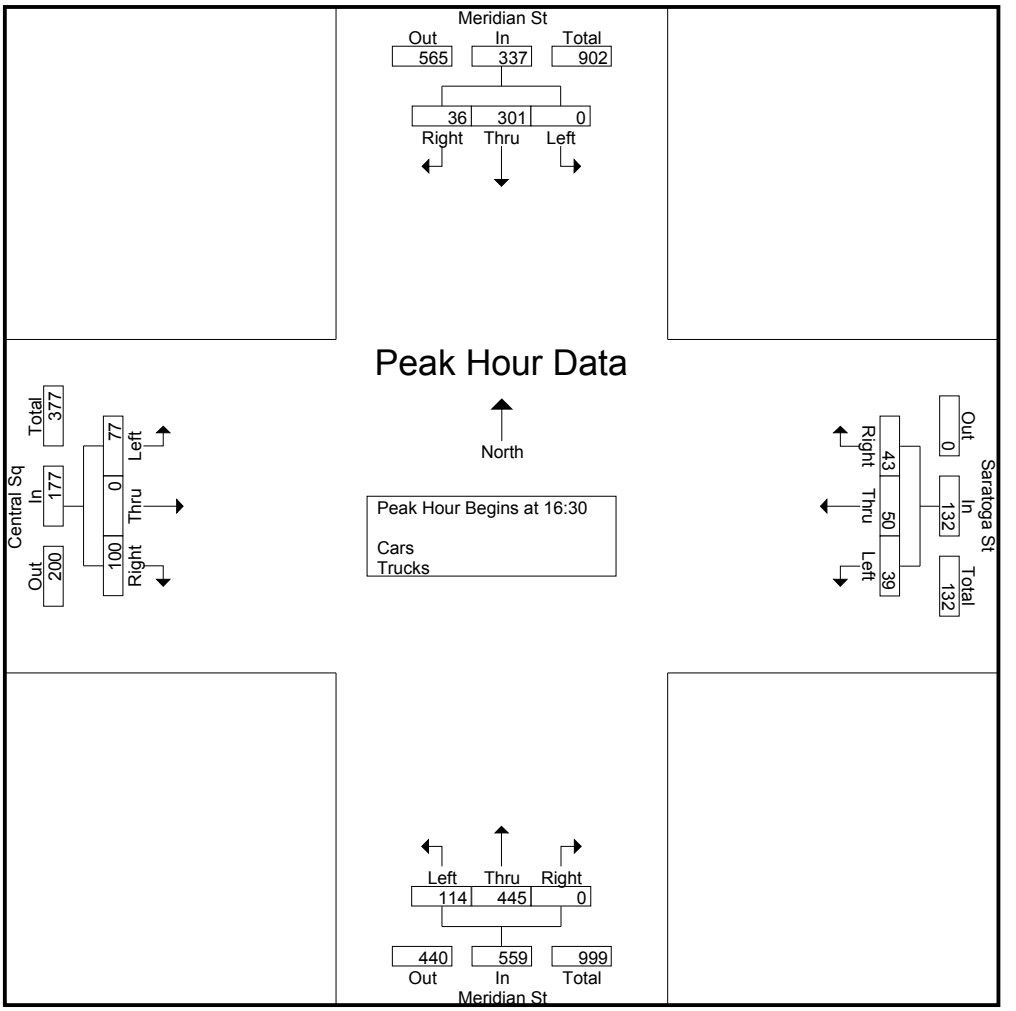
Groups Printed- Cars - Trucks

	Meridian St From North				Saratoga St From East				Meridian St From South				Central Sq From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
16:00	0	67	6	66	8	8	9	86	17	108	0	23	24	0	19	21	196	266	462
16:15	0	83	6	41	7	10	5	104	18	119	0	33	11	0	21	30	208	280	488
16:30	0	65	9	52	12	10	13	89	26	123	0	12	16	0	28	34	187	302	489
16:45	0	78	5	50	11	11	12	79	32	101	0	14	13	0	28	24	167	291	458
Total	0	293	26	209	38	39	39	358	93	451	0	82	64	0	96	109	758	1139	1897
17:00	0	77	9	33	11	13	11	44	26	103	0	17	33	0	24	34	128	307	435
17:15	0	81	13	43	5	16	7	93	30	118	0	30	15	0	20	21	187	305	492
17:30	0	66	7	36	4	9	10	68	30	110	0	21	14	0	13	26	151	263	414
17:45	0	81	10	49	4	13	11	69	32	98	0	18	7	0	27	19	155	283	438
Total	0	305	39	161	24	51	39	274	118	429	0	86	69	0	84	100	621	1158	1779
Grand Total	0	598	65	370	62	90	78	632	211	880	0	168	133	0	180	209	1379	2297	3676
Apprch %	0	90.2	9.8		27	39.1	33.9		19.3	80.7	0		42.5	0	57.5				
Total %	0	26	2.8		2.7	3.9	3.4		9.2	38.3	0		5.8	0	7.8		37.5	62.5	
Cars	0	577	63		61	90	75		206	843	0		129	0	161		0	0	3584
% Cars	0	96.5	96.9	100	98.4	100	96.2	100	97.6	95.8	0	100	97	0	89.4	100	0	0	97.5
Trucks	0	21	2		1	0	3		5	37	0		4	0	19		0	0	92
% Trucks	0	3.5	3.1	0	1.6	0	3.8	0	2.4	4.2	0	0	3	0	10.6	0	0	0	2.5

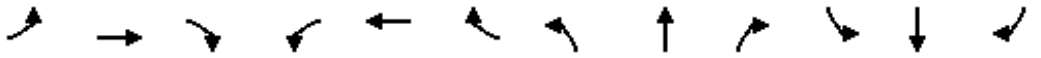
	Meridian St From North				Saratoga St From East				Meridian St From South				Central Sq From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	65	9	74	12	10	13	35	26	123	0	149	16	0	28	44	302
16:45	0	78	5	83	11	11	12	34	32	101	0	133	13	0	28	41	291
17:00	0	77	9	86	11	13	11	35	26	103	0	129	33	0	24	57	307
17:15	0	81	13	94	5	16	7	28	30	118	0	148	15	0	20	35	305
Total Volume	0	301	36	337	39	50	43	132	114	445	0	559	77	0	100	177	1205
% App. Total	0	89.3	10.7		29.5	37.9	32.6		20.4	79.6	0		43.5	0	56.5		
PHF	.000	.929	.692	.896	.813	.781	.827	.943	.891	.904	.000	.938	.583	.000	.893	.776	.981

Accurate Counts
978-664-2565

File Name : 71490001
Site Code : 71490001
Start Date : 9/13/2007
Page No : 2



C-2 Synchro Output



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50		50	50			50	
Trailing Detector (ft)	0		0	0	0		0	0			0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.94			0.99			0.99	
Frt			0.850		0.957						0.982	
Flt Protected	0.950				0.984			0.989				
Satd. Flow (prot)	1438	0	1275	0	1298	0	0	1363	0	0	1372	0
Flt Permitted	0.556				0.984			0.688				
Satd. Flow (perm)	841	0	1275	0	1298	0	0	943	0	0	1372	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			120		27							
Headway Factor	1.14	1.14	1.14	1.14	1.30	1.14	1.14	1.32	1.14	1.14	1.32	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		203			388			262			616	
Travel Time (s)		4.6			8.8			6.0			14.0	
Volume (vph)	77	0	100	39	50	43	114	445	0	0	301	36
Confl. Peds. (#/hr)						97	68					68
Peak Hour Factor	0.63	0.92	0.83	0.56	0.68	0.63	0.85	0.93	0.91	0.95	0.91	0.69
Heavy Vehicles (%)	13%	11%	14%	11%	4%	0%	10%	11%	0%	0%	9%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	2	0
Parking (#/hr)				0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	122	0	120	70	74	68	134	478	0	0	331	52
Lane Group Flow (vph)	122	0	120	0	212	0	0	612	0	0	383	0
Turn Type	D.Pm		Free	Perm			Perm					
Protected Phases					5			1			1	
Permitted Phases	5		Free	5			1					
Detector Phases	5			5	5		1	1			1	
Minimum Initial (s)	6.0			6.0	6.0		40.0	40.0			40.0	
Minimum Split (s)	25.0			25.0	25.0		45.0	45.0			45.0	
Total Split (s)	30.0	0.0	0.0	30.0	30.0	0.0	45.0	45.0	0.0	0.0	45.0	0.0
Total Split (%)	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Maximum Green (s)	25.0			25.0	25.0		40.0	40.0			40.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)	1.0			1.0	1.0		1.0	1.0			1.0	
Lead/Lag							Lead	Lead			Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0			2.0	
Recall Mode	Max			Max	Max		C-Max	C-Max			C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0		90.0		29.0			41.0			41.0	
Actuated g/C Ratio	0.32		1.00		0.32			0.46			0.46	
v/c Ratio	0.45		0.09		0.49			1.42			0.61	
Control Delay	32.8		0.2		27.3			228.3			23.7	

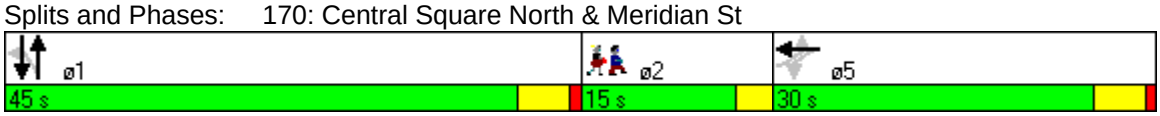
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	17%
Maximum Green (s)	12.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	97
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0		0.0		0.0			0.0			0.0	
Total Delay	32.8		0.2		27.3			228.3			23.7	
LOS	C		A		C			F			C	
Approach Delay					27.3			228.3			23.7	
Approach LOS					C			F			C	
Queue Length 50th (ft)	58		0		88			~475			159	
Queue Length 95th (ft)	73		0		108			#678			257	
Internal Link Dist (ft)		123			308			182			536	
Turn Bay Length (ft)												
Base Capacity (vph)	271		1275		436			430			625	
Starvation Cap Reductn	0		0		0			0			0	
Spillback Cap Reductn	0		0		0			0			0	
Storage Cap Reductn	0		0		0			0			0	
Reduced v/c Ratio	0.45		0.09		0.49			1.42			0.61	

Intersection Summary

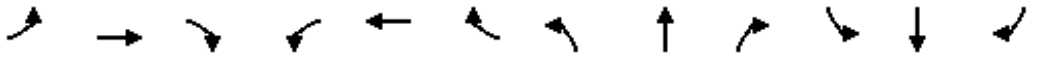
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.42
Intersection Signal Delay: 109.5 Intersection LOS: F
Intersection Capacity Utilization 93.5% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 170: Central Square North & Meridian St



Lane Group	ø2
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50		50	50			50	
Trailing Detector (ft)	0		0	0	0		0	0			0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96			1.00			1.00	
Frt			0.850		0.968						0.990	
Flt Protected	0.950				0.977			0.990				
Satd. Flow (prot)	1438	0	1275	0	1309	0	0	1364	0	0	1385	0
Flt Permitted	0.658				0.977			0.744				
Satd. Flow (perm)	996	0	1275	0	1309	0	0	1021	0	0	1385	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			76		17							
Headway Factor	1.14	1.14	1.14	1.14	1.30	1.14	1.14	1.32	1.14	1.14	1.32	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		203			388			262			616	
Travel Time (s)		4.6			8.8			6.0			14.0	
Volume (vph)	30	0	63	36	27	20	68	311	0	0	369	22
Confl. Peds. (#/hr)						97	68					68
Peak Hour Factor	0.63	0.92	0.83	0.56	0.68	0.63	0.85	0.93	0.91	0.95	0.91	0.69
Heavy Vehicles (%)	13%	11%	14%	11%	4%	0%	10%	11%	0%	0%	9%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	2	0
Parking (#/hr)				0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	48	0	76	64	40	32	80	334	0	0	405	32
Lane Group Flow (vph)	48	0	76	0	136	0	0	414	0	0	437	0
Turn Type	D.Pm		Free	Perm			Perm					
Protected Phases					5			1			1	
Permitted Phases	5		Free	5			1					
Detector Phases	5			5	5		1	1			1	
Minimum Initial (s)	6.0			6.0	6.0		40.0	40.0			40.0	
Minimum Split (s)	25.0			25.0	25.0		45.0	45.0			45.0	
Total Split (s)	30.0	0.0	0.0	30.0	30.0	0.0	45.0	45.0	0.0	0.0	45.0	0.0
Total Split (%)	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Maximum Green (s)	25.0			25.0	25.0		40.0	40.0			40.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)	1.0			1.0	1.0		1.0	1.0			1.0	
Lead/Lag							Lead	Lead			Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0			2.0	
Recall Mode	Max			Max	Max		C-Max	C-Max			C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0		90.0		29.0			41.0			41.0	
Actuated g/C Ratio	0.32		1.00		0.32			0.46			0.46	
v/c Ratio	0.15		0.06		0.31			0.89			0.69	
Control Delay	25.6		0.1		24.2			46.6			26.6	

