FORT POINT ASSOCIATES, INC.
33 Union Street, 3rd floor . Boston, MA 02108

411 D Street

South Boston, Massachusetts

EXPANDED PROJECT NOTIFICATION FORM

December 22, 2011

submitted to:
Boston Redevelopment Authority

prepared by:
Fort Point Associates, Inc.

in association with:
Elkus Manfredi Architects
Howard/Stein-Hudson, Inc.
Consentini Associates
CRB Geological & Environmental Services, Inc.
Geotechnical Services, Inc.
McNamara/Salvia, Inc.
The Green Roundtable

submitted by:
411 D Street Associates, LLC
c/o Cresset Development, LLC

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Chapter 1

Project Summary

1.0 PROJECT SUMMARY

1.1 PROJECT IDENTIFICATION

Project Name: 411 D Street
Address/Location: 411 D Street, South Boston, MA

1.2 PROJECT SITE

411 D Street Associates, LLC (the "proponent"), proposes to redevelop the approximately 63,000 square foot site at 411 D Street in South Boston (see Figure 1-1, Locus Plan). It is bound by D Street on the west side, a 7-story building on the north side, a warehouse on the east side, and a vacant lot on the southeast and south sides. The site is flat with a 2-story, 52,000 gross square foot (gsf) structure used for office and warehousing space. This building will be demolished and removed as part of the project (see Figure 1-2, Aerial View).

1.3 PROJECT SUMMARY

411 D Street Associates, LLC is the developer for the project at 411 D Street site, hereinafter referred to as the "project." The proposed project will have two separate buildings containing a total of approximately 197 residential units. The north and south buildings will be 6 and 5 stories in height, respectively. In both buildings, retail space and common space will be located on the ground floor fronting on D Street and residential units will be located on the upper floors. The project will be built in South Boston's new transit-oriented Innovation District, where the innovation workforce will benefit from proximity to the cutting-edge workplaces and other members of the workforce. To serve the preferences of this market, approximately 26 of the project's units will be provided for Innovation Housing, which is typically composed of smaller, less costly units, and includes a shared common area and flexible layout. The overall building square footage for the development will be approximately 197,634 gross square feet (see Figure 1-3, Project Site Plan). The project will be LEED certifiable with sustainable design and construction features.

Parking will be provided for approximately 129 vehicles at the ground level behind the retail space at both buildings. Secure, covered bicycle storage facilities for residents will also be provided in the garage area. Plantings and other landscape amenities will enhance the pedestrian character of the street and provide access to and from the waterfront and other points of interest.

1.4 PUBLIC AND COMMUNITY BENEFITS

The project will provide substantial benefits for the South Boston neighborhood, the City of Boston, and the region as summarized below.

HOUSING

- Construction of approximately 197 housing units - a substantial contribution to the City's efforts to expand a limited housing market.
- Addition of approximately 26 Innovation Housing units catering to the lifestyle preferences of the innovation workforce.
- Provision of 26 units in support of the Mayor's Executive Order on affordable housing.

PUBLIC ACCESS

- Continued extension of public access along D Street with sidewalk and landscape improvements.
- Retail and commercial space along D Street to revitalize streets, sidewalks, and the public realm.

ENVIRONMENTAL

- Proposed development is an infill of a previously developed site and surface parking lot.
- LEED certifiable design and construction will be highly energy and resource efficient.
- Transit oriented development will take full advantage of nearby MBTA bus lines, the Silver Line Transit Station and South Station.

REVENUES

- Increased state and local tax revenues through residential property and retail/commercial development.
- Generation of over $460,000 annually in new property tax revenues to the City of Boston.
- Investment of more than $60 million in development costs.

JOB CREATION

- Creation of approximately 200 jobs during construction and 12 permanent jobs.

1.5 SUMMARY OF REQUIRED PERMITS AND APPROVALS

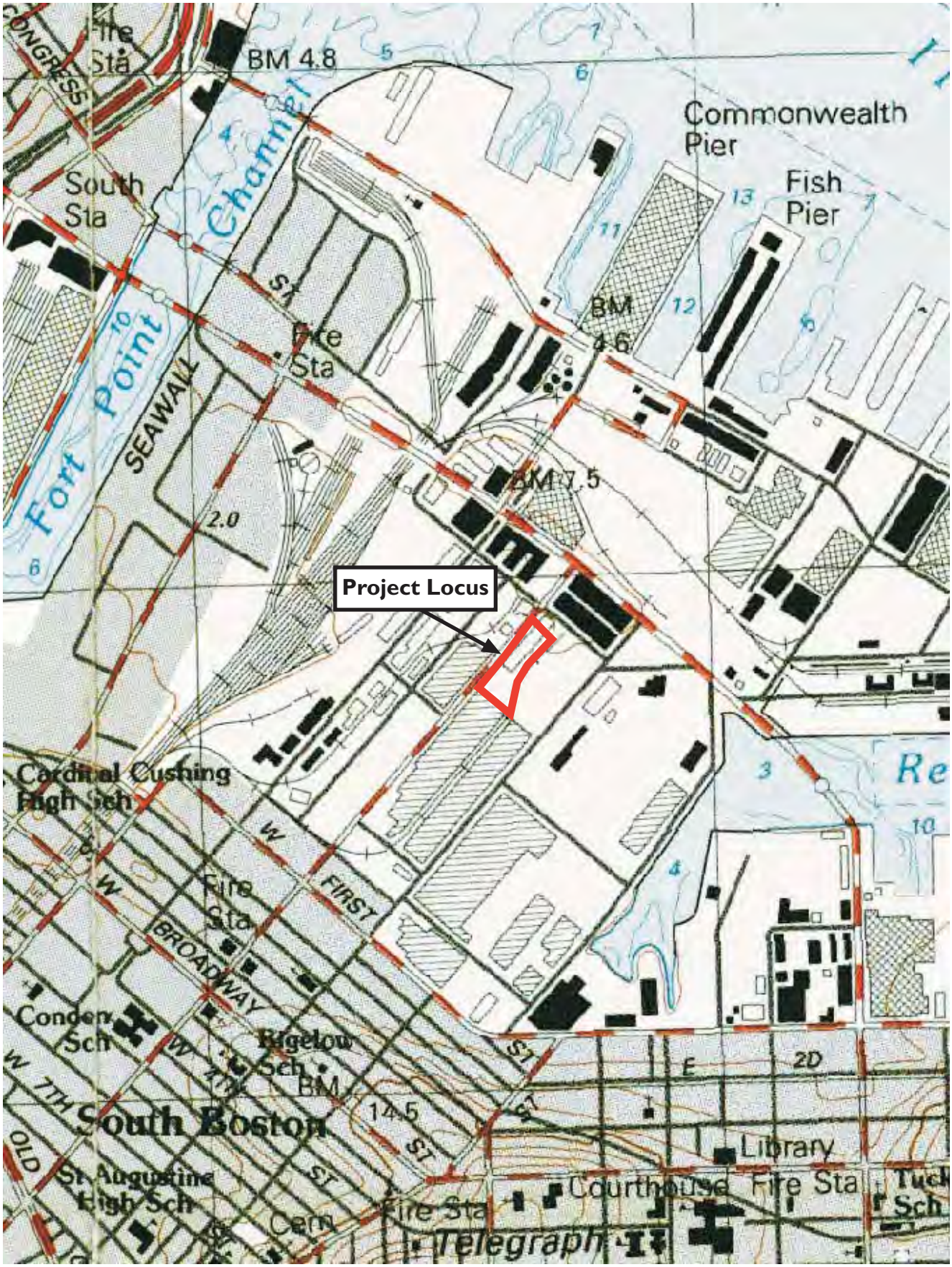
The proponent is required to secure local, state, and federal permits and approvals prior to commencement of construction. The following is a list of the anticipated permits/approvals which may be required to construct the project:

AGENCY	PERMIT/APPROVAL
Federal	
Environmental Protection Agency	NPDES Notice of Intent for Construction General Permit
State	
Department of Environmental Protection	Notification of Construction/Demolition
	Source Registration for Emergency Generator
	Source Registration for Sewer Connection
	Mass. Contingency Plan Compliance
Department of Public Safety	Elevator Inspection Permit
Local	
Boston Redevelopment Authority	Article 80-BLarge Project Review
	Cooperation Agreement
	Boston Residents Construction Employment Plan
	First Source Agreement and MOU
	Certificate of Compliance with Article 80
Boston Zoning Commission	Planned Development Area Approval
Boston Civic Design Commission	Recommendation to BRA Board
Boston Landmarks Commission	Article 85 Demolition Delay Review
Boston Fire Department	Flammable Storage Permit
Boston Transportation Department	Transportation Access Plan Agreement
	Construction Management Plan
Boston Water & Sewer Commission	Site Plan Approval
	Sewer Connection Permit
	Cross Connection Approval
	Double Check Valves Approval
	Backwater Valve Approval
Inspectional Services Department	Demolition Permit
	Building Permit
	Occupancy Permit

1.6 PROJECT TEAM

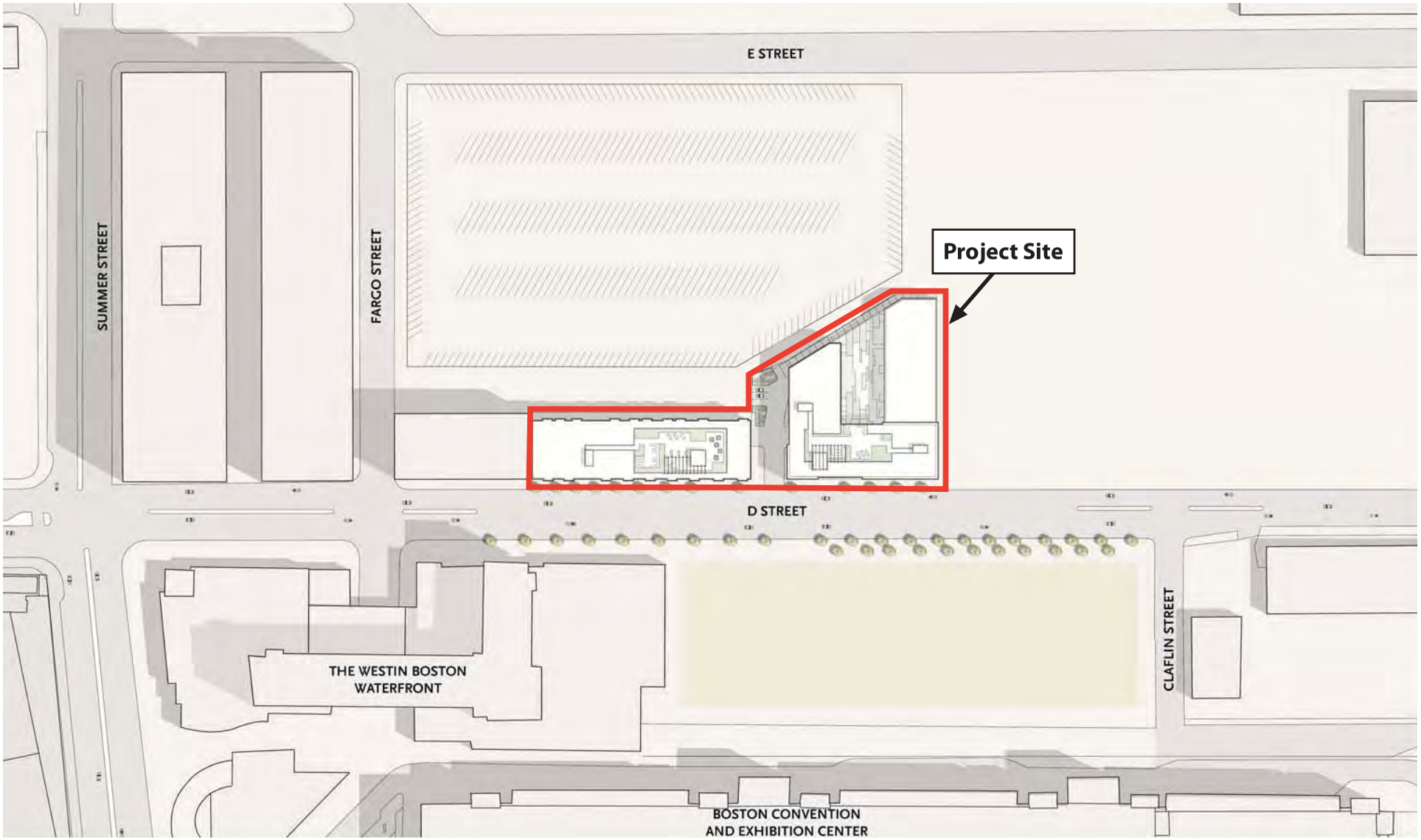
Developer	411 D Street Associates, LLC c/o Cresset Development 120 Water Street, 2nd Floor Boston, MA 02109 Tel: 617.624.9100 Contact: Ed Nardi
Planning Consultants	Fort Point Associates, Inc. 33 Union Street, 3rd Floor Boston, MA 02108 Tel: 617.357.7044 Contact: Jamie Fay/Richard Jabba
Design Architects	Elkus Manfredi Architects 300 A Street Boston, MA 02210 Tel: 617.426.1300 Contacts: David Manfredi/Steve Dube
Civil Engineer	Howard/Stein-Hudson, Inc. 38 Chauncy Street, 9th Floor Boston, MA 02111 Tel: 617.482.7080 Contact: Rick Latini
Transportation	Howard/Stein-Hudson, Inc. 38 Chauncy Street, 9th Floor Boston, MA 02111 Tel: 617.482.7080 Contact: Joseph L. SanClemente P.E.
MEP Engineer	Cosentini Associates Building 200, 2nd Floor One Kendall Square, Suite B2204 Cambridge, MA 02139-1571 Tel: 617.494.9090 Contact: Bob Leber, P.E.
Structural Engineer	McNamara/Salvia, Inc. 160 Federal Street, 5th Floor Boston, MA 02110 Tel: 617.737.0040 Contact: John Matuszewski

Landscape Architect	Kyle Zick Landscape Architecture, Inc. 300 A Street Boston, MA 02210 Tel: 617.456.2252 Contact: Kyle Zick
Geotechnical	Geotechnical Services Inc. 12 Rogers Road Haverhill, MA 01835 Tel: 603.235.0444 Contact: Glen Zoladz
Environmental	CRB Geological & Environmental Services, Inc. 386 West Main Street, Suite 3 Northborough, MA 01532-2128 Tel: 508.393.1700 Contact: Mike Duchesneau
Sustainable Design and Construction Consultant	The Green Roundtable 1085 Commonwealth Avenue, #374 Boston, MA 02215 Tel: 617.374.3740 Contact: Colleen Soden


Project Locus
BM 4.8
Commonwealth Pier
Fish Pier
South Sta
Channel
Fort Point
SEAWALL
BM 4.6
BM 7.5
Cardinal Cushing High Sch
Fire Sta
BROADWAY
FIRST
Condon Sch
Bigelow Sch
BM 14.5
South Boston
St Augustine High Sch
Cem
Library
Courthouse
Telegraph

411 D Street
BOSTON, MASSACHUSETTS

Figure 1-2
Aerial View
source: Google, 2011



411 D Street
BOSTON, MASSACHUSETTS

Figure 1-3
Project Site Plan
source: Elkus Manfredi Architects, 2011

Chapter 2

Project Description

2.0 PROJECT DESCRIPTION

2.1 PROJECT SITE AND SURROUNDINGS

411 D Street Associates, LLC (the "proponent"), proposes to redevelop the approximately 62,731 square foot site located at 411 D Street in South Boston (see Figure 1-1, Locus Plan). The project site is bound by D Street on the west side, a 7-story building on the north side, a 2-story warehouse building on the east side, and a vacant lot on the southeast and south sides. The existing building will be demolished and removed as part of the project (see Figure 2-1, Oblique View of Existing Site).

The project is adjacent to the residential building at 437 D Street. It is approximately 1,800 feet from the Boston Inner Harbor Waterfront and approximately 1,400 feet from the Reserved Channel. The project is also located across the street from the approximately 800,000 square foot Boston Convention and Exhibition Center (BCEC).

The site is flat and has a 2-story, 52,000 gross square foot (gsf) building (see Figure 2-2, Existing Conditions Survey). The building has a 28,050 sf footprint and is currently used as office and warehousing space (see Figure 2-3, Existing Conditions Photographs). It will be demolished and removed as part of the project. There is parking for approximately 80 vehicles and 3 truck loading spaces on the site today.

The project is located near the South Boston waterfront in the approximately 1,000 acre Innovation District. Created by the Mayor in 2010, the District is dedicated to the development of the physical and social infrastructure critical for research-based companies and startups. Such infrastructure prioritizes collaborative work spaces to build on the human capital provided by the nearby universities and high tech industries.

Plans for the adjacent area include the expansion of the BCEC facility and the Westin Hotel, which incorporates a new pedestrian connection from the facility to the street, a park and event lawn, and the widening of the D Street sidewalks. Together, these improvements will continue to build on the revival of the neighborhood and improve the pedestrian connection between the South Boston neighborhood and the waterfront.

2.2 PROJECT DESCRIPTION

The program for the 411 D Street project consists of two buildings with residential uses on the upper floors and retail uses and parking on the ground floors. Building 1 North is six stories in height and will be located on the north side of the project site. Building 2 South will be on the south side of the project site and have 5 stories (see Figure 2-4, Project Site Plan and Figure 2-5, Perspective Looking East at South Building). These buildings will

include approximately 197 residential units. The total gross floor area is approximately 197,364 sf. The FAR is 3.15, and the lot coverage is 70 percent (see Table 2-1, 411 D Street Building Program).

Table 2-1, 411 D Street Building Program

Building/Use	Bldg Footprint (sf)	GFA	Lot Area (sf)	FAR	Units	Building Height (1)	Lot Coverage (2)	Parking Spaces
Building 1 North Residential	-	95,575	-	na	90	na	%	-
Building 1 North Retail	-	2,204	-	na	0	na	na	-
Subtotal	18,223	97,779	-		90	69	na	-
Building 2 South Residential	-	97,822	-	na	107	na		-
Building 2 South Retail	-	2,033	-	na	0	na	na	-
Subtotal	25,711	99,855	-		197	59	na	-
Totals	**43,934**	**197,634**	**62,731**	**3.15**	**197**	**na**	**70%**	**129**

Note 1. Height is measured in feet above grade at each building.
Note 2. Lot Coverage is based on coverage of both buildings on the entire lot.

2.2.1 GROUND FLOOR USES

The ground floor of the new residential buildings will include approximately 4,237 sf of commercial/retail space. The remaining portion of the ground floors, approximately 8,223 sf, is composed of upper floor accessory uses, such as lobbies, meeting rooms, stairways, and elevators that will support the residential units and parking.

2.2.2 RESIDENTIAL UNITS

Floors 2 through 6 on the North Building and floors 2 through 5 on the South Building will house approximately 197 residential units. In total, they will consist of 42 studio units, 113 one-bedrooms, 39 two-bedrooms, and 3 three-bedrooms (see Table 2-2, Unit Mix by Building). There will be a total of 26 Innovation units stacked vertically in the South Building on floors 2 through 5; of these, 16 units will be Innovation studios and 10 will be Innovation 1-bedroom units. Twenty-six of the non-innovation units will be affordable.

Table 2-2, Unit Mix by Building

Building	Studio	Innovation Studio	1 Bedroom	Innovation 1 Bedroom	1 Bedroom with Den	2 Bedroom	3 Bedroom	Totals Units
Building 1 North	10	0	35	0	25	20	0	90
Building 2 South	16	16	37	10	6	19	3	107
Subtotal	26	16	72	10	31	39	3	197
Totals	**42**		**113**			**39**	**3**	**197**

2.2.3 PARKING AND ACCESS

There will be approximately 129 parking spaces for the residences located under both buildings at grade. Parking will be accessible from a driveway located between the North and South buildings. Pedestrian access to the residences will be through the lobbies of each building from both the street and the rear of the buildings. Access to the commercial/retail space will be from D Street. There will also be secure, covered bicycle parking for residents within the garage.

2.2.4 LANDSCAPING

The site will have improved landscaping, primarily along the entrance way between the North and South buildings. It will include plantings and small trees, all of which will be selected from indigenous species. The sidewalk will be reconstructed with scored concrete paving and a brick zone adjacent to the curb. Street trees, lighting, and furnishings will be integrated along the sidewalk.

2.2.5 INNOVATION HOUSING

The project will develop approximately 26 Innovation housing units for individuals whose income is too high to qualify for formally restricted affordable housing units but who are often priced out of the housing market. The units are a smaller unit type, which have a flexible layout and access to a common area. They provide an excellent opportunity for young professionals to enter housing market.

2.3 COMPLIANCE WITH BOSTON ZONING CODE

The project site is subject to land use controls contained in the City of Boston Zoning Code. In accordance with Article 80B of the Boston Zoning Code, the project is subject to the requirements of Large Project Review because it exceeds 50,000 square feet. The project also will be subject to review by the Boston Civic Design Commission under Article 28.

The site is located within the D Street Neighborhood Development Area (NDA) subdistrict of the South Boston Neighborhood District (Boston Zoning Ordinance, Article 68). The NDA Subdistricts serve as a transition from the residential areas to the local industrial areas.

The purpose of this Subdistrict is to promote development which includes a mix of residential and commercial uses.

The D Street NDA Subdistrict has a maximum building height of 65 feet and a maximum floor area ratio (FAR) of 2.0. Multifamily, commercial, and retail uses are allowed. Accessory parking is also allowed. Usable open space of 200 sf per dwelling unit is required. The proponent will be seeking relief from the current height, FAR and open space requirements through a Planned Development Area designation. The D Street NDA specifically authorizes the establishment of Planned Development Areas.

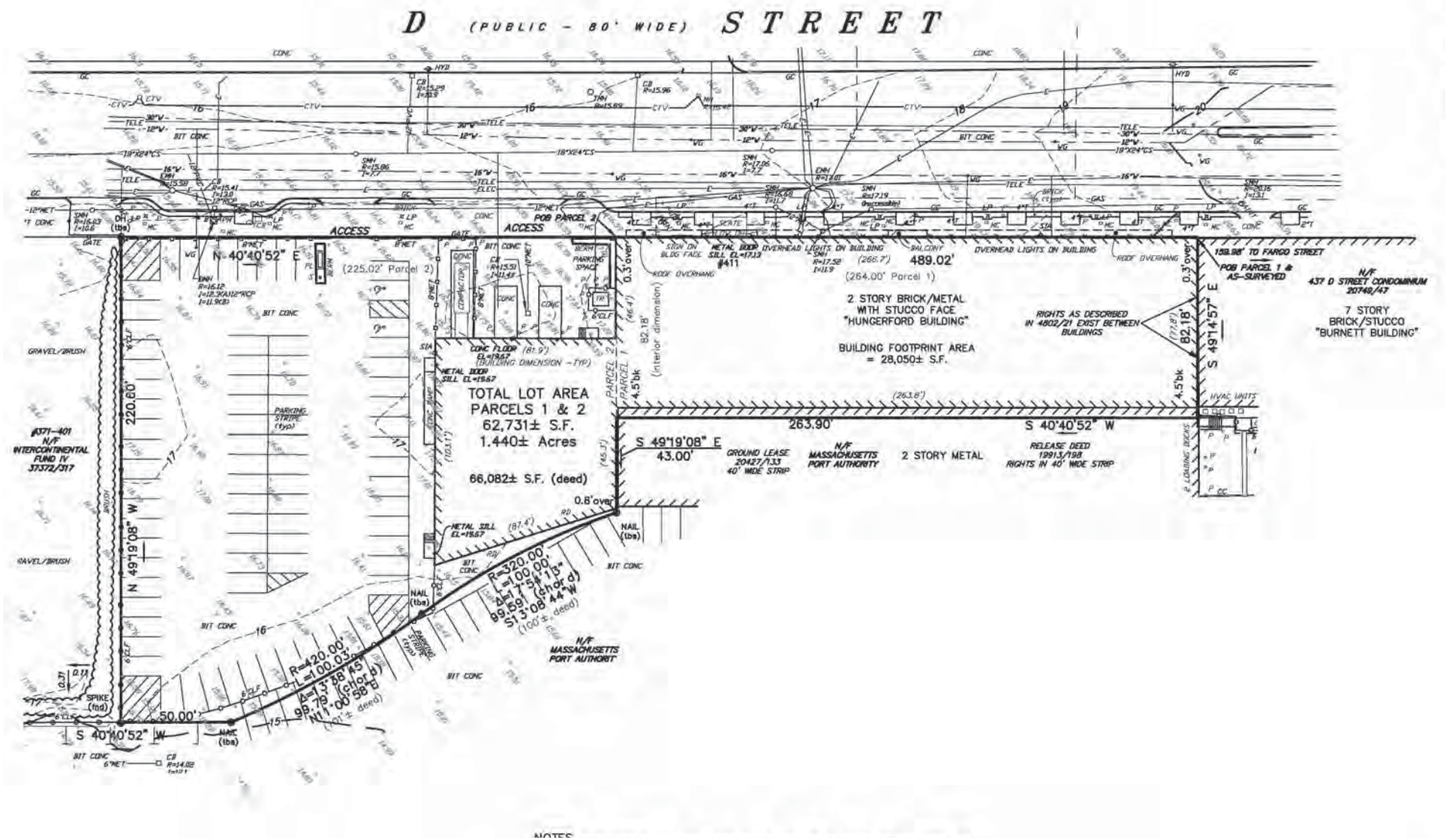
The project site is located within the South Boston Industrial/Commercial Area of the South Boston Parking Freeze Area. The project will provide parking spaces for approximately 129 vehicles. This will result in a parking ratio of 0.75 spaces per unit based on the market rate units. With a parking ratio less than 1 space per dwelling unit, the proponent is not required to obtain a permit under the Parking Freeze for new residential parking.

The project is also subject to Article 37 Green Building of the Code. It will therefore be designed and constructed to be LEED certifiable. See Section 3.5, Sustainability for a discussion of the LEED credits that the project intends to achieve.

The project site contains a building more than 50 years old that will be demolished to make way for the new development. The demolition is subject to the provisions of Article 85, Demolition Delay. The proponent will be filing for review under the provisions of this article.

411 D Street
BOSTON, MASSACHUSETTS

Figure 2-1
Oblique View of Existing Site
source: Bing, 2011



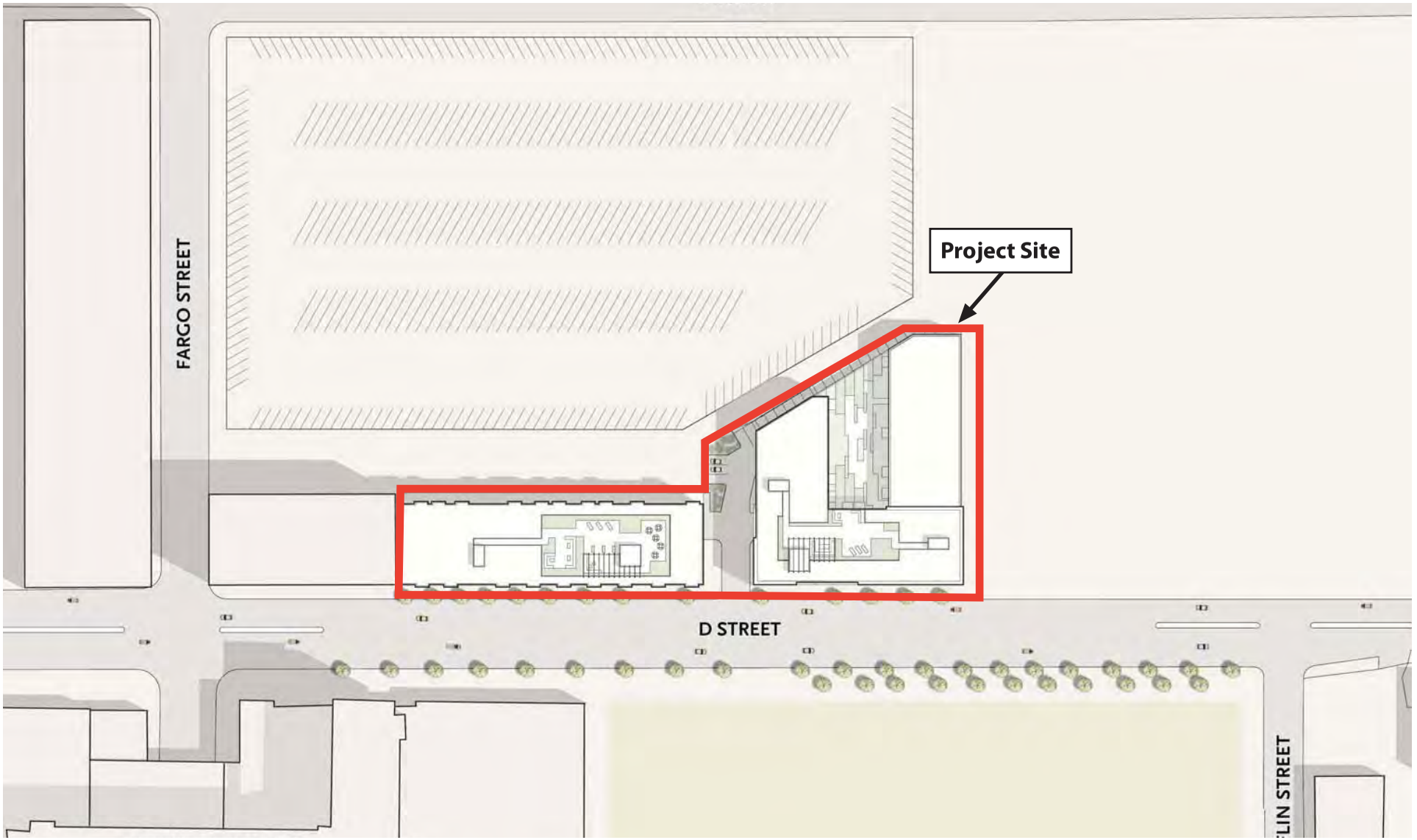
411 D Street
BOSTON, MASSACHUSETTS

Figure 2-2
Existing Conditions Survey
source: Precision Land Surveying, Inc., 2011

View of Existing Building Looking from Southeast

View of Existing Building looking from Other Side of D Street

View of Existing Building looking from South



411 D Street
BOSTON, MASSACHUSETTS

Figure 2-4
Project Site Plan
source: Elkus Manfredi Architects, 2011

411 D STREET
BOSTON, MASSACHUSETTS

Figure 2-5
Perspective Looking East at South Building
source: Elkus Manfredi Architects, 2011

Chapter 3

Urban Design

3.0 URBAN DESIGN

3.1 INTRODUCTION

The redevelopment of the 411 D Street site in South Boston will create approximately 197 new dwelling units in a location that is well served by mass transit and proximate to new public amenities in the Seaport District. The site is located on D Street across from the Boston Convention and Exhibition Center in a transitional zone between historically industrial areas and the predominately residential neighborhoods that are south of First Street (see Figure 3-1, Neighborhood Context). A two-story building of approximately 52,000 gross square feet will be demolished to prepare the site for redevelopment.

The proposed project is composed of two buildings that contain approximately 198,000 square feet in total. The buildings will be sited so their facades extend the D Street streetwall established by adjacent buildings to the north (see Figure 3-2, Ground Floor Plan). Both buildings will have residential entrances on D Street along with amenities and commercial space on the ground level. A leasing office on the ground level of the north building will serve both buildings.

The project will advance the City's Innovation District with the addition of 26 Innovation Housing dwelling units in studio and one-bedroom configurations. The Innovation units will be clustered vertically in the middle of the south building on floors two through five. This central location provides direct adjacency to the amenities on each floor and a stair for vertical communication. The interior of the Innovation Housing units are focused on creating open and adaptable living spaces that require less square feet of built area. The project will also have an affordable housing program of approximately 26 dwellings in a mix of unit types that will help meet the needs of the expected work force in the Innovation District.

3.2 MASSING

The buildings are shaped to conform to the geometry of the site. The northern half of the site is a rectangle of 82 feet wide by 263 feet long and the southern portion is an irregular shape measuring 225 feet long by 220 feet wide with its eastern boundary angled to a width of 125 feet (see Figure 3-2, Ground Floor Plan). The building massing provides a strong and continuous urban streetwall with ground floor retail and amenity spaces along D Street and residences above.

The north building is a linear bar with five residential levels above the ground floor commercial spaces. The typical residential floor plate is 18,200 square feet and has a series

of projecting bays. A landscaped terrace is located on the roof and will cover 5,800 square feet.

The four residential levels of the south building are U-shaped and surround a landscaped courtyard on the roof of the covered parking. The southern leg of the building drops down to three stories above the terrace to maximize daylight in the courtyard. The residential floor plates cover approximately 25,700 square feet. The south building includes a second rooftop terrace covering 3,200 square feet along the D Street frontage (see Figure 3-3, Level 2 Floor Plan; Figure 3-4, Typical Upper Level Floor Plan; Figure 3-5, Fifth Floor Plan; Figure 3-6, Sixth Floor Plan; and Figure 3-7, Roof Terrace Plan).

The two buildings are separated by a 43-foot wide forecourt that creates a break in the streetwall while functioning as the vehicular access point for each building's parking areas. The forecourt will include planted landscape areas and paving materials that are an extension of the sidewalk language to create a pedestrian sense of scale. Active uses frame the forecourt at grade level and are acknowledged with glass storefront to create visual connection between the buildings.

3.3 CHARACTER AND MATERIALS

The buildings each have distinct design expressions with the north building serving to transition from the scale and character of the larger and more traditionally composed buildings to the north with the smaller scale of residential neighborhoods to the south. The facades of both buildings include a hierarchy in street facing facades, facades that face away from the street, and facades that surround the courtyard of the south building (see Figure 3-8 through 3-10, Elevations, Figure 3-11, Perspective Looking East at South Building, and Figure 3-12, Perspective Looking East at North Building).

The design expression of the north building draws from a more traditional organization of elements and materials. The composition of the façade is organized by a rhythm of vertically oriented bays that create a pattern of projections and recesses. A four-story tall brick volume along the street anchors the composition and creates a horizontal datum that transitions the scale of the façade with that of adjacent buildings to the north. The brick volume gives way to metal panel at the top two floors. The residential entrance is acknowledged by interrupting the brick volume with a bay of metal panel that extends down to the marquee over the residential entrance. The brick volume turns the corner at the forecourt and transitions to metal panel, which is the cladding material on the eastern façade.

The south building is more progressive in its composition of façade elements and its use of materials. Metal panels in different profiles are organized by projecting ribbons of metal panel that create a horizontal orientation to the façade. The body of the building is clad in

horizontally articultated metal panel that is interrupted by projecting bays clad in vertically oriented metal panels. The projecting bays are captured by a ribbon element, one of which finds its termination at the marquee over the residential entrance. The non-street facing facades transition to a more regularized pattern of fenestration in a field of metal panel.

3.4 STREETSCAPE AND LANDSCAPE

The D Street sidewalk will retain its urban feel but will benefit from an improved street wall with frontage of commercial, retail, and active residential uses. Curb cuts will be reduced to a single location along the frontage, and special paving will be used on the sidewalk to articulate the residential entrances. The sidewalk will be reconstructed with scored concrete paving and a brick zone adjacent to the curb. Street trees, lighting, and furnishings will be integrated into the public realm to create continuity in the pedestrian experience. Bicycle storage racks will be provided within the garage for residents and along the sidewalk for transient users.

The forecourt between the buildings will include planted landscaped zones and hardscape materials that evoke a pedestrian scale while providing a sense of arrival. This urban court will also function as a buffer between the buildings and a visual amenity to the dwellings that overlook it. All plant materials will be selected from indigenous species based upon urban hardiness. No irrigation will be provided.

Three rooftop terrace spaces are part of the program for the use of residents. The terraces are envisioned as urban rooftop spaces with distant views and a mix of decking and planting zones. The terraces will provide seating and gathering spaces that are defined by planters and trellis elements. Rooftop mechanical equipment will be screened from view.

3.5 SUSTAINABILITY

Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. The project at 411 D Street is designed to satisfy market demands for efficient, urban apartment homes with flexible layouts. To minimize maintenance and safeguard the owner's investment, durable materials are used throughout the buildings.

The project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure while convenient access to mass transportation will reduce dependence on single occupant vehicle trips and minimize transportation impacts. Bicycle storage will be provided on-site and Zipcar access will provide residents with transportation alternatives.

3.5.1 ARTICLE 37

To comply with Article 37, the proponent intends to measure the results of their sustainability initiatives using the framework of the LEED (Leadership in Energy and Environmental Design) rating system. As a new construction residential apartment building, the project at 411 D Street is categorized as a LEED BD&C – NC 2009 (New Construction) project. The LEED rating system tracks the sustainable features of the project by achieving points in following categories: Sustainable Sites; Water Efficiency; Energy & Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation in Design.

The project team will demonstrate certifiable status under the LEED rating system through the submission of a LEED scorecard which will include an explanation of the project's approach to achieving each of the identified LEED points (see Figures 3-13 and 3-14, LEED Scorecard). The scorecard will be updated regularly as the design develops and engineering assumptions are substantiated.

3.5.2 SUSTAINABLE SITES

The development of sustainable sites is at the core of sustainable design. The sustainable sites category seeks to steer development toward sites that minimize the impact of construction on the natural environment. Strategies for the development of sustainable sites include: siting new construction on previously developed sites; developing on sites that are located to take advantage of existing infrastructure; selecting sites that are proximate to mass transportation and basic services in the community; and developing sites that require remediation of environmental contaminants.

Construction on the 411 D Street site will be preceded by the demolition of two low-rise buildings. The previously developed site features connectivity to basic services in the community and is located in an urban setting that is well served by the existing utility infrastructure.

The site's adjacency to basic services in the community and the development density of its urban context enable the project to satisfy both available approaches to the Development Density and Community Connectivity credit. The project also achieves all of the Alternative Transportation credits through its access to public transportation; by providing covered bicycle storage facilities for more than 15% of the building occupants; by providing preferred parking for low-emitting and fuel efficient vehicles; and by providing the number of parking spaces that meet, but do not exceed, the local zoning requirement. To achieve both Heat Island Effect credits and minimize the project's impact on the creation of urban heat islands, the roof of each building will be covered with high-albedo roofing membrane and planted areas to maximize solar reflectance and minimize heat gain. The planted roof areas are located adjacent

to rooftop terrace spaces that also serve as an amenity to residents. Furthermore, the non-roof Heat Island Effect credit is achieved because nearly all of the parking is covered by the residential buildings.

3.5.3 WATER EFFICIENCY

Conservation of water preserves a natural resource while reducing the amount of energy and chemicals used for sewage treatment. To satisfy the requirements of the Water Use Reduction prerequisite and credit, the project will incorporate water conservation strategies that include low flow plumbing fixtures for water closets and faucets. Further, drought tolerant plant species will be specified in landscaped areas to eliminate the requirement for irrigation and satisfy the requirements for the Water Efficient Landscaping credit. The water conservation measures will allow the project to significantly reduce water usage to below that of a comparable baseline building.

3.5.4 ENERGY AND ATMOSPHERE

The building is designed to optimize energy efficiency and will comply with the Stretch Energy Code, whereby energy use is reduced from the baseline energy conservation code by 20%. The prescriptive approach will be employed to demonstrate Stretch Energy Code compliance. To satisfy this requirement, high efficiency heating and cooling systems will be utilized throughout the project. As a result, several Optimize Energy Performance points will be achieved. In addition to energy conservation technologies, Fundamental Commissioning of Building Energy Systems will be performed in compliance the LEED prerequisite to ensure that systems are operating at peak efficiency. Further, no chlorofluorocarbon (CFC) based refrigerants will be used in the project to reduce ozone depletion in the atmosphere and satisfy the Fundamental Refrigeration Management prerequisite.

3.5.5 MATERIALS AND RESOURCES

The materials that are used in the construction of buildings have a profound impact on the amount of virgin materials that are harvested and also the amount of waste products that are generated. Recycling diverts material waste products from landfills and reduces the demand for virgin materials. In addition, the extraction, processing, and transportation of materials to project sites consumes energy and contributes to carbon dioxide emissions. Additionally, the use of locally extracted and processed materials stimulates the local economy.

The Project includes recycling facilities within the building for the convenience of the tenants in accordance with the requirements of the Storage & Collection of Recyclables prerequisite. A demolition and construction waste management plan will be implemented to divert at least 75% of the construction waste material from landfills per the Construction Waste Management credit. Building materials will be

specified based on their recycled content and proximity of extraction and manufacturing locations to the project site such that at least one point will be achieved in each of the Recycled Content and Regional Materials credits.