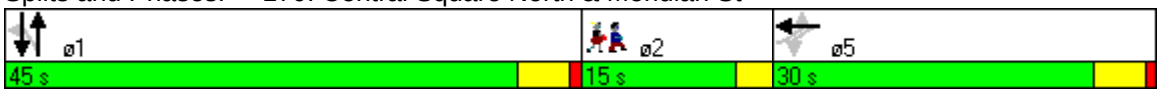
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	17%
Maximum Green (s)	12.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	97
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0		0.0		0.0			0.0			0.0	
Total Delay	25.6		0.1		24.2			46.6			26.6	
LOS	C		A		C			D			C	
Approach Delay					24.2			46.6			26.6	
Approach LOS					C			D			C	
Queue Length 50th (ft)	20		0		53			208			191	
Queue Length 95th (ft)	33		0		73			#395			306	
Internal Link Dist (ft)		123			308			182			536	
Turn Bay Length (ft)												
Base Capacity (vph)	321		1275		433			465			631	
Starvation Cap Reductn	0		0		0			0			0	
Spillback Cap Reductn	0		0		0			0			0	
Storage Cap Reductn	0		0		0			0			0	
Reduced v/c Ratio	0.15		0.06		0.31			0.89			0.69	

Intersection Summary

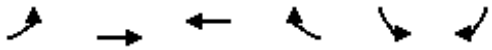
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 31.9 Intersection LOS: C
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 170: Central Square North & Meridian St



Lane Group	ø2
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	134	45	32	84	51	174
Peak Hour Factor	0.91	0.70	0.62	0.75	0.80	0.76
Hourly flow rate (vph)	147	64	52	112	64	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			203			
pX, platoon unblocked						
vC, conflicting volume	164				410	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164				410	52
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	89				88	77
cM capacity (veh/h)	1391				521	1008

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	147	64	52	112	293
Volume Left	147	0	0	0	64
Volume Right	0	0	0	112	229
cSH	1391	1700	1700	1700	837
Volume to Capacity	0.11	0.04	0.03	0.07	0.35
Queue Length 95th (ft)	9	0	0	0	39
Control Delay (s)	7.9	0.0	0.0	0.0	11.6
Lane LOS	A				B
Approach Delay (s)	5.5		0.0		11.6
Approach LOS					B

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	18	64	55	163	161	12
Peak Hour Factor	0.90	0.80	0.86	0.88	0.77	0.60
Hourly flow rate (vph)	20	80	64	185	209	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	532	219	229			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	532	219	229			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	96	90	95			
cM capacity (veh/h)	487	799	1321			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	100	249	229
Volume Left	20	64	0
Volume Right	80	0	20
cSH	708	1321	1700
Volume to Capacity	0.14	0.05	0.13
Queue Length 95th (ft)	12	4	0
Control Delay (s)	10.9	2.3	0.0
Lane LOS	B	A	
Approach Delay (s)	10.9	2.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	176	265	172	140	248	298
Peak Hour Factor	0.83	0.88	0.88	0.86	0.84	0.78
Hourly flow rate (vph)	212	301	195	163	295	382
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						262
pX, platoon unblocked						
vC, conflicting volume	1168	195			358	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1168	195			358	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	0	64			74	
cM capacity (veh/h)	155	831			1157	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	212	301	195	163	295	382
Volume Left	212	0	0	0	295	0
Volume Right	0	301	0	163	0	0
cSH	155	831	1700	1700	1157	1700
Volume to Capacity	1.37	0.36	0.11	0.10	0.26	0.22
Queue Length 95th (ft)	329	42	0	0	25	0
Control Delay (s)	256.9	11.8	0.0	0.0	9.2	0.0
Lane LOS	F	B			A	
Approach Delay (s)	113.0		0.0		4.0	
Approach LOS	F					

Intersection Summary			
Average Delay	39.2		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Yield			Stop			Yield	
Volume (vph)	2	20	9	22	40	76	19	91	27	74	83	10
Peak Hour Factor	0.50	0.63	0.75	0.69	0.77	0.90	0.59	0.91	0.68	0.80	0.83	0.50
Hourly flow rate (vph)	4	32	12	32	52	84	32	100	40	92	100	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	48	168	172	213
Volume Left (vph)	4	32	32	93
Volume Right (vph)	12	84	40	20
Hadj (s)	-0.13	-0.26	-0.06	0.05
Departure Headway (s)	4.9	4.6	4.6	4.7
Degree Utilization, x	0.07	0.22	0.22	0.28
Capacity (veh/h)	656	717	734	725
Control Delay (s)	8.3	8.9	8.9	9.5
Approach Delay (s)	8.3	8.9	8.9	9.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	9.1			
HCM Level of Service	A			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Volume (veh/h)	66	243	370	0	36	67
Peak Hour Factor	0.50	0.76	0.79	0.79	0.60	0.53
Hourly flow rate (vph)	132	320	468	0	60	126
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			524			
pX, platoon unblocked						
vC, conflicting volume	468				1052	468
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468				1052	468
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	87				72	78
cM capacity (veh/h)	1048				211	585

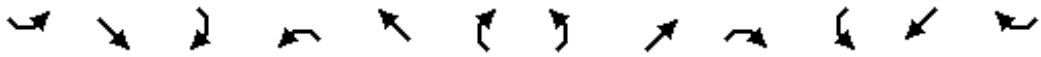
Direction, Lane #	NB 1	NB 2	SB 1	SE 1	SE 2
Volume Total	132	320	468	60	126
Volume Left	132	0	0	60	0
Volume Right	0	0	0	0	126
cSH	1048	1700	1700	211	585
Volume to Capacity	0.13	0.19	0.28	0.28	0.22
Queue Length 95th (ft)	11	0	0	28	20
Control Delay (s)	8.9	0.0	0.0	28.7	12.8
Lane LOS	A			D	B
Approach Delay (s)	2.6		0.0	18.0	
Approach LOS				C	

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	243	370	85	0	0
Peak Hour Factor	0.50	0.91	0.79	0.79	0.60	0.84
Hourly flow rate (vph)	0	267	468	108	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	576				735	468
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	576				735	468
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1007				379	599

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	267	468	108
Volume Left	0	0	0
Volume Right	0	0	108
cSH	1700	1700	1700
Volume to Capacity	0.16	0.28	0.06
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0	0.0	
Approach LOS			

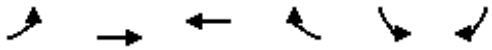
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Yield	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	103	19	2	64	0	11	0	33	0	19	66
Peak Hour Factor	0.60	0.84	0.53	0.92	0.92	0.92	0.69	0.61	0.38	0.80	0.79	0.79
Hourly flow rate (vph)	0	123	36	2	70	0	16	0	87	0	24	84
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									1			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	70			158			310	214	141	214	232	70
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	70			158			310	214	141	214	232	70
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	90	100	96	92
cM capacity (veh/h)	1531			1433			575	682	913	671	667	993

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	158	72	103	108
Volume Left	0	2	16	0
Volume Right	36	0	87	84
cSH	1700	1433	1080	895
Volume to Capacity	0.09	0.00	0.10	0.12
Queue Length 95th (ft)	0	0	8	10
Control Delay (s)	0.0	0.2	9.7	9.6
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	9.7	9.6
Approach LOS			A	A

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	234	36	30	185	121	205
Peak Hour Factor	0.91	0.70	0.62	0.75	0.80	0.76
Hourly flow rate (vph)	257	51	48	247	151	270
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			203			
pX, platoon unblocked						
vC, conflicting volume	295				614	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	295				614	48
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	79				57	73
cM capacity (veh/h)	1244				351	1012

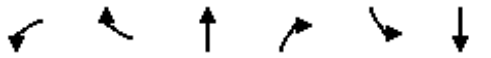
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	257	51	48	247	421
Volume Left	257	0	0	0	151
Volume Right	0	0	0	247	270
cSH	1244	1700	1700	1700	604
Volume to Capacity	0.21	0.03	0.03	0.15	0.70
Queue Length 95th (ft)	19	0	0	0	139
Control Delay (s)	8.6	0.0	0.0	0.0	23.6
Lane LOS	A				C
Approach Delay (s)	7.2		0.0		23.6
Approach LOS					C

Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	57	145	136	283	181	27
Peak Hour Factor	0.90	0.80	0.86	0.88	0.77	0.60
Hourly flow rate (vph)	63	181	158	322	235	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	895	258	280			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	895	258	280			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	77	76	88			
cM capacity (veh/h)	274	760	1265			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	245	480	280
Volume Left	63	158	0
Volume Right	181	0	45
cSH	521	1265	1700
Volume to Capacity	0.47	0.12	0.16
Queue Length 95th (ft)	62	11	0
Control Delay (s)	17.9	3.6	0.0
Lane LOS	C	A	
Approach Delay (s)	17.9	3.6	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	199	306	325	250	202	298
Peak Hour Factor	0.83	0.88	0.88	0.86	0.84	0.78
Hourly flow rate (vph)	240	348	369	291	240	382
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						262
pX, platoon unblocked						
vC, conflicting volume	1232	369			660	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1232	369			660	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	0	48			73	
cM capacity (veh/h)	139	663			891	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	240	348	369	291	240	382
Volume Left	240	0	0	0	240	0
Volume Right	0	348	0	291	0	0
cSH	139	663	1700	1700	891	1700
Volume to Capacity	1.73	0.52	0.22	0.17	0.27	0.22
Queue Length 95th (ft)	443	77	0	0	27	0
Control Delay (s)	411.5	16.3	0.0	0.0	10.5	0.0
Lane LOS	F	C			B	
Approach Delay (s)	177.5		0.0		4.1	
Approach LOS	F					

Intersection Summary			
Average Delay	57.1		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Yield			Stop			Yield	
Volume (vph)	12	54	23	19	98	168	29	83	38	126	89	18
Peak Hour Factor	0.50	0.63	0.75	0.69	0.77	0.90	0.59	0.91	0.68	0.80	0.83	0.50
Hourly flow rate (vph)	24	86	31	28	127	187	49	91	56	158	107	36

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	140	341	196	301
Volume Left (vph)	24	28	49	158
Volume Right (vph)	31	187	56	36
Hadj (s)	-0.10	-0.31	-0.09	0.05
Departure Headway (s)	5.9	5.3	5.7	5.7
Degree Utilization, x	0.23	0.50	0.31	0.47
Capacity (veh/h)	536	633	559	590
Control Delay (s)	10.6	13.5	11.3	13.7
Approach Delay (s)	10.6	13.5	11.3	13.7
Approach LOS	B	B	B	B

Intersection Summary				
Delay	12.7			
HCM Level of Service	B			
Intersection Capacity Utilization	54.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Volume (veh/h)	151	441	391	0	92	132
Peak Hour Factor	0.50	0.76	0.79	0.79	0.60	0.53
Hourly flow rate (vph)	302	580	495	0	153	249
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			524			
pX, platoon unblocked						
vC, conflicting volume	495				1679	495
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	495				1679	495
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	71				0	56
cM capacity (veh/h)	1024				70	565

Direction, Lane #	NB 1	NB 2	SB 1	SE 1	SE 2
Volume Total	302	580	495	153	249
Volume Left	302	0	0	153	0
Volume Right	0	0	0	0	249
cSH	1024	1700	1700	70	565
Volume to Capacity	0.29	0.34	0.29	2.19	0.44
Queue Length 95th (ft)	31	0	0	361	56
Control Delay (s)	10.0	0.0	0.0	676.3	16.3
Lane LOS	A			F	C
Approach Delay (s)	3.4		0.0	267.8	
Approach LOS				F	

Intersection Summary			
Average Delay	62.2		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	441	391	95	0	0
Peak Hour Factor	0.50	0.91	0.79	0.79	0.60	0.84
Hourly flow rate (vph)	0	485	495	120	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	615				980	495
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	615				980	495
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	974				271	579