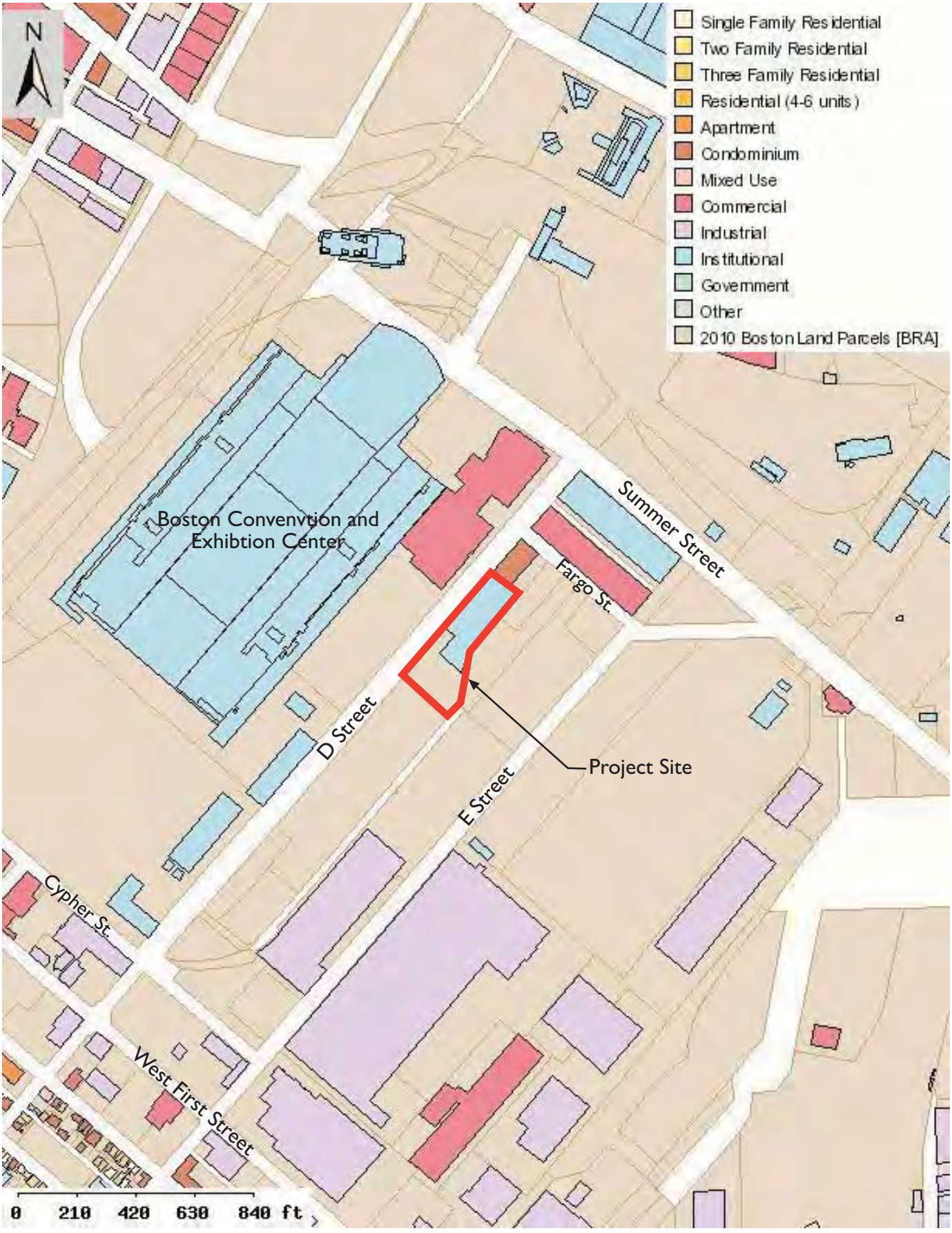
3.5.6 INDOOR ENVIRONMENTAL QUALITY

Safeguarding the comfort and well-being of the occupants is a fundamental obligation. The quality of indoor air, and specifically the reduction of airborne pollutants, is known to minimize occurrences of asthma, allergies, and other health ailments. Irritating off gassing, caused by the presence of volatile organic compounds (VOCs) in interior finishes, can be avoided by using products that release fewer and less harmful chemical compounds. To reduce the presence of VOCs, low-emitting adhesives and sealants, paints, and carpet systems will be specified throughout the project.

In addition to the quality of indoor air, access to daylight and views is central in achieving occupant comfort and will be provided through generous expanses of vision glass. Occupants will also have control over lighting and their thermal environment. During construction, an indoor air quality management plan will be implemented to prevent contamination of mechanical systems and absorptive materials.

3.5.7 INNOVATION IN DESIGN

The project anticipates that several points will be achieved in the Innovation & Design category. One point is expected for exemplary performance on the Development Density credit. Additional credits will be pursued for the Green Housekeeping program and the Green Education and Outreach program.



411 D Street
BOSTON, MASSACHUSETTS

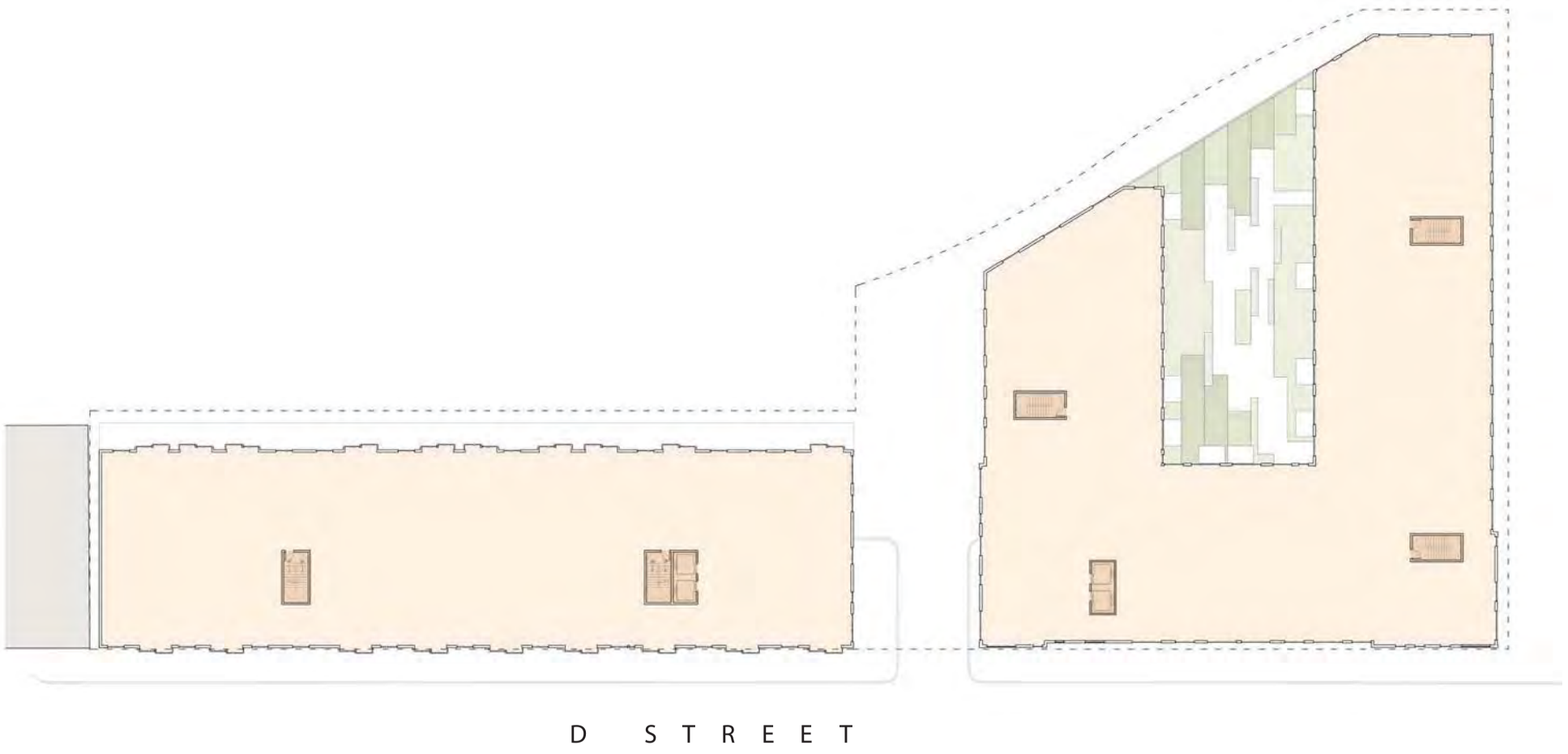
Figure 3-1
Neighborhood Context
source: BRA, 2010

411 D STREET
BOSTON, MASSACHUSETTS

Figure 3-2
Ground Floor Plan
source: Elkus Manfredi Architects, 2011

411 D Street
BOSTON, MASSACHUSETTS

Figure 3-3
Level 2 Floor Plan
source: Elkus Manfredi Architects, 2011

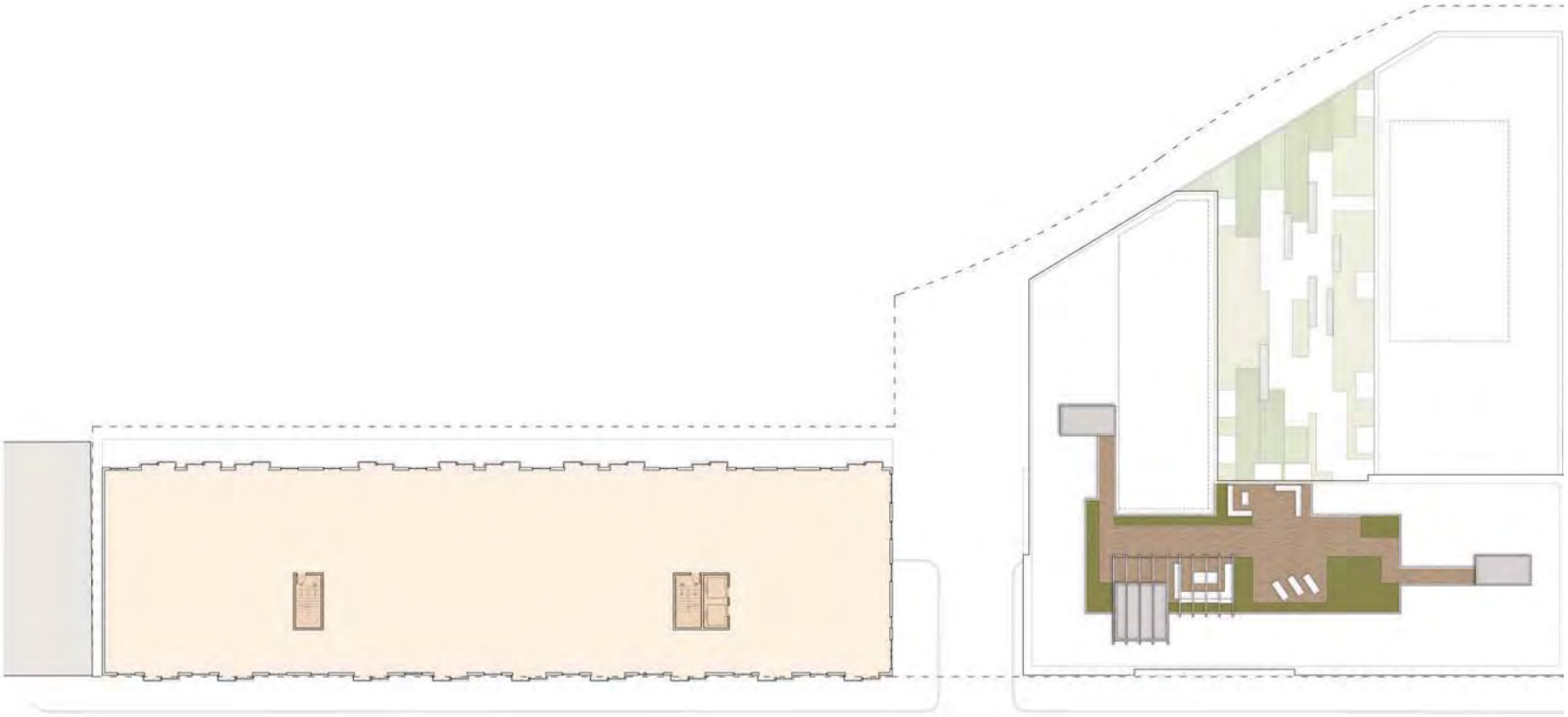


411 D Street
BOSTON, MASSACHUSETTS

Figure 3-4
Typical Upper Level Floor Plan (Levels 3 and 4)
source: Elkus Manfredi Architects, 2011

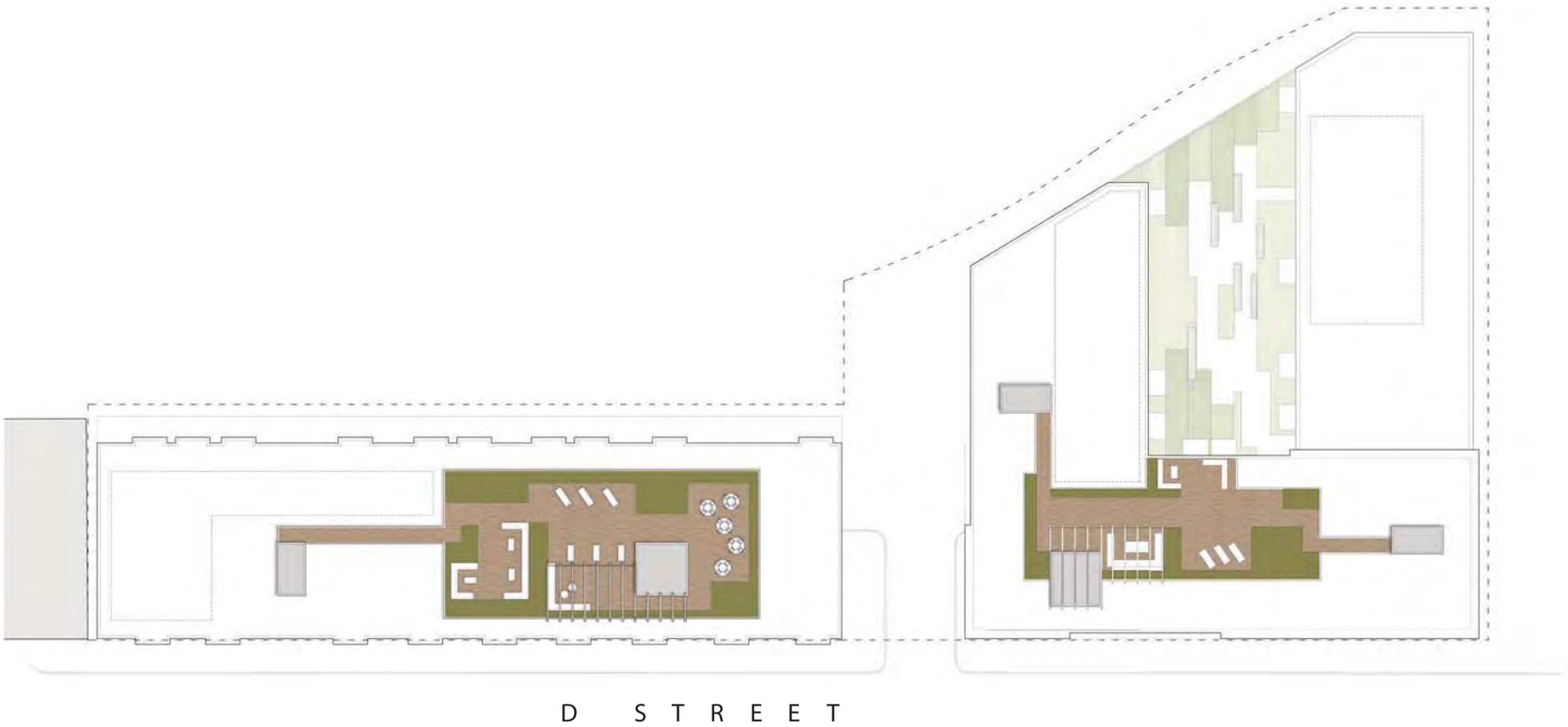
411 D Street
BOSTON, MASSACHUSETTS

Figure 3-5
Fifth Floor Plan
source: Elkus Manfredi Architects, 2011



411 D Street
BOSTON, MASSACHUSETTS

Figure 3-6
Sixth Floor Plan
source: Elkus Manfredi Architects, 2011



411 D Street
BOSTON, MASSACHUSETTS

Figure 3-7
Roof Terrace Plan
source: Elkus Manfredi Architects, 2011

411 D STREET
BOSTON, MASSACHUSETTS

Figure 3-8
Elevations - North Building (NW)
source: Elkus Manfredi Architects, 2011

411 D STREET
BOSTON, MASSACHUSETTS

Figure 3-9
Elevations - South Building (NW)
source: Elkus Manfredi Architects, 2011

411 D STREET
BOSTON, MASSACHUSETTS

Figure 3-10
Elevations - South Building (SW)
source: Elkus Manfredi Architects, 2011

411 D STREET
BOSTON, MASSACHUSETTS

Figure 3-11
Perspective Looking East at South Building
source: Elkus Manfredi Architects, 2011

411 D STREET
BOSTON, MASSACHUSETTS

Figure 3-12
Perspective Looking East at North Building
source: Elkus Manfredi Architects, 2011

The Green Roundtable
38 Chauncy Street, 7th Fl
Boston, MA 02111
617 374 3740
www.greenroundtable.org

Yes	?+	?(-)	No					
23	1	1	1	26	**Sustainable Sites**			26 Pts
Y					Prereq 1	**Construction Activity Pollution Prevention**		Req'd
1					Credit 1	**Site Selection**		1
5					Credit 2	**Development Density & Community Connectivity**		5
1					Credit 3	**Brownfield Redevelopment**		1
6					Credit 4.1	**Alternative Transportation**, Public Transportation Access		6
1					Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms		1
3					Credit 4.3	**Alternative Transportation**, Low-Emitting and Fuel Efficient Vehicles		3
2					Credit 4.4	**Alternative Transportation**, Parking Capacity		2
1					Credit 5.1	**Site Development**, Protect or Restore Habitat		1
1					Credit 5.2	**Site Development**, Maximize Open Space		1
	1				Credit 6.1	**Stormwater Design**, Quantity Control		1
		1			Credit 6.2	**Stormwater Design**, Quality Control		1
1					Credit 7.1	**Heat Island Effect**, Non-Roof		1
1					Credit 7.2	**Heat Island Effect**, Roof		1
			1		Credit 8	**Light Pollution Reduction**		1

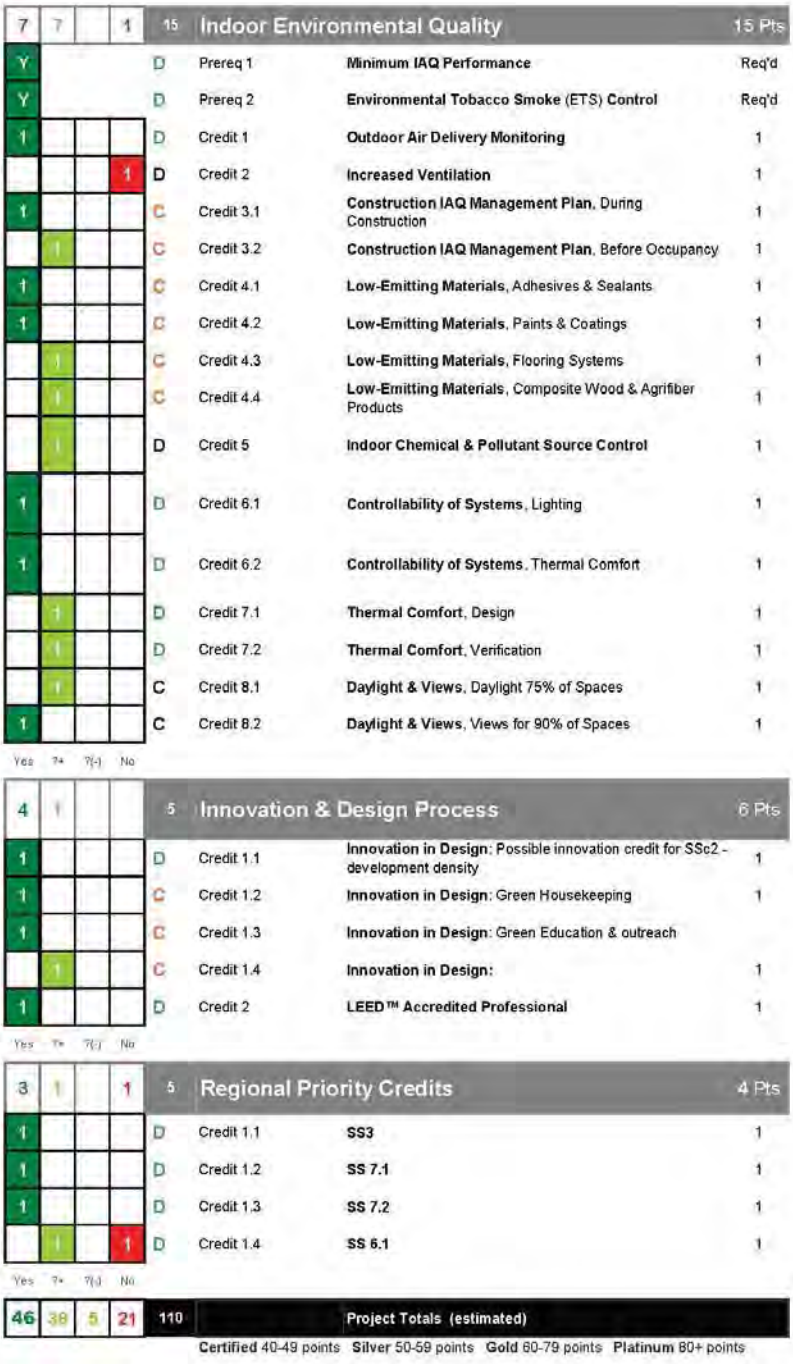
Yes	?+	?(-)	No					
5	3		2	10	**Water Efficiency**			10 Pts
Y					Prereq 1	**Water Use Reduction**, Reduce by 20%		Req'd
4					Credit 1	**Water Efficient Landscaping**, Reduce by 50%, No Potable Use or No Irrigation		2 to 4
			2		Credit 2	**Innovative Wastewater Technologies**		2
1	3				Credit 3	**Water Use Reduction**, 30%-40% Reduction		4

Yes	?+	?(-)	No					
	23	2	10	35	**Energy & Atmosphere**			35 Pts
Y					Prereq 1	**Fundamental Commissioning of the Building Energy Systems**		Req'd
Y					Prereq 2	**Minimum Energy Performance:** 10% New Bldgs or 5% Existing Bldg Renovations		Req'd
Y					Prereq 3	**Fundamental Refrigerant Management**		Req'd
	19				Credit 1	**Optimize Energy Performance** (1 pt for every 2% above 10% min)		1 to 19
			7		Credit 2	**On-Site Renewable Energy** (1%, 5%, 9%, 13%)		1 to 7
	2				Credit 3	**Enhanced Commissioning**		2
		2			Credit 4	**Enhanced Refrigerant Management**		2
			3		Credit 5	**Measurement and Verification**		3
	2				Credit 6	**Green Power**		2

Yes	?+	?(-)	No					
4	2	2	6	14	**Materials & Resources**			14 Pts
Y					Prereq 1	**Storage & Collection of Recyclables**		Req'd
			3		Credit 1.1	**Building Reuse**		3
			1		Credit 1.2	**Building Reuse**, maintain 50% of interior non-structural elements		1
2					Credit 2	**Construction Waste Management**, Divert 50% , 75% from Disposal		2
			2		Credit 3	**Materials Reuse**		2
1	1				Credit 4	**Recycled Content**, 10% 20%		2
1	1				Credit 5	**Regional Materials**, 10% 20%		2
		1			Credit 6	**Rapidly Renewable Materials**		1
		1			Credit 7	**Certified Wood**		1

411 D Street
BOSTON, MASSACHUSETTS

Figure 3-13
LEED Scorecard
source: The Green Roundtable, 2011



Yes	?	?(-)	No				
7	7		1	15	**Indoor Environmental Quality**		15 Pts
Y				D	Prereq 1	**Minimum IAQ Performance**	Req'd
Y				D	Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Req'd
1				D	Credit 1	**Outdoor Air Delivery Monitoring**	1
			1	D	Credit 2	**Increased Ventilation**	1
1				C	Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
	1			C	Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
1				C	Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
1				C	Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
	1			C	Credit 4.3	**Low-Emitting Materials**, Flooring Systems	1
	1			C	Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
	1			D	Credit 5	**Indoor Chemical & Pollutant Source Control**	1
1				D	Credit 6.1	**Controllability of Systems**, Lighting	1
1				D	Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
	1			D	Credit 7.1	**Thermal Comfort**, Design	1
	1			D	Credit 7.2	**Thermal Comfort**, Verification	1
	1			C	Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
1				C	Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1
4	1			5	**Innovation & Design Process**		6 Pts
1				D	Credit 1.1	**Innovation in Design**: Possible innovation credit for SSc2 - development density	1
1				C	Credit 1.2	**Innovation in Design**: Green Housekeeping	1
1				C	Credit 1.3	**Innovation in Design**: Green Education & outreach	
	1			C	Credit 1.4	**Innovation in Design:**	1
1				D	Credit 2	**LEED™ Accredited Professional**	1
3	1		1	5	**Regional Priority Credits**		4 Pts
1				D	Credit 1.1	**SS3**	1
1				D	Credit 1.2	**SS 7.1**	1
1				D	Credit 1.3	**SS 7.2**	1
	1		1	D	Credit 1.4	**SS 6.1**	1
46	38	5	21	110	**Project Totals (estimated)**		

Certified 40-49 points **Silver** 50-59 points **Gold** 60-79 points **Platinum** 80+ points

Figure 3-14
LEED Scorecard (con't)
source: The Green Roundtable, 2011

Chapter 4

Transportation

4.0 TRANSPORTATION

4.1 INTRODUCTION

In accordance with the City of Boston's *Transportation Access Plan Guidelines* (2001) and the *BRA Development Review Guidelines* (2006), this chapter describes roadway, pedestrian, and bicycle conditions; transportation issues; parking and loading; pedestrian and bicycle circulation; proposed mitigation; and transportation goals for the Project. Although the Boston Transportation Department (BTD) has not yet issued a formal Transportation Access Plan Scope, this report adheres to the general format requested by BTD.

4.1.1 PROJECT DESCRIPTION

The Project site is located at 411 D Street in South Boston and is bounded by a 7-story residential building to the north, a vacant parcel to the south, a 24,000 gross square foot (gsf) warehouse building and surface parking to the east, and D Street to the west (see **Figure 4-1**). The site currently consists of an approximately 52,000 gsf office/warehouse facility and approximately 80 surface parking spaces. The warehouse building on the east side of the site is currently used as part of this office/warehouse facility and will be demolished. The existing building on the site is partially occupied by a print production company.

The proposed Project involves the demolition of the existing building and the construction of two new buildings containing approximately 197 residential units, 4,237 square feet (sf) of ground-floor retail, and 129 parking spaces.

Vehicular access to the site is currently provided via two curb cuts on D Street, including one approximately 57-foot wide curb cut providing access to the loading area and a second approximately 22-foot wide curb cut providing access to a surface parking lot. Access to the site will continue to be provided on D Street in approximately the same location as the current loading dock driveway (approximately 470 feet south of Fargo Street), which will be reduced in width, thus improving pedestrian conditions in front of the site. The Project proposes to close the existing curb cut that currently provides access to the surface parking lot.

Loading and service, including trash, recycling, and deliveries will occur on-site within the surface parking lot. An existing on-street commercial loading zone

adjacent to the site will also be maintained to help support the service needs of the proposed ground-floor retail uses.

Pedestrian access to the residential and ground-floor retail uses will be provided along D Street and within the ground-level parking area behind the new buildings.

4.1.2 METHODOLOGY

In accordance with BTD *Transportation Access Plan Guidelines* (2001), the study team conducted a transportation analysis for the proposed Project. The analysis is summarized in the following sections:

- The first section comprises an inventory of existing transportation conditions, including roadway and intersection conditions; parking, transit, pedestrian and bicycle circulation; loading; and site conditions.
- The second section evaluates future transportation conditions and assesses potential traffic impacts associated with the proposed development and other neighboring projects. Long-term impacts are evaluated for the year 2016, based on a five-year horizon from the 2011 base year. Expected roadway, parking, transit, pedestrian, and loading capacities and deficiencies are identified. This section includes the following scenarios:
    - The No-Build Scenario (2016) includes general background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the site; and
    - The Build Scenario (2016) includes specific travel demand forecasts for the Project.
- A third section identifies appropriate measures to mitigate project-related impacts identified in the previous phase.
- Finally, an evaluation of short-term traffic impacts associated with construction activities is also included.

4.1.3 STUDY AREA

The Project's traffic impact study area was developed in consultation with BTD staff and includes the following three signalized intersections (see **Figure 4-2**):

- Summer Street/D Street;
- D Street/Fargo Street; and
- D Street/West First Street.

4.2 EXISTING CONDITIONS

4.2.1 ROADWAY CONDITIONS

The study area includes the following roadways, which are categorized according to the Massachusetts Department of Transportation Office of Transportation Planning functional classifications:

Summer Street is an urban principal arterial that runs generally east–west between Washington Street in Downtown Crossing to the west and East Second Street in South Boston to the east, where it then becomes L Street. Within the study area, Summer Street generally has two lanes in each direction. On-street parking is allowed on various sections of Summer Street throughout the study area. Sidewalks are provided on both sides of the street. Pavement markings on Summer Street are generally in good condition within the study area.

D Street is an urban minor arterial south of Summer Street and an urban principle arterial north of Summer Street. D Street runs generally north–south between Seaport Boulevard to the north and Dorchester Avenue to the south. Within the study area, D Street consists of one to two travel lanes in each direction; however, D Street is one-way northbound between West Second Street and West First Street. On-street parking is provided along both sides of the roadway and consists of a mix of South Boston resident permit and metered parking. Sidewalks are located on both sides of D Street throughout the study area and are generally in good condition.

Fargo Street is a local roadway between the Boston Convention and Exhibition Center (BCEC) and E Street and an urban collector between E Street and Summer Street. It runs generally east–west through the study area between the BCEC and Summer Street. Fargo Street generally has one travel lane in each direction. Sidewalks are provided on both sides of Fargo Street between D Street and E Street; however, no sidewalks are provided on Fargo Street east of E Street.

West First Street, an urban minor collector, runs generally east–west between Dorchester Street to the east and B Street to the west in South Boston. West First Street is one lane in each direction within the study area. Sidewalks are provided on both sides of the roadway and are generally in poor condition. The *South Boston Transportation Plan* (BTD, July 2000) lists West/East First Street as a designated secondary or backup truck route between D Street and L Street to the east. Between L Street and the Conley Terminal, East First Street is listed as a major truck route. The block adjacent to the site between C and D Streets, however, is not designated as a truck route, and trucks are prohibited by BTD on West First Street between C and B Streets.

4.2.2 INTERSECTION CONDITIONS

Summer Street/D Street is a four-leg, signalized intersection to the north of the Project site. The Summer Street eastbound approach consists of an 11-foot, exclusive left-turn lane, an 11-foot, exclusive through lane, and a 15-foot, shared through/right-turn lane. Summer Street westbound consists of a 12-foot, shared left-turn/through lane, a 14-foot through lane, and a channelized, 24-foot, exclusive right-turn lane. D Street northbound is a three-lane approach with a 12-foot, exclusive left-turn lane, a 12-foot through lane, and a 12-foot, shared through/right-turn lane with an eight-foot adjacent parking lane. Southbound D Street is a three-lane approach with one 11-foot, exclusive left-turn lane, an 11-foot, shared left-turn/through lane, and a 15-foot through/right-turn lane. Parking is allowed along the north side of Summer Street west of the intersection and along both sides of D Street south of the intersection. All approaches have crosswalks and handicapped-accessible ramps. Pedestrian pushbuttons activate concurrent pedestrian phases at the intersection.

D Street/Fargo Street is a four-leg, signalized intersection. The Fargo Street eastbound approach consist of one 12-foot, shared left-turn/through lane and a 12-foot, exclusive right-turn lane. Fargo Street westbound consists of one 12-foot shared left-turn/through lane and one 11-foot exclusive right-turn lane. D Street northbound is a two-lane approach consisting of an 11-foot, shared left-turn/through lane and a 14-foot, shared through/right-turn lane. D Street southbound consists of one 11-foot, shared left-turn/through lane one 14-foot shared through/right-turn lane. Within the vicinity of the intersection, a mix of resident permit and metered on-street parking is provided along both sides of D Street and parking is prohibited along both sides of Fargo Street. Crosswalks and push-button actuated pedestrian indications are provided across each of the intersection approaches. Pavement markings in the vicinity of the intersection are in good condition.

D Street/West First Street is a signalized, four-leg intersection. The West First Street eastbound approach consists of a 9-foot, exclusive left-turn lane and a 10-foot, exclusive through lane. The West First Street westbound approach consists of an 11-foot, exclusive through lane and a 12-foot, exclusive right-turn lane. The D Street southbound approach consists of a 10-foot, exclusive left-turn lane and a 10-foot, exclusive right-turn lane. The D Street northbound approach is one-way northbound and consists of a 12-foot, shared left-turn/through lane and an 11-foot, exclusive right-turn lane. The one-way northbound block of D Street was introduced by BTD to discourage southbound through traffic on the street. Similarly, a one-way southbound block was created at Old Colony Boulevard to discourage through traffic in the other direction. No on-street parking is located along any approach at this intersection. Sidewalks are provided along all approaches; 10-foot crosswalks are provided across all approaches of the intersection.

4.2.3 TRAFFIC CONDITIONS

The study team collected manual vehicle turning movement counts at study area intersections during the weekday AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods. Count data at the intersections of Summer Street/D Street and D Street/Fargo Street were collected on Wednesday, November 2, 2011 and counts at the intersection of D Street/West First Street were collected on Tuesday, November 15, 2011 and Wednesday, November 16, 2011. Based on these counts, the weekday peak hours were identified as 7:45–8:45 AM and 5:00–6:00 PM.

Figure 4-3 and **Figure 4-4** show the existing peak-hour turning volumes for the study area intersections. The existing traffic volumes include the traffic generated by the existing uses on site. Complete traffic count data are provided in **Appendix A.**

4.2.4 TRAFFIC OPERATIONS

The study team used Trafficware's Synchro 6 software to analyze LOS and delay at study area intersections, which is based on the methodology of the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM). HCM methods analyze the capacity of an intersection by determining the LOS, delay (in seconds), volume-to-capacity ratio (v/c), and 95th percentile queue length (in feet), based on the intersection geometry, traffic control, and available traffic data for each intersection.

The ***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 length*** represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 95% of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only 5% of the time. These queues would typically not be seen during off-peak hours.

The Existing Conditions signal timing and phasing information was provided by the Boston Transportation Department (BTD). The study team also conducted field observations to verify Synchro model accuracy as well as to calibrate the model as necessary to match existing traffic conditions as closely as possible.

Table 4-1, derived from the HCM, shows LOS criteria for signalized and unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition (over capacity), with significant traffic delay. LOS D is generally considered acceptable in an urban environment.

Table 4-1 Level of Service Criteria

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

Source: 2000 Highway Capacity Manual, Transportation Research Board.

Table 4-2 and **Table 4-3** summarize the existing weekday AM peak hour and PM peak hour level of service results for the study area intersections. Capacity analysis reports are provided in **Appendix B.**

All of the study area intersections operate at a good overall LOS (LOS D or better) during both peak hours. Only four individual intersection approaches operate below LOS D:

- ***Summer Street/D Street*** **–** during the AM peak hour, the Summer Street eastbound shared left-turn/through lane functions as a defacto left-turn lane that operates at LOS F. During the PM Peak hour, the D Street southbound left-turn lane operates at LOS E due to the high volume of left turns at this approach (approximately 300 vehicles per hour); and
- ***D Street/West First Street*** **–** during the AM Peak hour the West First Street westbound through approach operates at LOS F and the D Street southbound left-turn approach operates at LOS E.

4.2.5 PARKING

On-Street Parking

Figure 4-5 presents an inventory of existing curb use and parking restrictions along D Street adjacent to the Project site. On-street parking adjacent to the site consists of a mix of South Boston resident permit, metered, and commercial parking along the east side of D Street and is metered along the west side of D Street.

Off-street Public Parking

As shown in **Figure 4-6,** off-street public parking for approximately 1,745 vehicles is provided within a quarter-mile of the Project site, including 400 spaces within the Westin Boston Waterfront Garage and 1,345 spaces within the Boston Convention & Exhibition Center (BCEC) South Parking lot.

Table 4-2 Existing Conditions (2011) Level of Service Summary: AM Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	95th Percentile Queue Length (ft)
Summer Street/D Street	**C**	**26.5**	**—**	**—**
Summer EB left	C	24.0	0.45	86
Summer EB thru | thru/right	A	9.8	0.27	52
Summer WB left*	F	121.1	0.96	#170
Summer WB thru	C	33.9	0.58	#303
Summer WB right	B	10.3	0.57	64
D NB left	D	47.5	0.45	108
D NB thru | thru/right	D	41.5	0.62	117
D SB left	C	30.2	0.59	173
D SB left/thru | thru/right	B	19.4	0.58	140
D Street/Fargo Street	**A**	**5.3**	**—**	**—**
Fargo EB left/thru	D	40.6	0.08	21
Fargo EB right	B	13.5	0.02	4
Fargo WB left/thru	D	48.6	0.31	13
Fargo WB right	B	16.7	0.38	25
D NB left/thru | thru/right	A	1.2	0.16	8
D SB left/thru | thru/right	A	2.4	0.28	m23
D Street/West First Street	**C**	**34.5**	**—**	**—**
West First EB left	C	29.2	0.07	15
West First EB thru	C	30.6	0.14	37
West First WB thru	F	83.2	0.89	#244
West First WB right	A	5.6	0.32	39
D Street WB left/thru	B	15.6	0.23	127
D Street WB right	A	4.4	0.09	22
D Street SB left	E	66.5	0.77	131
D Street SB right	A	5.8	0.26	15

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* operates as a defacto left-turn lane.

4.2.6 PUBLIC TRANSPORTATION

The Project site is located within convenient walking distance to Massachusetts Bay Transportation Authority (MBTA) local bus and Silver Line service. Public transportation services within approximately a quarter mile (5 to 10-minute walk) of the Project site are summarized in **Table 4-4** and illustrated in **Figure 4-7.**

Table 4-3 Existing Conditions (2011) Level of Service Summary: PM Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	95th Percentile Queue Length (ft)
Summer Street/D Street	**D**	**32.1**	—	—
Summer EB left	C	23.6	0.64	284
Summer EB thru | thru/right	B	11.7	0.35	235
Summer WB left/thru | thru	D	38.3	0.52	122
Summer WB right	B	14.4	0.35	110
D NB left	D	39.8	0.38	53
D NB thru | thru/right	D	43.2	0.63	108
D SB left	E	58.0	0.80	m218
D SB left/thru | thru/right	D	45.3	0.78	m192
D Street/Fargo Street	**B**	**11.9**	—	—
Fargo EB left/thru	D	40.5	0.13	23
Fargo EB right	B	13.0	0.02	6
Fargo WB left/thru	D	42.2	0.19	11
Fargo WB right	B	14.1	0.61	17
D NB left/thru | thru/right	A	1.1	0.09	7
D SB left/thru | thru/right	B	12.3	0.24	m125
D Street/West First Street	**C**	**21.1**	—	—
West First EB left	C	30.8	0.04	12
West First EB thru	C	32.3	0.14	45
West First WB thru	D	49.5	0.47	88
West First WB right	A	2.8	0.10	14
D Street WB left/thru	C	26.5	0.12	88
D Street WB right	A	8.6	0.10	32
D Street SB left	C	26.2	0.58	120
D Street SB right	A	2.1	0.26	5

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* operates as a defacto left-turn lane.

Table 4-4 Transit Service in the Study Area

Transit Line/ Bus Route	Route Description	Peak Period Headway (minutes)
SL1	Silver Line, Logan Airport–South Station	10 – 15
SL2	Silver Line, Design Center–South Station	5 – 15
4	North Station – Tide Street via World Trade Center	10 – 20
7	City Point – Otis and Summer Streets via Summer Street	15

Source: MBTA.com, November 2011.

Bus route #4 operates between North Station and Tide Street and provides connection to South Station; Red, Green, Blue, Orange, and Silver Line service; and commuter rail service. Service runs approximately every 10 to 20 minutes during the weekday commuter peak periods; no service is provided on this route on weekends or holidays.

Bus route #7, operating between City Point in South Boston and Otis Street/Summer Street in downtown Boston, provides connections to the World Trade Center; Federal Court House; South Station; Harbor Industrial Park; downtown business and shopping districts; and connections to the Red and Silver Lines. Service on this route runs approximately every 15 minutes during the weekday commuter period. Service is also provided approximately every 40 minutes on Saturday; no service on Sundays.

The Silver Line routes SL1 and SL2 serve World Trade Center Station located approximately one-third of a mile from the Project site. The SL1 operates between South Station and Logan Airport, and the SL2 operates between South Station and the Design Center in South Boston. During the weekday commuter peak periods, the SL1 runs approximately every 10 to 15 minutes, and the SL2 runs approximately every 5 to 15 minutes. The Silver Line also operates on Saturdays and Sundays.