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	485	495	120
Volume Left	0	0	0
Volume Right	0	0	120
cSH	1700	1700	1700
Volume to Capacity	0.29	0.29	0.07
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0	0.0	
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Yield	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	224	17	2	149	0	31	0	37	0	7	88
Peak Hour Factor	0.60	0.84	0.53	0.92	0.92	0.92	0.69	0.61	0.38	0.80	0.79	0.79
Hourly flow rate (vph)	0	267	32	2	162	0	45	0	97	0	9	111
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									1			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	162			299			565	449	283	449	465	162
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	162			299			565	449	283	449	465	162
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			88	100	87	100	98	87
cM capacity (veh/h)	1417			1274			378	504	761	453	494	883

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	299	164	142	120
Volume Left	0	2	45	0
Volume Right	32	0	97	111
cSH	1700	1274	1112	834
Volume to Capacity	0.18	0.00	0.13	0.14
Queue Length 95th (ft)	0	0	11	13
Control Delay (s)	0.0	0.1	12.1	10.0
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.1	12.1	10.0
Approach LOS			B	B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50		50	50			50	
Trailing Detector (ft)	0		0	0	0		0	0			0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96			1.00			1.00	
Frt			0.850		0.968						0.990	
Flt Protected	0.950				0.977			0.990				
Satd. Flow (prot)	1438	0	1275	0	1309	0	0	1364	0	0	1385	0
Flt Permitted	0.643				0.977			0.673				
Satd. Flow (perm)	973	0	1275	0	1309	0	0	924	0	0	1385	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			83		17							
Headway Factor	1.14	1.14	1.14	1.14	1.30	1.14	1.14	1.32	1.14	1.14	1.32	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		203			388			262			616	
Travel Time (s)		4.6			8.8			6.0			14.0	
Volume (vph)	30	0	63	36	27	20	68	311	0	0	369	22
Confl. Peds. (#/hr)						97	68					68
Peak Hour Factor	0.63	0.92	0.83	0.56	0.68	0.63	0.85	0.93	0.91	0.95	0.91	0.69
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	13%	11%	14%	11%	4%	0%	10%	11%	0%	0%	9%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	2	0
Parking (#/hr)				0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	52	0	83	71	44	35	88	368	0	0	446	35
Lane Group Flow (vph)	52	0	83	0	150	0	0	456	0	0	481	0
Turn Type	D.Pm		Free	Perm			Perm					
Protected Phases					5			1			1	
Permitted Phases	5		Free	5			1					
Detector Phases	5			5	5		1	1			1	
Minimum Initial (s)	6.0			6.0	6.0		40.0	40.0			40.0	
Minimum Split (s)	25.0			25.0	25.0		45.0	45.0			45.0	
Total Split (s)	30.0	0.0	0.0	30.0	30.0	0.0	45.0	45.0	0.0	0.0	45.0	0.0
Total Split (%)	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Maximum Green (s)	25.0			25.0	25.0		40.0	40.0			40.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)	1.0			1.0	1.0		1.0	1.0			1.0	
Lead/Lag							Lead	Lead			Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0			2.0	
Recall Mode	Max			Max	Max		C-Max	C-Max			C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0		90.0		29.0			41.0			41.0	
Actuated g/C Ratio	0.32		1.00		0.32			0.46			0.46	
v/c Ratio	0.17		0.07		0.35			1.08			0.76	

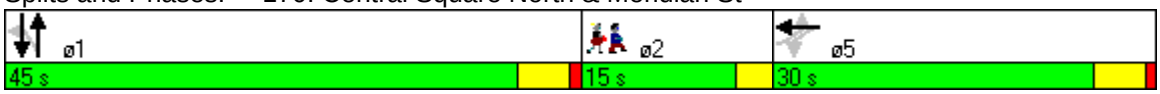
Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	17%
Maximum Green (s)	12.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	97
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	25.9		0.1		25.0			94.8			30.2	
Queue Delay	0.0		0.0		0.0			0.0			0.0	
Total Delay	25.9		0.1		25.0			94.8			30.2	
LOS	C		A		C			F			C	
Approach Delay					25.0			94.8			30.2	
Approach LOS					C			F			C	
Queue Length 50th (ft)	22		0		60			~294			220	
Queue Length 95th (ft)	35		0		80			#478			#361	
Internal Link Dist (ft)		123			308			182			536	
Turn Bay Length (ft)												
Base Capacity (vph)	313		1275		433			421			631	
Starvation Cap Reductn	0		0		0			0			0	
Spillback Cap Reductn	0		0		0			0			0	
Storage Cap Reductn	0		0		0			0			0	
Reduced v/c Ratio	0.17		0.07		0.35			1.08			0.76	

Intersection Summary

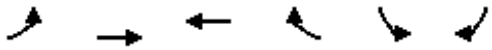
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 51.4 Intersection LOS: D
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 170: Central Square North & Meridian St



Lane Group	ø2
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	134	45	32	84	51	174
Peak Hour Factor	0.91	0.70	0.62	0.75	0.80	0.76
Hourly flow rate (vph)	162	71	57	123	70	252
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			203			
pX, platoon unblocked						
vC, conflicting volume	180				451	57
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	180				451	57
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	88				86	75
cM capacity (veh/h)	1372				486	1001

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	162	71	57	123	322
Volume Left	162	0	0	0	70
Volume Right	0	0	0	123	252
cSH	1372	1700	1700	1700	813
Volume to Capacity	0.12	0.04	0.03	0.07	0.40
Queue Length 95th (ft)	10	0	0	0	48
Control Delay (s)	8.0	0.0	0.0	0.0	12.3
Lane LOS	A				B
Approach Delay (s)	5.6		0.0		12.3
Approach LOS					B

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	18	64	55	163	161	12
Peak Hour Factor	0.90	0.80	0.86	0.88	0.77	0.60
Hourly flow rate (vph)	22	88	70	204	230	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	585	241	252			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	585	241	252			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	95	89	95			
cM capacity (veh/h)	451	776	1296			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	110	274	252
Volume Left	22	70	0
Volume Right	88	0	22
cSH	678	1296	1700
Volume to Capacity	0.16	0.05	0.15
Queue Length 95th (ft)	14	4	0
Control Delay (s)	11.3	2.4	0.0
Lane LOS	B	A	
Approach Delay (s)	11.3	2.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	176	265	172	140	248	298
Peak Hour Factor	0.83	0.88	0.88	0.86	0.84	0.78
Hourly flow rate (vph)	233	331	215	179	325	420
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						262
pX, platoon unblocked						
vC, conflicting volume	1285	215			394	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1285	215			394	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	0	59			71	
cM capacity (veh/h)	125	810			1122	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	233	331	215	179	325	420
Volume Left	233	0	0	0	325	0
Volume Right	0	331	0	179	0	0
cSH	125	810	1700	1700	1122	1700
Volume to Capacity	1.86	0.41	0.13	0.11	0.29	0.25
Queue Length 95th (ft)	457	50	0	0	30	0
Control Delay (s)	474.8	12.5	0.0	0.0	9.5	0.0
Lane LOS	F	B			A	
Approach Delay (s)	203.5		0.0		4.1	
Approach LOS	F					

Intersection Summary			
Average Delay	69.3		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Yield			Stop			Yield	
Volume (vph)	2	20	9	22	40	76	19	91	27	74	83	10
Peak Hour Factor	0.50	0.63	0.75	0.69	0.77	0.90	0.59	0.91	0.68	0.80	0.83	0.50
Hourly flow rate (vph)	4	35	13	35	57	93	35	110	44	102	110	22

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	53	185	189	234
Volume Left (vph)	4	35	35	102
Volume Right (vph)	13	93	44	22
Hadj (s)	-0.13	-0.26	-0.06	0.05
Departure Headway (s)	5.1	4.7	4.7	4.8
Degree Utilization, x	0.07	0.24	0.25	0.31
Capacity (veh/h)	631	695	716	709
Control Delay (s)	8.5	9.3	9.3	9.9
Approach Delay (s)	8.5	9.3	9.3	9.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay	9.5			
HCM Level of Service	A			
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Volume (veh/h)	66	243	370	0	36	67
Peak Hour Factor	0.50	0.76	0.79	0.79	0.60	0.53
Hourly flow rate (vph)	145	352	515	0	66	139
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			524			
pX, platoon unblocked						
vC, conflicting volume	515				1157	515
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	515				1157	515
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	86				63	75
cM capacity (veh/h)	1006				178	550

Direction, Lane #	NB 1	NB 2	SB 1	SE 1	SE 2
Volume Total	145	352	515	66	139
Volume Left	145	0	0	66	0
Volume Right	0	0	0	0	139
cSH	1006	1700	1700	178	550
Volume to Capacity	0.14	0.21	0.30	0.37	0.25
Queue Length 95th (ft)	13	0	0	40	25
Control Delay (s)	9.2	0.0	0.0	36.6	13.7
Lane LOS	A			E	B
Approach Delay (s)	2.7		0.0	21.1	
Approach LOS				C	

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	243	370	85	0	0
Peak Hour Factor	0.50	0.91	0.79	0.79	0.60	0.84
Hourly flow rate (vph)	0	294	515	118	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	634				809	515
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634				809	515
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	959				343	564

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	294	515	118
Volume Left	0	0	0
Volume Right	0	0	118
cSH	1700	1700	1700
Volume to Capacity	0.17	0.30	0.07
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0	0.0	
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Yield	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	103	19	2	64	0	11	0	33	0	19	66
Peak Hour Factor	0.60	0.84	0.53	0.92	0.92	0.92	0.69	0.61	0.38	0.80	0.79	0.79
Hourly flow rate (vph)	0	135	39	2	77	0	18	0	96	0	26	92
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									1			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	77			174			341	236	155	236	256	77
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			174			341	236	155	236	256	77
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	89	100	96	91
cM capacity (veh/h)	1522			1414			541	664	897	641	647	985

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	174	79	113	118
Volume Left	0	2	18	0
Volume Right	39	0	96	92
cSH	1700	1414	1061	882
Volume to Capacity	0.10	0.00	0.11	0.13
Queue Length 95th (ft)	0	0	9	12
Control Delay (s)	0.0	0.2	9.9	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	9.9	9.7
Approach LOS			A	A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

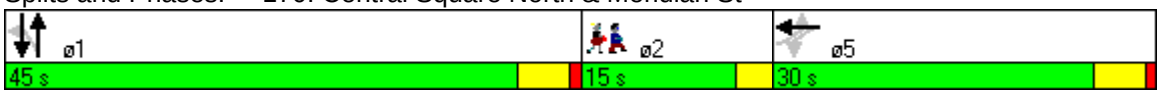
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50		50	50			50	
Trailing Detector (ft)	0		0	0	0		0	0			0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.94			1.00			0.99	
Frt			0.850		0.957						0.982	
Flt Protected	0.950				0.984			0.989				
Satd. Flow (prot)	1438	0	1275	0	1298	0	0	1363	0	0	1372	0
Flt Permitted	0.535				0.984			0.628				
Satd. Flow (perm)	810	0	1275	0	1298	0	0	861	0	0	1372	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			133		27							
Headway Factor	1.14	1.14	1.14	1.14	1.30	1.14	1.14	1.32	1.14	1.14	1.32	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		203			388			262			616	
Travel Time (s)		4.6			8.8			6.0			14.0	
Volume (vph)	77	0	100	39	50	43	114	445	0	0	301	36
Confl. Peds. (#/hr)						97	68					68
Peak Hour Factor	0.63	0.92	0.83	0.56	0.68	0.63	0.85	0.93	0.91	0.95	0.91	0.69
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	13%	11%	14%	11%	4%	0%	10%	11%	0%	0%	9%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	2	0
Parking (#/hr)				0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	134	0	133	77	81	75	148	526	0	0	364	57
Lane Group Flow (vph)	134	0	133	0	233	0	0	674	0	0	421	0
Turn Type	D.Pm		Free	Perm			Perm					
Protected Phases					5			1			1	
Permitted Phases	5		Free	5			1					
Detector Phases	5			5	5		1	1			1	
Minimum Initial (s)	6.0			6.0	6.0		40.0	40.0			40.0	
Minimum Split (s)	25.0			25.0	25.0		45.0	45.0			45.0	
Total Split (s)	30.0	0.0	0.0	30.0	30.0	0.0	45.0	45.0	0.0	0.0	45.0	0.0
Total Split (%)	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Maximum Green (s)	25.0			25.0	25.0		40.0	40.0			40.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)	1.0			1.0	1.0		1.0	1.0			1.0	
Lead/Lag							Lead	Lead			Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0			2.0	
Recall Mode	Max			Max	Max		C-Max	C-Max			C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0		90.0		29.0			41.0			41.0	
Actuated g/C Ratio	0.32		1.00		0.32			0.46			0.46	
v/c Ratio	0.51		0.10		0.53			1.72			0.67	

Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	17%
Maximum Green (s)	12.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	97
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	35.2		0.2		28.9			357.2			25.9	
Queue Delay	0.0		0.0		0.0			0.0			0.0	
Total Delay	35.2		0.2		28.9			357.2			25.9	
LOS	D		A		C			F			C	
Approach Delay					28.9			357.2			25.9	
Approach LOS					C			F			C	
Queue Length 50th (ft)	65		0		100			~571			181	
Queue Length 95th (ft)	80		0		120			#782			292	
Internal Link Dist (ft)		123			308			182			536	
Turn Bay Length (ft)												
Base Capacity (vph)	261		1275		436			392			625	
Starvation Cap Reductn	0		0		0			0			0	
Spillback Cap Reductn	0		0		0			0			0	
Storage Cap Reductn	0		0		0			0			0	
Reduced v/c Ratio	0.51		0.10		0.53			1.72			0.67	

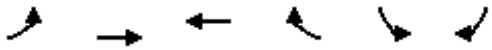
Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.72			
Intersection Signal Delay: 165.0		Intersection LOS: F	
Intersection Capacity Utilization 97.3%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 170: Central Square North & Meridian St



Lane Group	ø2
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	234	36	30	185	121	205
Peak Hour Factor	0.91	0.70	0.62	0.75	0.80	0.76
Hourly flow rate (vph)	283	57	53	271	166	297
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			203			
pX, platoon unblocked						
vC, conflicting volume	325				676	53
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	325				676	53
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	77				47	70
cM capacity (veh/h)	1213				312	1006

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	283	57	53	271	463
Volume Left	283	0	0	0	166
Volume Right	0	0	0	271	297
cSH	1213	1700	1700	1700	559
Volume to Capacity	0.23	0.03	0.03	0.16	0.83
Queue Length 95th (ft)	23	0	0	0	212
Control Delay (s)	8.9	0.0	0.0	0.0	35.2
Lane LOS	A				E
Approach Delay (s)	7.4		0.0		35.2
Approach LOS					E

Intersection Summary			
Average Delay	16.7		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	57	145	136	283	181	27
Peak Hour Factor	0.90	0.80	0.86	0.88	0.77	0.60
Hourly flow rate (vph)	70	199	174	354	259	50
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	985	283	308			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	985	283	308			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	71	73	86			
cM capacity (veh/h)	238	735	1236			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	269	528	308
Volume Left	70	174	0
Volume Right	199	0	50
cSH	477	1236	1700
Volume to Capacity	0.56	0.14	0.18
Queue Length 95th (ft)	86	12	0
Control Delay (s)	21.8	3.8	0.0
Lane LOS	C	A	
Approach Delay (s)	21.8	3.8	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	199	306	325	250	202	298
Peak Hour Factor	0.83	0.88	0.88	0.86	0.84	0.78
Hourly flow rate (vph)	264	382	406	320	265	420
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						262
pX, platoon unblocked						
vC, conflicting volume	1356	406			726	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1356	406			726	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	0	39			69	
cM capacity (veh/h)	110	632			841	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	264	382	406	320	265	420
Volume Left	264	0	0	0	265	0
Volume Right	0	382	0	320	0	0
cSH	110	632	1700	1700	841	1700
Volume to Capacity	2.41	0.61	0.24	0.19	0.31	0.25
Queue Length 95th (ft)	587	102	0	0	34	0
Control Delay (s)	723.1	19.0	0.0	0.0	11.2	0.0
Lane LOS	F	C			B	
Approach Delay (s)	306.4		0.0		4.3	
Approach LOS	F					

Intersection Summary			
Average Delay	97.7		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Yield			Stop			Yield	
Volume (vph)	12	54	23	19	98	168	29	83	38	126	89	18
Peak Hour Factor	0.50	0.63	0.75	0.69	0.77	0.90	0.59	0.91	0.68	0.80	0.83	0.50
Hourly flow rate (vph)	26	94	34	30	140	205	54	100	61	173	118	40

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	154	376	216	331
Volume Left (vph)	26	30	54	173
Volume Right (vph)	34	205	61	40
Hadj (s)	-0.10	-0.31	-0.09	0.05
Departure Headway (s)	6.3	5.6	6.1	6.0
Degree Utilization, x	0.27	0.58	0.37	0.55
Capacity (veh/h)	491	602	527	561
Control Delay (s)	11.5	16.1	12.6	16.1
Approach Delay (s)	11.5	16.1	12.6	16.1
Approach LOS	B	C	B	C

Intersection Summary			
Delay	14.7		
HCM Level of Service	B		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Volume (veh/h)	151	441	391	0	92	132
Peak Hour Factor	0.50	0.76	0.79	0.79	0.60	0.53
Hourly flow rate (vph)	332	638	544	0	169	274
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			524			
pX, platoon unblocked						
vC, conflicting volume	544				1847	544
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	544				1847	544
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	66				0	48
cM capacity (veh/h)	981				51	529

Direction, Lane #	NB 1	NB 2	SB 1	SE 1	SE 2
Volume Total	332	638	544	169	274
Volume Left	332	0	0	169	0
Volume Right	0	0	0	0	274
cSH	981	1700	1700	51	529
Volume to Capacity	0.34	0.38	0.32	3.28	0.52
Queue Length 95th (ft)	38	0	0	Err	74
Control Delay (s)	10.5	0.0	0.0	Err	18.9
Lane LOS	B			F	C
Approach Delay (s)	3.6		0.0	3821.9	
Approach LOS				F	

Intersection Summary			
Average Delay	866.0		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	441	391	95	0	0
Peak Hour Factor	0.50	0.91	0.79	0.79	0.60	0.84
Hourly flow rate (vph)	0	533	544	132	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	677				1078	544
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	677				1078	544
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	924				237	543

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	533	544	132
Volume Left	0	0	0
Volume Right	0	0	132
cSH	1700	1700	1700
Volume to Capacity	0.31	0.32	0.08
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0	0.0	
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Yield	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	224	17	2	149	0	31	0	37	0	7	88
Peak Hour Factor	0.60	0.84	0.53	0.92	0.92	0.92	0.69	0.61	0.38	0.80	0.79	0.79
Hourly flow rate (vph)	0	293	35	2	178	0	49	0	107	0	10	123
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									1			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	178			329			621	494	311	494	512	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			329			621	494	311	494	512	178
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			85	100	85	100	98	86
cM capacity (veh/h)	1398			1242			339	476	734	414	465	865

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	329	181	157	132
Volume Left	0	2	49	0
Volume Right	35	0	107	123
cSH	1700	1242	1073	813
Volume to Capacity	0.19	0.00	0.15	0.16
Queue Length 95th (ft)	0	0	13	14
Control Delay (s)	0.0	0.1	12.8	10.3
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.1	12.8	10.3
Approach LOS			B	B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50		50	50			50	
Trailing Detector (ft)	0		0	0	0		0	0			0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96			1.00			1.00	
Frt			0.850		0.968						0.990	
Flt Protected	0.950				0.977			0.990				
Satd. Flow (prot)	1438	0	1275	0	1309	0	0	1364	0	0	1385	0
Flt Permitted	0.643				0.977			0.664				
Satd. Flow (perm)	973	0	1275	0	1309	0	0	912	0	0	1385	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			90		17							
Headway Factor	1.14	1.14	1.14	1.14	1.30	1.14	1.14	1.32	1.14	1.14	1.32	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		203			388			262			616	
Travel Time (s)		4.6			8.8			6.0			14.0	
Volume (vph)	30	0	68	36	27	20	69	313	0	0	373	22
Confl. Peds. (#/hr)						97	68					68
Peak Hour Factor	0.63	0.92	0.83	0.56	0.68	0.63	0.85	0.93	0.91	0.95	0.91	0.69
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	13%	11%	14%	11%	4%	0%	10%	11%	0%	0%	9%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	2	0
Parking (#/hr)				0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	52	0	90	71	44	35	89	370	0	0	451	35
Lane Group Flow (vph)	52	0	90	0	150	0	0	459	0	0	486	0
Turn Type	D.Pm		Free	Perm			Perm					
Protected Phases					5			1			1	
Permitted Phases	5		Free	5			1					
Detector Phases	5			5	5		1	1			1	
Minimum Initial (s)	6.0			6.0	6.0		40.0	40.0			40.0	
Minimum Split (s)	25.0			25.0	25.0		45.0	45.0			45.0	
Total Split (s)	30.0	0.0	0.0	30.0	30.0	0.0	45.0	45.0	0.0	0.0	45.0	0.0
Total Split (%)	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Maximum Green (s)	25.0			25.0	25.0		40.0	40.0			40.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)	1.0			1.0	1.0		1.0	1.0			1.0	
Lead/Lag							Lead	Lead			Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0			2.0	
Recall Mode	Max			Max	Max		C-Max	C-Max			C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0		90.0		29.0			41.0			41.0	
Actuated g/C Ratio	0.32		1.00		0.32			0.46			0.46	
v/c Ratio	0.17		0.07		0.35			1.11			0.77	

Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	17%
Maximum Green (s)	12.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	97
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

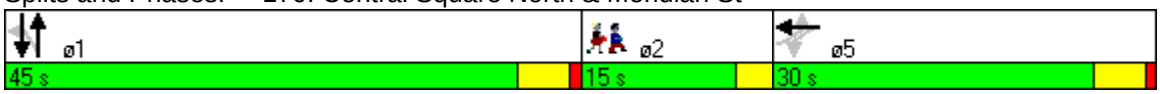
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	25.9		0.1		25.0			102.7			30.7	
Queue Delay	0.0		0.0		0.0			0.0			0.0	
Total Delay	25.9		0.1		25.0			102.7			30.7	
LOS	C		A		C			F			C	
Approach Delay					25.0			102.7			30.7	
Approach LOS					C			F			C	
Queue Length 50th (ft)	22		0		60			~300			224	
Queue Length 95th (ft)	35		0		80			#486			#374	
Internal Link Dist (ft)		123			308			182			536	
Turn Bay Length (ft)												
Base Capacity (vph)	313		1275		433			415			631	
Starvation Cap Reductn	0		0		0			0			0	
Spillback Cap Reductn	0		0		0			0			0	
Storage Cap Reductn	0		0		0			0			0	
Reduced v/c Ratio	0.17		0.07		0.35			1.11			0.77	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 54.3		Intersection LOS: D	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

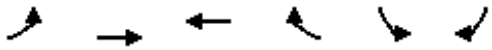
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 170: Central Square North & Meridian St



Lane Group	ø2
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	135	45	32	85	56	176
Peak Hour Factor	0.91	0.70	0.62	0.75	0.80	0.76
Hourly flow rate (vph)	163	71	57	125	77	255
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			203			
pX, platoon unblocked						
vC, conflicting volume	181				454	57
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181				454	57
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	88				84	75
cM capacity (veh/h)	1370				484	1001

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	163	71	57	125	332
Volume Left	163	0	0	0	77
Volume Right	0	0	0	125	255
cSH	1370	1700	1700	1700	802
Volume to Capacity	0.12	0.04	0.03	0.07	0.41
Queue Length 95th (ft)	10	0	0	0	51
Control Delay (s)	8.0	0.0	0.0	0.0	12.6
Lane LOS	A				B
Approach Delay (s)	5.6		0.0		12.6
Approach LOS					B

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	18	64	55	165	168	12
Peak Hour Factor	0.90	0.80	0.86	0.88	0.77	0.60
Hourly flow rate (vph)	22	88	70	206	240	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	598	251	262			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	598	251	262			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	95	89	95			
cM capacity (veh/h)	443	766	1285			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	110	277	262
Volume Left	22	70	0
Volume Right	88	0	22
cSH	669	1285	1700
Volume to Capacity	0.16	0.05	0.15
Queue Length 95th (ft)	15	4	0
Control Delay (s)	11.4	2.4	0.0
Lane LOS	B	A	
Approach Delay (s)	11.4	2.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	176	267	173	140	256	299
Peak Hour Factor	0.83	0.88	0.88	0.86	0.84	0.78
Hourly flow rate (vph)	233	334	216	179	335	422
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						262
pX, platoon unblocked						
vC, conflicting volume	1308	216			395	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1308	216			395	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	0	59			70	
cM capacity (veh/h)	120	809			1121	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	233	334	216	179	335	422
Volume Left	233	0	0	0	335	0
Volume Right	0	334	0	179	0	0
cSH	120	809	1700	1700	1121	1700
Volume to Capacity	1.95	0.41	0.13	0.11	0.30	0.25
Queue Length 95th (ft)	471	51	0	0	32	0
Control Delay (s)	516.7	12.5	0.0	0.0	9.6	0.0
Lane LOS	F	B			A	
Approach Delay (s)	219.9		0.0		4.2	
Approach LOS	F					

Intersection Summary			
Average Delay	74.4		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Yield			Stop			Yield	
Volume (vph)	2	20	9	22	40	77	19	91	27	76	83	10
Peak Hour Factor	0.50	0.63	0.75	0.69	0.77	0.90	0.59	0.91	0.68	0.80	0.83	0.50
Hourly flow rate (vph)	4	35	13	35	57	94	35	110	44	104	110	22

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	53	186	189	237
Volume Left (vph)	4	35	35	105
Volume Right (vph)	13	94	44	22
Hadj (s)	-0.13	-0.27	-0.06	0.06
Departure Headway (s)	5.1	4.7	4.7	4.8
Degree Utilization, x	0.07	0.25	0.25	0.32
Capacity (veh/h)	630	694	714	708
Control Delay (s)	8.5	9.3	9.3	10.0
Approach Delay (s)	8.5	9.3	9.3	10.0
Approach LOS	A	A	A	A

Intersection Summary				
Delay	9.5			
HCM Level of Service	A			
Intersection Capacity Utilization	46.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Volume (veh/h)	67	244	371	0	36	69
Peak Hour Factor	0.50	0.76	0.79	0.79	0.60	0.53
Hourly flow rate (vph)	147	353	517	0	66	143
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			524			
pX, platoon unblocked						
vC, conflicting volume	517				1165	517
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517				1165	517
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	85				62	74
cM capacity (veh/h)	1005				176	549

Direction, Lane #	NB 1	NB 2	SB 1	SE 1	SE 2
Volume Total	147	353	517	66	143
Volume Left	147	0	0	66	0
Volume Right	0	0	0	0	143
cSH	1005	1700	1700	176	549
Volume to Capacity	0.15	0.21	0.30	0.38	0.26
Queue Length 95th (ft)	13	0	0	40	26
Control Delay (s)	9.2	0.0	0.0	37.3	13.9
Lane LOS	A			E	B
Approach Delay (s)	2.7		0.0	21.2	
Approach LOS				C	

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	243	371	85	0	0
Peak Hour Factor	0.50	0.91	0.79	0.79	0.60	0.84
Hourly flow rate (vph)	0	294	517	118	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	635				810	517
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	635				810	517
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	958				342	563

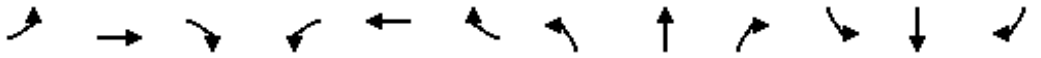
Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	294	517	118
Volume Left	0	0	0
Volume Right	0	0	118
cSH	1700	1700	1700
Volume to Capacity	0.17	0.30	0.07
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0	0.0	
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Yield	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	103	19	2	64	0	11	0	33	0	19	66
Peak Hour Factor	0.60	0.84	0.53	0.92	0.92	0.92	0.69	0.61	0.38	0.80	0.79	0.79
Hourly flow rate (vph)	0	135	39	2	77	0	18	0	96	0	26	92
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									1			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	77			174			341	236	155	236	256	77
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			174			341	236	155	236	256	77
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	89	100	96	91
cM capacity (veh/h)	1522			1414			541	664	897	641	647	985

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	174	79	113	118
Volume Left	0	2	18	0
Volume Right	39	0	96	92
cSH	1700	1414	1061	882
Volume to Capacity	0.10	0.00	0.11	0.13
Queue Length 95th (ft)	0	0	9	12
Control Delay (s)	0.0	0.2	9.9	9.7
Lane LOS		A	A	A
Approach Delay (s)	0.0	0.2	9.9	9.7
Approach LOS			A	A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50		50	50			50	
Trailing Detector (ft)	0		0	0	0		0	0			0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.94			1.00			0.99	
Frt			0.850		0.957						0.982	
Flt Protected	0.950				0.984			0.989				
Satd. Flow (prot)	1438	0	1275	0	1298	0	0	1363	0	0	1372	0
Flt Permitted	0.535				0.984			0.618				
Satd. Flow (perm)	810	0	1275	0	1298	0	0	848	0	0	1372	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			140		27							
Headway Factor	1.14	1.14	1.14	1.14	1.30	1.14	1.14	1.32	1.14	1.14	1.32	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		203			388			262			616	
Travel Time (s)		4.6			8.8			6.0			14.0	
Volume (vph)	77	0	106	39	50	43	117	451	0	0	305	36
Confl. Peds. (#/hr)						97	68					68
Peak Hour Factor	0.63	0.92	0.83	0.56	0.68	0.63	0.85	0.93	0.91	0.95	0.91	0.69
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Heavy Vehicles (%)	13%	11%	14%	11%	4%	0%	10%	11%	0%	0%	9%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	2	0
Parking (#/hr)				0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	134	0	140	77	81	75	151	533	0	0	369	57
Lane Group Flow (vph)	134	0	140	0	233	0	0	684	0	0	426	0
Turn Type	D.Pm		Free	Perm			Perm					
Protected Phases					5			1			1	
Permitted Phases	5		Free	5			1					
Detector Phases	5			5	5		1	1			1	
Minimum Initial (s)	6.0			6.0	6.0		40.0	40.0			40.0	
Minimum Split (s)	25.0			25.0	25.0		45.0	45.0			45.0	
Total Split (s)	30.0	0.0	0.0	30.0	30.0	0.0	45.0	45.0	0.0	0.0	45.0	0.0
Total Split (%)	33.3%	0.0%	0.0%	33.3%	33.3%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%
Maximum Green (s)	25.0			25.0	25.0		40.0	40.0			40.0	
Yellow Time (s)	4.0			4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)	1.0			1.0	1.0		1.0	1.0			1.0	
Lead/Lag							Lead	Lead			Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0			2.0	2.0		2.0	2.0			2.0	
Recall Mode	Max			Max	Max		C-Max	C-Max			C-Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0		90.0		29.0			41.0			41.0	
Actuated g/C Ratio	0.32		1.00		0.32			0.46			0.46	
v/c Ratio	0.51		0.11		0.53			1.77			0.68	

Lane Group	ø2
Lane Configurations	
Ideal Flow (vphpl)	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phases	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	17%
Maximum Green (s)	12.0
Yellow Time (s)	3.0
All-Red Time (s)	0.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	97
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

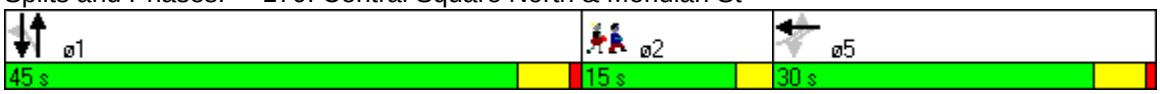
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	35.2		0.2		28.9			380.3			26.2	
Queue Delay	0.0		0.0		0.0			0.0			0.0	
Total Delay	35.2		0.2		28.9			380.3			26.2	
LOS	D		A		C			F			C	
Approach Delay					28.9			380.3			26.2	
Approach LOS					C			F			C	
Queue Length 50th (ft)	65		0		100			~587			184	
Queue Length 95th (ft)	80		0		120			#592			298	
Internal Link Dist (ft)		123			308			182			536	
Turn Bay Length (ft)												
Base Capacity (vph)	261		1275		436			386			625	
Starvation Cap Reductn	0		0		0			0			0	
Spillback Cap Reductn	0		0		0			0			0	
Storage Cap Reductn	0		0		0			0			0	
Reduced v/c Ratio	0.51		0.11		0.53			1.77			0.68	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.77			
Intersection Signal Delay: 174.9		Intersection LOS: F	
Intersection Capacity Utilization 97.9%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

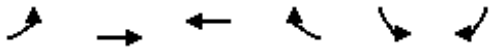
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 170: Central Square North & Meridian St



Lane Group	ø2
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	239	36	30	188	127	206
Peak Hour Factor	0.91	0.70	0.62	0.75	0.80	0.76
Hourly flow rate (vph)	289	57	53	276	175	298
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			203			
pX, platoon unblocked						
vC, conflicting volume	329				688	53
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329				688	53
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	76				43	70
cM capacity (veh/h)	1208				305	1006

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	289	57	53	276	473
Volume Left	289	0	0	0	175
Volume Right	0	0	0	276	298
cSH	1208	1700	1700	1700	544
Volume to Capacity	0.24	0.03	0.03	0.16	0.87
Queue Length 95th (ft)	23	0	0	0	240
Control Delay (s)	8.9	0.0	0.0	0.0	41.0
Lane LOS	A				E
Approach Delay (s)	7.5		0.0		41.0
Approach LOS					E

Intersection Summary			
Average Delay	19.2		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	57	145	136	291	188	27
Peak Hour Factor	0.90	0.80	0.86	0.88	0.77	0.60
Hourly flow rate (vph)	70	199	174	364	269	50
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1005	293	318			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1005	293	318			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	70	73	86			
cM capacity (veh/h)	232	725	1225			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	269	538	318
Volume Left	70	174	0
Volume Right	199	0	50
cSH	467	1225	1700
Volume to Capacity	0.58	0.14	0.19
Queue Length 95th (ft)	89	12	0
Control Delay (s)	22.6	3.8	0.0
Lane LOS	C	A	
Approach Delay (s)	22.6	3.8	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	199	309	328	250	211	299
Peak Hour Factor	0.83	0.88	0.88	0.86	0.84	0.78
Hourly flow rate (vph)	264	386	410	320	276	422
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						262
pX, platoon unblocked						
vC, conflicting volume	1384	410			730	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1384	410			730	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	0	39			67	
cM capacity (veh/h)	103	629			839	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	264	386	410	320	276	422
Volume Left	264	0	0	0	276	0
Volume Right	0	386	0	320	0	0
cSH	103	629	1700	1700	839	1700
Volume to Capacity	2.56	0.61	0.24	0.19	0.33	0.25
Queue Length 95th (ft)	605	105	0	0	36	0
Control Delay (s)	796.9	19.4	0.0	0.0	11.4	0.0
Lane LOS	F	C			B	
Approach Delay (s)	334.9		0.0		4.5	
Approach LOS	F					

Intersection Summary			
Average Delay	106.3		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Yield			Stop			Yield	
Volume (vph)	12	54	23	19	98	173	29	83	38	127	89	18
Peak Hour Factor	0.50	0.63	0.75	0.69	0.77	0.90	0.59	0.91	0.68	0.80	0.83	0.50
Hourly flow rate (vph)	26	94	34	30	140	211	54	100	61	175	118	40

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	154	382	216	332
Volume Left (vph)	26	30	54	175
Volume Right (vph)	34	211	61	40
Hadj (s)	-0.10	-0.32	-0.09	0.05
Departure Headway (s)	6.3	5.6	6.1	6.0
Degree Utilization, x	0.27	0.59	0.37	0.55
Capacity (veh/h)	488	602	521	558
Control Delay (s)	11.6	16.5	12.6	16.2
Approach Delay (s)	11.6	16.5	12.6	16.2
Approach LOS	B	C	B	C

Intersection Summary			
Delay	14.9		
HCM Level of Service	B		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Volume (veh/h)	156	444	392	0	92	133
Peak Hour Factor	0.50	0.76	0.79	0.79	0.60	0.53
Hourly flow rate (vph)	343	643	546	0	169	276
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			524			
pX, platoon unblocked						
vC, conflicting volume	546				1875	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	546				1875	546
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	65				0	48
cM capacity (veh/h)	980				48	528

Direction, Lane #	NB 1	NB 2	SB 1	SE 1	SE 2
Volume Total	343	643	546	169	276
Volume Left	343	0	0	169	0
Volume Right	0	0	0	0	276
cSH	980	1700	1700	48	528
Volume to Capacity	0.35	0.38	0.32	3.48	0.52
Queue Length 95th (ft)	40	0	0	Err	75
Control Delay (s)	10.6	0.0	0.0	Err	19.0
Lane LOS	B			F	C
Approach Delay (s)	3.7		0.0	3804.2	
Approach LOS				F	