The Project site is also located approximately one mile (a 20-minute walk) from South Station, which provides connection to commuter rail lines that service areas to the west and south of Boston, local and express bus service, private bus services, and Amtrak trains.

4.2.7 EXISTING PEDESTRIAN CONDITIONS

Sidewalks are provided along all roadways within the study area. As is common in urban settings, the effective widths of sidewalks in the study area are narrowed due to the presence of light posts, parking meters, street trees, and other obstacles located along the sidewalk path. The conditions of the sidewalks within the study area are described below:

- ***D Street –*** In the vicinity of the Project site, sidewalks between 8 and 14 feet wide are provided along both sides of D Street and are in good condition.
- ***Summer Street*** – Sidewalks are provided along both sides of Summer Street ranging in width between 9 and 13 feet. Sidewalks are generally in good condition.
- ***Fargo Street –*** Sidewalks are provided along both sides of the road in the study area between D Street and E Street, ranging from 7 to 11 feet wide and generally in good condition.
- ***West First Street –*** Sidewalks are generally provided along both sides of the West First Street. Between C Street and E Street sidewalks are approximately 4 to 6 feet

in width; however, they are discontinuous and/or in poor condition in some locations.

Crosswalks, handicap accessible ramps, and concurrent pedestrian phases are provided at all study intersections. In addition, three unsignalized mid-block crosswalks are provided across D Street between the Project site and Cypher Street.

The existing AM and PM peak hour pedestrian volumes at study area intersections are shown in **Figure 4-8**. As shown, pedestrian volumes are generally low along the D Street corridor.

4.2.8 EXISTING BICYCLE CONDITIONS

D Street, Summer Street, and West First Street are all classified as suitable for "intermediate" cyclists according to the *2010 Bike Routes of Boston Map*. The Project site is also located within approximately one-half to one mile of the Boston Harborwalk and South Bay Harbor trails, which are recreational pathways for the exclusive use of cyclists and pedestrians. In the Project area, the Harborwalk has two branches, one following the shoreline from Fan Pier south to Old Harbor Reservation, and another that follows the east side of Fort Point Channel south to South Bay Park. The South Bay Harbor Trail begins at Fan Pier and runs south along the east side of Fort Point Channel to South Bay Park. This trail terminates at the MBTA Orange Line Ruggles Station and provides a connection to the Pierre Lallement Bicycle Trail, which runs down the Southwest Corridor.

In July 2011, the City of Boston launched Hubway, a bicycle sharing program. To date, Hubway hosts 600 bicycles at 60 different locations across the city. As part of this program, cyclists are able to rent a bicycle from one location and return it to any other station, facilitating point-to-point travel within the City. Four Hubway stations are located within approximately one-mile of the Project site, including at the Boston Children's Museum, Seaport Boulevard/Boston Wharf Road, Fan Pier, and at Proctor and Gamble on Dorchester Avenue. These bicycle facilities are available to the public all year except during the winter.

Bicycle volumes during the weekday AM and PM peak hour are illustrated in **Figure 4-9;** bicycle volumes in the study area are generally low. No bicycle racks are currently provided on-site.

4.2.9 EXISTING LOADING AND SERVICE

Loading and service activity associated the existing office/warehouse facility generally occurs on-site within a dedicated area that provides two loading docks and a trash storage area. The loading and service area is accessed via one approximately 57-foot

wide curb cut on D Street. Loading and service activities today are fairly minimal as the existing building is currently only approximately 25% occupied.

In addition, an on-street 30-minute commercial loading zone is provided adjacent to the site on D Street. The loading zone is approximately 80 feet in length.

4.3 EVALUATION OF LONG-TERM IMPACTS

This section describes and evaluates the 2016 No-Build and Build Conditions. The methodology is in keeping with the City of Boston's *Transportation Access Guidelines* (2001).

4.3.1 NO-BUILD CONDITIONS

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.

Two procedures are generally used in combination to determine background traffic growth. The first procedure is to estimate traffic generated by planned new major developments and anticipated roadway changes. In collaboration with the Boston Redevelopment Authority (BRA) and BTD staff, the study team identified 11 development projects in the area that are anticipated to be constructed within the five-year planning horizon. The study team developed a unique vehicular trip distribution pattern for each of the 11 projects based on the CA/T model overall trip distribution patterns, BTD origin – destination data for Area 13, and knowledge of the local transportation network. Vehicle trips associated with these projects were then assigned to the study area intersections using their respective distributions. The projects for which traffic volumes were added specifically to the network include the following and are illustrated in **Figure 4-10:**

- ***49 – 63 Melcher Street –*** The project includes the conversion of 49 and 51 Melcher Street into approximately 185,000 sf of office space and the conversion of 61 Melcher Street into 38 residential units.
- ***319 A Street Rear –*** The project includes the redevelopment of the existing 319A Street Rear building and construction of a new building containing approximately 202 residential units.
- ***371-401 D Street Residences –*** The project includes the construction of 585 residential units in four new buildings.

- ***Boston Cargo Terminal –*** The Boston Cargo Terminal is a proposed waterfront project that calls for creation of an approximately 510,552 sf intermodal freight facility on the North Jetty site, north of FID Kennedy Street. Access will be from Tide Street.
- ***Channel Center, Phase 3 –*** Phase 3 of the project includes the construction of 75,000 square feet of office space, 25,000 sf of research and development space, 39 residential units, and 5,130 sf of retail/commercial space.
- ***Fan Pier, Phase 1 (Parcel F) –*** This project includes the construction of a new approximately 493,000 sf office building. Access is from Old Northern Avenue.
- ***Fan Pier, Vertex –*** This project includes the construction of a new approximately 1,000,000 sf office building that will be occupied by Vertex Pharmaceuticals Incorporated.
- ***Pier 4, Phase 1 –*** The first phase of this mixed-use project will include the construction of 383 residential units.
- ***Seaport Square, Parcels A, B, C, K, and Q*** – This project includes the development of approximately 1,400,000 sf of development, including 483,700 sf of retail, 842,700 sf of residential space, 106,500 sf of hotel and 1,900 sf of cultural space.
- ***USPS General Mail Facility –*** This project includes the construction of approximately 211,000 sf of office space and 480,000 sf of manufacturing space.
- ***Waterside Place, Phase 1 –*** Phase 1 of the project includes the construction of 236 residential units.

The second part of the procedure is to apply a general growth rate to account other smaller planned/approved development projects and changes in demographics, auto usage, and auto ownership. Based on an assessment of historic traffic volume data in the area, it was determined that traffic along the D Street corridor has increased by approximately one percent per year since 2009. Therefore, this analysis assumes a general background growth rate of one percent per year. The resulting traffic volumes for the 2016 No-Build Conditions are shown in **Figure 4-11** and **Figure 4-12.**

NO-BUILD TRAFFIC OPERATIONS

The 2016 No-Build analysis uses the methodology described for Existing Conditions. No-Build intersection LOS results for the project study area, including queue analysis results, are summarized in **Table 4-5** and **Table 4-6.** Complete Synchro reports are provided in **Appendix B.**

The following intersections, or individual intersection approaches, are expected to experience a decrease in LOS under No Build Conditions:

Summer Street/D Street – the overall intersection operations at this location will worsen from LOS C to LOS D during the AM peak hour and from LOS D to LOS E during the PM peak hour. In addition, several of the intersection approaches will experience a decrease in level of service during both peak periods primarily due to the anticipated increase in vehicle trips associated with planned area development projects. During the AM peak hour, several intersection approaches will decrease in LOS, but none below acceptable LOS D. During the PM peak hour, the Summer Street eastbound left-turn lane will decrease from LOS D to LOS E; the Summer Street westbound left-turn lane will function as a defacto left-turn lane and worsen from LOS D to LOS F; and D Street southbound left-turn/through|through approach will worsen from LOS D to LOS E.

Table 4-5 No-Build Conditions (2016) Level of Service Summary: AM Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	95th Percentile Queue Length (ft)
Summer Street/D Street	**D**	**46.2**	**—**	**—**
Summer EB left	D	37.2	0.56	105
Summer EB thru | thru/right	B	11.9	0.35	66
Summer WB left*	F	391.7	1.70	#259
Summer WB thru	D	41.9	0.70	#403
Summer WB right	B	15.2	0.68	104
D NB left	D	40.8	0.44	132
D NB thru | thru/right	D	41.4	0.74	173
D SB left	D	43.3	0.74	#254
D SB left/thru | thru/right	C	35.5	0.74	205
D Street/Fargo Street	**A**	**4.3**	**—**	**—**
Fargo EB left/thru	D	40.2	0.08	20
Fargo EB right	B	13.5	0.02	4
Fargo WB left/thru	D	49.1	0.33	13
Fargo WB right	B	16.5	0.39	25
D NB left/thru | thru/right	A	1.3	0.23	15
D SB left/thru | thru/right	A	1.7	0.38	m25
D Street/West First Street	**D**	**35.1**	**—**	**—**
West First EB left	C	29.7	0.17	30
West First EB thru	C	28.9	0.13	37
West First WB thru	F	92.3	0.93	#261
West First WB right	A	5.3	0.41	47
D Street WB left/thru	B	19.6	0.36	194
D Street WB right	A	5.4	0.10	26
D Street SB left	E	71.0	0.83	#212
D Street SB right	A	8.1	0.31	74

# =95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* operates as a defacto left-turn lane.
Gray cell shading indicates a decrease in LOS from Existing Conditions.

D Street/West First Street **–** during the AM peak hour the overall intersection operations will decrease from LOS C to LOS D, with an increase of just one second of average delay.

All other study area intersection approaches will continue to operate at the same LOS when compared to Existing Conditions.

Table 4-6 No-Build Conditions (2016) Level of Service Summary: PM Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	95th Percentile Queue Length (ft)
Summer Street/D Street	**E**	**55.7**	**—**	**—**
Summer EB left	E	58.1	0.90	#360
Summer EB thru | thru/right	B	16.4	0.44	258
Summer WB left*	F	347.7	1.59	#228
Summer WB thru	D	44.9	0.63	266
Summer WB right	B	18.8	0.48	186
D NB left	D	36.7	0.29	76
D NB thru | thru/right	D	44.7	0.69	155
D SB left	E	76.1	0.90	m#370
D SB left/thru | thru/right	E	59.7	0.89	m#306
D Street/Fargo Street	**B**	**13.2**	**—**	**—**
Fargo EB left/thru	D	40.9	0.12	23
Fargo EB right	B	13.4	0.02	7
Fargo WB left/thru	D	43.0	0.20	12
Fargo WB right	B	14.1	0.57	51
D NB left/thru | thru/right	A	1.1	0.14	10
D SB left/thru | thru/right	B	17.1	0.35	m133
D Street/West First Street	**C**	**21.0**	**—**	**—**
West First EB left	C	32.4	0.13	25
West First EB thru	C	32.4	0.14	47
West First WB thru	D	48.8	0.46	93
West First WB right	A	2.1	0.16	19
D Street WB left/thru	C	31.5	0.26	139
D Street WB right	A	8.8	0.12	33
D Street SB left	C	26.8	0.69	188
D Street SB right	A	2.9	0.32	26

# =95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* operates as a defacto left-turn lane.
Gray cell shading indicates a decrease in LOS from Existing Conditions.

4.3.2 BUILD CONDITIONS

As summarized in **Section 4.1.1 Project Description,** the Project will result in construction of approximately 197 residential units, 4,237 square feet (sf) of ground-floor retail, and 129 parking spaces. The proposed site access and circulation plan is illustrated in **Figure 4-13.**

SITE ACCESS AND CIRCULATION

Vehicular access to the site is currently provided via two curb cuts on D Street, including one approximately 57-foot wide curb cut providing access to the loading area and a second approximately 22-foot wide curb cut providing access to the surface parking lot. Access to the site will continue to be provided on D Street in approximately the same location as the current loading dock driveway (approximately 470 feet south of Fargo Street), which will be significantly reduced in width (to approximately 24 feet), thus improving pedestrian conditions in front of the site and allowing for the creation of additional new on-street parking. The Project also proposes to close the existing curb cut currently providing access to the surface parking lot.

Loading and service, including trash, recycling, and deliveries will occur on-site within the surface parking lot. An existing on-street commercial loading zone adjacent to the site on D Street will be maintained and will help support the ground-floor retail uses. Pedestrian access to the residential and ground-floor retail uses will be provided along D Street and within the ground-level parking area behind the building.

TRIP GENERATION AND MODE SPLIT

Trip generation for the proposed residential and retail uses was derived from the Institute of Transportation Engineers' (ITE) publication *Trip Generation* (8th edition, 2008), using the following Land Use Codes (LUC):

- ***LUC 223 – Mid-Rise Apartment –*** are rental dwelling units located within the same building with between three and 10 floors. This LUC was chosen as the closest match to that of the proposed residential use; however, trip generation data for this LUC is only available for the AM and PM peak hour. Therefore, the daily trip generation was estimated using data for LUC 222 – High-Rise Apartment, since it was the next closest match. The fitted curve equations were used to estimate person trips associated with the residential use during all time periods; and
- ***LUC 820 – Shopping Center –*** is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. The average rates were used to estimate the person trips associated with the proposed ground-floor retail space.

BTD publishes transit, walk/bike, and vehicle mode split rates for different areas of Boston; the Project is located within designated Area 13. Mode split assumptions based on BTD's Area 13 data and local vehicle occupancy rates from the *2009 National Household Travel Survey* and the 2000 U.S. Census are summarized in **Table 4-7.**

Table 4-7 BTD Area 13 Mode Shares

Land Use	Direction	Transit Share[1]	Walk/Bike Share[1]	Vehicle Share[1]	Local Vehicle Occupancy Rate[2]
Daily					
Residential	In	19%	34%	47%	1.1
	Out	19%	34%	47%	1.1
Retail	In	5%	43%	52%	1.8
	Out	5%	43%	52%	1.8
AM Peak Hour					
Residential	In	16%	36%	48%	1.1
	Out	24%	42%	34%	1.1
Retail	In	4%	43%	53%	1.8
	Out	6%	54%	40%	1.8
PM Peak Hour					
Residential	In	24%	42%	34%	1.1
	Out	16%	36%	48%	1.1
Retail	In	6%	54%	40%	1.8
	Out	4%	43%	53%	1.8

1. Boston Transportation Department mode share data for Area 13.

2. 2000 Census data and 2009 National Household Travel Survey.

Based on the land use trip rates, mode split assumptions, and local vehicle occupancy rates, the resulting transit, walk/bike, and vehicle trips were identified. The Project-generated trips are summarized in **Table 4-8,** with detailed trip generation information provided in **Appendix C.**

As shown in **Table 4-8,** the Project is expected to generate only approximately 29 vehicle trips during the AM peak hour (12 in and 17 out) and 40 vehicle trips during the PM peak hour (20 in and 20 out) – this corresponds to less than one new vehicle trip per minute on the adjacent roadway network.

The trip generation of the proposed Project was also compared to that of the existing as-of-right use on site, approximately 78,000 sf of office/warehouse space. At the time of this study, the existing building was only approximately 25% occupied by a printing production company (these trips are currently on the roadway network and

reflected within the existing traffic counts along D Street); however, according to information provided by the Proponent, the existing building at one time accommodated as many as 180 workers. **Table 4-9** compares the vehicle trip generation associated with the proposed Project with that of the existing building, assuming it were 100% occupied.

Table 4-8 Trip Generation Summary

Land Use	Direction	Transit Trips	Walk/Bike Trips	Vehicle Trips
Daily				
Residential (197 units)	In	106	189	238
	Out	106	189	238
	Total	212	378	476
Retail (4,237 sf)	In	6	49	33
	Out	6	49	33
	Total	**12**	**98**	**66**
Combined	**In**	**112**	**238**	**271**
	Out	**112**	**238**	**271**
	Total	**224**	**478**	**542**
AM Peak Hour				
Residential (197 units)	In	4	9	11
	Out	13	23	16
	Total	17	32	27
Retail (4,237 sf)	In	0	1	1
	Out	0	2	1
	Total	0	3	2
Combined	**In**	**4**	**10**	**12**
	Out	**13**	**25**	**17**
	Total	**17**	**35**	**29**
PM Peak Hour				
Residential (197 units)	In	13	23	17
	Out	6	14	17
	Total	19	37	34
Retail (4,237 sf)	In	1	5	3
	Out	0	5	3
	Total	1	10	6
Combined	**In**	**14**	**28**	**20**
	Out	**6**	**19**	**20**
	Total	**20**	**47**	**40**

As shown **Table 4-9,** when compared to the as-of-right use, the proposed Project will generate only 2 additional vehicle trips (10 fewer trips in and 12 additional trips out)

during the AM peak hour and 11 additional vehicle trips (15 additional trips in and 4 fewer trips out) during the PM peak hour.

To provide a conservative estimate, no credit was taken for the vehicle trips associated with the existing/former use on site.

Table 4-9 Comparison of Project Vehicle Trip Generation to Existing As-of-Right Use

Period	Direction	Existing Office/Warehouse (if 100% Occupied)[1]	Proposed Residential/Retail	Net Vehicle Trips
Daily	In	131	271	137
	Out	131	271	137
	Total	262	542	274
AM Peak Hour	In	22	12	(10)
	Out	5	17	12
	Total	27	29	2
PM Peak Hour	In	5	20	15
	Out	24	20	(4)
	Total	29	40	11

1. Based on 100% occupancy of existing 78,000 sf building; existing building is currently only 25% occupied. Trip generation based on ITE LUC 110 –General Light Industrial, average rates per 1,000 sf.

TRIP DISTRIBUTION

Vehicular trip distribution was developed using origin–destination data from BTD for Area 13 and knowledge of the local roadway network. The resulting trip distribution is shown in **Figure 4-14**. The Project-generated vehicle trips were then assigned to the study area intersections according to the distribution and are illustrated in **Figure 4-15**.

Figure 4-16 and **Figure 4-17** show the 2016 Build AM and PM peak-hour traffic volumes, accounting for background growth rate, anticipated development by others, and Project-generated trips.

BUILD CONDITIONS TRAFFIC OPERATIONS

The LOS analysis for Build Conditions, which was conducted using the methodology described for Existing Conditions, appears in **Table 4-10** and **Table 4-11.**

With the addition of the small number of new vehicle trips added by the Project, all study area intersections will continue to operate with the same level of service as under No-Build Conditions and no adverse impacts will occur. The Project will generate less than 30 new vehicles trips during the weekday AM peak hour and about

40 vehicle trips during the weekday PM peak period, equivalent to just one new vehicle trip every one to two minutes. This is a negligible amount of new traffic and well within the daily fluctuations of normal traffic flow.

Table 4-10 Build Conditions (2016) Level of Service Summary: AM Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	95th Percentile Queue Length (ft)
Signalized Intersections				
Summer Street/D Street	**D**	**46.9**	—	—
Summer EB left	D	37.7	0.56	105
Summer EB thru | thru/right	B	11.9	0.35	66
Summer WB left*	F	400.6	1.73	#262
Summer WB thru	D	42.3	0.71	#403
Summer WB right	B	15.4	0.68	104
D NB left	D	41.1	0.46	136
D NB thru | thru/right	D	42.1	0.75	176
D SB left	D	43.6	0.74	#256
D SB left/thru | thru/right	C	32.2	0.74	207
D Street/Fargo Street	**A**	**4.2**	—	—
Fargo EB left/thru	D	40.8	0.07	21
Fargo EB right	B	13.8	0.02	4
Fargo WB left/thru	D	47.4	0.29	13
Fargo WB right	B	16.9	0.38	31
D NB left/thru | thru/right	A	1.4	0.23	15
D SB left/thru | thru/right	A	1.6	0.39	m22
D Street/West First Street	**D**	**35.1**	—	—
West First EB left	C	29.7	0.17	30
West First EB thru	C	28.9	0.13	37
West First WB thru	F	92.3	0.93	#261
West First WB right	A	5.3	0.41	46
D Street WB left/thru	B	19.7	0.37	196
D Street WB right	A	5.4	0.10	26
D Street SB left	E	71.0	0.83	#217
D Street SB right	A	8.0	0.31	74
Unsignalized Intersections				
D Street/Site Driveway	—	—	—	—
Site Driveway WB left/right	B	11.0	0.03	2
D Street NB thru/right	A	0.0	0.19	0
D Street SB left/thru	A	0.7	0.14	1

# =95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* operates as a defacto left-turn lane.

Table 4-11 Build Conditions (2016) Level of Service Summary: PM Peak Hour

Intersection/Approach	LOS	Delay (seconds)	V/C Ratio	95th Percentile Queue Length (ft)
Signalized Intersections				
Summer Street/D Street	**E**	**56.5**	**—**	**—**
Summer EB left	E	63.6	0.90	#360
Summer EB thru | thru/right	B	16.0	0.44	259
Summer WB left*	F	340.7	1.57	#231
Summer WB thru	D	43.8	0.62	267
Summer WB right	B	18.2	0.47	185
D NB left	D	38.3	0.32	82
D NB thru | thru/right	D	47.2	0.74	158
D SB left	E	77.8	0.91	m#376
D SB left/thru | thru/right	E	61.2	0.90	m#310
D Street/Fargo Street	**B**	**13.1**	**—**	**—**
Fargo EB left/thru	D	40.9	0.12	23
Fargo EB right	B	13.4	0.02	7
Fargo WB left/thru	D	42.7	0.19	12
Fargo WB right	B	14.1	0.57	51
D NB left/thru | thru/right	A	1.2	0.15	10
D SB left/thru | thru/right	B	17.2	0.36	m135
D Street/West First Street	**C**	**21.2**	**—**	**—**
West First EB left	C	32.5	0.14	27
West First EB thru	C	32.4	0.14	47
West First WB thru	D	48.8	0.46	93
West First WB right	A	2.1	0.16	20
D Street WB left/thru	C	31.5	0.26	141
D Street WB right	A	8.8	0.13	33
D Street SB left	C	27.4	0.69	193
D Street SB right	A	3.0	0.32	27
Unsignalized Intersections				
D Street/Site Driveway	**—**	**—**	**—**	**—**
Site Driveway WB left/right	B	10.2	0.03	2
D Street NB thru/right	A	0.0	0.12	0
D Street SB left/thru	A	0.7	0.22	1

# =95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.
m = Volume for 95th percentile queue is metered by upstream signal.
* operates as a defacto left-turn lane.

BUILD CONDITIONS PARKING SUPPLY

In order to develop a baseline understanding of parking needs for the Project, the study team evaluated local trends in parking demand for existing occupied market rate rental housing developments in Boston neighborhoods (see **Table 4-12**).

Table 4-12 Residential (Apartment) Parking Ratios

Development	Location	Occupied Units	Occupied Parking Spaces	Parking Ratio (occupied)
50 West Broadway	South Boston	111	65	0.59
101 Canal Street	Bullfinch Triangle	210	113	0.59
135 Clarendon Street	Back Bay	364	203	0.57
225 Northern Avenue	South Boston/ Seaport	450	164	0.38
West End Asteria	West End	170	67	0.41
Total/Average		**1,445**	**676**	**0.47**

Based on survey data collected by HSH, 2010.

As **Table 4-12** shows, parking demand ratios range from 0.38 to 0.57 parking spaces per occupied unit, with an overall average parking demand ratio of approximately 0.47 spaces per occupied unit.

The Project proposes to provide 129 at-grade parking spaces for the 171 market rate residential units, which corresponds to a parking ratio of approximately 0.75 spaces per unit (approximately 0.18 spaces per unit higher than the average parking demand ratio per occupied unit demonstrated at other similar residential developments). In an effort to reduce overall parking demand and better manage parking supply, the BTD has set maximum district-based parking space guidelines throughout the city to establish the amount of parking supply provided with new developments. The proposed parking is within the BTD maximum parking guidelines for the South Boston Waterfront area (1.0 to 1.5 spaces maximum per unit). Parking supply ratios are subject to Article 80 Large Project Review.

The proposed parking ratio is expected to be adequate given:

- current market demands for parking;
- the types of units (nearly 80% are studio or one-bedroom units and approximately 13% will be dedicated as "innovation" units); and
- the proximity of the site to public transportation, Hubway shared bicycle stations, and shared car services (six Zipcar locations within approximately a half-mile of the site).

The Proponent will also evaluate the feasibility of providing shared cars on-site (e.g., Zipcar).

In addition, the Project proposes to reconfigure the existing curb extension adjacent to the site to define the proposed driveway and allow for the creation of up to three new

on-street parking spaces, which will help support the Project's retail uses and benefit the neighborhood.

The Project team also proposes to work with the City to install additional metered on-street parking adjacent to the site to provide additional support for the proposed ground floor uses. As proposed, on-street parking adjacent to the site would function as metered during the day and could then revert to South Boston Resident permit parking during the evenings. The Proponent will work with the City to identity the most appropriate modifications to on-street curb-use adjacent to the site as part of the Transportation Access Plan Agreement (TAPA) process.

BUILD CONDITIONS PUBLIC TRANSPORTATION

As shown in **Table 4-8,** the Project will add 224 daily transit trips; with 17 transit trips (13 boarding and 4 alighting) during the AM peak hour and 20 new trips (6 boarding and 14 alighting) during the PM peak hour. The small increase in project-generated transit trips is not expected to affect transit services adversely in the study area. Detailed trip generation calculations are provided in **Appendix C.**

The Proponent is committed to promoting transit use among Project residents, workers, and visitors, as discussed under the Transportation Demand Management section below.

BUILD CONDITIONS PEDESTRIAN AND BICYCLE TRIP GENERATION

On a daily basis, the Project will generate an estimated 478 new pedestrian and bicycle trips and an additional 224 new transit trips that will require a walk to or from the site. This results in an additional 702 new pedestrian or bicycle trips per day. Approximately 35 pedestrian or bicycle trips in and out of the site will occur during the AM peak hour, and 47 pedestrian or bicycle trips in and out will occur during the p.m. peak hour, plus 17 and 20 transit trips, respectively. This results in approximately one additional pedestrian trip per minute during the AM and PM peak hours. Pedestrian and bicycle trip generation is summarized in **Table 4-8,** with detailed trip generation data provided in **Appendix C.** The Proponent is committed to promoting bicycle use among Project residents, workers, and visitors, as discussed under the Transportation Demand Management section below.

BUILD CONDITIONS BICYCLE ACCOMMODATIONS

Secure bicycle storage will be made available for building residents and tenants within the parking area and/or within dedicated storage areas within the proposed building per City of Boston *Bicycle Parking Guidelines,* which require a minimum of one bicycle parking space per residential unit. Additional racks for workers, visitors, and guests will also be provided near main entrances to the new buildings.

All bicycle racks, signs, and parking areas will conform to BTD standards and be sited in safe, secure locations. The Proponent will work with BTD to identify the most appropriate quantity and location for bicycle racks on the Project site as part of the Transportation Access Plan Agreement (TAPA) process.

BUILD CONDITIONS LOADING AND SERVICE

Whenever possible, all recycling, trash collection, and loading activities for the Project will occur on-site within the surface parking area (see **Figure 4-13,** "Site Access and Circulation Plan"). The existing on-street commercial loading zone on D Street adjacent to the site will also be maintained to provide more support for the service needs for the ground-floor retail uses.

The expected loading and service vehicle demands of the Project, by use, are presented in **Table 4-13.**

Table 4-13 Expected Loading and Service Activity

Land Use	Typical Vehicle & Size	Number of Vehicles (per day)	Typical Delivery Periods
Residential (197 units, approx. 193,397 sf)	Car/Van to SU-30 and Trash	6 to 10[1]	7:00 AM to 7:00 PM
Retail (approx. 4,237 sf)	Car/Van to SU-36 and Trash	4 to 6[2]	7:00 AM to 5:00 PM
Totals	**—**	**10 to 16**	**—**

1. 0.04 trucks per day/1,000 sf residential, per HSH survey of Tremont-on-the-Common

2. 1.2 trucks per day/1,000 sf restaurant, per NCHRP Synthesis 298: Truck Trip Generation Data

As shown in the **Table 4-13,** the loading demand for the Project is between 10 and 16 deliveries per day, which corresponds to between 20 and 32 vehicle trips in and out per day; these trips are included in the trip generation estimates provided in **Table 4-8.** Most residential deliveries are made via smaller vehicles - cars, vans, small panel trucks.

A Transportation Coordinator will be appointed by the Project to manage loading activity and to coordinate residential move-in/move-out activities. Where possible, these activities will be scheduled during off-peak hours. Permanent "No Idling" signs will be posted in the loading and parking areas.

EVALUATION OF SHORT-TERM CONSTRUCTION IMPACTS

Details of the overall construction schedule, working hours, number of construction workers, worker transportation, and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be

filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.

To minimize transportation impacts during the construction period, the following measures will be incorporated into the CMP:

- Construction workers will be encouraged to use public transportation and/or carpool;
- A subsidy for MBTA passes will be considered for full-time employees; and
- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

See also Section 5.12 for additional construction mitigation measures.

TRANSPORTATION DEMAND MANAGEMENT

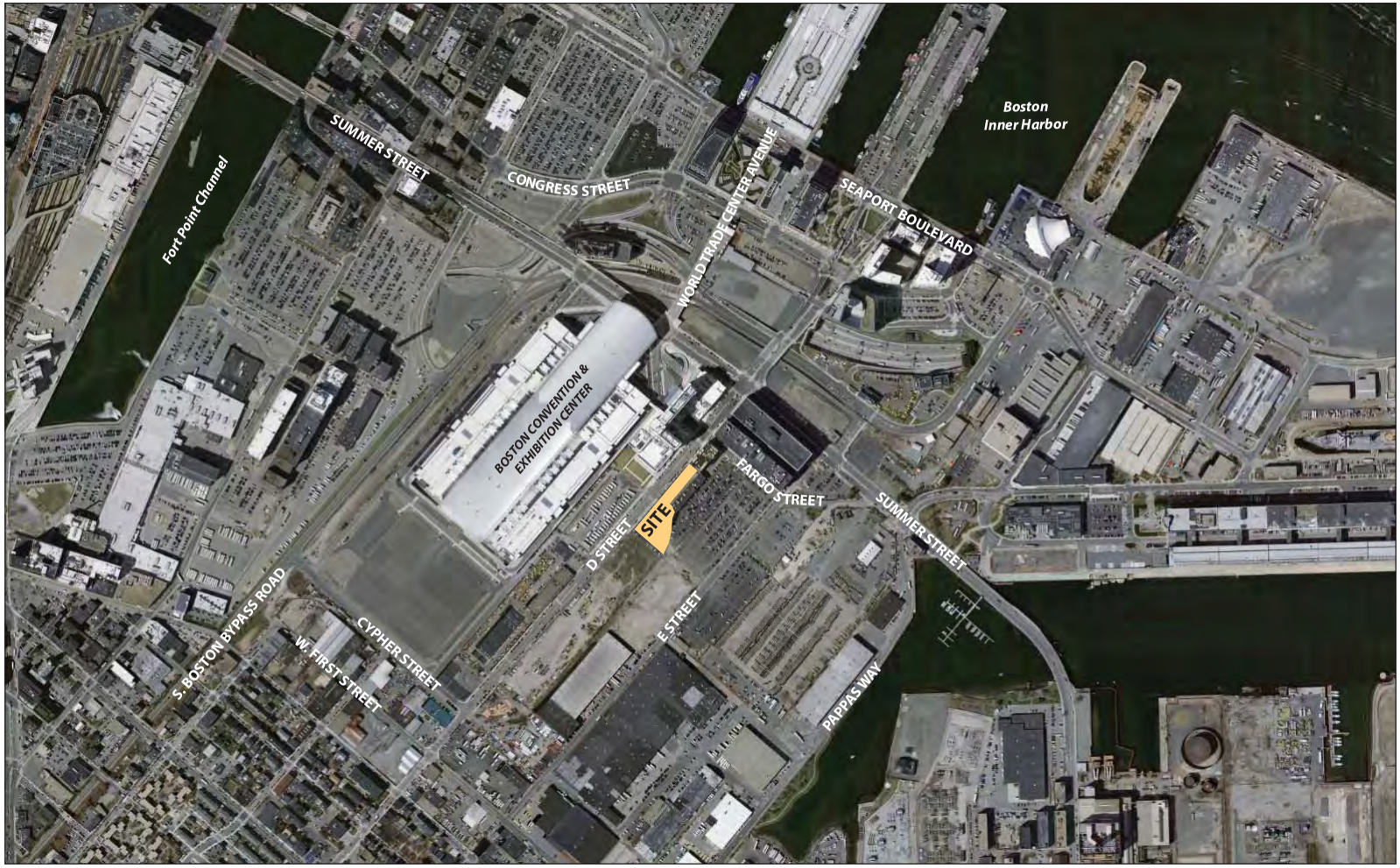
The Proponent is committed to implementing Transportation Demand Management (TDM) measures that support the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak periods. TDM will be facilitated by the nature of the Project and its proximity to the downtown, the Waterfront, and public transit.

The Proponent will emphasize the site's convenient transit and pedestrian access in marketing the Project to future residents and tenants. On-site management will provide transit information (schedules, maps, fare information) in the building lobbies for residents, workers, and visitors.

Additional TDM measures may include, but are not limited to, the following:

- ***Bicycle Storage*** **–** The Project Proponent will provide secure bicycle storage for residents, workers, and visitors in accordance with the City of Boston *Bicycle Parking Guidelines*.
- ***Constrained Parking*** **–** The Project does not exceed BTD district maximum parking ratios.
- ***Electric Vehicle Charging*** **–** The Proponent will explore the feasibility of providing electric vehicle charging stations on-site.
- ***Project Web Site*** **–**Public transportation information for residents and visitors will be included on the Project's Web Site.

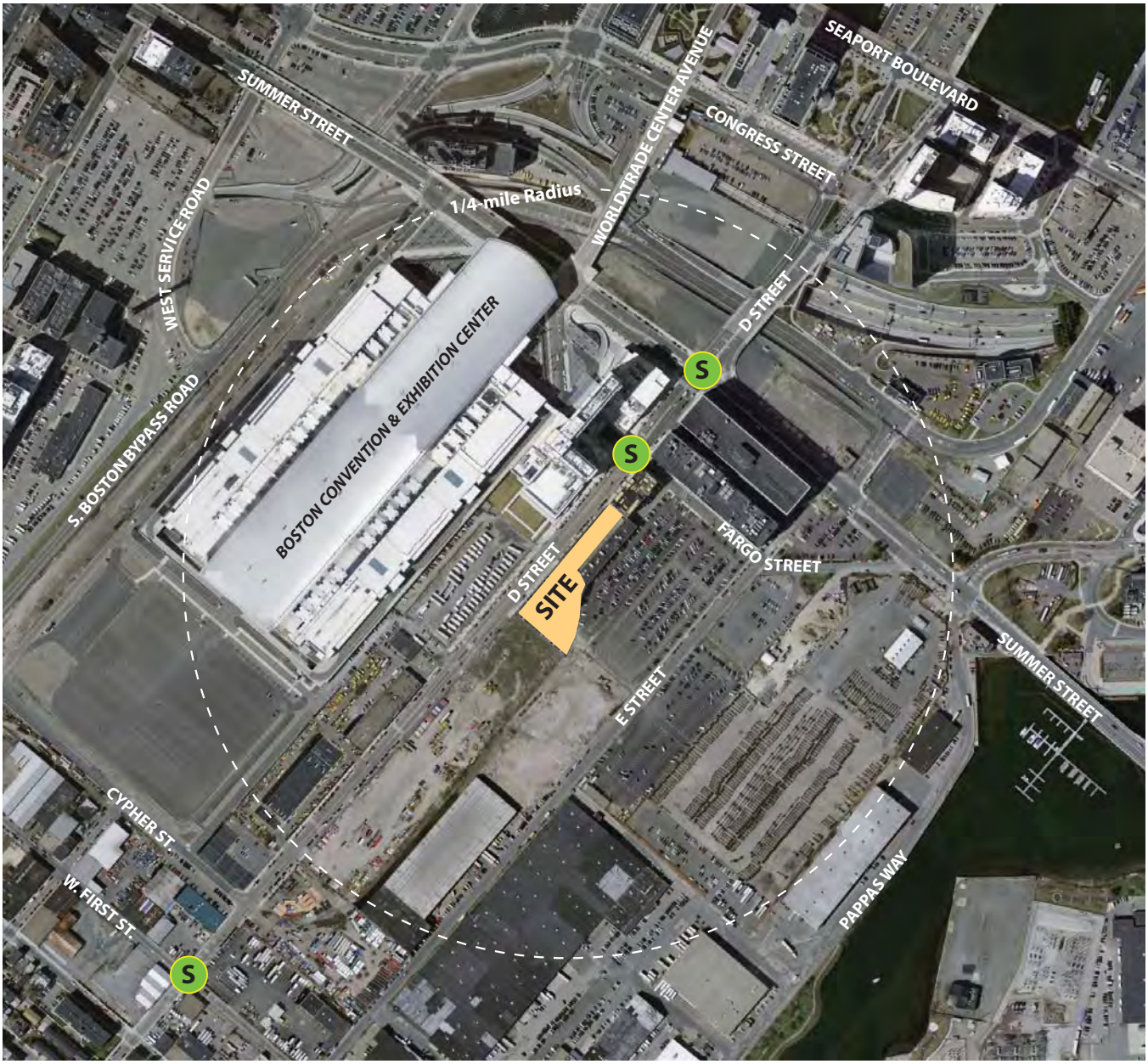
- ***Tenant and Employee Orientation Packet –*** These packets will provide all new tenants with information concerning available TDM programs and public transportation in the area, including route maps, schedules, and fare information.
- ***TMA Membership –*** The Proponent will join a Transportation Management Association (TMA)—in this case, the Seaport TMA (www.seaporttma.org).
- ***Transportation Coordinator –*** An on-site transportation coordinator will oversee transportation issues, including parking, residential move-in and move-out, and service and loading. The transportation coordinator will also work with residents and tenants as they move in to raise awareness of public transportation alternatives.



Not to scale.

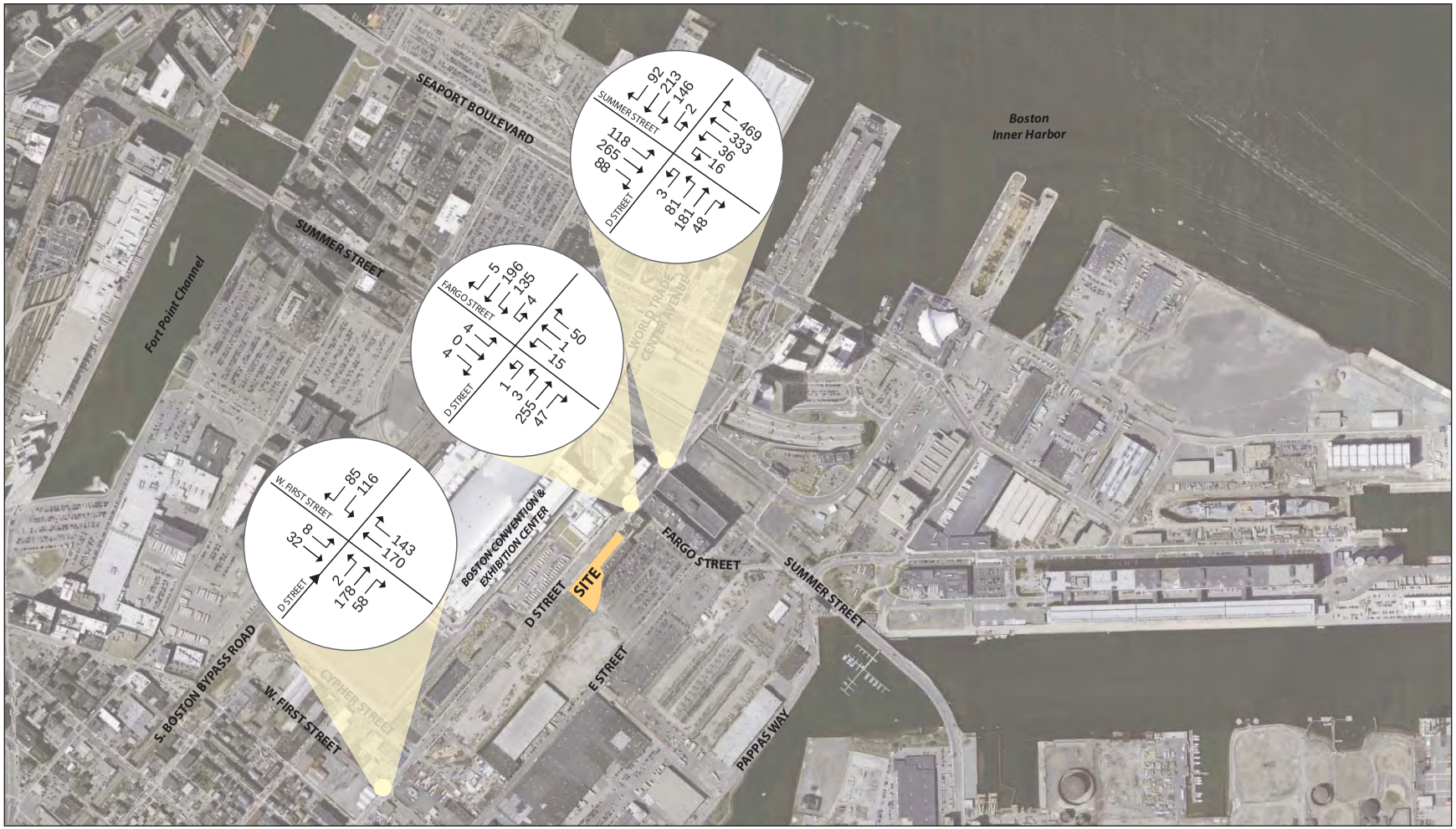
411 D Street
BOSTON, MASSACHUSETTS

Figure 4-1
Locus Map



Not to scale.