Intersection Summary			
Average Delay	857.8		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	441	392	95	0	0
Peak Hour Factor	0.50	0.91	0.79	0.79	0.60	0.84
Hourly flow rate (vph)	0	533	546	132	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			405			
pX, platoon unblocked						
vC, conflicting volume	678				1079	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	678				1079	546
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	923				236	542

Direction, Lane #	NB 1	SB 1	SB 2
Volume Total	533	546	132
Volume Left	0	0	0
Volume Right	0	0	132
cSH	1700	1700	1700
Volume to Capacity	0.31	0.32	0.08
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0	0.0	
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Yield	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	225	17	2	149	0	31	0	37	0	7	88
Peak Hour Factor	0.60	0.84	0.53	0.92	0.92	0.92	0.69	0.61	0.38	0.80	0.79	0.79
Hourly flow rate (vph)	0	295	35	2	178	0	49	0	107	0	10	123
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									1			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	178			330			623	495	312	495	513	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	178			330			623	495	312	495	513	178
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			85	100	85	100	98	86
cM capacity (veh/h)	1398			1241			339	475	733	413	464	865

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	330	181	157	132
Volume Left	0	2	49	0
Volume Right	35	0	107	123
cSH	1700	1241	1071	813
Volume to Capacity	0.19	0.00	0.15	0.16
Queue Length 95th (ft)	0	0	13	14
Control Delay (s)	0.0	0.1	12.9	10.3
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.1	12.9	10.3
Approach LOS			B	B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

C-3 Trip Generation Calculations

Seville Theater

Trip Generation Estimation

Howard/Stein-Hudson Associates
November 13, 2007

Daily

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Capture Rate	Less capture trips	Assumed national vehicle occupancy rate[1]	**Converted to Person trips**	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Assumed local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Residential [4]																
	65	Total	6.85	445		445	1.2	**534**	17%	**91**	29%	**155**	54%	288	1.2	**246**
	Units	In	3.42	223		223	1.2	**267**	17%	**45**	29%	**77**	54%	144	1.2	**123**
		Out	3.42	223		223	1.2	**267**	17%	**45**	29%	**77**	54%	144	1.2	**123**
Retail [5]																
	15	Total	42.94	644	25%	483	1.8	**870**	13%	**113**	35%	**304**	52%	452	1.8	**251**
	KSF	In	21.47	322	25%	242	1.8	**435**	13%	**57**	35%	**152**	52%	226	1.8	**126**
		Out	21.47	322	25%	242	1.8	**435**	13%	**57**	35%	**152**	52%	226	1.8	**126**
Total		Total		**1,089**		**928**		**1,404**		**204**		**459**		**741**		**498**
		In		**545**		**464**		**702**		**102**		**230**		**370**		**249**
		Out		**545**		**464**		**702**		**102**		**230**		**370**		**249**

AM Peak Hour

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Capture Rate	Less capture trips	Assumed national vehicle occupancy rate[1]	**Converted to Person trips**	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Assumed local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Residential [4]																
	65	Total	0.56	37		37	1.2	**44**	25%	**11**	30%	**13**	45%	20	1.2	**17**
	Units	In	0.10	6		6	1.2	**7**	25%	**2**	30%	**2**	45%	3	1.2	**3**
		Out	0.47	30		30	1.2	**36**	25%	**9**	30%	**11**	45%	16	1.2	**14**
Retail [5]																
	15	Total	1.03	15	25%	12	1.8	**21**	24%	**5**	32%	**7**	44%	9	1.8	**5**
	KSF	In	0.63	9	25%	7	1.8	**13**	24%	**3**	32%	**4**	44%	6	1.8	**3**
		Out	0.40	6	25%	5	1.8	**8**	24%	**2**	32%	**3**	44%	4	1.8	**2**
Total		Total		**52**		**48**		**65**		**16**		**20**		**29**		**22**
		In		**16**		**13**		**20**		**5**		**6**		**9**		**6**
		Out		**36**		**35**		**45**		**11**		**14**		**20**		**16**

PM Peak Hour

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Capture Rate	Less capture trips	Assumed national vehicle occupancy rate[1]	**Converted to Person trips**	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Assumed local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Residential [4]																
	65	Total	0.65	42		42	1.2	**51**	25%	**13**	30%	**15**	45%	23	1.2	**19**
	Units	In	0.44	28		28	1.2	**34**	25%	**8**	30%	**10**	45%	15	1.2	**13**
		Out	0.21	14		14	1.2	**17**	25%	**4**	30%	**5**	45%	8	1.2	**6**
Retail [5]																
	15	Total	3.75	56	25%	42	1.8	**76**	24%	**18**	32%	**24**	44%	33	1.8	**19**
	KSF	In	1.80	27	25%	20	1.8	**36**	24%	**9**	32%	**12**	44%	16	1.8	**9**
		Out	1.95	29	25%	22	1.8	**39**	24%	**9**	32%	**13**	44%	17	1.8	**10**
Total		Total		**98**		**84**		**127**		**31**		**40**		**56**		**38**
		In		**55**		**49**		**70**		**17**		**22**		**31**		**22**
		Out		**43**		**36**		**56**		**14**		**18**		**25**		**16**

Notes:

1. 2001 National vehicle occupancy rates - 1.2:home to work; 1.8: family/personal business; 1.8: shopping; 2.1 social/recreational
2. Mode shares based on BTD Data for Area 7
3. Local vehicle occupancy rates based on 2000 Census data (residential) and national vehicle occupancy rates (retail)
4. ITE Trip Generation, 7th Edition, LUC 230 (Residential Condominium/Townhouse)
5. ITE Trip Generation, 7th Edition, LUC 820 (Shopping Center)

C-4 Mode Split Data

Area 7

Trips Beginning by Origin Activity and Period

	All Purposes	Home	Work	Other
Daily average mode shares				
Auto	52%	54%	74%	42%
Transit	13%	17%	21%	6%
Walk	35%	29%	5%	53%
AM mode shares				
Auto	44%	44%	62%	35%
Transit	24%	25%	32%	9%
Walk	32%	30%	5%	56%
Rest of day mode shares				
Auto	53%	59%	75%	42%
Transit	10%	12%	20%	6%
Walk	36%	28%	5%	52%
PM mode shares				
Auto	50%	51%	75%	37%
Transit	10%	15%	19%	5%
Walk	40%	34%	6%	58%

Trips Ending by Destination Activity and Period

	All Purposes	Home	Work	Other
Daily average mode shares				
Auto	52%	54%	74%	42%
Transit	13%	17%	21%	6%
Walk	35%	29%	5%	53%
AM mode shares				
Auto	50%	51%	75%	37%
Transit	10%	15%	19%	5%
Walk	40%	34%	6%	58%
Rest of day mode shares				
Auto	52%	54%	74%	43%
Transit	14%	17%	22%	6%
Walk	34%	29%	4%	51%
PM mode shares				
Auto	44%	44%	62%	35%
Transit	24%	25%	32%	9%
Walk	32%	30%	5%	56%

Daily Trip Ends in Area 7

Number of trips that begin in Area 7 by destination. The same numbers of trips are assumed to end in.

Location of Other Trip End	Daily Trips				Mode shares			Geographical Distribution of Trips			
	Total	Auto	Transit	Walk	Auto	Transit	Walk	Total	Auto	Transit	Walk
1					48.2	51.8		1.3	1.2	5.0	
2					21.6	78.4		4.3	1.8	25.8	
3					27.5	72.5		.8	.4	4.7	
4					39.0	61.0		2.2	1.7	10.2	
5					44.8	55.2		.7	.6	2.8	
6					63.0	37.0		.3	.3	.7	
7					25.9	4.4	69.7	50.6	25.4	17.1	100.0
8					80.1	19.9		.5	.8	.8	
9					85.3	14.7		.2	.4	.3	
10					76.4	23.6		.4	.6	.7	
11					78.0	22.0		.5	.7	.8	
12					96.3	3.7		.1	.1	.0	
13					83.2	16.8		.5	.8	.6	
14					62.8	37.2		.3	.3	.7	
15					62.5	37.5		.9	1.1	2.5	
16					60.5	39.5		.1	.1	.2	
17					81.4	18.6		.2	.4	.3	
18					85.0	15.0		.1	.2	.2	
19					82.1	17.9		.1	.2	.2	
20					97.9	2.1		4.2	8.1	.7	
RBO					88.8	11.2		17.4	29.9	15.0	
RGR					81.0	19.0		3.8	6.0	5.6	
RCD					74.4	25.6		1.1	1.6	2.1	
RMR					90.4	9.6		.4	.8	.3	
BNE					96.3	3.7		1.9	3.5	.5	
BNO					97.9	2.1		.9	1.8	.2	
BNW					89.7	10.3		.8	1.3	.6	
CN					98.8	1.2		2.6	4.9	.2	
CW					97.1	2.9		1.3	2.5	.3	
CSW					90.6	9.4		.8	1.4	.6	
CSE					93.7	6.3		.7	1.3	.3	
TOTAL					51.6	13.1	35.3	100.0	100.0	100.0	100.0

Area 7. Morning Peak Period (6 AM – 9 AM) Trips Starting in Area 7

Destination	Trips Starting in Area 7 Total	Auto	Transit	Walk	Mode shares Auto	Transit	Walk	Distribution of Trip Destinations Combined	Auto	Transit	Walk
1					45.1	54.9		2.2	2.3	5.0	
2					17.8	82.2		10.2	4.1	34.7	
3					23.5	76.5		1.8	1.0	5.8	
4					29.8	70.2		4.7	3.2	13.6	
5					30.8	69.2		1.2	.9	3.5	
6					54.2	45.8		.2	.2	.3	
7				4	19.3	6.1	74.6	42.4	18.5	10.6	100.0
8					73.7	26.3		.6	1.0	.7	
9					86.1	13.9		.1	.2	.1	
10					46.6	53.4		.4	.4	.9	
11					75.0	25.0		.6	1.0	.6	
12					100.0			.0	.1		
13					76.8	23.2		.7	1.2	.7	
14					100.0			.1	.2		
15					43.6	56.4		1.2	1.2	2.7	
16					27.5	72.5		.1	.1	.3	
17					51.3	48.7		.3	.4	.7	
18					100.0			.1	.1		
19					100.0			.1	.2		
20					91.4	8.6		3.8	7.9	1.4	
RBO					83.1	16.9		12.3	23.2	8.6	
RGR					74.4	25.6		5.4	9.2	5.7	
RCD					65.2	34.8		1.8	2.6	2.5	
RMR					100.0			.4	1.0		
BNE					100.0			1.7	3.9		
BNO					98.1	1.9		1.2	2.6	.1	
BNW					85.3	14.7		1.4	2.6	.8	
CN					98.4	1.6		2.1	4.7	.1	
CW					93.2	6.8		1.6	3.4	.5	
CSW					96.5	3.5		.6	1.4	.1	
CSE					100.0			.5	1.1		
TOTAL				24	44.1	24.3	31.6	100.0	100.0	100.0	100.0

Morning Peak Period (6 AM – 9 AM)

Trips Ending in Area 7

Origin	Trips Ending in Area 7 Total	Auto	Transit	Walk	Mode shares Auto	Transit	Walk	Distribution of Trip Origins Combined	Auto	Transit	Walk
1	--	--			72.6	27.4		.4	.6	1.1	
2					60.0	40.0		.6	.7	2.3	
3					31.1	68.9		.4	.2	2.5	
4					70.2	29.8		.6	.9	1.8	
5					34.8	65.2		.5	.4	3.4	
6					22.7	77.3		.6	.3	4.8	
7					19.3	6.1	74.6	53.4	20.5	32.9	100.0
8					100.0			.2	.5		
9					68.5	31.5		.3	.5	1.1	
10					50.0	50.0		.6	.6	2.8	
11					76.2	23.8		.4	.6	1.0	
12					100.0			.1	.2		
13					74.0	26.0		.3	.4	.8	
14					48.2	51.8		.5	.4	2.4	
15					49.7	50.3		.8	.8	3.9	
16					100.0			.1	.2		
17					100.0			.1	.3		
18					100.0			.1	.2		
19					70.9	29.1		.2	.3	.7	
20					100.0			4.3	8.6		
RBO					86.3	13.7		17.2	29.5	23.8	
RGR					80.5	19.5		2.4	3.8	4.7	
RCD					100.0			.7	1.5		
RMR					82.2	17.8		.7	1.2	1.3	
BNE					96.0	4.0		3.5	6.7	1.4	
BNO					100.0			1.5	3.0		
BNW					94.1	5.9		.9	1.8	.6	
CN					97.0	3.0		4.3	8.4	1.3	
CW					96.5	3.5		1.4	2.7	.5	
CSW					80.4	19.6		1.2	1.9	2.3	
CSE					84.2	15.8		1.6	2.7	2.5	
TOTAL	1				50.3	9.9	39.8	100.0	100.0	100.0	100.0