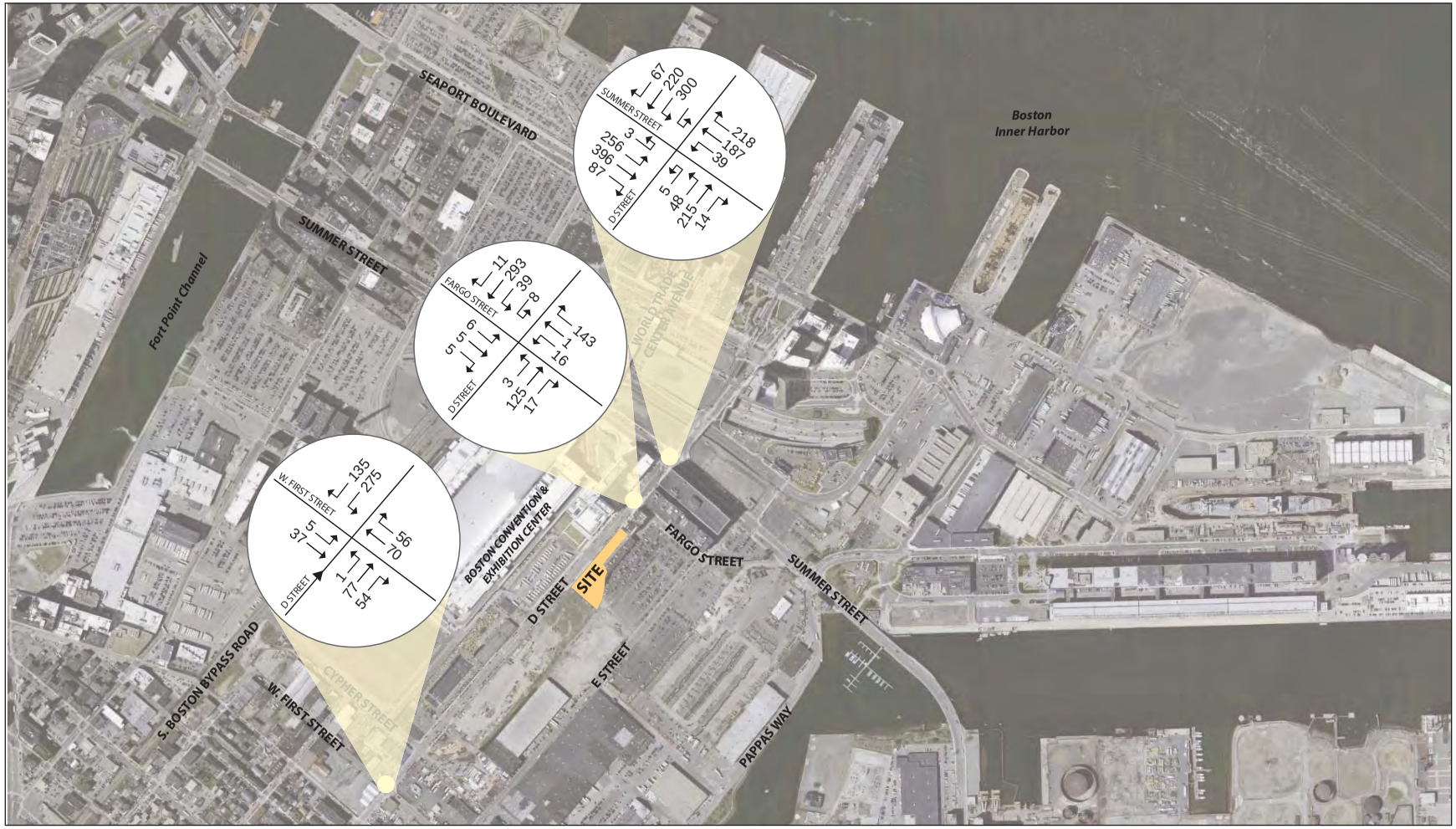
S Signalized Intersection



Not to scale.

411 D Street
BOSTON, MASSACHUSETTS

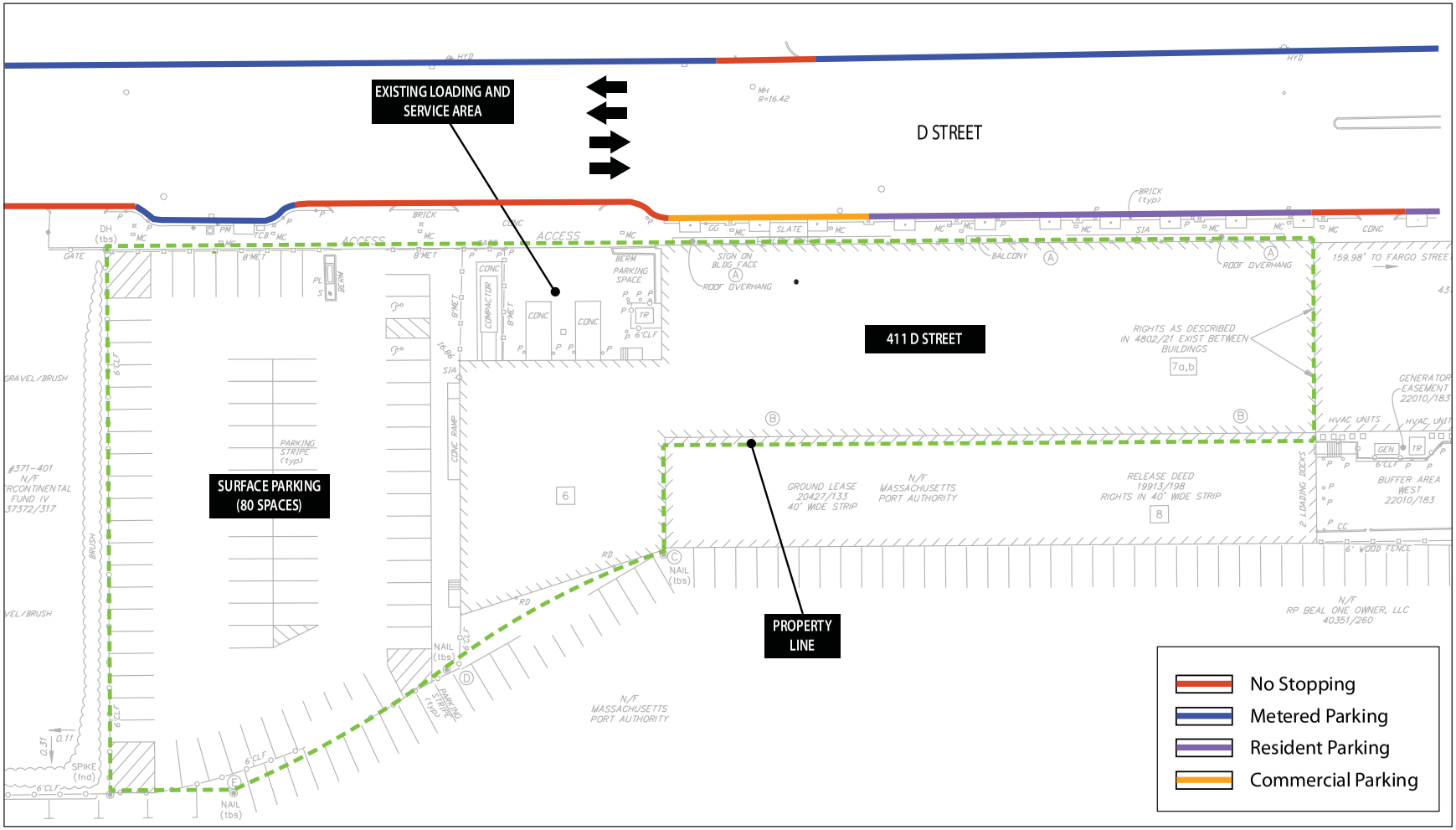
Figure 4-3
Existing Conditions (2011) Turning Movement Volumes, AM Peak Hour (7:45-8:45 AM)



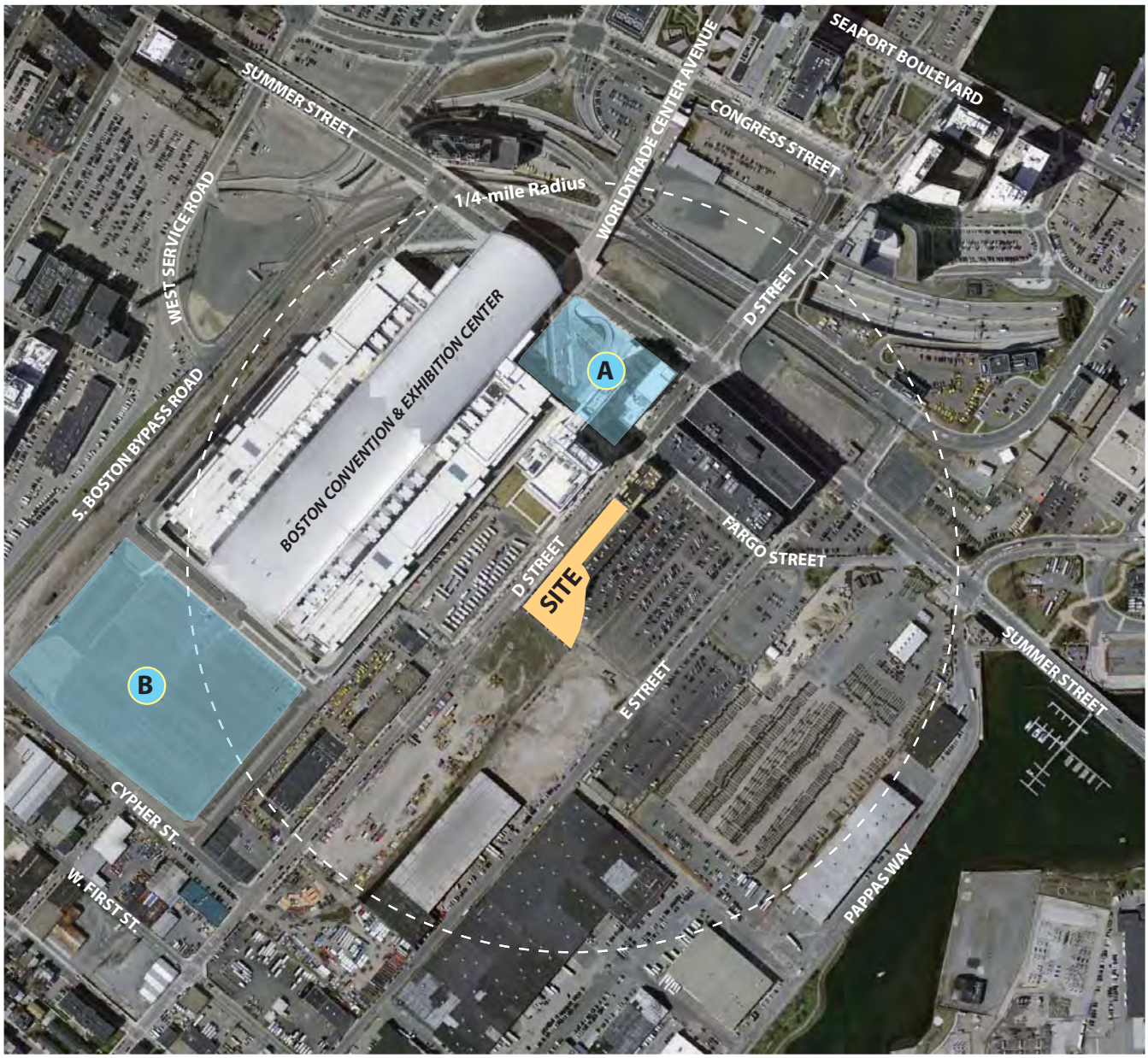
Not to scale.

411 D Street
BOSTON, MASSACHUSETTS

Figure 4-4
Existing Conditions (2011) Turning Movement Volumes, PM Peak Hour (4:00-5:00 PM)

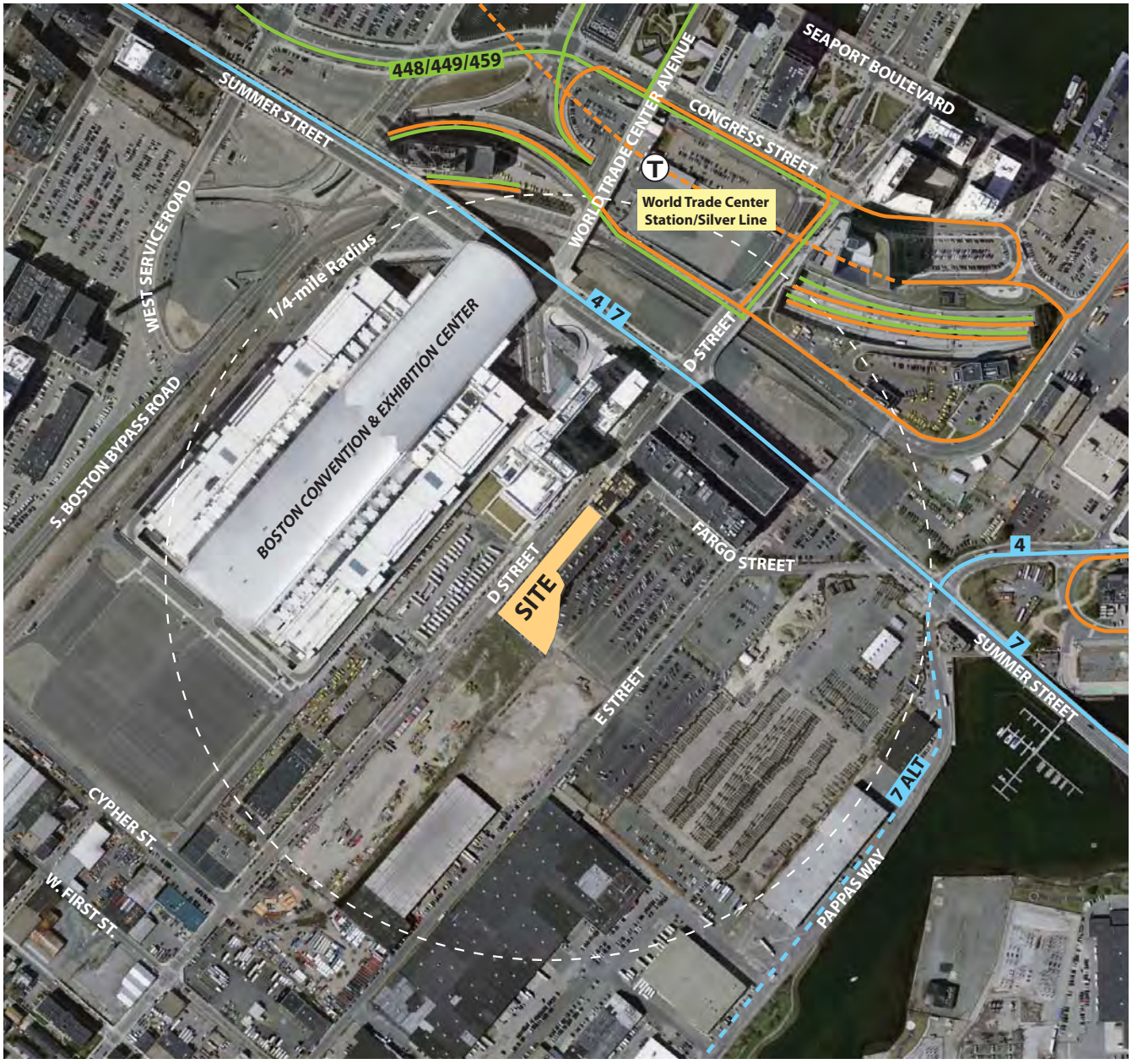

EXISTING LOADING AND SERVICE AREA
D STREET
411 D STREET
SURFACE PARKING (80 SPACES)
PROPERTY LINE
No Stopping
Metered Parking
Resident Parking
Commercial Parking

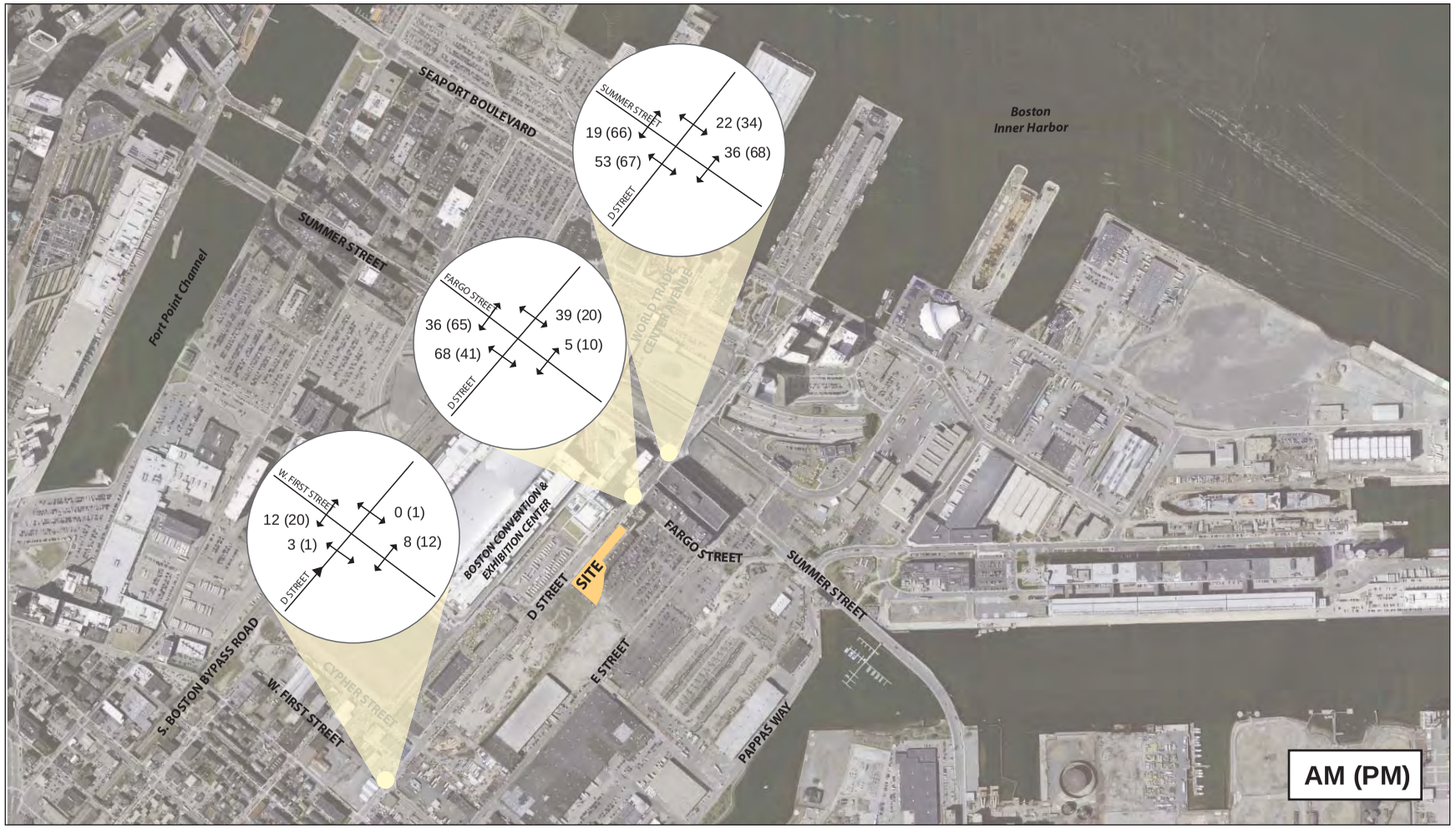
Not to scale.



Not to scale.

Map I.D.	Facility	Spaces
A.	Westin Boston Waterfront Garage	400
B.	BCEC South Parking Lot	1345
	Total	**1745**

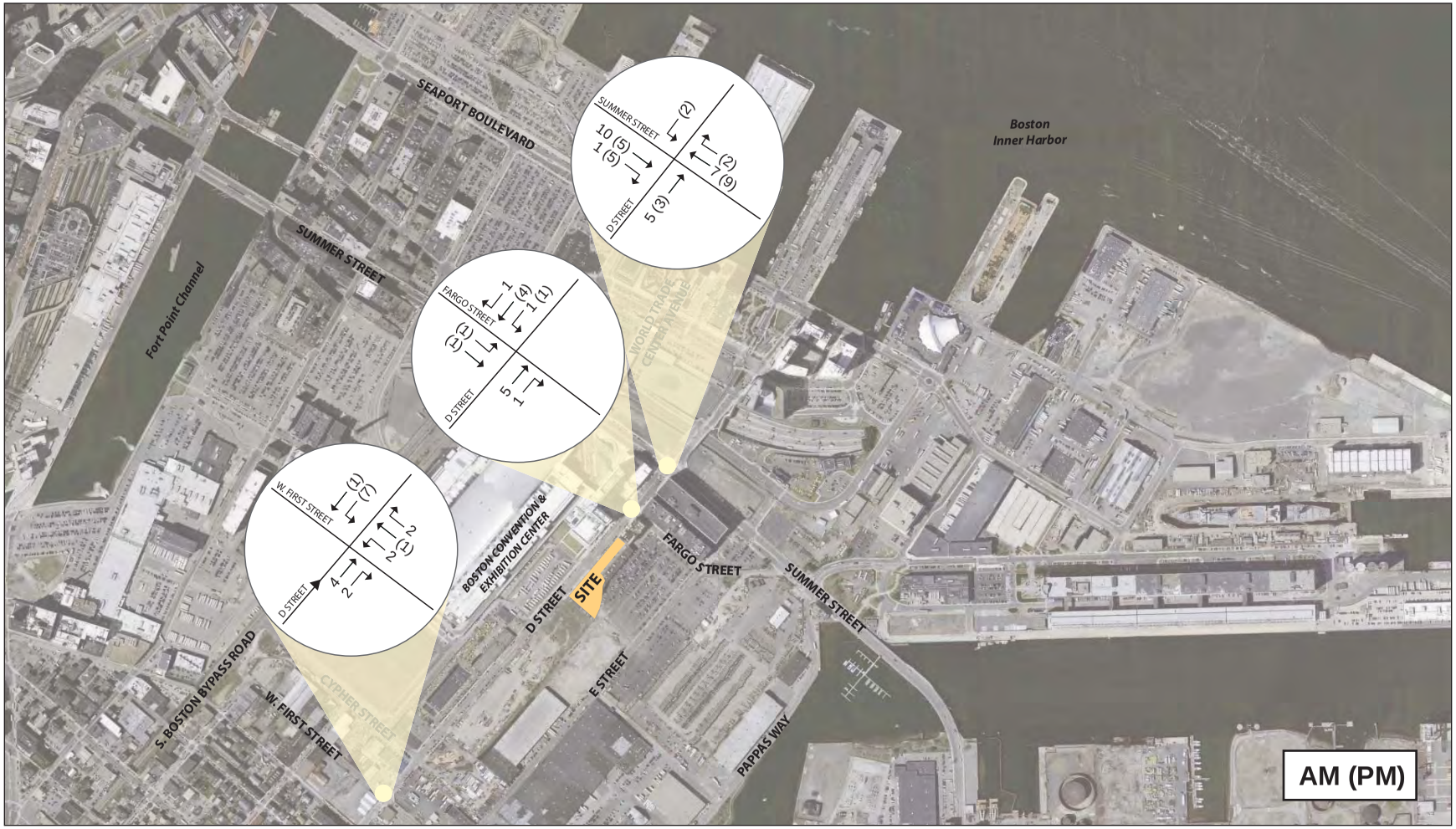

448/449/459
SUMMER STREET
SEAPORT BOULEVARD
CONGRESS STREET
WORLD TRADE CENTER AVENUE
World Trade Center Station/Silver Line
WEST SERVICE ROAD
1/4-mile Radius
4 7
D STREET
S. BOSTON BYPASS ROAD
BOSTON CONVENTION & EXHIBITION CENTER
SITE
FARGO STREET
4
7
SUMMER STREET
E STREET
7 ALT
CYPHER ST.
W. FIRST ST.
PAPPAS WAY
Not to scale.
MBTA Silver Line
MBTA Local Bus 4/7/7Alt
MBTA Express Bus 448/449/459



Not to scale.

411 D Street
BOSTON, MASSACHUSETTS

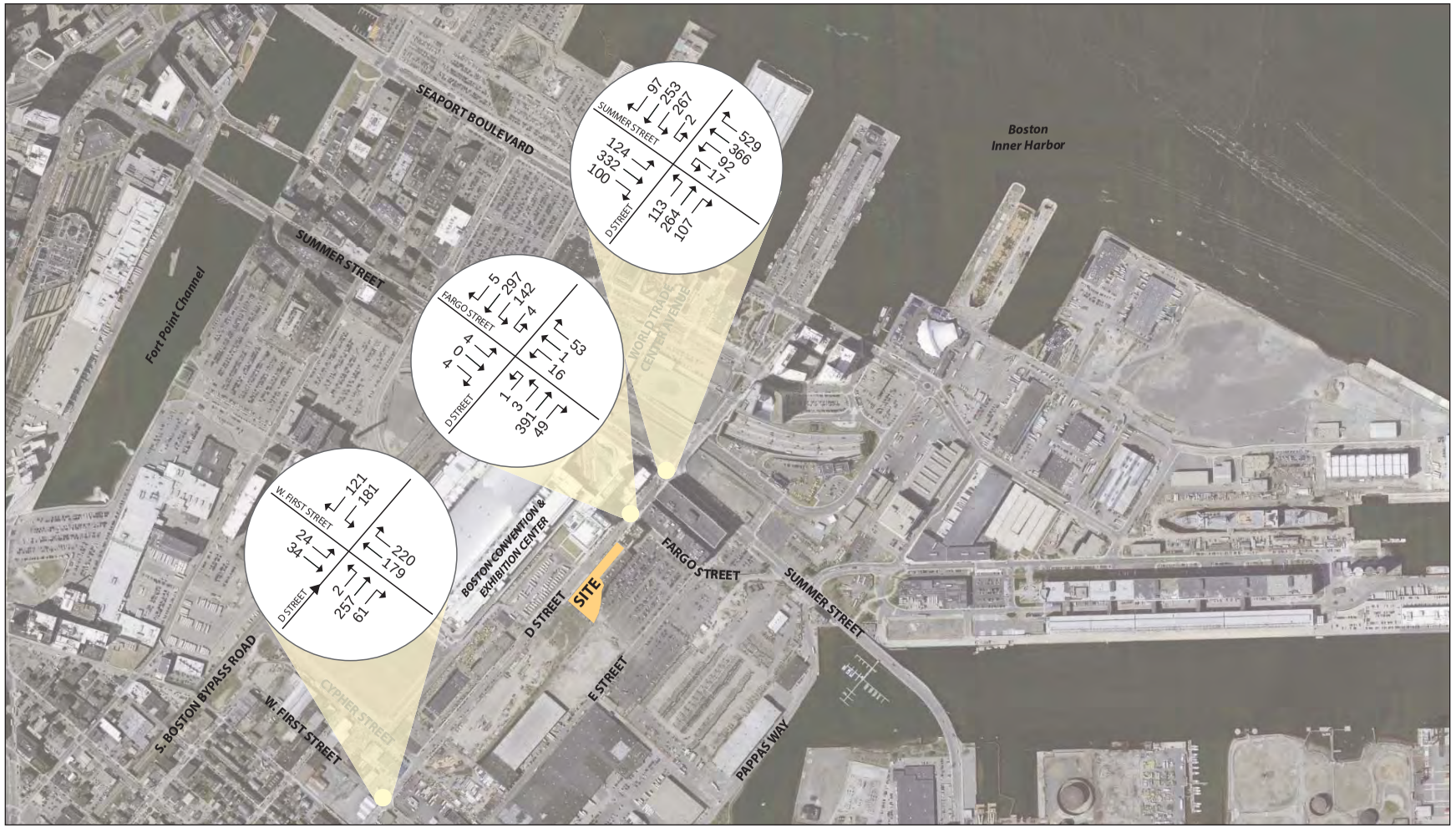
Figure 4-8
Existing Conditions (2011) Pedestrian Volumes, AM and PM Peak Hour


SEAPORT BOULEVARD
SUMMER STREET
Fort Point Channel
Boston
Inner Harbor
WORLD TRADE CENTER AVENUE
SUMMER STREET
FARGO STREET
D STREET
10 (5)
1 (5)
(2)
5 (3)
(2)
7 (9)
FARGO STREET
D STREET
1
(4)
1 (1)
(1)
(1)
5
1
W. FIRST STREET
D STREET
(2)
(2)
2
(1)
2
4
2
BOSTON CONVENTION & EXHIBITION CENTER
SITE
FARGO STREET
SUMMER STREET
D STREET
E STREET
PAPPAS WAY
S. BOSTON BYPASS ROAD
W. FIRST STREET
CYPHER STREET
AM (PM)

Not to scale.


SEAPORT BOULEVARD
SUMMER STREET
CONGRESS STREET
WORLD TRADE CENTER AVENUE
Fort Point Channel
Boston
Inner Harbor
BOSTON CONVENTION & EXHIBITION CENTER
FARGO STREET
SUMMER STREET
D STREET
E STREET
SITE
S. BOSTON BYPASS ROAD
W. FIRST STREET
CYPHER STREET
PAPPAS WAY
1. 49-63 Melcher Street
2. 319 A Street Rear
3. 371-401 D Street Residences
4. Boston Cargo Terminal
5. Channel Center, Phase 3
6. Fan Pier, Phase 1 (Parcel F)
7. Fan Pier, Vertex
8. Pier 4, Phase 1
9. Seaport Square, Parcels A, B, C, K, and Q
10. USPS General Mail Facility
11. Waterside Place, Phase 1

Not to scale.

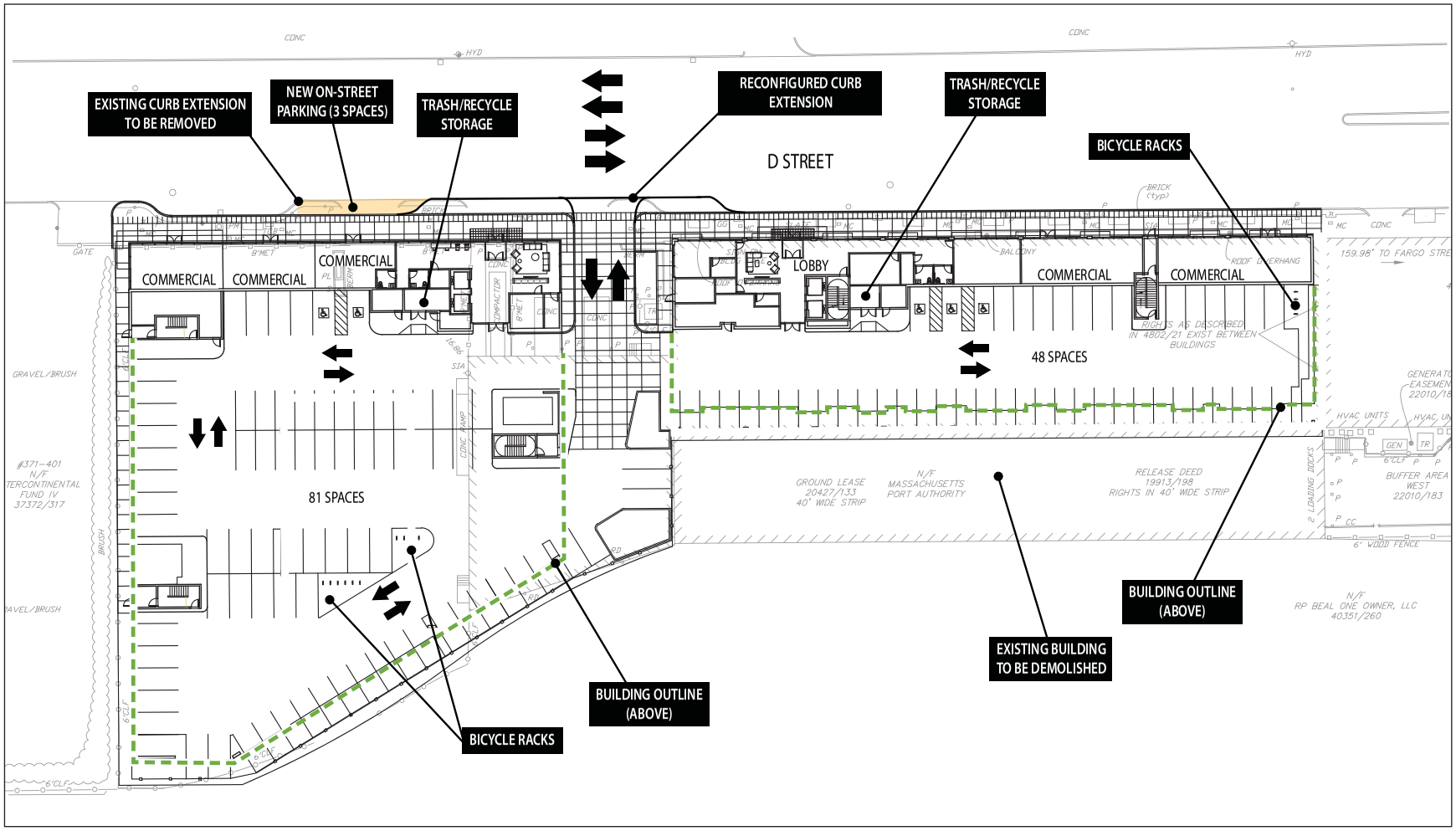

SEAPORT BOULEVARD
SUMMER STREET
Fort Point Channel
Boston
Inner Harbor
SUMMER STREET
97
253
267
2
529
366
92
17
124
332
100
113
264
107
D STREET
FARGO STREET
5
297
142
4
4
0
4
53
1
16
1
3
391
49
D STREET
W. FIRST STREET
121
181
24
34
220
179
2
257
61
D STREET
BOSTON CONVENTION & EXHIBITION CENTER
SITE
D STREET
FARGO STREET
SUMMER STREET
E STREET
PAPPAS WAY
S. BOSTON BYPASS ROAD
W. FIRST STREET
CYPHER STREET

Not to scale.

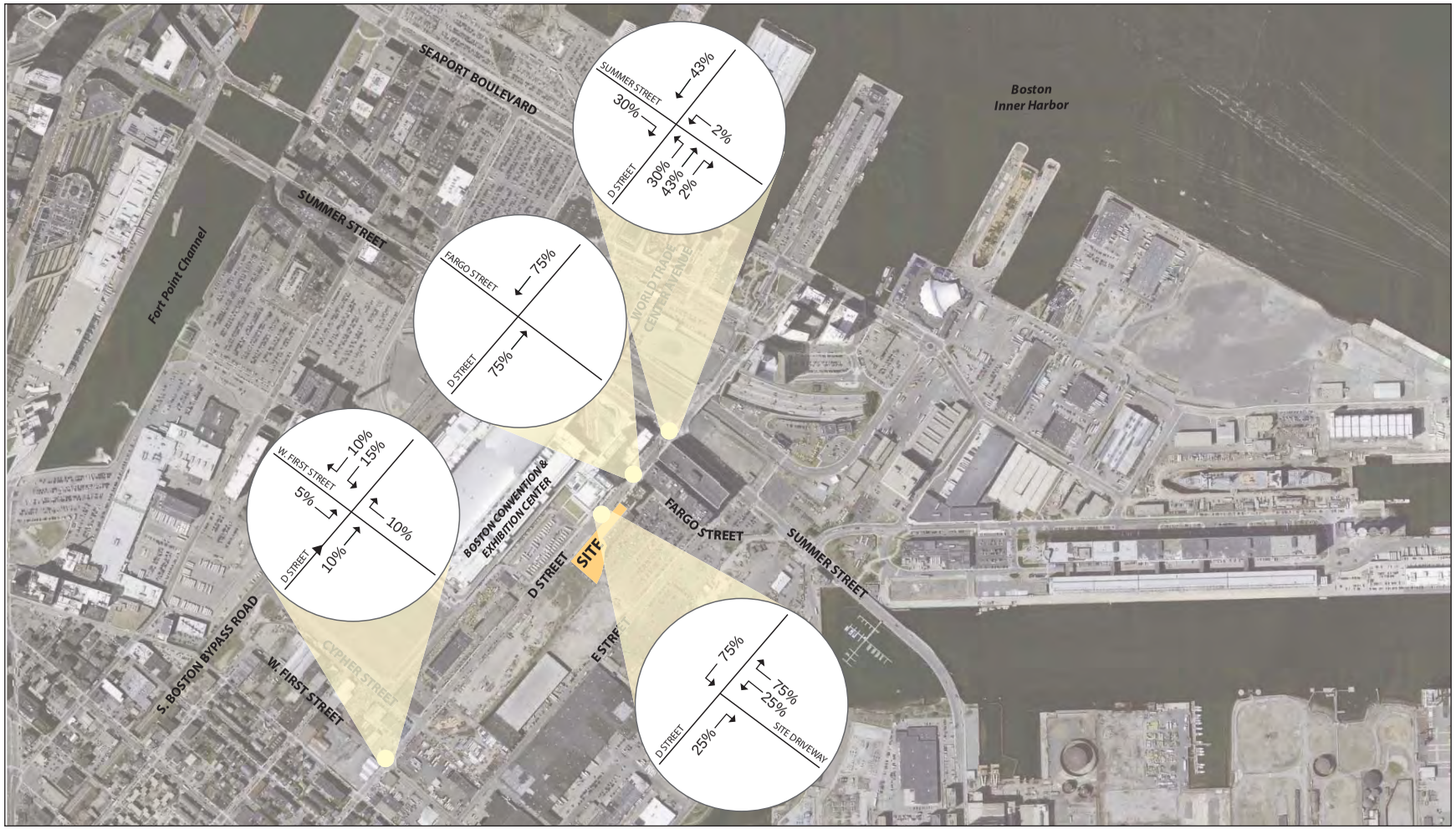
Not to scale.

411 D Street
BOSTON, MASSACHUSETTS

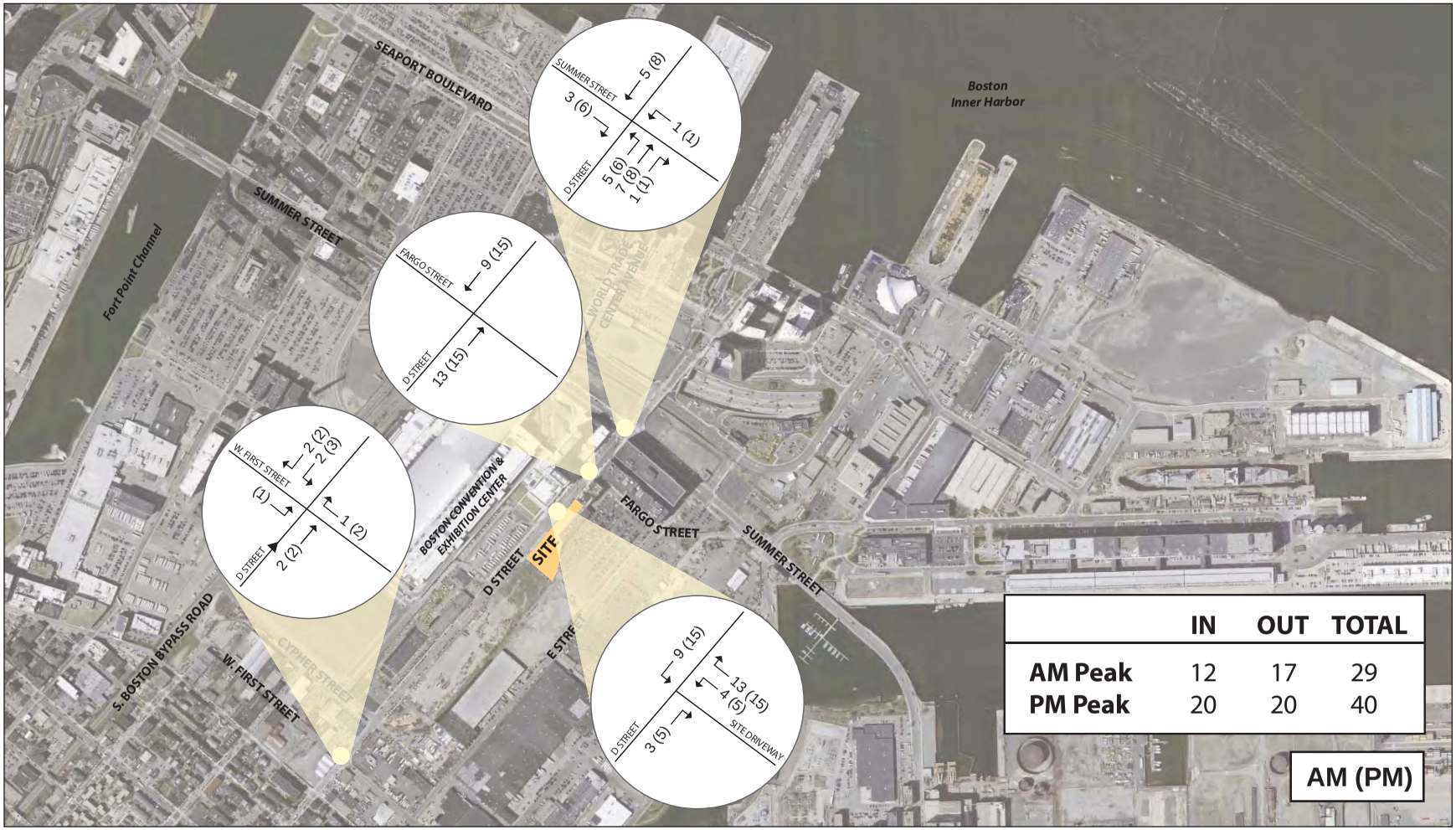
Figure 4-12
No-Build Conditions (2016) Turning Movement Volumes, PM Peak Hour


EXISTING CURB EXTENSION TO BE REMOVED
NEW ON-STREET PARKING (3 SPACES)
TRASH/RECYCLE STORAGE
RECONFIGURED CURB EXTENSION
TRASH/RECYCLE STORAGE
BICYCLE RACKS
D STREET
COMMERCIAL
COMMERCIAL
COMMERCIAL
LOBBY
COMMERCIAL
COMMERCIAL
48 SPACES
81 SPACES
BUILDING OUTLINE (ABOVE)
BICYCLE RACKS
BUILDING OUTLINE (ABOVE)
EXISTING BUILDING TO BE DEMOLISHED
GROUND LEASE 20427/133 40' WIDE STRIP
N/F MASSACHUSETTS PORT AUTHORITY
RELEASE DEED 19913/198 RIGHTS IN 40' WIDE STRIP
RIGHTS AS DESCRIBED IN 4802/21 EXIST BETWEEN BUILDINGS
N/F RP BEAL ONE OWNER, LLC 40351/260
6' WOOD FENCE
BUFFER AREA WEST 22010/183
HVAC UNITS
GRAVEL/BRUSH
#371-401 N/F TERCONTINENTAL FUND IV 37372/317
CONC
HYD
BRICK (typ)
GATE
6'CLF

Not to scale.


SEAPORT BOULEVARD
SUMMER STREET
Fort Point Channel
Boston
Inner Harbor
SUMMER STREET
43%
30%
2%
D STREET
30%
43%
2%
FARGO STREET
75%
D STREET
75%
WORLD TRADE CENTER AVENUE
W. FIRST STREET
10%
15%
5%
10%
D STREET
10%
BOSTON CONVENTION & EXHIBITION CENTER
SITE
FARGO STREET
SUMMER STREET
D STREET
S. BOSTON BYPASS ROAD
W. FIRST STREET
CYPHER STREET
75%
75%
25%
D STREET
25%
SITE DRIVEWAY

Not to scale.



Not to scale.

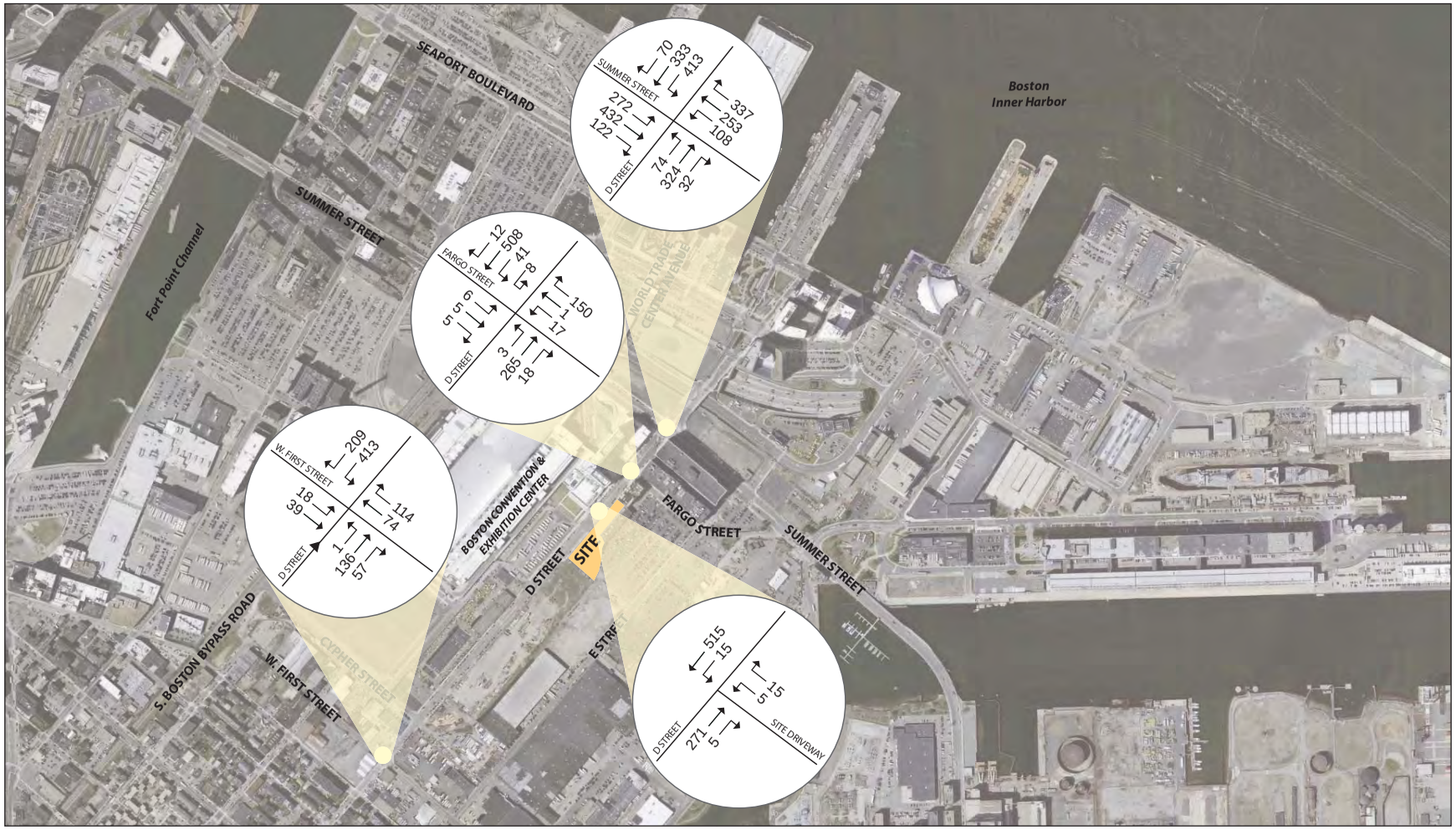
411 D Street
BOSTON, MASSACHUSETTS

Figure 4-15
Project-generated Vehicle Trips, AM and PM Peak Hours

Not to scale.

411 D Street
BOSTON, MASSACHUSETTS

Figure 4-16
Build Conditions (2016) Turning Movement Volumes, AM Peak Hour


SEAPORT BOULEVARD
SUMMER STREET
Fort Point Channel
Boston
Inner Harbor
WORLD TRADE CENTER AVENUE
BOSTON CONVENTION & EXHIBITION CENTER
FARGO STREET
SUMMER STREET
D STREET
SITE
S. BOSTON BYPASS ROAD
W. FIRST STREET
CYPHER STREET
SITE DRIVEWAY
SUMMER STREET
70
333
413
272
432
122
337
253
108
74
324
32
FARGO STREET
12
508
41
8
5
5
6
150
1
17
3
265
18
D STREET
W. FIRST STREET
209
413
18
39
114
74
1
136
57
D STREET
515
15
15
5
271
5
D STREET
SITE DRIVEWAY

Not to scale.

Chapter 5

Environmental

5.0 ENVIRONMENTAL PROTECTION COMPONENT

5.1 WIND

The current development contains one building which occupies approximately 45% of the project site. The existing building is 2 stories and has a height above grade of approximately 35 feet.

The proposed 5 and 6-story residential buildings will reach 69 and 59 feet in height, respectively. The new structures will occupy 69% of the project site. The only public areas will be along the sidewalk. There will be several entrances to the proposed commercial areas and the residences from D Street. Other buildings in the vicinity of the project are about the same or significantly higher than the proposed project. The adjacent building at 437 D Street is 7 stories in height, and the Westin Hotel across the street is approximately 15 stories in height.

As a result of the existing and proposed condition, it is expected that none of the locations along the sidewalk will have pedestrian level winds (PLWs) that exceed the BRA guideline wind speed of 31 mph.

5.2 SHADOW

A shadow impact study has been conducted to compare existing shadows cast by the structure on the site with those of the proposed project in compliance with the Boston Redevelopment Authority's Development Review Guidelines. Table 5-1 identifies the dates and times for which the shadow conditions have been simulated.

Table 5-1, Shadow Study Dates and Times

Date	Time
Vernal Equinox - March 21st	9:00 a.m., 12:00 noon, 3:00 p.m.
Summer Solstice - June 21st	9:00 a.m., 12:00 noon, 3:00 p.m., 6:00 p.m.
Autumnal Equinox - September 21st, EDT	9:00 a.m., 12:00 noon, 3:00 p.m., 6:00 p.m.
Winter Solstice - December 21st, EST	9:00 a.m., 12:00 noon, 3:00 p.m.

5.2.1 RESULTS OF THE SHADOW STUDY

A detailed set of images is shown in Figures 5-1 through 5-4. All net new shadows are shown in light blue, existing site shadows are shown in dark blue, and existing non-project shadows are in dark gray. For reference, the building adjacent to the north side of the

project site is 437 D Street, also known as the Burnett Building. The Westin Hotel is located on the west side of D Street, opposite from the project site.

Vernal Equinox – March 21st (Figure 5-1)
At 9:00 a.m., the new shadow is cast in a northwesterly direction across D Street and at the west end of the Westin Hotel complex.

At 12:00 noon, shadows are cast in a northerly direction, extending to the middle of D Street. This leaves the western side of the street in light while the eastern half closest to the proposed building remains in shadow.

At 3:00 p.m., shadows are cast toward the northeast into the project site. D Street is left completely in light, and the only shadow impacts beyond the site are to the south side of the adjacent building at 437 D Street.

Summer Solstice – June 21st (Figure 5-2)
At 9:00 a.m., shadows from the new development will extend in a westerly direction stopping just before the sidewalk on the west side of D Street. Shadows do not impact the building across the street.

At 12:00 noon shadows are cast in a northerly direction. They partially block light on the sidewalk of D Street next to the proposed site but do not exert any shadow impact on the other side of D Street.

At 3:00 p.m., shadows are directed northeastward, leaving D Street without shadow.

At 6:00 p.m., long shadows are cast westward. Therefore, the shadow impacts do not fall on any public areas.

Autumnal Equinox – September 21st (Figure 5-3)
The shadow conditions for the autumnal equinox are nearly identical to those described for the vernal equinox, except for the slight differences due to the observance of daylight savings time. At 9:00 a.m., the morning sun projects shadows in a northwesterly direction. With the proposed building at 411 D Street in place, the shadows extend through D Street, its sidewalks, and onto the southernmost corner of the Westin Hotel complex.

At 12:00 noon, shadows are cast in a northerly direction, extending to the midpoint of D Street. Only the south side of D Street would be obscured, leaving the northern half and its sidewalks next to the Westin Hotel in sunlight.

At 3:00 p.m., shadows are cast toward the northeast, leaving D Street completely unobscured.

At 6:00 p.m. the sun is setting, rendering shadows less visible. They are cast in an easterly direction, ending just short of E street and covering the southeastern half of Fargo Street.

Winter Solstice – December 21st (Figure 5-4)
The longest shadows of the year will occur during the winter solstice. At 9:00 a.m., the shadow from the proposed buildings reaches in a northwest direction across D Street to the southeastern half of the Westin Hotel complex.

At noon, shadows fall directly north, extending across D Street just short of the Westin Hotel.

At 3:00 p.m., shadows are less apparent as the sun is already beginning to set. The shadows extend northeast as far as Fargo Street, but leave D Street completely unobscured.

5.2.2 CONCLUSIONS

A shadow study has been conducted on the proposed 411 D Street development. Using computer models for existing and building conditions, color renderings reveal the new shadow created by the project.

- The project shadow impacts from the northerly building are only slightly greater than the existing shadow from the existing building. Most of the new shadow is from the southerly buildings.
- The project creates additional shadow along D Street, mainly during the morning and noon periods during the summer and fall, at which time the majority of the street next to the project site is already under shadow.
- There were no shadows cast on D Street during any of the 3:00 pm or 6:00 pm periods throughout the year.

5.3 DAYLIGHT

The project site currently has a 2-story building that fronts D Street along most of the project site. The proposed 5 and 6-story buildings will result in some additional daylight obstruction along D Street. A separation of approximately 45 feet between the two buildings will substantially reduce this impact.

5.4 SOLAR GLARE

A solar glare analysis is intended to measure potential reflective glare from the buildings onto potentially affected streets, and public open spaces and sidewalk areas in order to determine the likelihood of visual impairment or discomfort due to reflective spot glare. As a result of the design and use of generally non-reflective materials, including brick and metal panels, it is not anticipated that the project will have adverse solar glare impacts or create solar heat buildup in

nearby buildings. Reflective glass will not be used in order to reduce potential impacts associated with solar glare.

5.5 AIR QUALITY

This section provides a qualitative review of air quality sources and impacts as a result of the proposed 411 D Street project from the parking lot and from traffic sources. Impacts from construction operations are discussed in Section 6.12. Although the heating and mechanical ventilation systems have not yet been designed, they will not impact pedestrian level air quality.

5.5.1 EXISTING AIR QUALITY

The site is currently occupied by a 2-story building, which contains office and warehouse uses. There are about 35 vehicles in the site's parking area on average, exerting a relatively minor impact on air quality.

5.5.2 PARKING LOT

The proposed 129 vehicle spaces will be located at grade under the residential levels of the two buildings. The lot will be open on 3 sides and closed along the building. No mechanical ventilation will be installed as there will be sufficient venting of motor vehicle emissions to the air around the building. Over the long term, air quality impacts from the parking area are expected to decline as new vehicles become subject to more stringent emission control requirements.

Several design and program considerations will mitigate impacts from the parking area:

- Location of walkways and public use areas away from the parking area behind the buildings,
- Installation of parking spaces for shared–use vehicles, and
- Installation of bicycle storage facilities at grade for residents.

5.5.3 TRAFFIC

The Massachusetts Department of Environmental Protection (DEP) and the Boston Redevelopment Authority (BRA) typically require a future air quality CO analysis for any intersection where the level-of-service (LOS) is expected to fall to D and the proposed project causes a 10% increase in traffic; or where the LOS is E or F and the project contributes to a reduction in LOS. The peak hour traffic generated by the proposed project will be 29 vehicles during the morning peak hour and 37 vehicles during the afternoon peak hour.

The traffic engineers, Howard/Stein-Hudson Associates have performed a transportation study for the project area. Each of three intersections was considered for a microscale CO air quality analysis. Table 5-2 shows a summary of the 2016 Build LOS analysis for each intersection. Based on intersection capacity analysis presented in this report, none of the study area intersections meet the DEP/BRA criteria for a microscale analysis.

Table 5-2, Summary of 2016 Build Case LOS for Project Study Area Intersections

Intersection	Build LOS AM/PM	Requires Analysis?
D Street and Summer Street	D/E	No
D Street and Fargo Street	A/B	No
D Street and West First Street	D/C	No

Source: Howard/Stein-Hudson Associates, Inc.

5.6 FLOOD ZONES AND ACECS

Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) for the City of Boston (Community Panel 25025C0081G, updated September 2009) was reviewed to determine if the project site lies within the 100-year flood plain. The site falls within a Zone C, defined by FEMA as an "area of minimal flooding." Thus, the project will not lead to an increased flood or storm damage risk.

No Areas of Critical Environmental Concern or State Certified Vernal Pools exist within the site. Likewise, the site is not included on the list of either Priority Habitats for State-Listed Rare Species or the list of Estimated Habitats for Rare Wildlife.

5.7 WATER QUALITY

The Project proposes a stormwater management program that will improve the quality of stormwater runoff and promote recharge. Practices to control pollution during construction will be implemented. A stormwater management system will be installed to treat and infiltrate stormwater supplemented with a long-term operation and maintenance plan.

Stormwater pollution prevention measures will include good housekeeping such as properly storing materials, spill prevention and response plans, and proper storage and disposal of solid wastes. Erosion and sediment controls, such as hay bales, silt fence, and catch basin filters, will be used during construction in order to stabilize the site. The Contractor will also be

responsible for controlling dust through the use of a stabilized construction entrance, street sweeping, and watering if necessary.

The stormwater management system will reduce the pollutant load to the municipal storm drain system. Deep sump catch basins and a water quality inlet will remove a portion of the total suspended solids inherent in surface parking runoff. Rooftop runoff will be directed to a subsurface infiltration system with overflows being directed to the municipal storm drain system.

The project will yield a decrease in peak discharge rates and volumes of runoff and improve groundwater recharge. This is accomplished primarily by increasing the amount of open space on-site and installing a stormwater infiltration system.

5.8 GEOTECHNICAL

Five test borings to evaluate the subsurface conditions were recently drilled in the site's parking lot and within the existing building. Three historical test borings from previous investigations are also available. Based on this test boring data, the site subsurface conditions consist of the following major strata (in order of increasing depth below the existing grade):

Fill

The fill soils were encountered beneath approximately 3 inches of asphalt paving (parking lot area) or beneath the 12-inch concrete slab (within the existing building). In general a thin layer of Granular Fill was encountered within 3 to 5 feet of the ground surface within the parking lot and within 10 feet of the floor slab inside the existing building. The Granular Fill material generally consists of loose to medium dense, brown, fine to medium SAND with varying amounts of gravel, coarse sand, silt and construction debris (bricks, concrete, coal ash). A thick deposit of Cohesive Fill was encountered immediately beneath the Granular Fill. The Cohesive Fill soils were encountered to depths ranging from about 20 to 23 feet below grade. The Cohesive Fill is generally described as a very soft to medium stiff, gray to dark gray, SILT with varying amounts of fine to medium sand, shells, construction debris, peat, and trash.

Organic Silt and Peat

Between the depths of approximately 20 feet to 31 feet below existing grade, soft to stiff, Organic Silt and Peat were encountered. The thickness of this deposit ranged from about 6 feet to 10 feet.

Marine Clay

The marine clay stratum consists of gray CLAY and was encountered at approximately 29 to 30.5 feet beneath the existing grade. The consistency of the marine clay was determined to be stiff to medium stiff within the upper 10 to 15 feet of the deposit, which is commonly referred to as the Boston Blue Clay. Beneath the upper crust layer,

the marine clay generally has a consistency that is soft to very soft. The Marine Clay stratum extended to depths ranging from approximately 50 to 77 feet below existing grade.

Glacial Till

Glacial Till soils were encountered at depths ranging from approximately 65 to 77 feet beneath the existing grade. The Glacial Till material consists of dense to very dense, gray to purple, silty CLAY, little gravel, coarse sand, and trace fine sand. The thickness of the Glacial Till deposit is generally 10 feet or less.

Bedrock

Bedrock was encountered at depths ranging from 50 feet to 80 feet below the existing grade. The bedrock generally consists of gray to purple ARGILLITE. The upper to 10 feet of bedrock is generally highly weathered.

5.9 GROUNDWATER

Groundwater levels taken at the completion of the test borings indicate that groundwater is between 2.5 to 8 feet below the existing grade. Groundwater levels vary with season, precipitation, snowmelt, and other factors, so levels encountered during and following construction may differ from those reported here.

5.10 SOLID AND HAZARDOUS WASTE

5.10.1 SITE HISTORY AND COMPLIANCE WITH MASSACHUSETTS CONTINGENCY PLAN

The earliest known use of the site was 1921, when a building was constructed for the manufacture of extracts. A second building was added involving warehousing of brass and copper products and matches. A two-story renovation was performed in 1995 that involved the addition of offices space above a printing operation.

No previous environmental investigations had been conducted on the site. In 2011, a subsurface investigation included soil borings, temporary groundwater monitoring wells and laboratory analysis of soil and groundwater samples. Levels of total polynuclear aromatic hydrocarbons (PAHs), petroleum hydrocarbons and various were detected in some of the soil and groundwater samples collected during the investigation. The presence of coal, wood ash and coal ash within the on-site fill material was confirmed by laboratory analysis.

A soil and groundwater quality test will be conducted prior to construction to determine the options for reuse, recycling, disposal or treatment of contaminated soil. Groundwater

testing will be conducted in support of obtaining temporary construction dewatering permits and to assess the need for on-site treatment to remove contaminants.

Conditions at the site will likely trigger regulatory notification under the Massachusetts Contingency Plan (MCP). Excavated soil will require characterization to assess its disposition for off-site reuse, disposal, treatment or recycling in accordance with DEP policy and the MCP. The construction contractor will be responsible for proper off-site removal of contaminated soil and disposal of construction and demolition debris.

5.11 NOISE

The proponent does not anticipate a significant increase in noise impacts associated with the residential uses at the project site. The Boston Air Pollution Control Commission regulates noise in the City of Boston based on land use classification. The regulations establish a maximum sound level for residential areas such as the project site of 60 dBA during the day and 50 dBA at night. These limits do not apply to construction noise or motor vehicle traffic. The City of Boston has also established noise limits that apply to nine octave band center frequencies.

The primary sources of external mechanical noise will include the make-up air units and the compressors. The project may also include emergency generators, which would also contribute to external mechanical noise. As rooftop equipment will not exceed maximum sound levels no mitigation is proposed. During the final design phase, appropriate low-noise mechanical equipment and noise control measures will be selected, as necessary, to ensure compliance with the City of Boston and DEP noise regulations at all nearby sensitive locations.

5.12 CONSTRUCTION IMPACTS

The following section describes impacts likely to result from the demolition and the project's construction. It also addresses steps that will be taken to avoid or minimize environmental and transportation-related impacts. The proponent will employ a construction manager who will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

5.12.1 CONSTRUCTION MANAGEMENT PLAN

The proponent will require the general contractor to comply with applicable state and local regulations, as well as the Construction Management Plan ("CMP") developed with and approved by the Boston Transportation Department ("BTD") prior to the commencement of construction. The construction manager will be bound by the CMP,

which will establish the guidelines for the duration of the project and specific mitigation measures and staging plans to minimize impacts on abutters.

Proper pre-construction planning with the neighborhood will be essential to the project is constructed safely and successfully. Signage will include construction manager contact information with emergency contact numbers.

5.12.2 CONSTRUCTION ACTIVITY SCHEDULE

The construction period for the proposed project is expected to last approximately 18 months, beginning in August 2012 and reaching completion by January 2014. The project will comply with the City of Boston Noise and Work Ordinance. Normal work hours will be from 7:00 AM to 6:00 PM, Monday through Friday, along with any approved exceptions.

5.12.3 PERIMETER PROTECTION/PUBLIC SAFETY

The CMP will describe any sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary for safety around the site perimeter. Barricades and secure fencing will isolate construction areas from pedestrian traffic. Sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety.

The proponent will continue to coordinate with all pertinent regulatory agencies and representatives of the surrounding neighborhoods to ensure they are informed of any changes in construction activities.

5.12.4 CONSTRUCTION TRAFFIC IMPACTS

Truck traffic will vary throughout the construction period, depending on activity. It its estimated that the highest amount of truck traffic will be for a short period during the demolition phase. Estimated truck deliveries and routes will be established with BTD through the CMP.

5.12.5 CONSTRUCTION WORKER PARKING

Measures will be employed during construction to minimize the impact of construction workers on the transportation network. Though the number of workers required for construction of the project will vary during the construction period, the following measures will reduce construction impacts on the transportation system:

- Worker shifts will end and begin before the normal commuter hours.
- The site's proximity to MBTA bus lines, the Silver Line Transit Station, and South Station will incentivize personnel to use those modes of transportation.

- Lock-up facilities for work tools will be provided to make public transportation more convenient and desirable for workers.
- Terms and conditions related to workforce parking and public transportation use will be written into each subcontract.

These measures will be addressed in the Construction Management Plan (CMP) and reviewed by the Boston Transportation Department prior to commencement of construction activities.

5.12.6 CONSTRUCTION AIR QUALITY

Construction activities may generate fugitive dust, which will result in a localized increase of airborne particle levels. Fugitive dust emission from construction activities will depend on such factors as the properties of the emitting surface (e.g. moisture content), meteorological variables, and construction practices employed.

To reduce emission of fugitive dust and minimize impacts on the local environment the construction contractor will adhere to a number of strictly enforceable mitigation measures and may include:

- Using wetting agents to control and suppress dust from construction debris;
- Ensuring that all trucks traveling to and from the site will be fully covered;
- Removing construction debris regularly;
- Monitoring construction practices closely to ensure that any emissions of dust are negligible;
- Cleaning streets and sidewalks to minimize dust and dirt accumulation; and
- Wheel-washing trucks before they leave the site during the excavation phase.

5.12.7 CONSTRUCTION NOISE IMPACTS

Intermittent increases in noise levels will occur in the short-term during construction. Construction work will comply with the requirements of the City of Boston noise ordinance. Since there are residences in the adjacent building at 437 D Street, this issue will be carefully addressed. To reduce the noise impacts of construction, a number of noise mitigation measures will be included in the CMP. Measures may be employed to reduce noise emissions include:

- Using mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on running equipment;
- Scheduling construction activities so as to avoid the simultaneous operation of the noisiest construction activities;
- Turning off all idling equipment;
- Locating noisy equipment away from abutters; and

- Shielding the noise generator by distance or enclosure.

5.12.8 UTILITY PROTECTION DURING CONSTRUCTION

City infrastructure will be protected from construction hazards using sheeting and shoring, temporary relocations, and 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/operator prior to any work commencing on their utility. Also, in the event a utility cannot be maintained in service during a switch-over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility owners/operators and project abutters to minimize impacts and inconveniences accordingly.

5.12.9 RODENT CONTROL

A rodent control program including inspection, monitoring, and treatment will be implemented prior to, during, and after construction. The construction contractor will file a rodent extermination certificate, along with the building permit application, to comply with City regulations. A preliminary extermination treatment may be performed throughout the project site and the building interior prior to demolition and construction. During the construction process, regular service visits will be made in order to maintain effective rodent control levels.

5.13 HISTORIC RESOURCES

5.13.1 HISTORIC RESOURCES ON THE PROJECT SITE

The existing building on the project site was constructed circa 1923 according to Boston Inspectional Service's building records. Since that time, it has been used for storage, warehousing, printing, and office uses. The existing building is not listed in the Inventory of Historic and Archeological Assets of the Commonwealth.

5.13.2 HISTORIC RESOURCES IN THE VICINITY OF THE PROJECT SITE

Table 5-3 presents a list of historic resources located in the immediate vicinity of the project. There is one area and three properties listed in the Inventory of Historic and Archeological Assets of the Commonwealth. There are no properties in the immediate vicinity that are listed in the National Register of Historic Places. A map displaying these historic sites in relation to the project site can be found in Figure 5-5, Historic Resources.

Table 5-3, Historic Resources within the Vicinity of Project Site

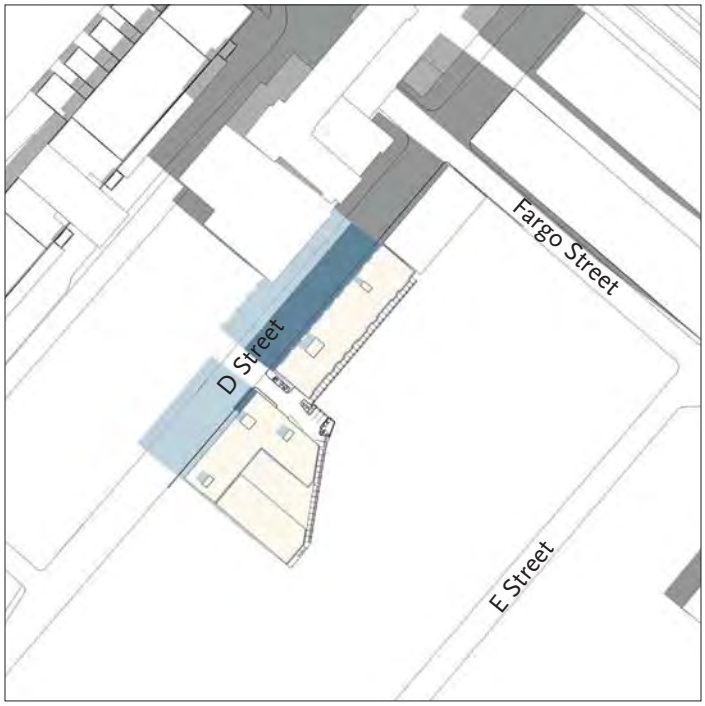
Map No.	Name	Location	Resource Notes	Impact of Project on Resource
Properties listed in the *Inventory of Historic and Archaeological Assets of the Commonwealth*				
1	C Street Industrial Area	C and D Streets		No Impact
2	437 D Street	Joseph Burnett Company, Extract Building	Used as Foundry and other manufacturing	No Impact
3	451 D Street	Fargo Real Estate Trust Company Wool Warehouse	Used for wool warehouse	No Impact
4	80 Fargo Street	80 Fargo Street		No Impact

Source: Massachusetts Cultural Resource Information System, October 2011

The C Street Industrial Area that is listed in the Inventory of Historic and Archeological Assets was recommended for listing in the National Register of Historic Places in 1997. The area is bounded by Summer Street to the north, D Street to the east, West First Street to the south, and B Street to the west. When it was recommended for listing, the area contained many buildings dating from the early 1900s. Most of the buildings identified in the area were large, multi-story buildings that were used for warehousing. All of the buildings west of D Street and North of Cypher Street have been demolished to make way for the Boston Convention and Exhibition Center. Only a few buildings in the C Street Industrial Area remain.

The project is adjacent to the building at 437 D Street, a 7-story reinforced concrete frame warehouse built in 1921. It is among the more streamlined reinforced concrete frame warehouses and industrial buildings at the north end of the C Street industrial area. Some net new shadow from the proposed North Building will be cast on this building's lower floors, which have no windows in this area.

From this review of the project's area of potential affect, it does not appear that the project will have any substantial impact on historic resources.



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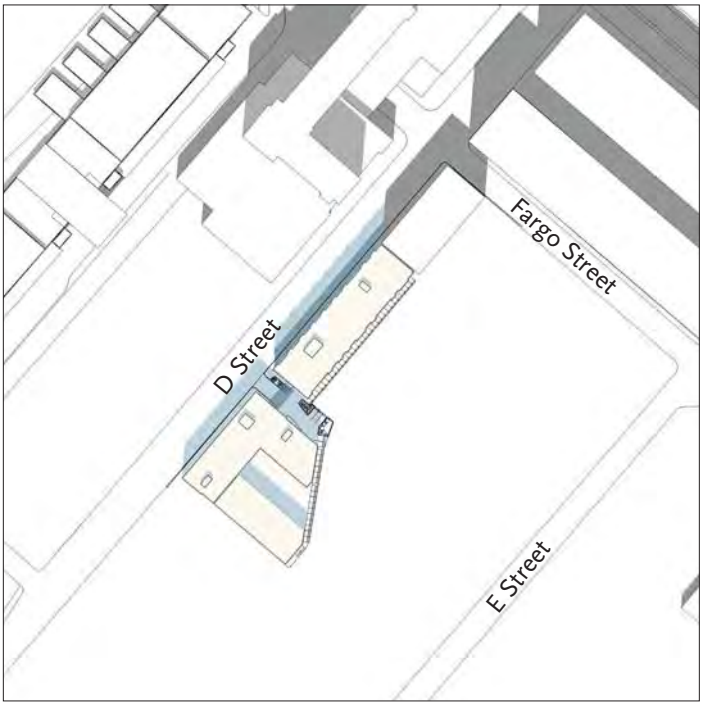

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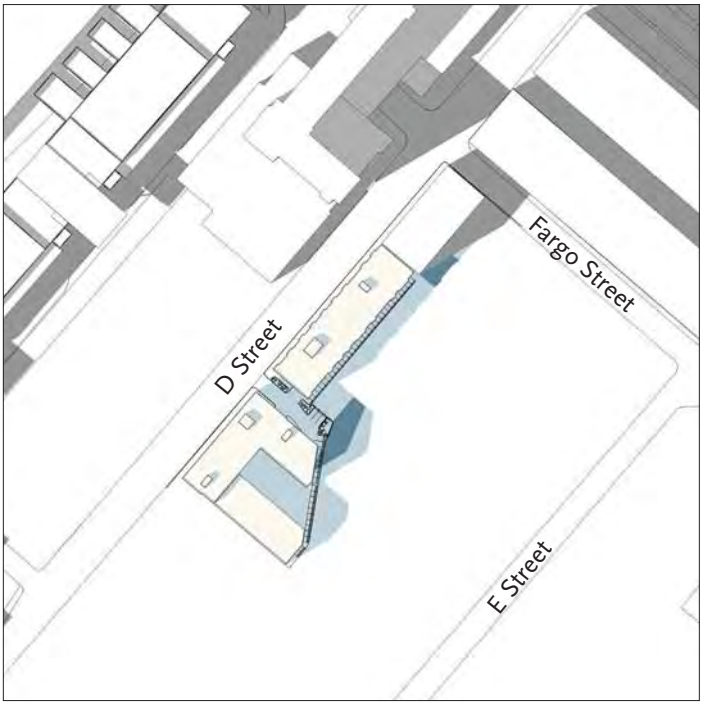


3 PM

Existing Shadow

New Shadow within Existing Shadow

Net New Shadow

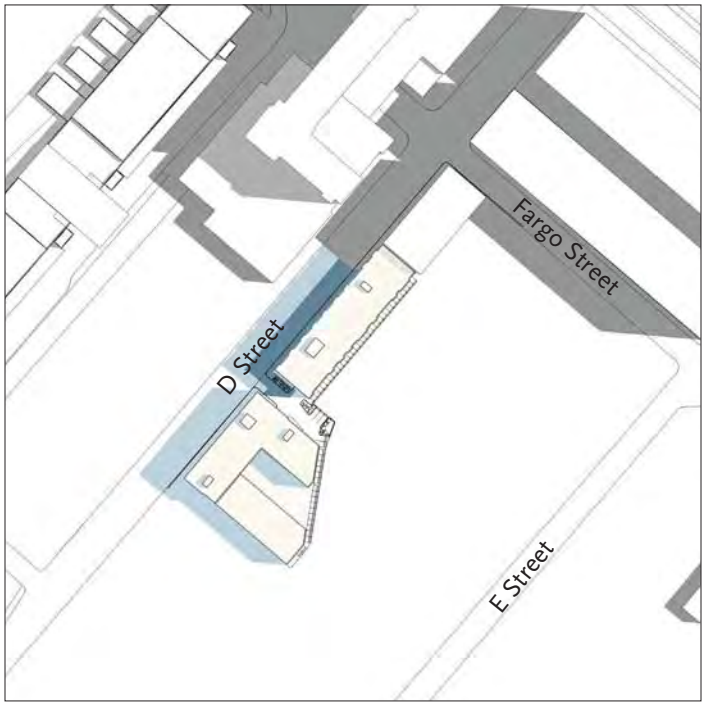
Figure 5-1

Shadow Studies - March 21

411 D Street

ELKUS | MANFREDI ARCHITECTS

CRESSET



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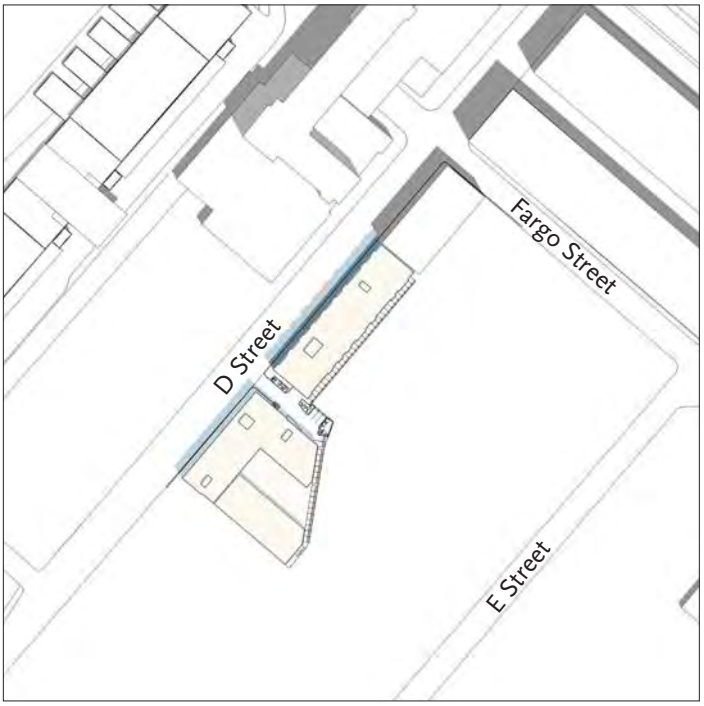

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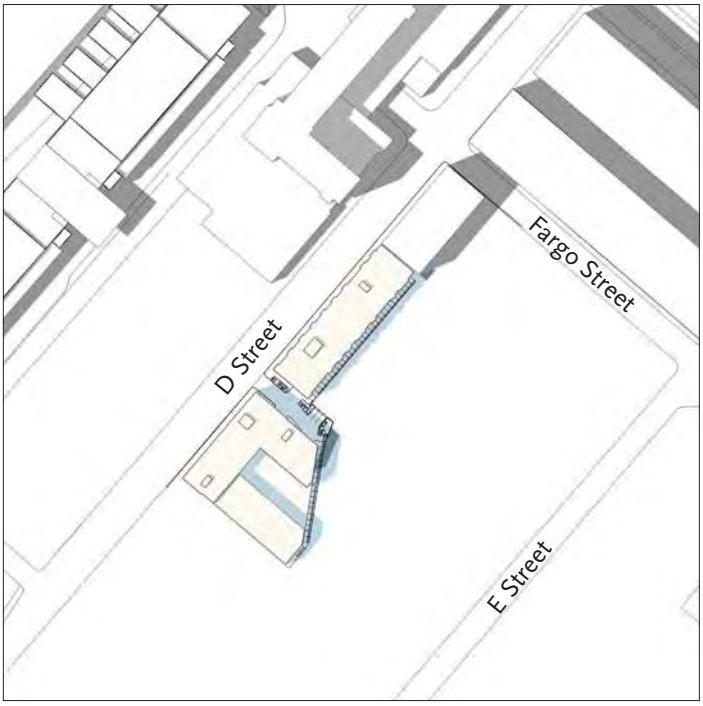

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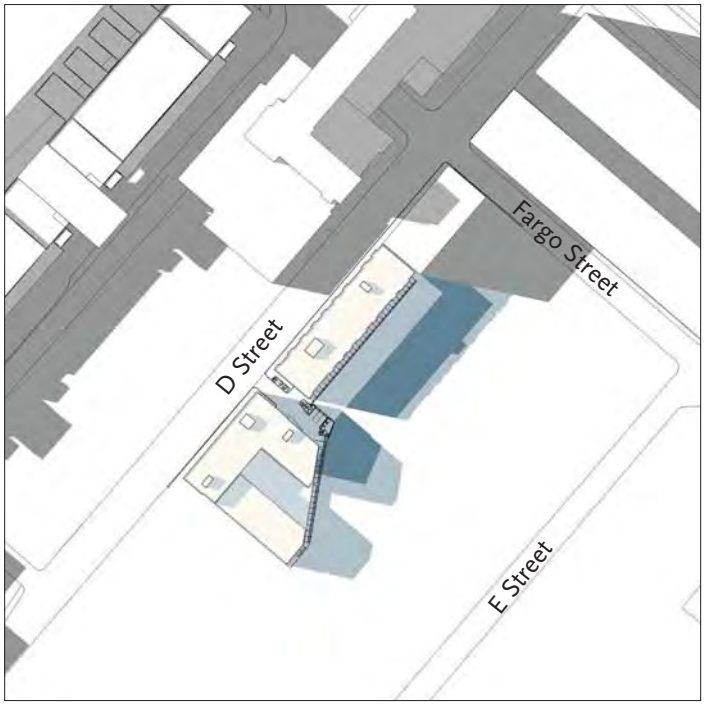