Afternoon Peak Period (3 PM – 6 PM)

Trips Starting in Area 7

Destination	Trips Starting in Area 7 Total	Auto	Transit	Walk	Mode shares Auto	Transit	Walk	Distribution of Trip Destinations Combined	Auto	Transit	Walk
1					46.9	53.1		.7	.6	3.5	
2					25.3	74.7		1.4	.7	9.8	
3					21.2	78.8		.5	.2	3.9	
4					44.8	55.2		1.3	1.1	6.7	
5					42.9	57.1		.5	.4	2.8	
6					56.6	43.4		.3	.3	1.1	
7					17.4	5.6	77.0	49.4	16.8	26.0	100.0
8					74.3	25.7		.4	.5	.9	
9					76.5	23.5		.3	.4	.6	
10					88.5	11.5		.3	.6	.3	
11					74.3	25.7		.4	.6	.9	
12					91.7	8.3		.1	.2	.1	
13					75.2	24.8		.3	.5	.8	
14					48.4	51.6		.4	.4	1.9	
15					56.5	43.5		.8	.8	3.1	
16					100.0			.1	.1		
17					100.0			.2	.3		
18					82.7	17.3		.1	.2	.2	
19					66.3	33.7		.2	.3	.7	
20					100.0			6.3	12.3		
RBO					88.2	11.8		18.7	32.2	21.0	
RGR					80.4	19.6		3.2	4.9	5.9	
RCD					78.9	21.1		1.0	1.6	2.1	
RMR					82.6	17.4		.6	.9	1.0	
BNE					94.9	5.1		2.6	4.9	1.3	
BNO					97.7	2.3		1.3	2.4	.3	
BNW					90.6	9.4		.9	1.6	.8	
CN					97.8	2.2		4.0	7.5	.8	
CW					98.3	1.7		1.6	3.1	.3	
CSW					83.0	17.0		1.1	1.8	1.8	
CSE					84.6	15.4		1.1	1.9	1.7	
TOTAL					51.4	10.6	38.1	100.0	100.0	100.0	100.0

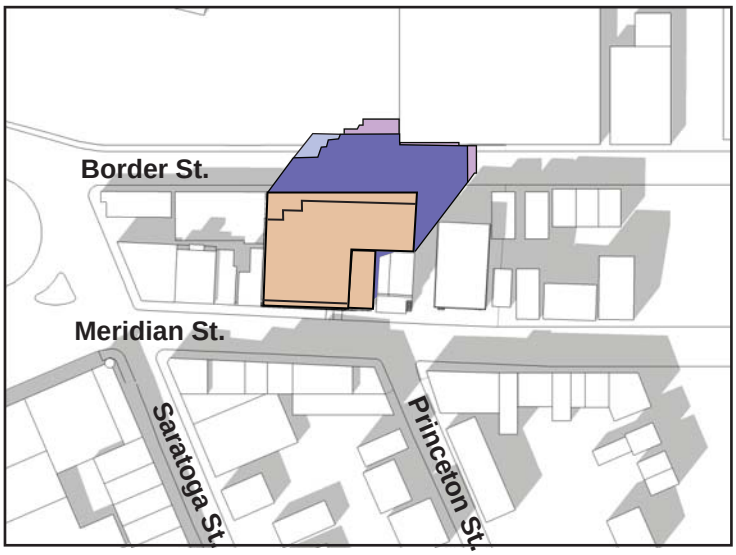
Afternoon Peak Period (3 PM – 6 PM)

Trips Ending in Area 7

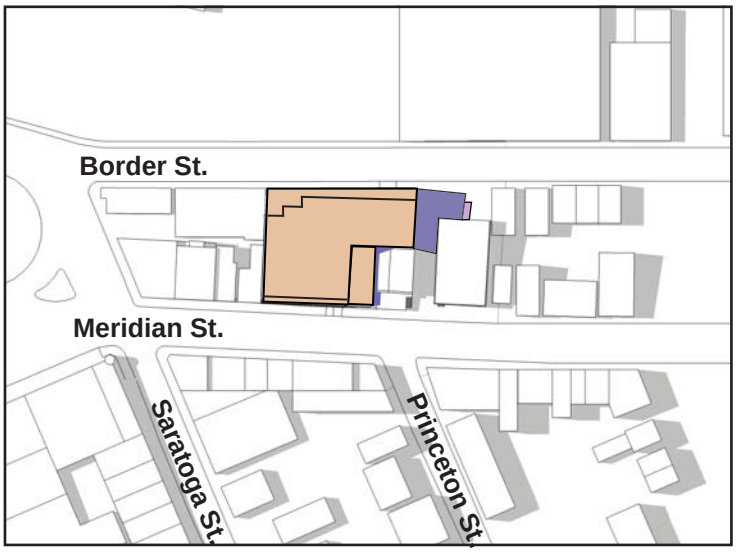
Origin	Trips Ending in Area 7 Total	Auto	Transit	Walk	Mode shares Auto	Transit	Walk	Distribution of Trip Origins Combined	Auto	Transit	Walk
1					30.8	69.2		2.1	1.5	6.2	
2					13.7	86.3		9.7	3.1	35.3	
3					17.8	82.2		1.6	.6	5.4	
4					24.4	75.6		3.8	2.1	12.1	
5					31.2	68.8		1.1	.8	3.1	
6					68.7	31.3		.2	.3	.3	
7	1				17.4	5.6	77.0	42.6	17.1	10.0	100.0
8					63.4	36.6		.7	1.1	1.1	
9					96.3	3.7		.2	.5	.0	
10					73.0	27.0		.4	.6	.4	
11					63.2	36.8		.5	.8	.8	
12					100.0			.1	.1		
13					76.0	24.0		.6	1.1	.6	
14					53.8	46.2		.3	.3	.5	
15					50.0	50.0		1.1	1.3	2.3	
16					46.8	53.2		.1	.1	.2	
17					70.7	29.3		.3	.5	.4	
18					78.7	21.3		.2	.3	.1	
19					100.0			.1	.3		
20					97.4	2.6		5.4	12.1	.6	
RBO					83.5	16.5		15.2	29.2	10.5	
RGR					69.9	30.1		4.0	6.4	5.0	
RCD					53.8	46.2		1.5	1.8	2.9	
RMR					88.6	11.4		.5	1.0	.2	
BNE					94.1	5.9		1.6	3.4	.4	
BNO					96.5	3.5		.9	2.0	.1	
BNW					81.4	18.6		.9	1.7	.7	
CN					99.1	.9		2.1	4.8	.1	
CW					93.9	6.1		1.2	2.7	.3	
CSW					94.5	5.5		.6	1.3	.1	
CSE					100.0			.5	1.1		
TOTAL	2				43.4	23.7	32.8	100.0	100.0	100.0	100.0