6 PM

Existing Shadow

New Shadow within Existing Shadow

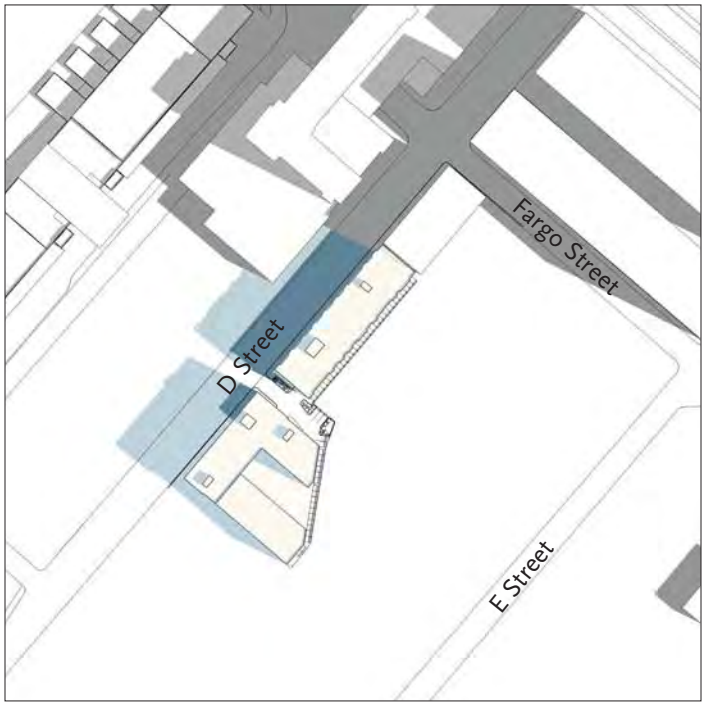
Net New Shadow

Figure 5-2
Shadow Studies - June 21

411 D Street

ELKUS | MANFREDI ARCHITECTS

CRESSET



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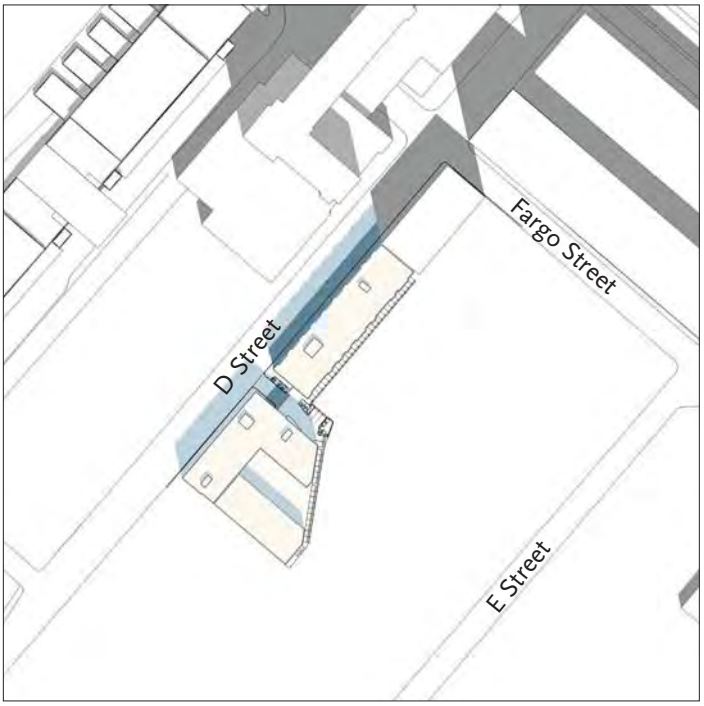

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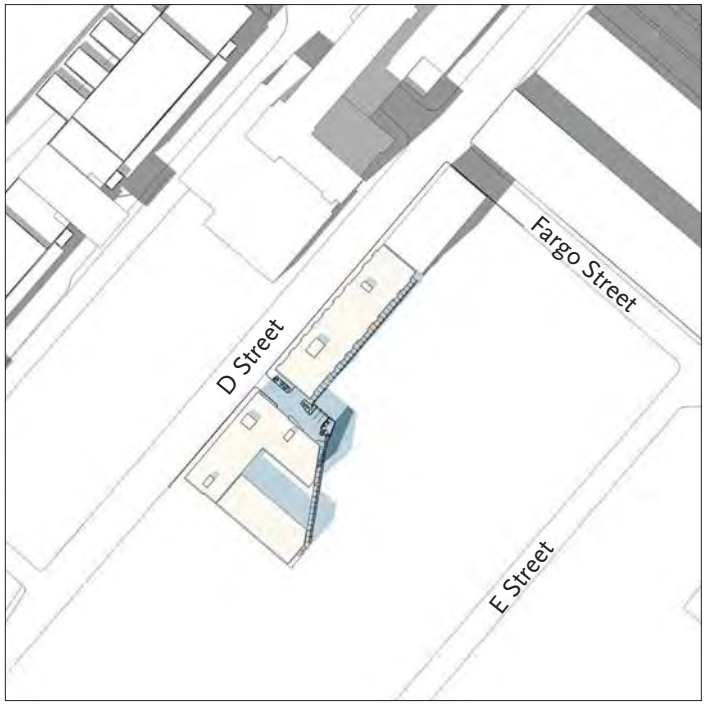

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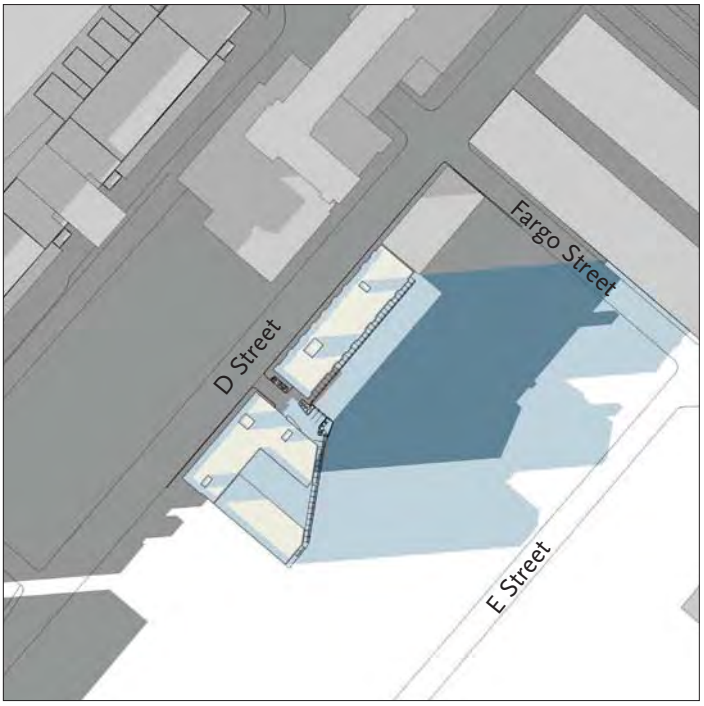

6 PM

Existing Shadow

New Shadow within Existing Shadow

Net New Shadow

Figure 5-3
Shadow Studies - September 21

411 D Street

ELKUS | MANFREDI ARCHITECTS

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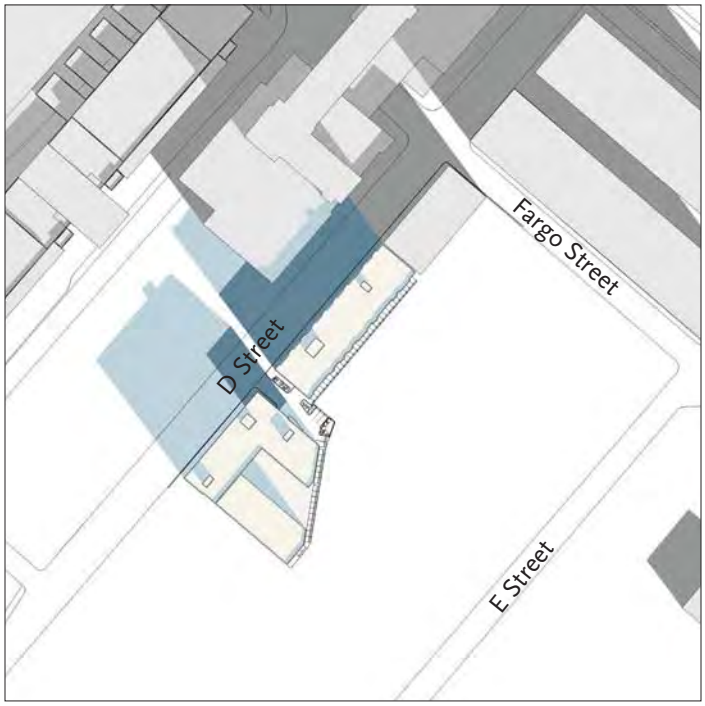

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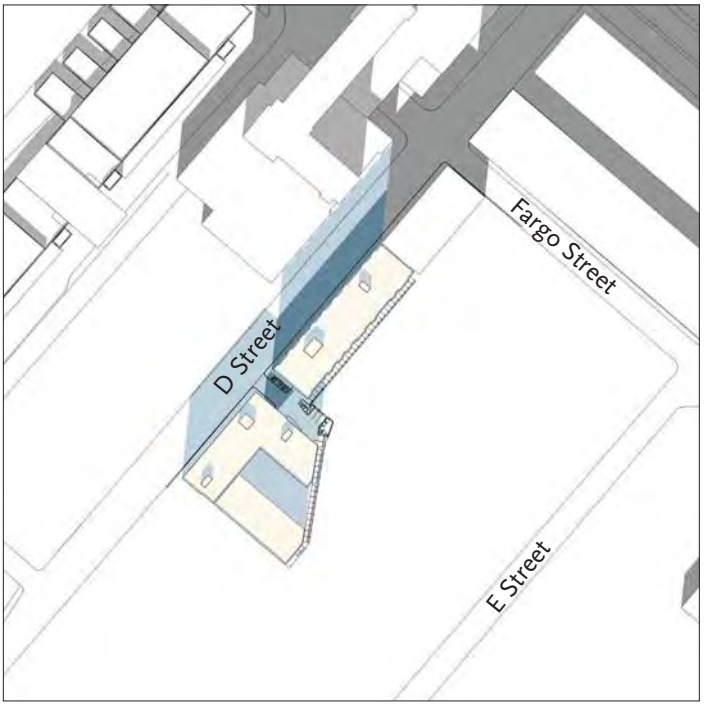

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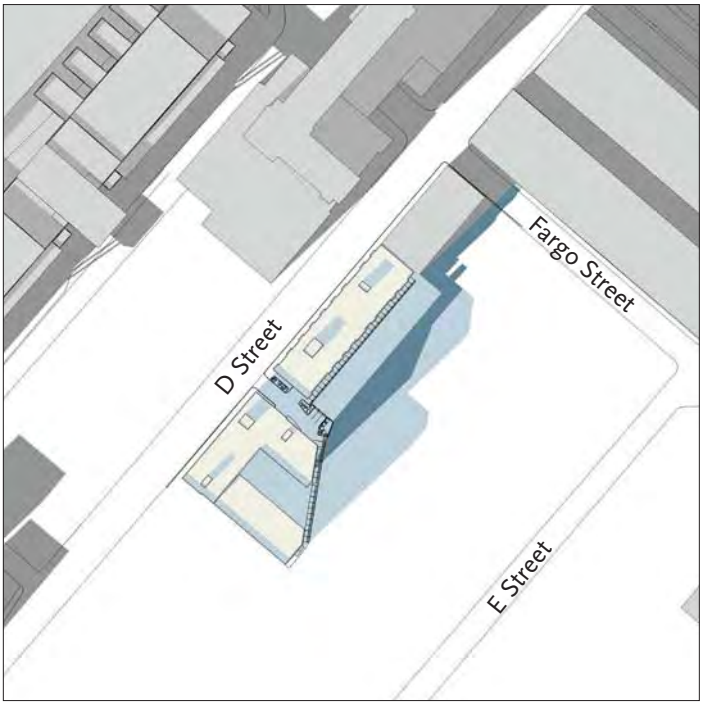


3 PM

Existing Shadow

New Shadow within Existing Shadow

Net New Shadow

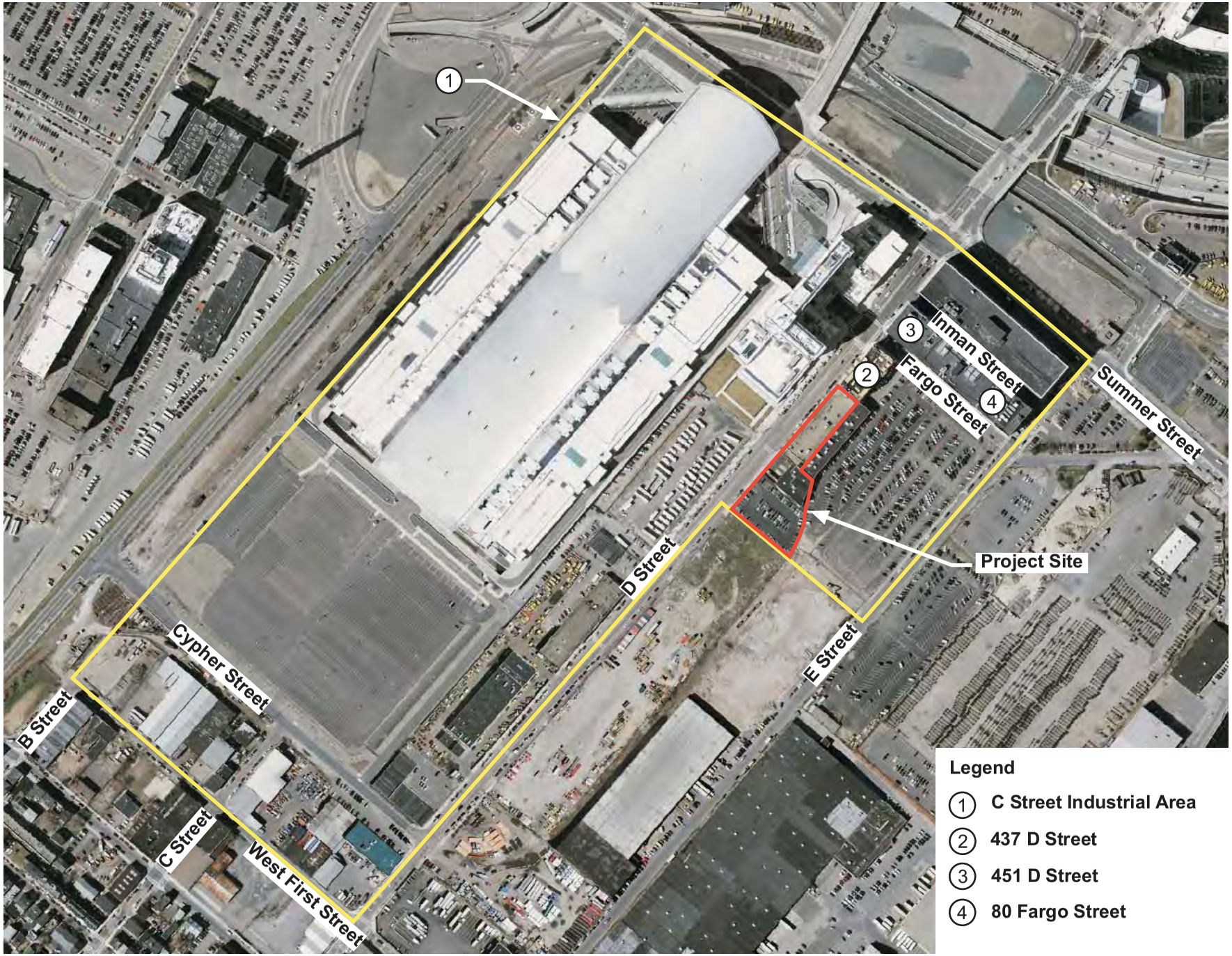
Figure 5-4

Shadow Studies - December 21

411 D Street

ELKUS | MANFREDI ARCHITECTS

CRESSET



411 D STREET
BOSTON, MASSACHUSETTS

Figure 5-5
Historic Resources
source: Massachusetts Historical Commission, 2011

Chapter 6

Infrastructure

6.0 PROJECT DESCRIPTION

6.1 WASTEWATER

6.1.1 EXISTING SEWER SYSTEM

The Boston Water and Sewer Commission owns and maintains the sewer system adjacent to the site (See Figure 6-1, BWSC Sewer System Map). A sewer separation project was completed prior to the Boston Convention and Exhibition Center opening in 2004. A 12-inch ductile iron pipe (sanitary sewer) was installed along the southerly side of D Street as part of this separation project. Three sewer services from the existing building on-site were tied into this pipe.

The 12-inch sanitary sewer continues southwesterly under D Street where it ties into an 18″ x 24″ concrete culvert. Sanitary sewage from this area generally flows into the Boston Main Drainage Tunnel, which delivers the sewage to the Deer Island Treatment Facility.

6.1.2 PROJECT-GENERATED SANITARY SEWER FLOW

The Project will generate an estimated 26,938 gallons per day (gpd) based on design sewer flows provided in 314 CMR 7.00-Sewer System Extension and Connection Permit Program as summarized in Table 6-1.

Table 6-1, Projected Sanitary Sewer Flows

Use	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow (gpd)
Residential Units	242 bed	110 gpd/bedroom	26,620 gpd
Commercial Space	4,237 sf	75 gpd/1,000 sf	318 gpd
Total			**26,938 gpd**

6.1.3 SANITARY SEWER CONNECTION

The proposed buildings sanitary services will tie into the 12-inch sanitary sewer main in D Street. It is expected that each building will have two 6-inch sanitary services. Existing building services will be cut and capped at the main if the wyes are not reused.

The flow full capacity of the 12-inch sanitary sewer adjacent to the site is 1.59 cfs (1.03 MGD). The projected maximum daily sewer flow for the project is 0.027 MGD, which is under 3% of this line's capacity.

The Proponent will submit a Site Plan to the BWSC for review and approval. Based on the proposed estimated sanitary flow, a Compliance Certification will be reviewed and approved by BWSC prior to submitting to the Massachusetts Department of Environmental Protection ("DEP") as required.

6.2 WATER SYSTEM

6.2.1 EXISTING WATER SERVICE

The water mains in the vicinity of the Project Site are owned and maintained by BWSC (see Figure 6-2, BWSC Water System Map). There is a 30-inch cement-lined ductile iron (CLDI) distribution line and a 12-inch CLDI water main located in D Street. Both are part of the Southern Low service network and were installed in 2000. There is also a 16-inch pit cast iron (PCI) water main in D Street. It is part of BWSC's Southern High service network. Originally installed in 1915, it was cleaned and cement-lined in 1997.

According to BWSC records, the existing building has three fire protection services; a 6-inch service near the northerly portion of the building and two 4-inch services located about mid-building. These services are connected to the 16-inch (Southern High) water main in D Street. The building's domestic service is located approximately mid-building and is connected to the 12-inch (Southern Low) water main in D Street.

There are two fire hydrants across the street from the site and it appears they provide sufficient coverage for the project. The Proponent will confirm this with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

6.2.2 ANTICIPATED WATER CONSUMPTION

The maximum daily water demand is estimated to be 29,632 gpd based on the sewage flow estimate and an added factor for system losses including the average requirements for the Project's cooling system. More detailed water use and meter sizing calculations will be submitted to BWSC as part of the Site Plan approval process.

6.2.3 PROPOSED WATER SERVICE

It has not been determined if the development will be served by one domestic service or two. If it is serviced by one domestic water line, it is anticipated that this will be a 4-inch pipe with a 3-inch meter. If each building has its own domestic water service, the setup will likely be a 4-inch pipe with a 2-inch meter for each building. The domestic water services will be tied into the 12-inch water main (Southern Low) with

a tapping sleeve and valve. Water meters will be of a type approved by BWSC and tied into the BWSC's Automatic Meter Reading system. The project will also be served by dedicated fire protection lines. The fire protection services will have separate taps into the 16-inch water main (Southern High).

Irrigation is currently not proposed for the Project. If it is added to the project, the Proponent will provide BWSC an estimate of the water usage. Also, methods to reduce water usage will be investigated including soil moisture indicators and the use of water efficient landscaping.

Existing water services to be abandoned will be cut and capped at the main with the valve box, frame and cover removed. Fire protection service removal will be coordinated with BWSC, BFD, and Inspectional Services Department. A Termination Verification Approval Form for Demolition will be submitted for approval by BWSC prior to demolition of the existing structures. The Contractor will obtain a Hydrant Meter Permit from BWSC if hydrant use is required during construction.

6.2.4 WATER SUPPLY CONSERVATION AND MITIGATION MEASURES

The Proponent is investigating the use of low consumption plumbing fixtures. It is expected that low-flow water closets and showers will be used. Lavatories are expected to have aerated faucets to reduce water usage.

6.3 STORM DRAINAGE SYSTEM

6.3.1 EXISTING STORM DRAINAGE SYSTEM

BWSC owns and maintains an 18″ x 24″ u-shaped concrete sewer in D Street. The sewer collected both sanitary and storm flows until a separate sanitary sewer was installed in D Street in 2001. The 18″ x 24″ sewer now transports only storm drainage near the site. This u-shaped sewer flows southwesterly (approximately 1,100 feet from the site) to a regulating structure where it appears low flows would continue into a combined sewer system in D Street and overflows would be directed into a 72″ pipe that heads southeasterly ultimately discharging into the Reserved Channel.

The current, on-site, storm drain system generally collects runoff and quickly conveys it to the surrounding municipal storm drain system. Little water quality improvement is provided to the stormwater before it leaves the site and almost no recharge is provided.

The northwesterly portion of the surface parking area drains overland where it is collected by a catch basin in D Street. The southeasterly portion of the parking area

drains in a southerly direction to a catch basin off-site that ultimately ties into the municipal system. The existing loading area drains to a catch basin on-site that is tied into the 18″ x 24″ storm drain in D Street. Roof drainage appears to tie directly into the 18″ x 24″ storm drain with the exception of small portion of the roof at southerly portion of the building, which has roof leaders that empty onto the parking area.

6.3.2 PROPOSED STORM DRAINAGE SYSTEM

The project will improve both the quality and quantity of stormwater runoff. Quality will be improved through the installation of deep sump catch basins, a water quality inlet, and an on-site infiltration system. Quantity of runoff will be reduced through additional landscaped area and the proposed stormwater infiltration system.

Runoff from the surface parking area will be collected by deep sump catch basins. Flows to the catch basins will be routed through a water quality inlet (e.g. particle separator) before being piped downstream and tied into the 18″x24″ storm drain in D Street.

The storm drainage from the surface parking area under the building will be pitched to catch basins under the footprint of the building. The catch basins will be piped to an oil and gasoline interceptor and then piped to the 18″x24″ storm drain in D Street.

The proposed buildings will occupy the majority of the site. Runoff from the rooftops will be collected and sent to the proposed infiltration system. Runoff from most rainfall events will be infiltrated to the ground. The infiltration system is expected to have an overflow structure in case the system gets inundated by larger storm events. The overflow structure will be tied into the 18″x24″ storm drain in D Street.

The storm drain system will be designed in accordance with BWSC's design standards and the BWSC "Requirements for Site Plans." A Site Plan will be submitted for BWSC approval and a General Service Application will be completed prior to any off-site drain work. Any drain connections terminated as a result of construction will be cut and capped at the storm drain in the street in accordance with BWSC standards.

An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

Erosion and sediment controls will be used during construction to protect adjacent properties, the municipal storm drain system and the on-site storm drain system. A pollution prevention plan will be prepared for use during construction including during demolition activity.

6.4 ELECTRICAL SERVICE

NSTAR owns and maintains the electrical transmission system located in D Street. The primary feed to service the development is expected to be pulled from an NSTAR manhole in D Street to a pad-mounted transformer on-site.

The electric service for the entire project is expected to be in the range of 2,000 kVA. Demand on the utility will be in the range of 500 – 700 kVA. The proponent is investigating energy conservation measures, including high efficiency lighting.

The street lighting system adjacent to the site consists of dual acorn luminaires in good condition. Construction may require the removal and storage of one or more street lights, which will be reinstalled during the appropriate stage of construction. Work on the City's street lighting system will be approved by the Public Works Department, Street Lighting Section.

6.5 TELECOMMUNICATIONS SYSTEMS

Comcast maintains infrastructure adjacent to the site offering cable television, telephone, and internet services. Verizon maintains copper and fiber lines in D Street, and currently offers telephone and internet services in the area.

6.6 GAS SYSTEMS

National Grid owns and maintains an 8-inch, plastic, intermediate pressure gas main in D Street. The project is expected to use natural gas for heating and domestic hot water. Each building will have its own service. The actual size and location of the building services will be coordinated with National Grid.

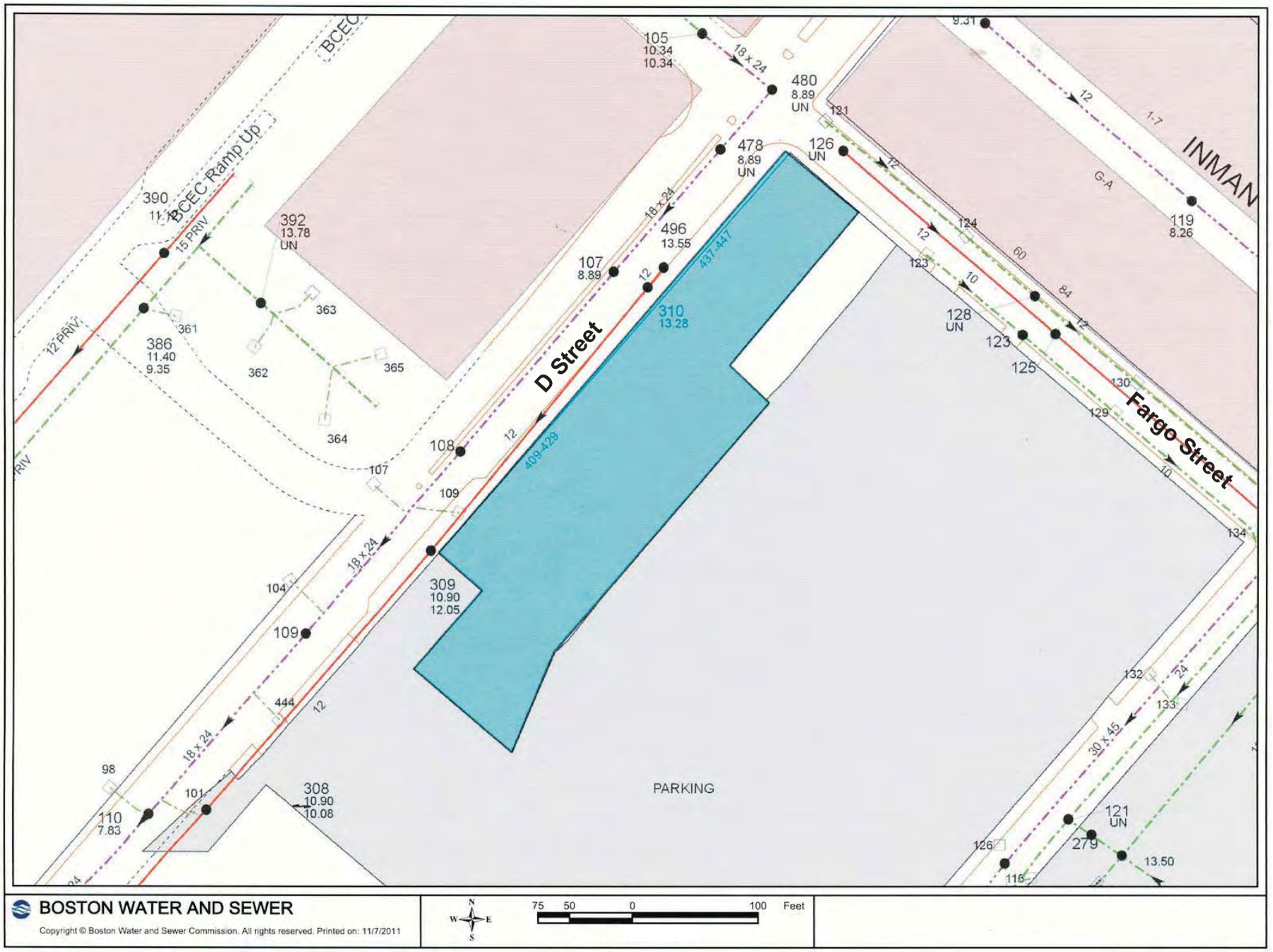
6.7 STEAM SYSTEMS

Veolia Energy does not have steam structures adjacent to the project site.

6.8 UTILITY PROTECTION DURING CONSTRUCTION

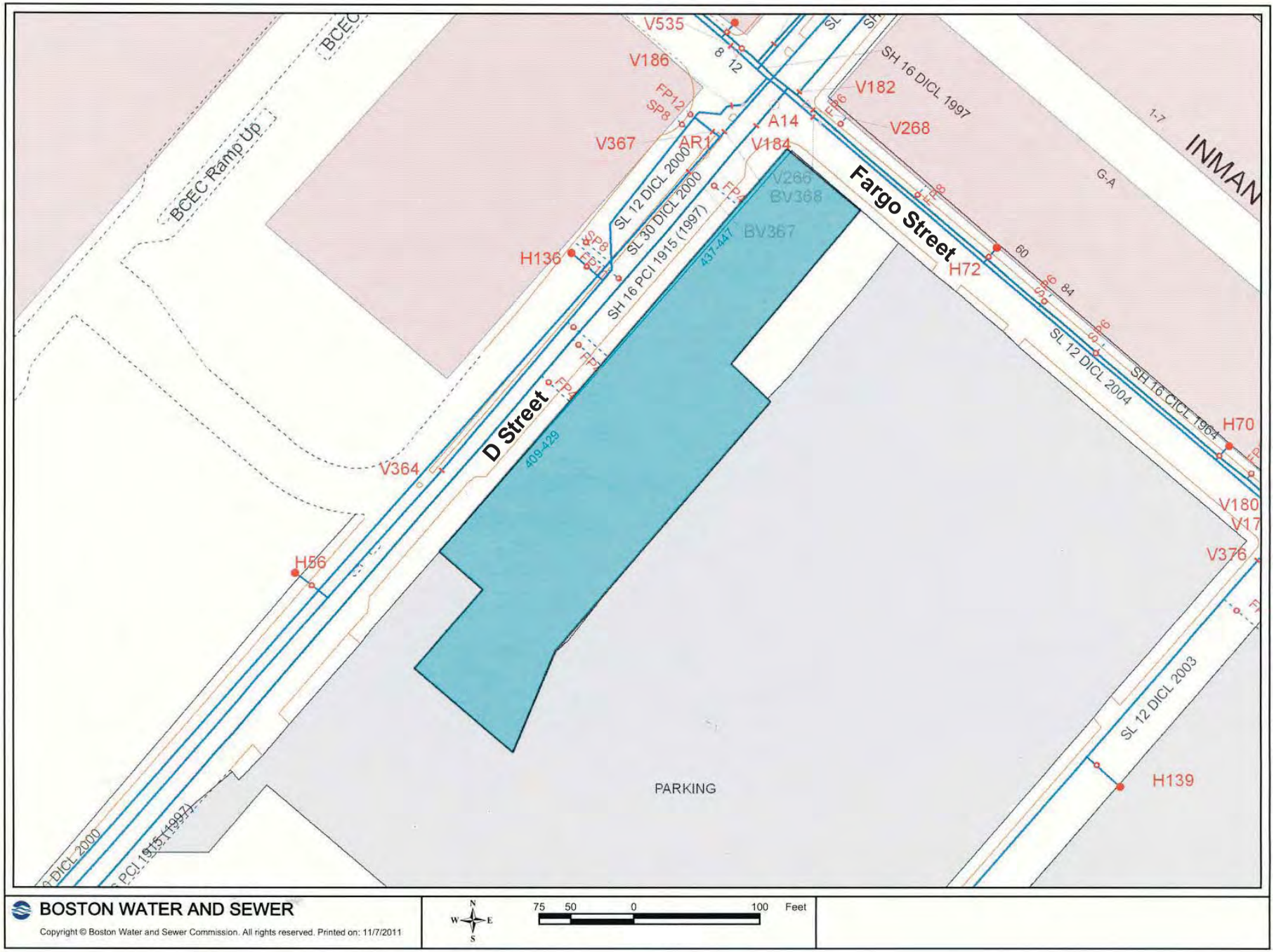
The Contractor will notify utility companies and call "Dig Safe" prior to excavation. During construction, infrastructure will be protected using sheeting and shoring, temporary relocations, and construction staging as required. The Construction Contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility owners and/or agencies. The Construction Contractor will also be required to provide adequate notification to the utility

owner prior to any 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 Construction Contractor will be required to coordinate the shutdown with the utility owners and project abutters to minimize impacts and inconveniences.



411 D STREET
BOSTON, MASSACHUSETTS

Figure 6-1
BWSC Sewer System Map
source: BWSC, 2011



411 D STREET
BOSTON, MASSACHUSETTS

Figure 6-2
BWSC Water System Map
source: BWSC, 2011

Appendix A

Traffic Counts

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
E/W: Summer Street
City, State: South Boston, MA
Client: HSH/ J. SanClemente

File Name : 112683 A
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	D Street From North				Summer Street From East				D Street From South				Summer Street From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00 AM	21	47	40	2	82	53	5	1	7	35	16	0	26	53	22	410
07:15 AM	15	41	40	2	77	62	9	3	8	38	12	0	21	43	16	387
07:30 AM	29	24	45	1	118	66	12	25	9	42	16	0	19	58	26	490
07:45 AM	21	48	36	1	126	67	9	1	14	50	19	1	21	63	25	502
Total	86	160	161	6	403	248	35	30	38	165	63	1	87	217	89	1789
08:00 AM	21	54	37	1	115	88	10	12	4	41	23	2	21	68	34	531
08:15 AM	26	50	33	0	120	86	9	2	17	44	17	0	26	63	27	520
08:30 AM	24	60	40	0	108	92	8	1	13	46	22	0	20	71	32	537
08:45 AM	31	48	43	0	88	85	6	1	10	43	15	0	22	71	36	499
Total	102	212	153	1	431	351	33	16	44	174	77	2	89	273	129	2087
Grand Total	188	372	314	7	834	599	68	46	82	339	140	3	176	490	218	3876
Apprch %	21.3	42.2	35.6	0.8	53.9	38.7	4.4	3	14.5	60.1	24.8	0.5	19.9	55.4	24.7	
Total %	4.9	9.6	8.1	0.2	21.5	15.5	1.8	1.2	2.1	8.7	3.6	0.1	4.5	12.6	5.6	
Cars	178	349	283	7	780	504	49	44	64	292	110	2	164	419	202	3447
% Cars	94.7	93.8	90.1	100	93.5	84.1	72.1	95.7	78	86.1	78.6	66.7	93.2	85.5	92.7	88.9
Heavy Vehicles	10	23	31	0	54	95	19	2	18	47	30	1	12	71	16	429
% Heavy Vehicles	5.3	6.2	9.9	0	6.5	15.9	27.9	4.3	22	13.9	21.4	33.3	6.8	14.5	7.3	11.1

	D Street From North					Summer Street From East					D Street From South					Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:45 AM																				
07:45 AM	21	48	36	**1**	106	**126**	67	9	1	203	14	**50**	19	1	**84**	21	63	25	109	502
08:00 AM	21	54	37	1	113	115	88	**10**	**12**	**225**	4	41	**23**	**2**	70	21	68	**34**	**123**	531
08:15 AM	**26**	50	33	0	109	120	86	9	2	217	**17**	44	17	0	78	**26**	63	27	116	520
08:30 AM	24	**60**	**40**	0	**124**	108	**92**	8	1	209	13	46	22	0	81	20	**71**	32	123	**537**
Total Volume	92	212	146	2	452	469	333	36	16	854	48	181	81	3	313	88	265	118	471	2090
% App. Total	20.4	46.9	32.3	0.4		54.9	39	4.2	1.9		15.3	57.8	25.9	1		18.7	56.3	25.1		
PHF	.885	.883	.913	.500	.911	.931	.905	.900	.333	.949	.706	.905	.880	.375	.932	.846	.933	.868	.957	.973
Cars	89	200	133	2	424	435	282	29	16	762	39	162	66	2	269	80	223	113	416	1871
% Cars	96.7	94.3	91.1	100	93.8	92.8	84.7	80.6	100	89.2	81.3	89.5	81.5	66.7	85.9	90.9	84.2	95.8	88.3	89.5
Heavy Vehicles	3	12	13	0	28	34	51	7	0	92	9	19	15	1	44	8	42	5	55	219
% Heavy Vehicles	3.3	5.7	8.9	0	6.2	7.2	15.3	19.4	0	10.8	18.8	10.5	18.5	33.3	14.1	9.1	15.8	4.2	11.7	10.5

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
E/W: Summer Street
City, State: South Boston, MA
Client: HSH/ J. SanClemente

File Name : 112683 A
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Cars

	D Street From North				Summer Street From East				D Street From South				Summer Street From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00 AM	18	45	34	2	78	40	2	0	7	29	10	0	24	49	19	357
07:15 AM	14	38	33	2	76	54	8	2	4	33	10	0	20	37	16	347
07:30 AM	28	22	43	1	113	57	9	25	5	32	13	0	18	49	22	437
07:45 AM	21	48	32	1	122	61	9	1	10	42	16	1	19	50	25	458
Total	81	153	142	6	389	212	28	28	26	136	49	1	81	185	82	1599
08:00 AM	20	50	35	1	113	75	9	12	4	36	18	1	21	59	32	486
08:15 AM	26	44	31	0	104	68	7	2	14	42	15	0	22	53	27	455
08:30 AM	22	58	35	0	96	78	4	1	11	42	17	0	18	61	29	472
08:45 AM	29	44	40	0	78	71	1	1	9	36	11	0	22	61	32	435
Total	97	196	141	1	391	292	21	16	38	156	61	1	83	234	120	1848
Grand Total	178	349	283	7	780	504	49	44	64	292	110	2	164	419	202	3447
Apprch %	21.8	42.7	34.6	0.9	56.6	36.6	3.6	3.2	13.7	62.4	23.5	0.4	20.9	53.4	25.7	
Total %	5.2	10.1	8.2	0.2	22.6	14.6	1.4	1.3	1.9	8.5	3.2	0.1	4.8	12.2	5.9	

	D Street From North					Summer Street From East					D Street From South					Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:45 AM																				
07:45 AM	21	48	32	**1**	102	**122**	61	**9**	1	193	10	**42**	16	**1**	69	19	50	25	94	458
08:00 AM	20	50	**35**	1	106	113	75	9	**12**	**209**	4	36	**18**	1	59	21	59	**32**	**112**	**486**
08:15 AM	**26**	44	31	0	101	104	68	7	2	181	**14**	42	15	0	**71**	**22**	53	27	102	455
08:30 AM	22	**58**	35	0	**115**	96	**78**	4	1	179	11	42	17	0	70	18	**61**	29	108	472
Total Volume	89	200	133	2	424	435	282	29	16	762	39	162	66	2	269	80	223	113	416	1871
% App. Total	21	47.2	31.4	0.5		57.1	37	3.8	2.1		14.5	60.2	24.5	0.7		19.2	53.6	27.2		
PHF	.856	.862	.950	.500	.922	.891	.904	.806	.333	.911	.696	.964	.917	.500	.947	.909	.914	.883	.929	.962

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
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City, State: South Boston, MA
Client: HSH/ J. SanClemente

File Name : 112683 A
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Heavy Vehicles

	D Street From North				Summer Street From East				D Street From South				Summer Street From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00 AM	3	2	6	0	4	13	3	1	0	6	6	0	2	4	3	53
07:15 AM	1	3	7	0	1	8	1	1	4	5	2	0	1	6	0	40
07:30 AM	1	2	2	0	5	9	3	0	4	10	3	0	1	9	4	53
07:45 AM	0	0	4	0	4	6	0	0	4	8	3	0	2	13	0	44
Total	5	7	19	0	14	36	7	2	12	29	14	0	6	32	7	190
08:00 AM	1	4	2	0	2	13	1	0	0	5	5	1	0	9	2	45
08:15 AM	0	6	2	0	16	18	2	0	3	2	2	0	4	10	0	65
08:30 AM	2	2	5	0	12	14	4	0	2	4	5	0	2	10	3	65
08:45 AM	2	4	3	0	10	14	5	0	1	7	4	0	0	10	4	64
Total	5	16	12	0	40	59	12	0	6	18	16	1	6	39	9	239
Grand Total	10	23	31	0	54	95	19	2	18	47	30	1	12	71	16	429
Apprch %	15.6	35.9	48.4	0	31.8	55.9	11.2	1.2	18.8	49	31.2	1	12.1	71.7	16.2	
Total %	2.3	5.4	7.2	0	12.6	22.1	4.4	0.5	4.2	11	7	0.2	2.8	16.6	3.7	