APPENDIX D –SHADOW STUDY

9 AM



12 PM



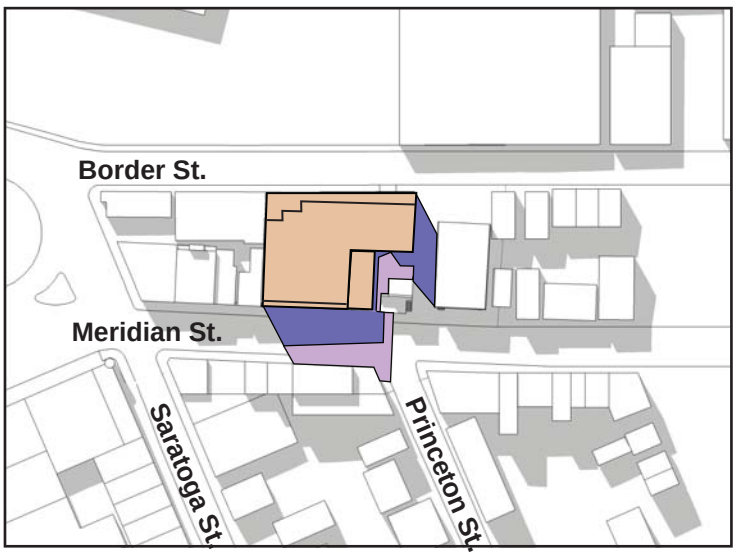
Proposed Building Footprint

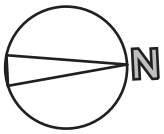
Existing Shadow

New Shadow

Combined Shadow

3 PM





ICON architecture

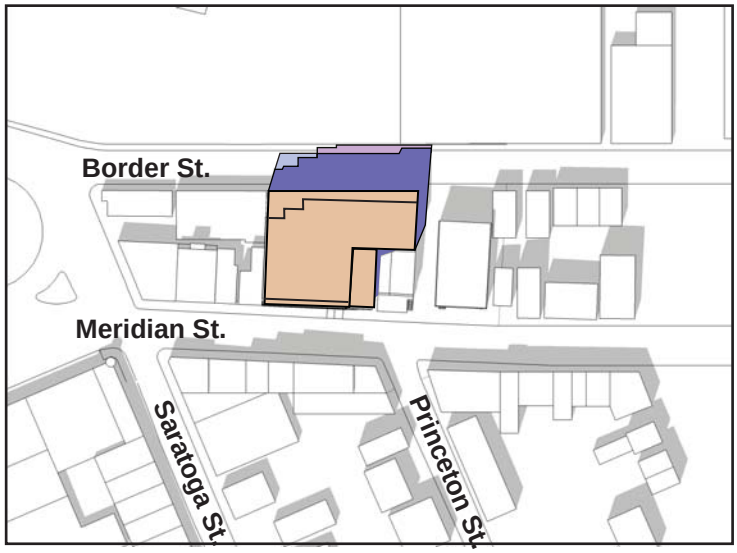
THE SEVILLE

East Boston, Massachusetts
Global Property Developers Corporation

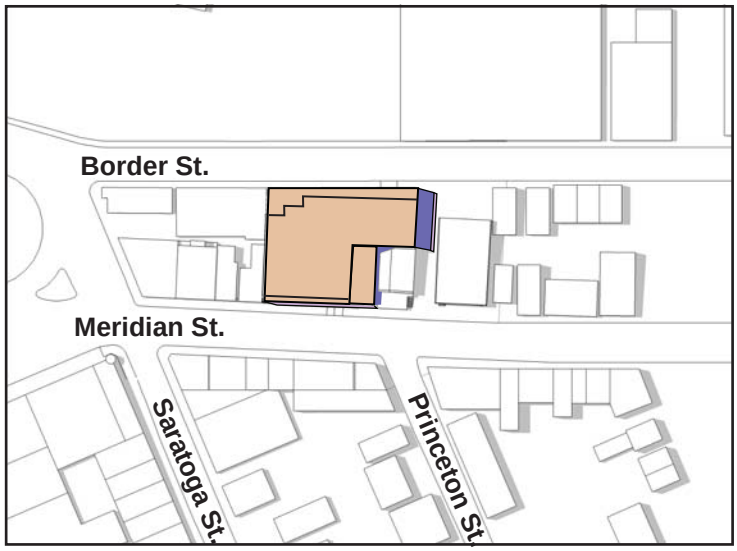
January 18, 2008

Shadow Analysis
March 21

9 AM



12 PM



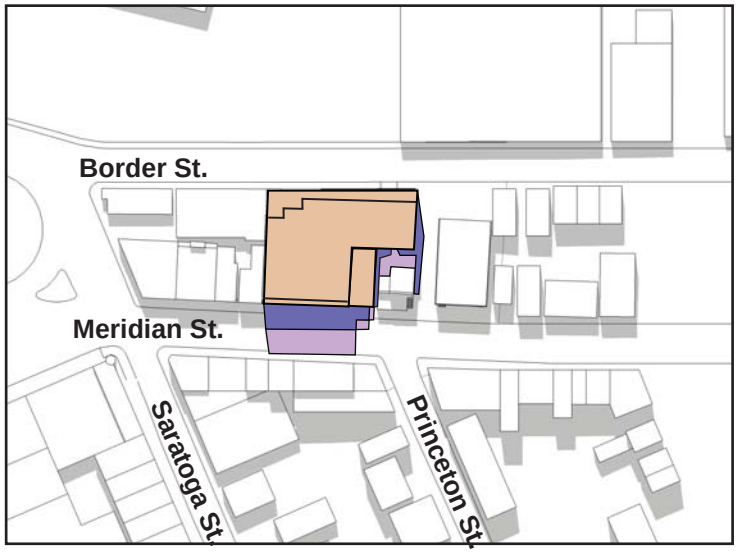
Proposed Building Footprint

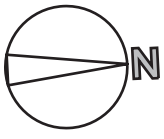
Existing Shadow

New Shadow

Combined Shadow

3 PM





ICON architecture

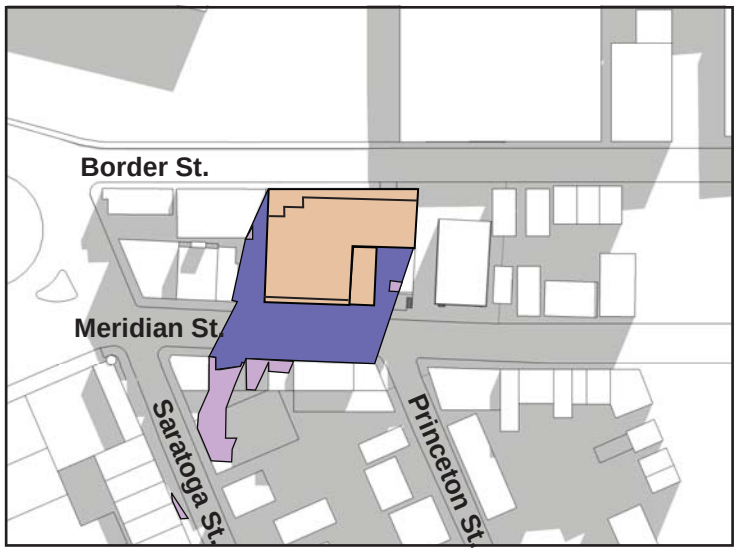
THE SEVILLE

East Boston, Massachusetts
Global Property Developers Corporation

January 18, 2008

Shadow Analysis
June 21

6 PM



Proposed Building Footprint

Existing Shadow

New Shadow

Combined Shadow

N

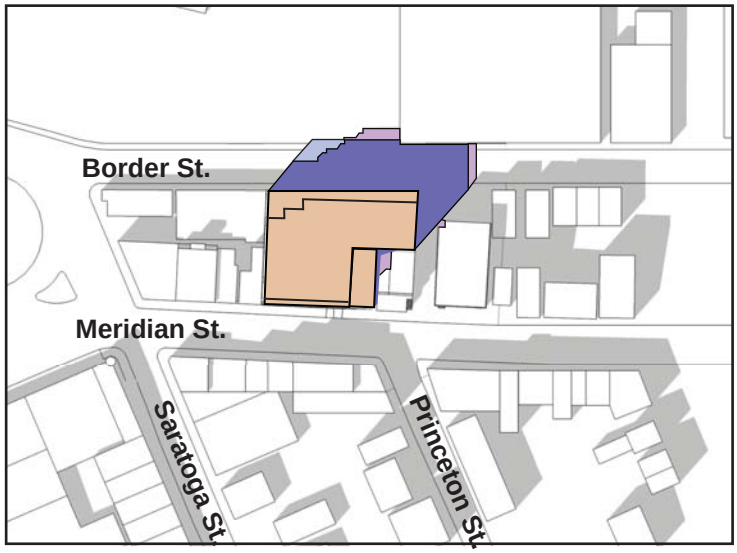
THE SEVILLE

East Boston, Massachusetts
Global Property Developers Corporation

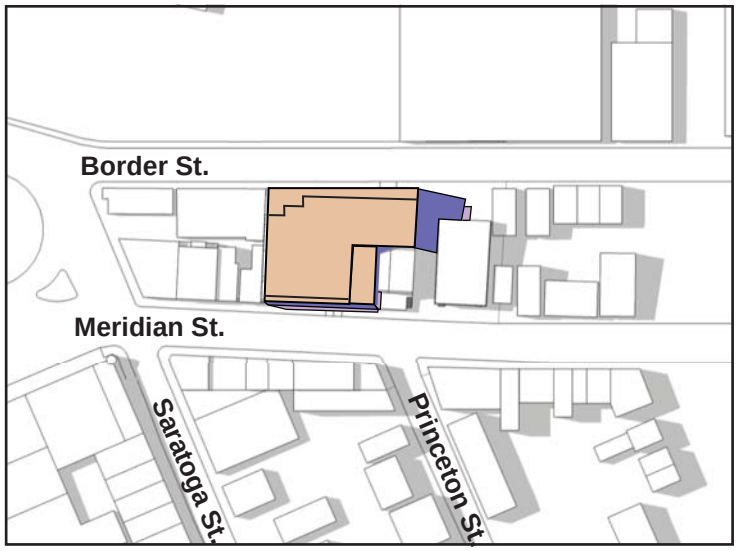
January 18, 2008

Shadow Analysis
June 21

9 AM



12 PM



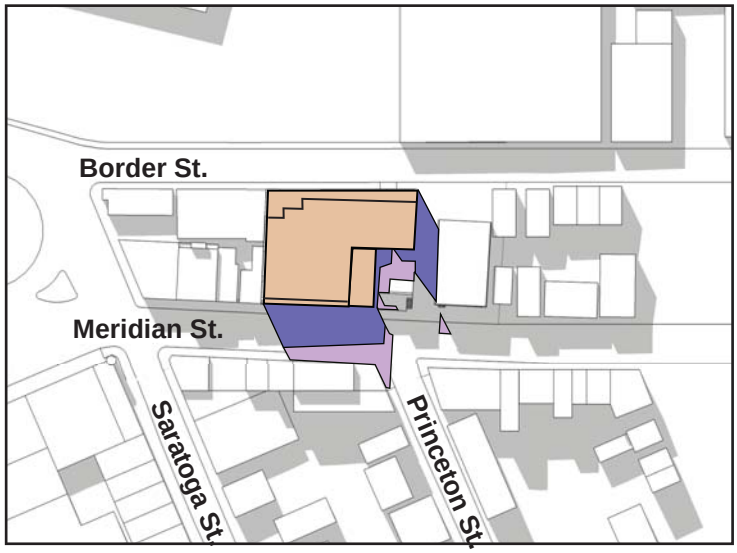
Proposed Building Footprint

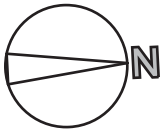
Existing Shadow

New Shadow

Combined Shadow

3 PM





ICON architecture

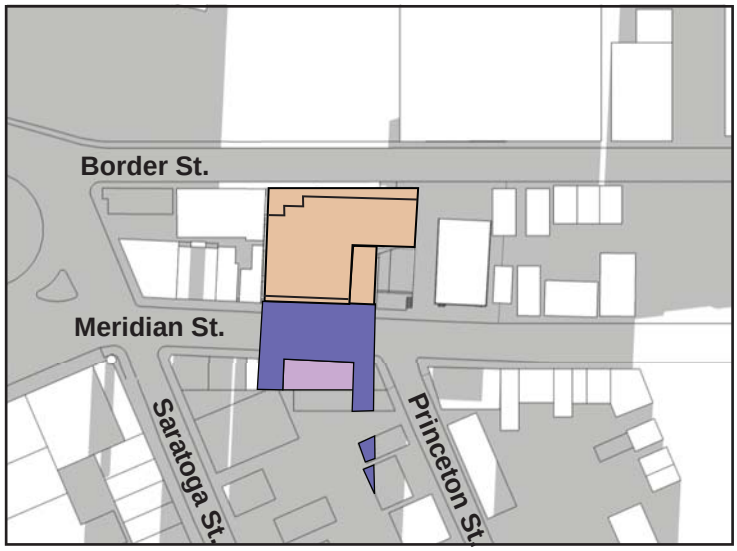
THE SEVILLE

East Boston, Massachusetts
Global Property Developers Corporation

January 18, 2008

Shadow Analysis
September 21

6 PM



Proposed Building Footprint

Existing Shadow

New Shadow

Combined Shadow

N

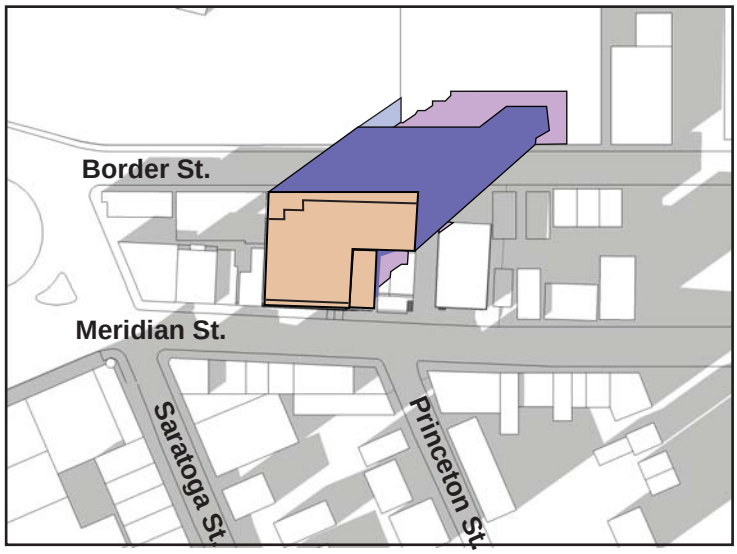
THE SEVILLE

East Boston, Massachusetts
Global Property Developers Corporation

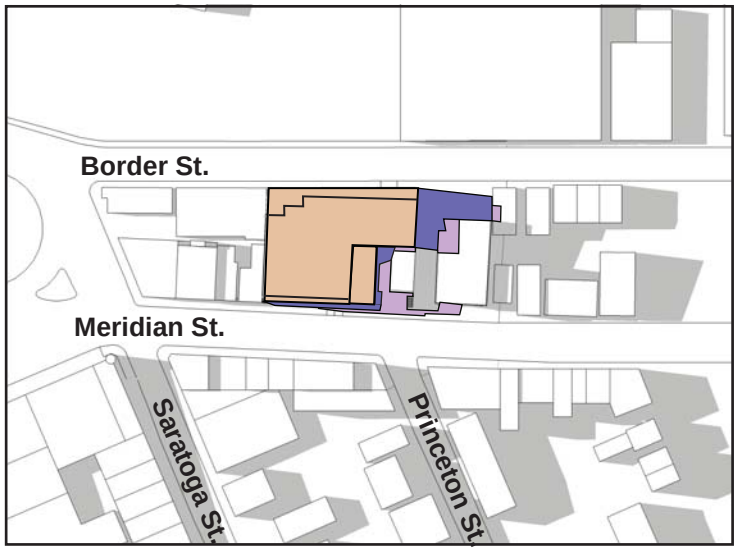
January 18, 2008

Shadow Analysis
September 21

9 AM



12 PM



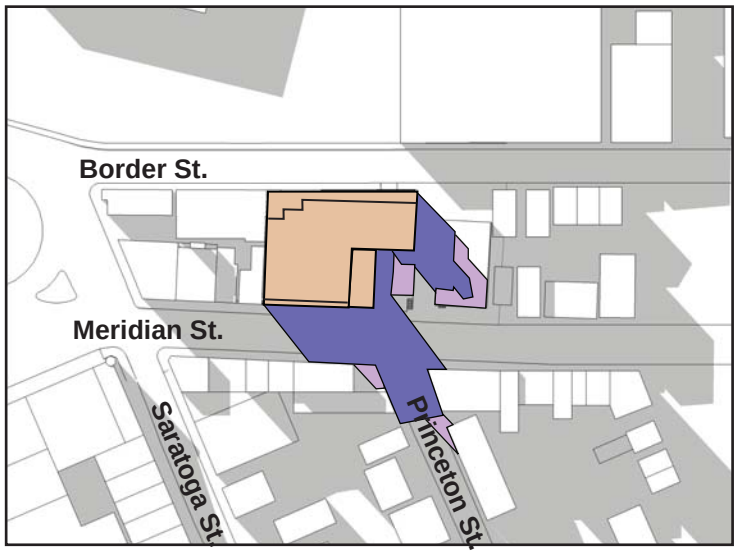
Proposed Building Footprint

Existing Shadow

New Shadow

Combined Shadow

3 PM



N

ICON architecture

THE SEVILLE

East Boston, Massachusetts
Global Property Developers Corporation

January 18, 2008

Shadow Analysis
December 21

APPENDIX E –FEMA MAP


N
348 Meridian Street, East Boston, MA
FEMA Q3 Flood Zones