	D Street From North					Summer Street From East					D Street From South					Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 08:00 AM																				
08:00 AM	1	4	2	0	7	2	13	1	0	16	0	5	**5**	**1**	11	0	9	2	11	45
08:15 AM	0	**6**	2	0	8	**16**	**18**	2	0	**36**	**3**	2	2	0	7	**4**	**10**	0	14	**65**
08:30 AM	**2**	2	**5**	0	**9**	12	14	4	0	30	2	4	5	0	11	2	10	3	**15**	65
08:45 AM	2	4	3	0	9	10	14	**5**	0	29	1	**7**	4	0	**12**	0	10	**4**	14	64
Total Volume	5	16	12	0	33	40	59	12	0	111	6	18	16	1	41	6	39	9	54	239
% App. Total	15.2	48.5	36.4	0		36	53.2	10.8	0		14.6	43.9	39	2.4		11.1	72.2	16.7		
PHF	.625	.667	.600	.000	.917	.625	.819	.600	.000	.771	.500	.643	.800	.250	.854	.375	.975	.563	.900	.919

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Page No : 1

Groups Printed- Peds and Bicycles

	D Street From North				Summer Street From East				D Street From South				Summer Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	3	0	1	0	4	0	1	1	5	0	0	0	10	25
07:15 AM	0	0	0	1	0	1	0	4	0	0	1	6	0	1	0	8	22
07:30 AM	0	0	0	5	2	1	0	16	0	0	1	10	0	2	0	10	47
07:45 AM	0	0	0	4	0	3	0	12	0	2	0	13	1	1	0	5	41
Total	0	0	0	13	2	6	0	36	0	3	3	34	1	4	0	33	135
08:00 AM	0	0	0	4	0	0	0	6	0	1	0	8	0	3	0	3	25
08:15 AM	0	0	0	5	0	4	0	7	0	0	0	18	0	2	0	6	42
08:30 AM	0	0	0	9	0	0	0	11	0	2	0	14	0	4	0	5	45
08:45 AM	0	0	0	6	0	0	0	13	0	0	0	16	0	3	1	9	48
Total	0	0	0	24	0	4	0	37	0	3	0	56	0	12	1	23	160
Grand Total	0	0	0	37	2	10	0	73	0	6	3	90	1	16	1	56	295
Apprch %	0	0	0	100	2.4	11.8	0	85.9	0	6.1	3	90.9	1.4	21.6	1.4	75.7	
Total %	0	0	0	12.5	0.7	3.4	0	24.7	0	2	1	30.5	0.3	5.4	0.3	19	

	D Street From North					Summer Street From East					D Street From South					Summer Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	4	4	0	0	0	6	6	0	1	0	8	9	0	3	0	3	6	25
08:15 AM	0	0	0	5	5	0	**4**	**0**	**7**	**11**	**0**	**0**	**0**	**18**	**18**	0	2	0	6	8	42
08:30 AM	0	0	0	**9**	**9**	0	0	0	11	11	0	**2**					**4**	0	5	9	45
08:45 AM	0	0	0	6	6	0	0	0	**13**	**13**	0	0	0	16	16	0	3	**1**	**9**	**13**	**48**
Total Volume	0	0	0	24	24	0	4	0	37	41	0	3	0	56	59	0	12	1	23	36	160
% App. Total	0	0	0	100		0	9.8	0	90.2		0	5.1	0	94.9		0	33.3	2.8	63.9		
PHF	.000	.000	.000	.667	.667	.000	.250	.000	.712	.788	.000	.375	.000	.778	.819	.000	.750	.250	.639	.692	.833

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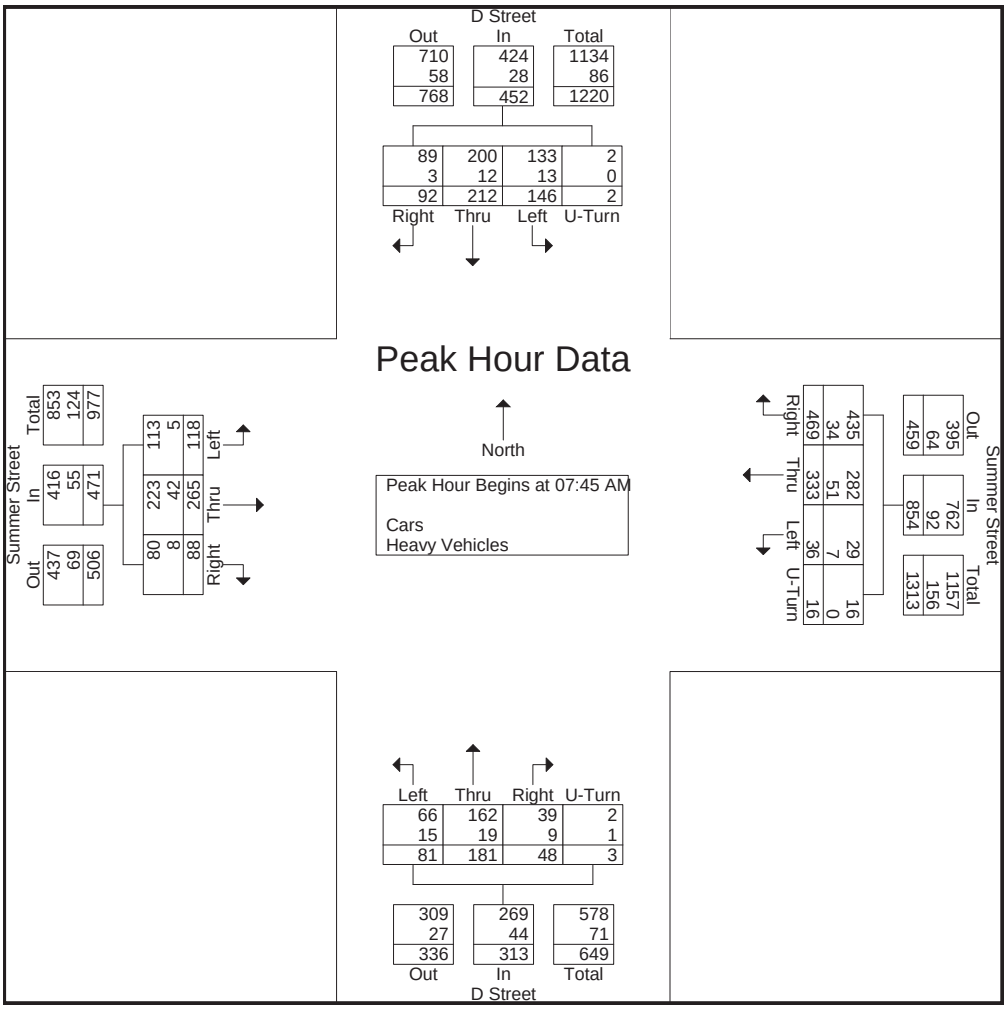
	D Street From North					Summer Street From East					D Street From South					Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:45 AM																				
07:45 AM	21	48	36	**1**	106	**126**	67	9	1	203	14	**50**	19	1	**84**	21	63	25	109	502
08:00 AM	21	54	37	1	113	115	88	**10**	**12**	**225**	4	41	**23**	**2**	70	21	68	**34**	**123**	531
08:15 AM	**26**	50	33	0	109	120	86	9	2	217	**17**	44	17	0	78	**26**	63	27	116	520
08:30 AM	24	**60**	**40**	0	**124**	108	**92**	8	1	209	13	46	22	0	81	20	**71**	32	123	**537**
Total Volume	92	212	146	2	452	469	333	36	16	854	48	181	81	3	313	88	265	118	471	2090
% App. Total	20.4	46.9	32.3	0.4		54.9	39	4.2	1.9		15.3	57.8	25.9	1		18.7	56.3	25.1		
PHF	.885	.883	.913	.500	.911	.931	.905	.900	.333	.949	.706	.905	.880	.375	.932	.846	.933	.868	.957	.973
Cars	89	200	133	2	424	435	282	29	16	762	39	162	66	2	269	80	223	113	416	1871
% Cars	96.7	94.3	91.1	100	93.8	92.8	84.7	80.6	100	89.2	81.3	89.5	81.5	66.7	85.9	90.9	84.2	95.8	88.3	89.5
Heavy Vehicles	3	12	13	0	28	34	51	7	0	92	9	19	15	1	44	8	42	5	55	219
% Heavy Vehicles	3.3	5.7	8.9	0	6.2	7.2	15.3	19.4	0	10.8	18.8	10.5	18.5	33.3	14.1	9.1	15.8	4.2	11.7	10.5



PRECISION DATA INDUSTRIES, LLC
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Groups Printed- Cars - Heavy Vehicles

	D Street From North				Summer Street From East				D Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	17	44	47	1	58	56	6	0	10	57	18	0	19	84	65	0	482
04:15 PM	20	34	63	2	72	41	5	1	8	43	6	2	20	74	53	0	444
04:30 PM	19	61	54	0	66	46	13	0	4	44	12	1	23	81	59	0	483
04:45 PM	25	52	64	0	57	48	10	0	5	42	17	2	15	85	46	1	469
Total	81	191	228	3	253	191	34	1	27	186	53	5	77	324	223	1	1878
05:00 PM	17	42	60	0	72	44	6	0	4	64	19	1	22	100	65	0	516
05:15 PM	13	49	72	0	53	60	10	0	2	58	12	1	23	107	62	0	522
05:30 PM	16	61	73	0	43	48	14	0	2	45	8	0	21	94	74	2	501
05:45 PM	21	63	95	0	50	35	9	0	6	39	9	3	21	95	55	1	502
Total	67	215	300	0	218	187	39	0	14	206	48	5	87	396	256	3	2041
Grand Total	148	406	528	3	471	378	73	1	41	392	101	10	164	720	479	4	3919
Apprch %	13.6	37.4	48.7	0.3	51	41	7.9	0.1	7.5	72.1	18.6	1.8	12	52.7	35	0.3	
Total %	3.8	10.4	13.5	0.1	12	9.6	1.9	0	1	10	2.6	0.3	4.2	18.4	12.2	0.1	
Cars	142	384	514	3	440	343	66	1	36	370	90	10	143	667	462	4	3675
% Cars	95.9	94.6	97.3	100	93.4	90.7	90.4	100	87.8	94.4	89.1	100	87.2	92.6	96.5	100	93.8
Heavy Vehicles	6	22	14	0	31	35	7	0	5	22	11	0	21	53	17	0	244
% Heavy Vehicles	4.1	5.4	2.7	0	6.6	9.3	9.6	0	12.2	5.6	10.9	0	12.8	7.4	3.5	0	6.2

	D Street From North					Summer Street From East					D Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	42	60	0	119	**72**	44	6	0	122	4	**64**	**19**	1	**88**	22	100	65	0	187	516
05:15 PM	13	49	72	0	134	53	**60**			**123**	2	58	12	1	73	**23**	**107**	62	0	**192**	**522**
05:30 PM	16	61	73	0	150	43	48	**14**										**74**	**2**		
05:45 PM	**21**	**63**	**95**	**0**	**179**	50	35	9	0	94	**6**	**39**	**9**	**3**	**57**	**21**	**95**	**55**	**1**	**172**	**502**
Total Volume	67	215	300	0	582	218	187	39	0	444	14	206	48	5	273	87	396	256	3	742	2041
% App. Total	11.5	36.9	51.5	0		49.1	42.1	8.8	0		5.1	75.5	17.6	1.8		11.7	53.4	34.5	0.4		
PHF	.798	.853	.789	.000	.813	.757	.779	.696	.000	.902	.583	.805	.632	.417	.776	.946	.925	.865	.375	.966	.977
Cars	63	203	296	0	562	212	169	39	0	420	12	195	41	5	253	79	371	250	3	703	1938
% Cars	94.0	94.4	98.7	0	96.6	97.2	90.4	100	0	94.6	85.7	94.7	85.4	100	92.7	90.8	93.7	97.7	100	94.7	95.0
Heavy Vehicles	4	12	4	0	20	6	18	0	0	24	2	11	7	0	20	8	25	6	0	39	103
% Heavy Vehicles	6.0	5.6	1.3	0	3.4	2.8	9.6	0	0	5.4	14.3	5.3	14.6	0	7.3	9.2	6.3	2.3	0	5.3	5.0

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
E/W: Summer Street
City, State: South Boston, MA
Client: HSH/ J. SanClemente

File Name : 112683 AA
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Cars

	D Street From North				Summer Street From East				D Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	16	43	44	1	55	52	4	0	8	56	17	0	15	73	61	0	445
04:15 PM	19	33	62	2	57	37	4	1	7	36	5	2	15	71	49	0	400
04:30 PM	19	57	52	0	63	41	9	0	4	43	12	1	21	73	56	0	451
04:45 PM	25	48	60	0	53	44	10	0	5	40	15	2	13	79	46	1	441
Total	79	181	218	3	228	174	27	1	24	175	49	5	64	296	212	1	1737
05:00 PM	17	41	58	0	69	38	6	0	2	61	19	1	21	97	63	0	493
05:15 PM	12	48	72	0	52	54	10	0	2	54	10	1	21	101	60	0	497
05:30 PM	15	58	72	0	42	44	14	0	2	45	5	0	18	85	72	2	474
05:45 PM	19	56	94	0	49	33	9	0	6	35	7	3	19	88	55	1	474
Total	63	203	296	0	212	169	39	0	12	195	41	5	79	371	250	3	1938
Grand Total	142	384	514	3	440	343	66	1	36	370	90	10	143	667	462	4	3675
Apprch %	13.6	36.8	49.3	0.3	51.8	40.4	7.8	0.1	7.1	73.1	17.8	2	11.2	52.3	36.2	0.3	
Total %	3.9	10.4	14	0.1	12	9.3	1.8	0	1	10.1	2.4	0.3	3.9	18.1	12.6	0.1	

	D Street From North					Summer Street From East					D Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	41	58	0	116	**69**	38	6	0	113	2	**61**	**19**	1	**83**	**21**	**97**	**63**	**0**	**181**	**493**
05:15 PM	**12**	**48**	**72**	**0**	**132**	**52**	**54**	**10**	**0**	**116**	2	54	10	1	67	21	**101**	60	0	**182**	**497**
05:30 PM	15	**58**	72	0	145	42	44	**14**										**72**	**2**		
05:45 PM	**19**	**56**	**94**	**0**	**169**	49	33	9	0	91	**6**	**35**	**7**	**3**	**51**	**19**	**88**	**55**	**1**	**163**	**474**
Total Volume	63	203	296	0	562	212	169	39	0	420	12	195	41	5	253	79	371	250	3	703	1938
% App. Total	11.2	36.1	52.7	0		50.5	40.2	9.3	0		4.7	77.1	16.2	2		11.2	52.8	35.6	0.4		
PHF	.829	.875	.787	.000	.831	.768	.782	.696	.000	.905	.500	.799	.539	.417	.762	.940	.918	.868	.375	.966	.975

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
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City, State: South Boston, MA
Client: HSH/ J. SanClemente

File Name : 112683 AA
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Heavy Vehicles

	D Street From North				Summer Street From East				D Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	1	1	3	0	3	4	2	0	2	1	1	0	4	11	4	0	37
04:15 PM	1	1	1	0	15	4	1	0	1	7	1	0	5	3	4	0	44
04:30 PM	0	4	2	0	3	5	4	0	0	1	0	0	2	8	3	0	32
04:45 PM	0	4	4	0	4	4	0	0	0	2	2	0	2	6	0	0	28
Total	2	10	10	0	25	17	7	0	3	11	4	0	13	28	11	0	141
05:00 PM	0	1	2	0	3	6	0	0	2	3	0	0	1	3	2	0	23
05:15 PM	1	1	0	0	1	6	0	0	0	4	2	0	2	6	2	0	25
05:30 PM	1	3	1	0	1	4	0	0	0	0	3	0	3	9	2	0	27
05:45 PM	2	7	1	0	1	2	0	0	0	4	2	0	2	7	0	0	28
Total	4	12	4	0	6	18	0	0	2	11	7	0	8	25	6	0	103
Grand Total	6	22	14	0	31	35	7	0	5	22	11	0	21	53	17	0	244
Apprch %	14.3	52.4	33.3	0	42.5	47.9	9.6	0	13.2	57.9	28.9	0	23.1	58.2	18.7	0	
Total %	2.5	9	5.7	0	12.7	14.3	2.9	0	2	9	4.5	0	8.6	21.7	7	0	

	D Street From North					Summer Street From East					D Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**1**	**1**	**3**	**0**	**5**	**3**	**4**	**2**	**0**	**9**	**2**	**1**	**1**	**0**	**4**	**4**	**11**	**4**	**0**	**19**	37
04:15 PM	1	1	1	0	3	**15**	4	1	0	**20**	1	**7**			**9**	**5**					**44**
04:30 PM	0	**4**	2	0	6	3	**5**	**4**													
04:45 PM	**0**	**4**	**4**	**0**	**8**	4	4	0	0	8	0	2	**2**	0	4	2	6	0	0	8	28
Total Volume	2	10	10	0	22	25	17	7	0	49	3	11	4	0	18	13	28	11	0	52	141
% App. Total	9.1	45.5	45.5	0		51	34.7	14.3	0		16.7	61.1	22.2	0		25	53.8	21.2	0		
PHF	.500	.625	.625	.000	.688	.417	.850	.438	.000	.613	.375	.393	.500	.000	.500	.650	.636	.688	.000	.684	.801

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
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Client: HSH/ J. SanClemente

File Name : 112683 AA
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Peds and Bicycles

	D Street From North				Summer Street From East				D Street From South				Summer Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	6	0	0	0	3	0	0	1	2	0	2	0	5	19
04:15 PM	0	1	0	7	0	2	0	2	0	0	1	5	0	0	0	5	23
04:30 PM	0	1	0	4	0	0	0	8	0	0	2	7	0	2	0	7	31
04:45 PM	0	0	0	11	0	1	0	10	0	0	0	8	1	0	0	6	37
Total	0	2	0	28	0	3	0	23	0	0	4	22	1	4	0	23	110
05:00 PM	0	0	0	3	0	2	0	12	0	0	0	7	0	1	0	9	34
05:15 PM	0	0	2	10	0	3	0	16	0	0	0	15	2	3	0	21	72
05:30 PM	0	0	0	12	1	3	0	14	0	0	0	19	1	1	0	26	77
05:45 PM	0	0	0	9	1	1	0	26	0	3	0	26	2	0	0	10	78
Total	0	0	2	34	2	9	0	68	0	3	0	67	5	5	0	66	261
Grand Total	0	2	2	62	2	12	0	91	0	3	4	89	6	9	0	89	371
Apprch %	0	3	3	93.9	1.9	11.4	0	86.7	0	3.1	4.2	92.7	5.8	8.7	0	85.6	
Total %	0	0.5	0.5	16.7	0.5	3.2	0	24.5	0	0.8	1.1	24	1.6	2.4	0	24	

	D Street From North					Summer Street From East					D Street From South					Summer Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	3	3	0	2	0	12	14	0	0	0	7	7	0	1	0	9	10	34
05:15 PM	0	0	**2**	**10**	**12**	0	**3**	**0**	**16**	**19**	**0**	**0**	**0**	**15**	**15**	**2**	**3**	0	21	26	72
05:30 PM	0	0	0	**12**		**1**	3	0	14	18	0	0	0	19	19	1	1	0	**26**	**28**	77
05:45 PM	0	0	0	9	9	1	1	0	**26**	**28**	0	**3**		**26**	**29**	2	0	0	10	12	**78**
Total Volume	0	0	2	34	36	2	9	0	68	79	0	3	0	67	70	5	5	0	66	76	261
% App. Total	0	0	5.6	94.4		2.5	11.4	0	86.1		0	4.3	0	95.7		6.6	6.6	0	86.8		
PHF	.000	.000	.250	.708	.750	.500	.750	.000	.654	.705	.000	.250	.000	.644	.603	.625	.417	.000	.635	.679	.837

PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

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File Name : 112683 AA
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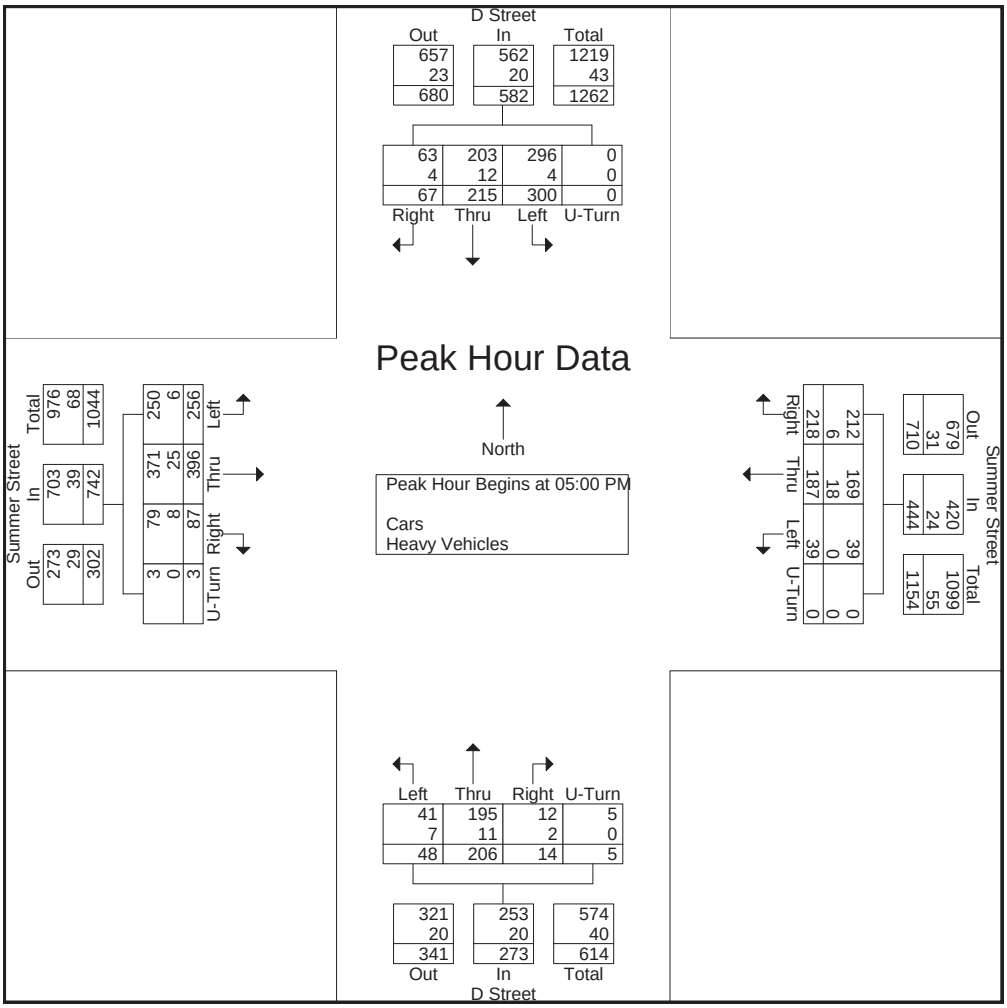
Start Date : 11/2/2011
Page No : 1

	D Street From North					Summer Street From East					D Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	42	60	0	119	**72**	44	6	0	122	4	**64**	**19**	1	**88**	22	100	65	0	187	516
05:15 PM	13	49	72	0	134	53	**60**			**123**	2	58	12	1	73	**23**	**107**	62	0	**192**	**522**
05:30 PM	16	61	73	0	150	43	48	**14**										**74**	**2**		
05:45 PM	**21**	**63**	**95**	**0**	**179**	50	35	9	0	94	**6**	**39**	**9**	**3**	**57**	**21**	**95**	**55**	**1**	**172**	**502**
Total Volume	67	215	300	0	582	218	187	39	0	444	14	206	48	5	273	87	396	256	3	742	2041
% App. Total	11.5	36.9	51.5	0		49.1	42.1	8.8	0		5.1	75.5	17.6	1.8		11.7	53.4	34.5	0.4		
PHF	.798	.853	.789	.000	.813	.757	.779	.696	.000	.902	.583	.805	.632	.417	.776	.946	.925	.865	.375	.966	.977
Cars	63	203	296	0	562	212	169	39	0	420	12	195	41	5	253	79	371	250	3	703	1938
% Cars	94.0	94.4	98.7	0	96.6	97.2	90.4	100	0	94.6	85.7	94.7	85.4	100	92.7	90.8	93.7	97.7	100	94.7	95.0
Heavy Vehicles	4	12	4	0	20	6	18	0	0	24	2	11	7	0	20	8	25	6	0	39	103
% Heavy Vehicles	6.0	5.6	1.3	0	3.4	2.8	9.6	0	0	5.4	14.3	5.3	14.6	0	7.3	9.2	6.3	2.3	0	5.3	5.0



PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
E/W: Fargo Street/ BCEC Driveway
City, State: South Boston, MA
Client: HSH/J. SanClemente

File Name : 112683 B
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	D Street From North				Fargo Street From East			D Street From South				BCEC Driveway From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00 AM	0	45	29	1	11	1	3	3	43	0	0	0	0	1	137
07:15 AM	0	43	27	3	10	2	0	11	43	4	1	2	0	1	147
07:30 AM	2	35	25	1	15	0	3	12	45	2	1	2	0	3	146
07:45 AM	1	51	31	1	13	0	3	17	68	0	0	0	0	2	187
Total	3	174	112	6	49	3	9	43	199	6	2	4	0	7	617
08:00 AM	0	46	37	0	11	0	3	9	61	1	1	1	0	1	171
08:15 AM	2	46	38	3	9	0	2	7	64	1	0	1	0	0	173
08:30 AM	2	53	29	0	17	1	7	14	57	1	0	2	0	1	184
08:45 AM	2	45	39	2	13	1	6	5	43	0	0	1	0	6	163
Total	6	190	143	5	50	2	18	35	225	3	1	5	0	8	691
Grand Total	9	364	255	11	99	5	27	78	424	9	3	9	0	15	1308
Apprch %	1.4	57	39.9	1.7	75.6	3.8	20.6	15.2	82.5	1.8	0.6	37.5	0	62.5	
Total %	0.7	27.8	19.5	0.8	7.6	0.4	2.1	6	32.4	0.7	0.2	0.7	0	1.1	
Cars	7	322	247	10	67	3	17	63	370	5	3	8	0	8	1130
% Cars	77.8	88.5	96.9	90.9	67.7	60	63	80.8	87.3	55.6	100	88.9	0	53.3	86.4
Heavy Vehicles	2	42	8	1	32	2	10	15	54	4	0	1	0	7	178
% Heavy Vehicles	22.2	11.5	3.1	9.1	32.3	40	37	19.2	12.7	44.4	0	11.1	0	46.7	13.6

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45 AM																			
07:45 AM	1	51	31	1	84	13	0	3	16	**17**	**68**	0	0	**85**	0	0	**2**	2	**187**
08:00 AM	0	46	37	0	83	11	0	3	14	9	61	**1**	**1**	72	1	0	1	2	171
08:15 AM	**2**	46	**38**	**3**	**89**	9	0	2	11	7	64	1	0	72	1	0	0	1	173
08:30 AM	2	**53**	29	0	84	**17**	**1**	**7**	**25**	14	57	1	0	72	**2**	0	1	**3**	184
Total Volume	5	196	135	4	340	50	1	15	66	47	250	3	1	301	4	0	4	8	715
% App. Total	1.5	57.6	39.7	1.2		75.8	1.5	22.7		15.6	83.1	1	0.3		50	0	50		
PHF	.625	.925	.888	.333	.955	.735	.250	.536	.660	.691	.919	.750	.250	.885	.500	.000	.500	.667	.956
Cars	4	176	132	4	316	33	1	8	42	37	227	1	1	266	4	0	1	5	629
% Cars	80.0	89.8	97.8	100	92.9	66.0	100	53.3	63.6	78.7	90.8	33.3	100	88.4	100	0	25.0	62.5	88.0
Heavy Vehicles	1	20	3	0	24	17	0	7	24	10	23	2	0	35	0	0	3	3	86
% Heavy Vehicles	20.0	10.2	2.2	0	7.1	34.0	0	46.7	36.4	21.3	9.2	66.7	0	11.6	0	0	75.0	37.5	12.0

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Groups Printed- Cars

	D Street From North				Fargo Street From East			D Street From South				BCEC Driveway From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00 AM	0	40	29	0	9	1	2	3	34	0	0	0	0	0	118
07:15 AM	0	39	25	3	8	1	0	8	34	3	1	2	0	1	125
07:30 AM	2	31	22	1	7	0	2	10	38	1	1	2	0	2	119
07:45 AM	1	50	30	1	7	0	1	12	60	0	0	0	0	1	163
Total	3	160	106	5	31	2	5	33	166	4	2	4	0	4	525
08:00 AM	0	42	37	0	8	0	2	6	55	0	1	1	0	0	152
08:15 AM	1	38	36	3	7	0	1	5	60	1	0	1	0	0	153
08:30 AM	2	46	29	0	11	1	4	14	52	0	0	2	0	0	161
08:45 AM	1	36	39	2	10	0	5	5	37	0	0	0	0	4	139
Total	4	162	141	5	36	1	12	30	204	1	1	4	0	4	605
Grand Total	7	322	247	10	67	3	17	63	370	5	3	8	0	8	1130
Apprch %	1.2	54.9	42.2	1.7	77	3.4	19.5	14.3	83.9	1.1	0.7	50	0	50	
Total %	0.6	28.5	21.9	0.9	5.9	0.3	1.5	5.6	32.7	0.4	0.3	0.7	0	0.7	

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45 AM																			
07:45 AM	1	**50**	30	1	**82**	7	0	1	8	12	**60**	0	0	**72**	0	0	**1**	1	**163**
08:00 AM	0	42	**37**	0	79	8	0	2	10	6	55	0	**1**	62	1	0	0	1	152
08:15 AM	1	38	36	**3**	78	7	0	1	8	5	60	**1**							
08:30 AM	**2**	46	29	0	77	**11**	**1**	**4**	**16**	**14**	**52**	**0**	**0**	**66**	**2**	0	0	**2**	161
Total Volume	4	176	132	4	316	33	1	8	42	37	227	1	1	266	4	0	1	5	629
% App. Total	1.3	55.7	41.8	1.3		78.6	2.4	19		13.9	85.3	0.4	0.4		80	0	20		
PHF	.500	.880	.892	.333	.963	.750	.250	.500	.656	.661	.946	.250	.250	.924	.500	.000	.250	.625	.965

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
E/W: Fargo Street/ BCEC Driveway
City, State: South Boston, MA
Client: HSH/J. SanClemente

File Name : 112683 B
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Heavy Vehicles

	D Street From North				Fargo Street From East			D Street From South				BCEC Driveway From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00 AM	0	5	0	1	2	0	1	0	9	0	0	0	0	1	19
07:15 AM	0	4	2	0	2	1	0	3	9	1	0	0	0	0	22
07:30 AM	0	4	3	0	8	0	1	2	7	1	0	0	0	1	27
07:45 AM	0	1	1	0	6	0	2	5	8	0	0	0	0	1	24
Total	0	14	6	1	18	1	4	10	33	2	0	0	0	3	92
08:00 AM	0	4	0	0	3	0	1	3	6	1	0	0	0	1	19
08:15 AM	1	8	2	0	2	0	1	2	4	0	0	0	0	0	20
08:30 AM	0	7	0	0	6	0	3	0	5	1	0	0	0	1	23
08:45 AM	1	9	0	0	3	1	1	0	6	0	0	1	0	2	24
Total	2	28	2	0	14	1	6	5	21	2	0	1	0	4	86
Grand Total	2	42	8	1	32	2	10	15	54	4	0	1	0	7	178
Apprch %	3.8	79.2	15.1	1.9	72.7	4.5	22.7	20.5	74	5.5	0	12.5	0	87.5	
Total %	1.1	23.6	4.5	0.6	18	1.1	5.6	8.4	30.3	2.2	0	0.6	0	3.9	

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:00 AM																			
07:00 AM	0	**5**	0	**1**	6	2	0	1	3	0	**9**	0	0	9	0	0	**1**	**1**	19
07:15 AM	0	4	2	0	6	2	**1**	0	3	3	9	**1**		**13**	0	0	0	0	22
07:30 AM	0	4	**3**	0	**7**	**8**	0	1	**9**	2	7	1	0	10	0	0	1	1	**27**
07:45 AM	0	1	1	0	2	6	0	**2**	8	**5**									
Total Volume	0	14	6	1	21	18	1	4	23	10	33	2	0	45	0	0	3	3	92
% App. Total	0	66.7	28.6	4.8		78.3	4.3	17.4		22.2	73.3	4.4	0		0	0	100		
PHF	.000	.700	.500	.250	.750	.563	.250	.500	.639	.500	.917	.500	.000	.865	.000	.000	.750	.750	.852

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File Name : 112683 B
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Peds and Bicycles

	D Street From North				Fargo Street From East				D Street From South				BCEC Driveway From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	7	0	0	0	0	0	2	0	2	0	0	0	9	20
07:15 AM	0	0	0	15	0	0	0	0	0	1	0	2	0	0	0	12	30
07:30 AM	0	0	0	19	0	0	0	2	0	1	0	7	0	0	0	14	43
07:45 AM	1	0	0	17	0	0	0	1	0	1	0	21	0	0	0	19	60
Total	1	0	0	58	0	0	0	3	0	5	0	32	0	0	0	54	153
08:00 AM	0	0	1	7	0	0	0	2	1	1	0	20	0	0	0	6	38
08:15 AM	0	0	0	5	0	0	0	1	0	0	0	16	0	0	0	3	25
08:30 AM	0	0	0	10	0	0	0	1	0	3	0	11	0	0	0	8	33
08:45 AM	0	0	0	8	0	0	0	2	0	0	0	12	0	0	0	11	33
Total	0	0	1	30	0	0	0	6	1	4	0	59	0	0	0	28	129
Grand Total	1	0	1	88	0	0	0	9	1	9	0	91	0	0	0	82	282
Apprch %	1.1	0	1.1	97.8	0	0	0	100	1	8.9	0	90.1	0	0	0	100	
Total %	0.4	0	0.4	31.2	0	0	0	3.2	0.4	3.2	0	32.3	0	0	0	29.1	

	D Street From North					Fargo Street From East					D Street From South					BCEC Driveway From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	0	15	15	0	0	0	0	0	0	**1**	**0**	**2**	**3**	**0**	**0**	**0**	**12**	**12**	**30**
07:30 AM	**0**	**0**	**0**	**19**	**19**	0	0	0	**2**	**2**	0	1	0	7	8	0	0	0	14	14	43
07:45 AM	**1**													**21**	**22**	0	0	0	**19**	**19**	**60**
08:00 AM	0	0	**1**								**1**										
Total Volume	1	0	1	58	60	0	0	0	5	5	1	4	0	50	55	0	0	0	51	51	171
% App. Total	1.7	0	1.7	96.7		0	0	0	100		1.8	7.3	0	90.9		0	0	0	100		
PHF	.250	.000	.250	.763	.789	.000	.000	.000	.625	.625	.250	1.000	.000	.595	.625	.000	.000	.000	.671	.671	.713

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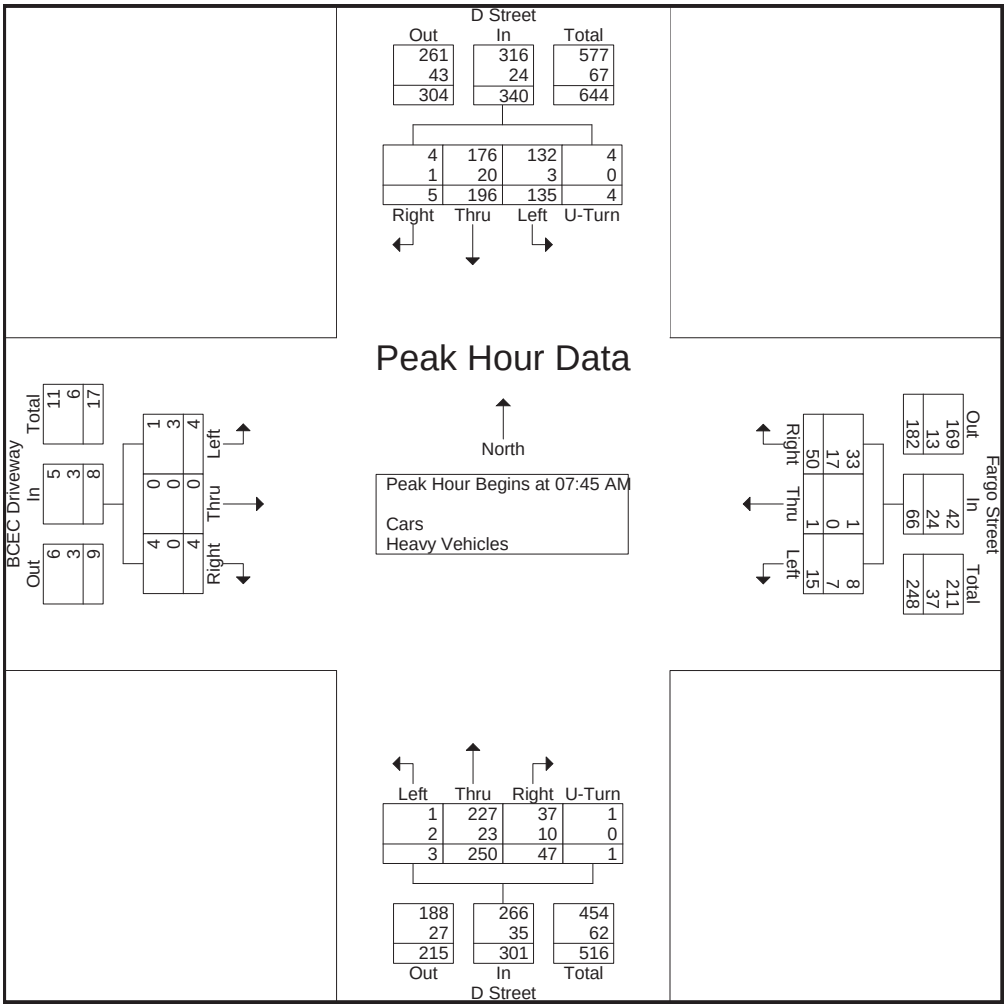
	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45 AM																			
07:45 AM	1	51	31	1	84	13	0	3	16	**17**	**68**	0	0	**85**	0	0	**2**	2	**187**
08:00 AM	0	46	37	0	83	11	0	3	14	9	61	**1**	**1**	72	1	0	1	2	171
08:15 AM	**2**	46	**38**	**3**	**89**	9	0	2	11	7	64	1	0	72	1	0	0	1	173
08:30 AM	2	**53**	29	0	84	**17**	**1**	**7**	**25**	14	57	1	0	72	**2**	0	1	**3**	184
Total Volume	5	196	135	4	340	50	1	15	66	47	250	3	1	301	4	0	4	8	715
% App. Total	1.5	57.6	39.7	1.2		75.8	1.5	22.7		15.6	83.1	1	0.3		50	0	50		
PHF	.625	.925	.888	.333	.955	.735	.250	.536	.660	.691	.919	.750	.250	.885	.500	.000	.500	.667	.956
Cars	4	176	132	4	316	33	1	8	42	37	227	1	1	266	4	0	1	5	629
% Cars	80.0	89.8	97.8	100	92.9	66.0	100	53.3	63.6	78.7	90.8	33.3	100	88.4	100	0	25.0	62.5	88.0
Heavy Vehicles	1	20	3	0	24	17	0	7	24	10	23	2	0	35	0	0	3	3	86
% Heavy Vehicles	20.0	10.2	2.2	0	7.1	34.0	0	46.7	36.4	21.3	9.2	66.7	0	11.6	0	0	75.0	37.5	12.0



PRECISION DATA INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

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City, State: South Boston, MA
Client: HSH/J. SanClemente

File Name : 112683 BB
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	D Street From North				Fargo Street From East			D Street From South				BCEC Driveway From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
04:00 PM	2	59	12	0	32	1	6	7	37	2	0	1	0	2	161
04:15 PM	1	49	12	3	24	0	2	2	29	2	1	3	0	0	128
04:30 PM	1	88	17	0	25	1	2	3	33	1	0	1	1	0	173
04:45 PM	1	63	11	2	25	0	3	1	38	0	0	0	0	1	145
Total	5	259	52	5	106	2	13	13	137	5	1	5	1	3	607
05:00 PM	2	58	10	1	53	0	4	6	41	1	0	2	2	0	180
05:15 PM	3	71	10	1	41	0	3	3	32	0	0	0	1	3	168
05:30 PM	3	83	10	2	35	0	3	3	24	1	0	2	1	1	168
05:45 PM	3	81	9	4	14	1	6	5	28	1	0	1	1	2	156
Total	11	293	39	8	143	1	16	17	125	3	0	5	5	6	672
Grand Total	16	552	91	13	249	3	29	30	262	8	1	10	6	9	1279
Apprch %	2.4	82.1	13.5	1.9	88.6	1.1	10.3	10	87	2.7	0.3	40	24	36	
Total %	1.3	43.2	7.1	1	19.5	0.2	2.3	2.3	20.5	0.6	0.1	0.8	0.5	0.7	
Cars	14	520	75	13	234	3	24	26	243	7	1	8	5	8	1181
% Cars	87.5	94.2	82.4	100	94	100	82.8	86.7	92.7	87.5	100	80	83.3	88.9	92.3
Heavy Vehicles	2	32	16	0	15	0	5	4	19	1	0	2	1	1	98
% Heavy Vehicles	12.5	5.8	17.6	0	6	0	17.2	13.3	7.3	12.5	0	20	16.7	11.1	7.7

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	2	58	**10**	1	71	**53**	0	4	**57**	**6**	**41**	**1**	**0**	**48**	**2**	**2**	0	**4**	**180**
05:15 PM	**3**	71	10	1	85	41	0	3	44	3	32	0	0	35	0	1	**3**	4	168
05:30 PM	3	**83**	10	2	**98**	35	0	3	38	3	24	1	0	28	2	1	1	4	168
05:45 PM	3	81	9	**4**	97	14	**1**	**6**	21	5	28	1	0	34	1	1	2	4	156
Total Volume	11	293	39	8	351	143	1	16	160	17	125	3	0	145	5	5	6	16	672
% App. Total	3.1	83.5	11.1	2.3		89.4	0.6	10		11.7	86.2	2.1	0		31.2	31.2	37.5		
PHF	.917	.883	.975	.500	.895	.675	.250	.667	.702	.708	.762	.750	.000	.755	.625	.625	.500	1.000	.933
Cars	9	283	32	8	332	135	1	15	151	14	117	3	0	134	5	4	5	14	631
% Cars	81.8	96.6	82.1	100	94.6	94.4	100	93.8	94.4	82.4	93.6	100	0	92.4	100	80.0	83.3	87.5	93.9
Heavy Vehicles	2	10	7	0	19	8	0	1	9	3	8	0	0	11	0	1	1	2	41
% Heavy Vehicles	18.2	3.4	17.9	0	5.4	5.6	0	6.3	5.6	17.6	6.4	0	0	7.6	0	20.0	16.7	12.5	6.1

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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City, State: South Boston, MA
Client: HSH/J. SanClemente

File Name : 112683 BB
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

Groups Printed- Cars

	D Street From North				Fargo Street From East			D Street From South				BCEC Driveway From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
04:00 PM	2	55	11	0	32	1	4	7	34	1	0	0	0	2	149
04:15 PM	1	44	10	3	20	0	1	2	23	2	1	2	0	0	109
04:30 PM	1	81	14	0	24	1	1	3	33	1	0	1	1	0	161
04:45 PM	1	57	8	2	23	0	3	0	36	0	0	0	0	1	131
Total	5	237	43	5	99	2	9	12	126	4	1	3	1	3	550
05:00 PM	2	58	9	1	52	0	3	4	38	1	0	2	1	0	171
05:15 PM	3	70	9	1	37	0	3	3	31	0	0	0	1	3	161
05:30 PM	2	81	8	2	33	0	3	2	24	1	0	2	1	1	160
05:45 PM	2	74	6	4	13	1	6	5	24	1	0	1	1	1	139
Total	9	283	32	8	135	1	15	14	117	3	0	5	4	5	631
Grand Total	14	520	75	13	234	3	24	26	243	7	1	8	5	8	1181
Apprch %	2.3	83.6	12.1	2.1	89.7	1.1	9.2	9.4	87.7	2.5	0.4	38.1	23.8	38.1	
Total %	1.2	44	6.4	1.1	19.8	0.3	2	2.2	20.6	0.6	0.1	0.7	0.4	0.7	

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	2	58	**9**	1	70	**52**	0	3	**55**	4	**38**	**1**	**0**	**43**	**2**	**1**	0	3	**171**
05:15 PM	**3**	70	9	1	83	37	0	3	40	3	31	0	0	34	0	1	**3**	**4**	161
05:30 PM	2	**81**	8	2	**93**	33	0	3	36	2	24	1	0	27	2	1	1	4	160
05:45 PM	2	74	6	**4**	86	13	**1**	**6**	20	**5**									
Total Volume	9	283	32	8	332	135	1	15	151	14	117	3	0	134	5	4	5	14	631
% App. Total	2.7	85.2	9.6	2.4		89.4	0.7	9.9		10.4	87.3	2.2	0		35.7	28.6	35.7		
PHF	.750	.873	.889	.500	.892	.649	.250	.625	.686	.700	.770	.750	.000	.779	.625	1.000	.417	.875	.923

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Groups Printed- Heavy Vehicles

	D Street From North				Fargo Street From East			D Street From South				BCEC Driveway From West			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
04:00 PM	0	4	1	0	0	0	2	0	3	1	0	1	0	0	12
04:15 PM	0	5	2	0	4	0	1	0	6	0	0	1	0	0	19
04:30 PM	0	7	3	0	1	0	1	0	0	0	0	0	0	0	12
04:45 PM	0	6	3	0	2	0	0	1	2	0	0	0	0	0	14
Total	0	22	9	0	7	0	4	1	11	1	0	2	0	0	57
05:00 PM	0	0	1	0	1	0	1	2	3	0	0	0	1	0	9
05:15 PM	0	1	1	0	4	0	0	0	1	0	0	0	0	0	7
05:30 PM	1	2	2	0	2	0	0	1	0	0	0	0	0	0	8
05:45 PM	1	7	3	0	1	0	0	0	4	0	0	0	0	1	17
Total	2	10	7	0	8	0	1	3	8	0	0	0	1	1	41
Grand Total	2	32	16	0	15	0	5	4	19	1	0	2	1	1	98
Apprch %	4	64	32	0	75	0	25	16.7	79.2	4.2	0	50	25	25	
Total %	2	32.7	16.3	0	15.3	0	5.1	4.1	19.4	1	0	2	1	1	

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:00 PM																			
04:00 PM	0	4	1	0	5	0	0	**2**	2	0	3	**1**	**0**	**4**	**1**	0	0	**1**	12
04:15 PM	0	5	2	0	7	**4**	0	1	**5**	0	**6**	0	0	**6**	1	0	0	1	**19**
04:30 PM	0	**7**	**3**	0	**10**	1	0	1	2	0	0	0	0	0	0	0	0	0	12
04:45 PM	0	6	3	0	9	2	0	0	2	**1**									
Total Volume	0	22	9	0	31	7	0	4	11	1	11	1	0	13	2	0	0	2	57
% App. Total	0	71	29	0		63.6	0	36.4		7.7	84.6	7.7	0		100	0	0		
PHF	.000	.786	.750	.000	.775	.438	.000	.500	.550	.250	.458	.250	.000	.542	.500	.000	.000	.500	.750

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Groups Printed- Peds and Bicycles

	D Street From North				Fargo Street From East				D Street From South				BCEC Driveway From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	8	0	0	1	3	0	0	0	12	0	0	1	7	32
04:15 PM	0	2	0	16	0	0	0	2	0	1	0	12	0	0	0	11	44
04:30 PM	0	1	0	13	1	0	0	3	0	0	0	7	0	1	0	9	35
04:45 PM	0	1	0	3	0	0	0	0	0	0	0	5	0	0	0	6	15
Total	0	4	0	40	1	0	1	8	0	1	0	36	0	1	1	33	126
05:00 PM	0	0	0	5	0	0	0	2	0	0	0	10	0	0	0	16	33
05:15 PM	0	1	1	7	0	0	0	2	0	0	0	13	0	0	0	19	43
05:30 PM	0	1	0	3	0	0	0	1	0	0	0	7	0	1	0	16	29
05:45 PM	0	1	0	5	0	0	0	5	0	0	0	11	0	0	1	14	37
Total	0	3	1	20	0	0	0	10	0	0	0	41	0	1	1	65	142
Grand Total	0	7	1	60	1	0	1	18	0	1	0	77	0	2	2	98	268
Apprch %	0	10.3	1.5	88.2	5	0	5	90	0	1.3	0	98.7	0	2	2	96.1	
Total %	0	2.6	0.4	22.4	0.4	0	0.4	6.7	0	0.4	0	28.7	0	0.7	0.7	36.6	

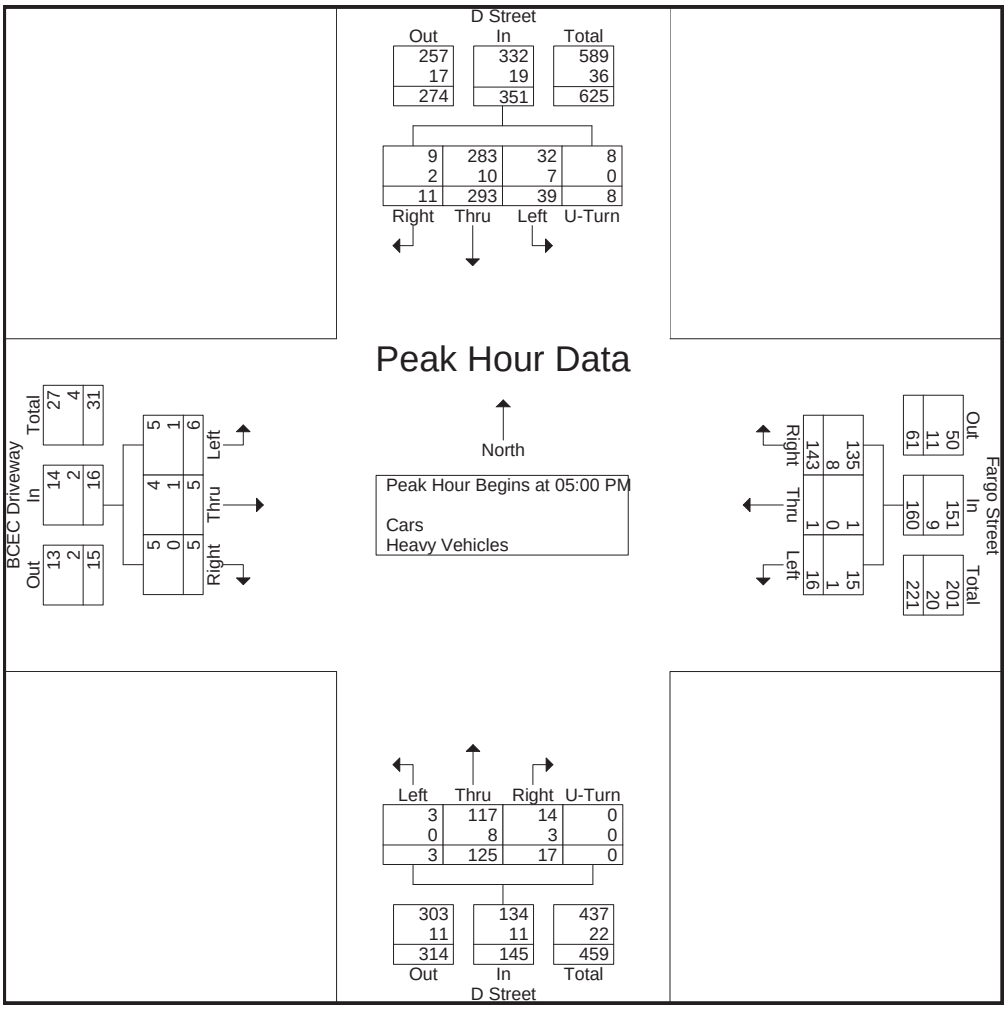
	D Street From North					Fargo Street From East					D Street From South					BCEC Driveway From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	5	5	0	0	0	2	2	0	0	0	10	10	0	0	0	16	16	33
05:15 PM	0	**1**	**1**	**7**	**9**	0	0	0	2	2	0	0	0	**13**	**13**	0	0	0	**19**	**19**	**43**
05:30 PM	0	1	0	3	4	0	0	0	1	1	0	0	0	7	7	0	**1**	0	16	17	29
05:45 PM	0	1	0	5	6	0	0	0	**5**	**5**	0	0	0	11	11	0	0	**1**			
Total Volume	0	3	1	20	24	0	0	0	10	10	0	0	0	41	41	0	1	1	65	67	142
% App. Total	0	12.5	4.2	83.3		0	0	0	100		0	0	0	100		0	1.5	1.5	97		
PHF	.000	.750	.250	.714	.667	.000	.000	.000	.500	.500	.000	.000	.000	.788	.788	.000	.250	.250	.855	.882	.826

PRECISION
D A T A
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: D Street
E/W: Fargo Street/ BCEC Driveway
City, State: South Boston, MA
Client: HSH/J. SanClemente

File Name : 112683 BB
Site Code : 2011129
Start Date : 11/2/2011
Page No : 1

	D Street From North					Fargo Street From East				D Street From South					BCEC Driveway From West				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	2	58	**10**	1	71	**53**	0	4	**57**	**6**	**41**	**1**	**0**	**48**	**2**	**2**	0	**4**	**180**
05:15 PM	**3**	71	10	1	85	41	0	3	44	3	32	0	0	35	0	1	**3**	4	168
05:30 PM	3	**83**	10	2	**98**	35	0	3	38	3	24	1	0	28	2	1	1	4	168
05:45 PM	3	81	9	**4**	97	14	**1**	**6**	21	5	28	1	0	34	1	1	2	4	156
Total Volume	11	293	39	8	351	143	1	16	160	17	125	3	0	145	5	5	6	16	672
% App. Total	3.1	83.5	11.1	2.3		89.4	0.6	10		11.7	86.2	2.1	0		31.2	31.2	37.5		
PHF	.917	.883	.975	.500	.895	.675	.250	.667	.702	.708	.762	.750	.000	.755	.625	.625	.500	1.000	.933
Cars	9	283	32	8	332	135	1	15	151	14	117	3	0	134	5	4	5	14	631
% Cars	81.8	96.6	82.1	100	94.6	94.4	100	93.8	94.4	82.4	93.6	100	0	92.4	100	80.0	83.3	87.5	93.9
Heavy Vehicles	2	10	7	0	19	8	0	1	9	3	8	0	0	11	0	1	1	2	41
% Heavy Vehicles	18.2	3.4	17.9	0	5.4	5.6	0	6.3	5.6	17.6	6.4	0	0	7.6	0	20.0	16.7	12.5	6.1



Howard Stein-Hudson
38 Chauncy St. 9th Floor
Boston, MA 02111

D Street and 1st Street Morning
Counted By: Michael Flanary
Weather: Cloudy
Other: Arterial streets

File Name : D st at 1st st Morning
Site Code : 00000000
Start Date : 11/16/2011

Groups Printed- Cars - Bicycles - Heavy Vehicles

	D From North				W. FIRST STREET From East				D From South				W. FIRST STREET From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	12	0	32	0	29	24	0	0	14	19	0	0	0	9	0	4	143
07:15 AM	11	0	30	0	25	18	0	3	8	24	1	0	0	11	1	5	137
07:30 AM	7	0	36	0	27	25	0	2	7	34	0	0	0	8	1	3	150
07:45 AM	21	0	26	0	40	53	0	1	17	54	0	1	0	8	3	2	226
Total	51	0	124	0	121	120	0	6	46	131	1	1	0	36	5	14	656
08:00 AM	17	0	39	0	32	38	0	0	18	35	1	1	1	13	1	5	201
08:15 AM	23	0	29	0	42	41	0	4	9	47	0	1	0	4	1	2	203
08:30 AM	24	0	22	0	31	38	1	3	16	46	1	0	0	7	3	3	195
08:45 AM	10	0	23	0	30	35	0	6	16	40	1	1	0	15	1	2	180
Total	74	0	113	0	135	152	1	13	59	168	3	3	1	39	6	12	779
Grand Total	125	0	237	0	256	272	1	19	105	299	4	4	1	75	11	26	1435
Apprch %	34.5	0	65.5	0	46.7	49.6	0.2	3.5	25.5	72.6	1	1	0.9	66.4	9.7	23	
Total %	8.7	0	16.5	0	17.8	19	0.1	1.3	7.3	20.8	0.3	0.3	0.1	5.2	0.8	1.8	
Cars	114	0	201	0	185	219	0	19	90	277	3	4	0	65	10	26	1213
% Cars	91.2	0	84.8	0	72.3	80.5	0	100	85.7	92.6	75	100	0	86.7	90.9	100	84.5
Bicycles	0	0	0	0	5	1	1	0	2	7	0	0	0	0	0	0	16
% Bicycles	0	0	0	0	2	0.4	100	0	1.9	2.3	0	0	0	0	0	0	1.1
Heavy Vehicles	11	0	36	0	66	52	0	0	13	15	1	0	1	10	1	0	206
% Heavy Vehicles	8.8	0	15.2	0	25.8	19.1	0	0	12.4	5	25	0	100	13.3	9.1	0	14.4

411 D Street

D Street and West First Street AM Peak Hour Traffic Counts

Howard/Stein-Hudson Associates

December 1, 2011

Count Date: November 16, 2011

	D From North				FIRST STREET From East				D From South				FIRST STREET From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
CARS																
07:00 AM	11	0	24	0	19	21	0	0	12	15	0	0	0	7	0	4
07:15 AM	11	0	29	0	19	11	0	3	5	22	1	0	0	8	1	5
07:30 AM	7	0	33	0	24	22	0	2	5	31	0	0	0	6	0	3
07:45 AM	20	0	21	0	28	41	0	1	16	49	0	1	0	7	3	2
08:00 AM	15	0	32	0	25	30	0	0	15	33	1	1	0	12	1	5
08:15 AM	22	0	24	0	28	34	0	4	9	46	0	1	0	4	1	2
08:30 AM	19	0	18	0	21	32	0	3	13	43	1	0	0	7	3	3
08:45 AM	9	0	20	0	21	28	0	6	15	38	0	1	0	14	1	2

	D From North				FIRST STREET From East				D From South				FIRST STREET From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
HEAVY VEHICLES																
07:00 AM	1	0	8	0	10	3	0	0	2	3	0	0	0	2	0	0
07:15 AM	0	0	1	0	5	6	0	0	3	2	0	0	0	3	0	0
07:30 AM	0	0	3	0	2	3	0	0	2	1	0	0	0	2	1	0
07:45 AM	1	0	5	0	12	12	0	0	1	5	0	0	0	1	0	0
08:00 AM	2	0	7	0	7	8	0	0	2	1	0	0	1	1	0	0
08:15 AM	1	0	5	0	13	7	0	0	0	0	0	0	0	0	0	0
08:30 AM	5	0	4	0	9	6	0	0	2	1	0	0	0	0	0	0
08:45 AM	1	0	3	0	8	7	0	0	1	2	1	0	0	1	0	0

	D From North				FIRST STREET From East				D From South				FIRST STREET From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
COMBINED																
07:00 AM	12	0	32	0	29	24	0	0	14	18	0	0	0	9	0	4
07:15 AM	11	0	30	0	24	17	0	3	8	24	1	0	0	11	1	5
07:30 AM	7	0	36	0	26	25	0	2	7	32	0	0	0	8	1	3
07:45 AM	21	0	26	0	40	53	0	1	17	54	0	1	0	8	3	2
08:00 AM	17	0	39	0	32	38	0	0	17	34	1	1	1	13	1	5
08:15 AM	23	0	29	0	41	41	0	4	9	46	0	1	0	4	1	2
08:30 AM	24	0	22	0	30	38	0	3	15	44	1	0	0	7	3	3
08:45 AM	10	0	23	0	29	35	0	6	16	40	1	1	0	15	1	2
Peak Hour Total	**85**	**0**	**116**	**0**	**143**	**170**	**0**	**8**	**58**	**178**	**2**	**3**	**1**	**32**	**8**	**12**
HV	9	0	21	0	41	33	0	0	5	7	0	0	1	2	0	0
HV%	11%	0%	18%	0%	29%	19%	0%	0%	9%	4%	0%	0%	100%	6%	0%	0%
PHF	0.89	0.00	0.74	0.00	0.87	0.80	0.00	0.50	0.85	0.82	0.50	0.75	0.25	0.62	0.67	0.60

Howard Stein-Hudson
38 Chauncy St. 9th Floor
Boston, MA 02111

D Street and 1st Street, South Boston
Counted By: Michael Flanary
Weather: Cloudy
Other: Arterial streets

File Name : DSTAT1~1
Site Code : 00000000
Start Date : 11/15/2011

Groups Printed- Cars - Bicycles - Heavy Vehicles

	D STREET From North				W. FIRST STREET From East				D STREET From South				W. FIRST STREET From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	18	0	68	1	17	16	0	1	10	14	0	2	0	18	0	2	167
04:15 PM	24	2	58	0	19	15	0	0	8	13	2	0	0	15	5	0	161
04:30 PM	22	1	59	0	19	24	0	1	10	17	1	0	0	14	1	0	169
04:45 PM	25	0	55	2	14	12	0	1	11	28	0	0	0	11	0	2	161
Total	89	3	240	3	69	67	0	3	39	72	3	2	0	58	6	4	658
05:00 PM	43	1	70	0	14	22	0	5	15	21	0	0	0	10	1	6	208
05:15 PM	38	2	60	1	9	12	0	4	14	21	0	0	0	8	1	5	175
05:30 PM	28	2	70	0	16	23	0	1	14	18	0	0	0	6	2	3	183
05:45 PM	27	2	75	0	17	14	0	2	11	17	1	0	0	13	1	6	186
Total	136	7	275	1	56	71	0	12	54	77	1	0	0	37	5	20	752
Grand Total	225	10	515	4	125	138	0	15	93	149	4	2	0	95	11	24	1410
Apprch %	29.8	1.3	68.3	0.5	45	49.6	0	5.4	37.5	60.1	1.6	0.8	0	73.1	8.5	18.5	
Total %	16	0.7	36.5	0.3	8.9	9.8	0	1.1	6.6	10.6	0.3	0.1	0	6.7	0.8	1.7	
Cars	214	0	487	4	112	122	0	15	85	141	4	2	0	88	9	24	1307
% Cars	95.1	0	94.6	100	89.6	88.4	0	100	91.4	94.6	100	100	0	92.6	81.8	100	92.7
Bicycles	1	10	1	0	1	1	0	0	0	1	0	0	0	2	0	0	17
% Bicycles	0.4	100	0.2	0	0.8	0.7	0	0	0	0.7	0	0	0	2.1	0	0	1.2
Heavy Vehicles	10	0	27	0	12	15	0	0	8	7	0	0	0	5	2	0	86
% Heavy Vehicles	4.4	0	5.2	0	9.6	10.9	0	0	8.6	4.7	0	0	0	5.3	18.2	0	6.1

411 D Street

D Street and West First Street PM Peak Hour Traffic Counts

Howard/Stein-Hudson Associates

December 1, 2011

Count Date: November 15, 2011

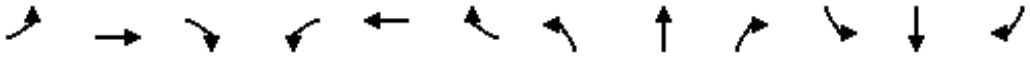
	D STREET From North				FIRST STREET From East				D STREET From South				FIRST STREET From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
CARS																
04:00 PM	17	0	61	1	13	16	0	1	8	13	0	2	0	17	0	2
04:15 PM	23	0	52	0	17	12	0	0	8	12	2	0	0	15	3	0
04:30 PM	21	0	56	0	17	20	0	1	9	14	1	0	0	11	1	0
04:45 PM	21	0	49	2	14	12	0	1	10	28	0	0	0	9	0	2
05:00 PM	42	0	69	0	11	18	0	5	14	19	0	0	0	10	1	6
05:15 PM	35	0	59	1	9	9	0	4	14	21	0	0	0	8	1	5
05:30 PM	28	0	67	0	15	23	0	1	11	17	0	0	0	6	2	3
05:45 PM	27	0	74	0	16	12	0	2	11	17	1	0	0	12	1	6

	D STREET From North				FIRST STREET From East				D STREET From South				FIRST STREET From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
HEAVY VEHICLES																
04:00 PM	1	0	7	0	3	0	0	0	2	1	0	0	0	1	0	0
04:15 PM	1	0	5	0	2	3	0	0	0	0	0	0	0	0	2	0
04:30 PM	1	0	3	0	2	4	0	0	1	3	0	0	0	1	0	0
04:45 PM	4	0	6	0	0	0	0	0	1	0	0	0	0	2	0	0
05:00 PM	0	0	1	0	3	3	0	0	1	2	0	0	0	0	0	0
05:15 PM	3	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	3	0	1	0	0	0	3	1	0	0	0	0	0	0
05:45 PM	0	0	1	0	1	2	0	0	0	0	0	0	0	1	0	0

	D STREET From North				FIRST STREET From East				D STREET From South				FIRST STREET From West			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
COMBINED																
04:00 PM	18	0	68	1	16	16	0	1	10	14	0	2	0	18	0	2
04:15 PM	24	0	57	0	19	15	0	0	8	12	2	0	0	15	5	0
04:30 PM	22	0	59	0	19	24	0	1	10	17	1	0	0	12	1	0
04:45 PM	25	0	55	2	14	12	0	1	11	28	0	0	0	11	0	2
05:00 PM	42	0	70	0	14	21	0	5	15	21	0	0	0	10	1	6
05:15 PM	38	0	60	1	9	12	0	4	14	21	0	0	0	8	1	5
05:30 PM	28	0	70	0	16	23	0	1	14	18	0	0	0	6	2	3
05:45 PM	27	0	75	0	17	14	0	2	11	17	1	0	0	13	1	6
Peak Hour Total	**135**	**0**	**275**	**1**	**56**	**70**	**0**	**12**	**54**	**77**	**1**	**0**	**0**	**37**	**5**	**20**
HV	3	0	6	0	5	8	0	0	4	3	0	0	0	1	0	0
HV%	2%	0%	2%	0%	9%	11%	0%	0%	7%	4%	0%	0%	0%	3%	0%	0%
PHF	0.80	0.00	0.92	0.25	0.82	0.76	0.00	0.60	0.90	0.92	0.25	0.00	0.00	0.71	0.63	0.83

Appendix B

Synchro Reports



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
Lane Width (ft)	12	12	12	12	12	11	12	12	12	12	12	12
Storage Length (ft)	0		150	0		200	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
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	50		50	50	
Trailing Detector (ft)	0	0	0	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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.95	0.76		0.86	0.93		0.99			0.99	
Frt			0.850			0.850		0.971			0.997	
Flt Protected		0.957			0.958			0.999			0.979	
Satd. Flow (prot)	0	1131	1425	0	1161	1049	0	2790	0	0	2959	0
Flt Permitted		0.870			0.820			0.955			0.689	
Satd. Flow (perm)	0	980	1080	0	855	979	0	2665	0	0	2074	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			68		64			3	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		289			573			2348			384	
Travel Time (s)		6.6			13.0			53.4			8.7	
Volume (vph)	4	1	4	15	1	50	4	255	47	139	196	5
Confl. Peds. (#/hr)	39		68	68		39	36		5	5		36
Peak Hour Factor	0.50	0.92	0.50	0.54	0.25	0.74	0.75	0.92	0.69	0.88	0.93	0.63
Heavy Vehicles (%)	50%	2%	2%	47%	0%	34%	67%	9%	21%	2%	10%	20%
Adj. Flow (vph)	8	1	8	28	4	68	5	277	68	158	211	8
Lane Group Flow (vph)	0	9	8	0	32	68	0	350	0	0	377	0
Turn Type	Perm		pm+ov	Perm		Perm	pm+pt			Perm		
Protected Phases		3	2		3		2	1 2			1	
Permitted Phases	3		3	3		3	1 2			1		
Detector Phases	3	3	2	3	3	3	2	1 2		1	1	
Minimum Initial (s)	12.0	12.0	15.0	12.0	12.0	12.0	15.0			15.0	15.0	
Minimum Split (s)	16.0	16.0	22.0	16.0	16.0	16.0	22.0			22.0	22.0	
Total Split (s)	25.0	25.0	31.0	25.0	25.0	25.0	31.0	75.0	0.0	44.0	44.0	0.0
Total Split (%)	25.0%	25.0%	31.0%	25.0%	25.0%	25.0%	31.0%	75.0%	0.0%	44.0%	44.0%	0.0%
Maximum Green (s)	21.0	21.0	27.0	21.0	21.0	21.0	27.0			40.0	40.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	
Lead/Lag			Lag				Lag			Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	2.0	
Recall Mode	None	None	None	None	None	None	None			C-Min	C-Min	
Walk Time (s)			7.0				7.0			7.0	7.0	
Flash Dont Walk (s)			8.0				8.0			8.0	8.0	
Pedestrian Calls (#/hr)			10				10			10	10	
Act Effct Green (s)		12.2	24.8		12.2	12.2		79.0			64.0	
Actuated g/C Ratio		0.12	0.25		0.12	0.12		0.79			0.64	
v/c Ratio		0.08	0.02		0.31	0.38		0.16			0.28	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.6	13.5		48.6	16.7		1.2			2.4	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		40.6	13.5		48.6	16.7		1.2			2.4	
LOS		D	B		D	B		A			A	
Approach Delay		27.8			26.9			1.2			2.4	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		5	0		19	0		4			11	
Queue Length 95th (ft)		21	4		13	25		8			m23	
Internal Link Dist (ft)		209			493			2268			304	
Turn Bay Length (ft)			150			200						
Base Capacity (vph)		206	426		180	259		2424			1329	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.04	0.02		0.18	0.26		0.14			0.28	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 42 (42%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 32: Fargo Street & D Street

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	13	12	12	12	14	16	12	12	12	12	11
Storage Length (ft)	150		0		0		0	130		0		180
Storage Lanes	1		0		1		1	1		0		1
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	50		50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	9	15
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.91
Ped Bike Factor	0.99	0.98					0.94	0.98	0.97			0.94
Frt		0.960					0.850		0.962			
Flt Protected	0.950				0.950			0.950				0.950
Satd. Flow (prot)	1510	2621	0	0	1495	1586	1540	1365	2560	0	0	1314
Flt Permitted	0.249				0.148			0.950				0.950
Satd. Flow (perm)	391	2621	0	0	233	1586	1450	1331	2560	0	0	1232
Right Turn on Red			Yes				No			Yes		
Satd. Flow (RTOR)		65							44			
Headway Factor	1.19	1.17	1.14	1.14	1.14	1.05	0.97	1.14	1.22	1.14	1.14	1.19
Link Speed (mph)		30				30			30			
Link Distance (ft)		635				580			384			
Travel Time (s)		14.4				13.2			8.7			
Volume (vph)	118	265	88	16	36	333	469	84	181	48	2	146
Confl. Peds. (#/hr)	22		53		53		22	19		36		36
Peak Hour Factor	0.88	0.94	0.85	0.33	0.90	0.91	0.93	0.88	0.91	0.71	0.50	0.91
Heavy Vehicles (%)	4%	16%	9%	0%	19%	15%	7%	19%	11%	19%	0%	9%
Parking (#/hr)		0	0						0	0		
Adj. Flow (vph)	134	282	104	48	40	366	504	95	199	68	4	160
Lane Group Flow (vph)	134	386	0	0	88	366	504	95	267	0	0	154
Turn Type	D.P+P			Perm	Perm		pm+ov	Split			Split	Split
Protected Phases	4	1 4				1	2!	3	3		2!	2
Permitted Phases	1			1	1		1					
Detector Phases	4	1 4		1	1	1	2	3	3		2	2
Minimum Initial (s)	6.0			10.0	10.0	10.0	6.0	6.0	6.0		6.0	6.0
Minimum Split (s)	12.0			27.0	27.0	27.0	19.0	17.0	17.0		19.0	19.0
Total Split (s)	15.0	46.0	0.0	31.0	31.0	31.0	27.0	27.0	27.0	0.0	27.0	27.0
Total Split (%)	15.0%	46.0%	0.0%	31.0%	31.0%	31.0%	27.0%	27.0%	27.0%	0.0%	27.0%	27.0%
Maximum Green (s)	10.0			25.0	25.0	25.0	22.0	22.0	22.0		22.0	22.0
Yellow Time (s)	4.0			4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0			2.0	2.0	2.0	1.0	1.0	1.0		1.0	1.0
Lead/Lag							Lead	Lag	Lag		Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None			C-Max	C-Max	C-Max	Ped	Ped	Ped		Ped	Ped
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0	7.0	5.0	5.0		7.0	7.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0		0	0
Act Effct Green (s)	48.8	52.8			39.5	39.5	59.3	15.4	15.4			19.8
Actuated g/C Ratio	0.49	0.53			0.40	0.40	0.59	0.15	0.15			0.20

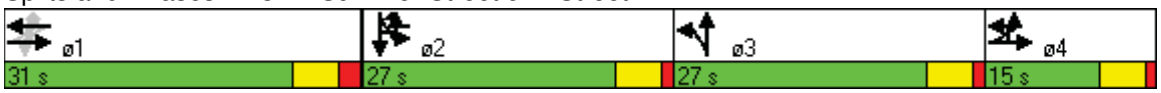
Lane Group	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width (ft)	13	12
Storage Length (ft)		0
Storage Lanes		0
Total Lost Time (s)	4.0	4.0
Leading Detector (ft)	50	
Trailing Detector (ft)	0	
Turning Speed (mph)		9
Lane Util. Factor	0.91	0.95
Ped Bike Factor	0.98	
Frt	0.955	
Flt Protected	0.999	
Satd. Flow (prot)	2872	0
Flt Permitted	0.999	
Satd. Flow (perm)	2867	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	56	
Headway Factor	1.10	1.14
Link Speed (mph)	30	
Link Distance (ft)	297	
Travel Time (s)	6.8	
Volume (vph)	213	92
Confl. Peds. (#/hr)		19
Peak Hour Factor	0.88	0.86
Heavy Vehicles (%)	6%	3%
Parking (#/hr)		
Adj. Flow (vph)	242	107
Lane Group Flow (vph)	359	0
Turn Type		
Protected Phases	2	
Permitted Phases		
Detector Phases	2	
Minimum Initial (s)	6.0	
Minimum Split (s)	19.0	
Total Split (s)	27.0	0.0
Total Split (%)	27.0%	0.0%
Maximum Green (s)	22.0	
Yellow Time (s)	4.0	
All-Red Time (s)	1.0	
Lead/Lag	Lead	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	Ped	
Walk Time (s)	7.0	
Flash Dont Walk (s)	7.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)	19.8	
Actuated g/C Ratio	0.20	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
v/c Ratio	0.45	0.27			0.96	0.58	0.57	0.45	0.62			0.59
Control Delay	23.8	9.8			121.1	33.9	10.3	47.5	41.5			30.2
Queue Delay	0.2	0.0			0.0	0.0	0.0	0.0	0.0			0.0
Total Delay	24.0	9.8			121.1	33.9	10.3	47.5	41.5			30.2
LOS	C	A			F	C	B	D	D			C
Approach Delay		13.4				29.5			43.1			
Approach LOS		B				C			D			
Queue Length 50th (ft)	23	13			52	178	108	61	77			107
Queue Length 95th (ft)	86	52			#170	#303	64	108	117			173
Internal Link Dist (ft)		555				500			304			
Turn Bay Length (ft)	150							130				180
Base Capacity (vph)	321	1376			92	627	927	314	623			302
Starvation Cap Reductn	0	0			0	0	0	0	0			0
Spillback Cap Reductn	17	0			0	0	0	0	0			0
Storage Cap Reductn	0	0			0	0	0	0	0			0
Reduced v/c Ratio	0.44	0.28			0.96	0.58	0.54	0.30	0.43			0.51

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 7 (7%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 26.5 Intersection LOS: C
Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 374: Summer Street & D Street



Lane Group	SBT	SBR
v/c Ratio	0.58	
Control Delay	19.3	
Queue Delay	0.1	
Total Delay	19.4	
LOS	B	
Approach Delay	22.6	
Approach LOS	C	
Queue Length 50th (ft)	106	
Queue Length 95th (ft)	140	
Internal Link Dist (ft)	217	
Turn Bay Length (ft)		
Base Capacity (vph)	704	
Starvation Cap Reductn	34	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.54	

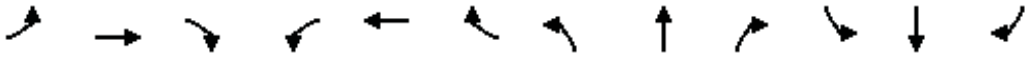
Intersection Summary

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
Lane Width (ft)	9	10	11	11	10	12	11	12	11	11	11	10
Storage Length (ft)	100		0	0		100	0		100	0		100
Storage Lanes	1		0	0		1	0		1	1		1
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	50		50
Trailing Detector (ft)	0	0			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	1.00					0.99		1.00		0.98		
Frt						0.850			0.850			0.850
Flt Protected	0.950							0.999		0.950		
Satd. Flow (prot)	1624	1673	0	0	1739	1524	0	1826	1432	1479	0	1358
Flt Permitted	0.333							0.999		0.950		
Satd. Flow (perm)	569	1673	0	0	1739	1502	0	1825	1432	1442	0	1358
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164			68			96
Headway Factor	1.14	1.09	1.04	1.04	1.09	1.00	1.04	1.00	1.04	1.04	1.04	1.09
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1114			1146			921			2348	
Travel Time (s)		25.3			26.0			20.9			53.4	
Volume (vph)	8	32	0	0	170	143	2	178	58	116	0	85
Confl. Peds. (#/hr)	1					1	20		12	12		20
Peak Hour Factor	0.67	0.62	0.92	0.92	0.92	0.87	0.50	0.82	0.85	0.74	0.92	0.89
Heavy Vehicles (%)	0%	6%	2%	2%	2%	6%	0%	4%	9%	18%	2%	11%
Adj. Flow (vph)	12	52	0	0	185	164	4	217	68	157	0	96
Lane Group Flow (vph)	12	52	0	0	185	164	0	221	68	157	0	96
Turn Type	D.P+P					pm+ov	Split		Prot	Prot		custom
Protected Phases	2	2 3			3	4	1	1	1	4		2 4
Permitted Phases	3					3						
Detector Phases	2	2 3			3	4	1	1	1	4		2 4
Minimum Initial (s)	6.0				12.0	6.0	14.0	14.0	14.0	6.0		
Minimum Split (s)	14.0				16.0	14.0	22.0	22.0	22.0	14.0		
Total Split (s)	18.0	34.0	0.0	0.0	16.0	22.0	44.0	44.0	44.0	22.0	0.0	40.0
Total Split (%)	18.0%	34.0%	0.0%	0.0%	16.0%	22.0%	44.0%	44.0%	44.0%	22.0%	0.0%	40.0%
Maximum Green (s)	14.0				12.0	18.0	40.0	40.0	40.0	18.0		
Yellow Time (s)	3.0				3.0	3.0	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0				1.0	1.0	1.0	1.0	1.0	1.0		
Lead/Lag	Lag				Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0				2.0	2.0	2.0	2.0	2.0	2.0		
Recall Mode	None				None	None	C-Min	C-Min	C-Min	None		
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					5.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					5		5	5	5			
Act Effct Green (s)	18.3	21.5			12.0	25.8		52.7	52.7	13.8		21.3
Actuated g/C Ratio	0.18	0.22			0.12	0.26		0.53	0.53	0.14		0.21
v/c Ratio	0.07	0.14			0.89	0.32		0.23	0.09	0.77		0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	29.2	30.6			83.2	5.6		15.6	4.4	66.5		5.8
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	29.2	30.6			83.2	5.6		15.6	4.4	66.5		5.8
LOS	C	C			F	A		B	A	E		A
Approach Delay		30.3			46.7			13.0				
Approach LOS		C			D			B				
Queue Length 50th (ft)	6	27			118	0		75	0	105		3
Queue Length 95th (ft)	15	37			#244	39		127	22	131		15
Internal Link Dist (ft)		1034			1066			841			2268	
Turn Bay Length (ft)	100					100			100			100
Base Capacity (vph)	272	365			209	569		961	786	266		500
Starvation Cap Reductn	0	0			0	0		0	0	0		0
Spillback Cap Reductn	0	0			0	0		0	0	0		0
Storage Cap Reductn	0	0			0	0		0	0	0		0
Reduced v/c Ratio	0.04	0.14			0.89	0.29		0.23	0.09	0.59		0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 81 (81%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 34.5		Intersection LOS: C	
Intersection Capacity Utilization 45.2%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1484: West First & D Street



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
Lane Width (ft)	12	12	12	12	12	11	12	12	12	12	12	12
Storage Length (ft)	0		150	0		200	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
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	50		50	50	
Trailing Detector (ft)	0	0	0	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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.98	0.85		0.89	0.95		0.99			0.99	
Frt			0.850			0.850		0.981			0.995	
Flt Protected		0.971			0.959			0.999			0.994	
Satd. Flow (prot)	0	1405	1454	0	1560	1326	0	2946	0	0	3030	0
Flt Permitted		0.880			0.810			0.955			0.895	
Satd. Flow (perm)	0	1246	1230	0	1177	1261	0	2809	0	0	2720	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			210		24			5	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		297			470			2360			378	
Travel Time (s)		6.8			10.7			53.6			8.6	
Volume (vph)	6	5	5	16	1	143	3	125	17	47	293	11
Confl. Peds. (#/hr)	20		41	41		20	65		10	10		65
Peak Hour Factor	0.50	0.63	0.63	0.67	0.25	0.68	0.75	0.76	0.71	0.98	0.88	0.92
Heavy Vehicles (%)	17%	20%	0%	6%	0%	6%	0%	6%	18%	18%	3%	18%
Adj. Flow (vph)	12	8	8	24	4	210	4	164	24	48	333	12
Lane Group Flow (vph)	0	20	8	0	28	210	0	192	0	0	393	0
Turn Type	Perm		pm+ov	Perm		Perm	pm+pt			Perm		
Protected Phases		3	2		3		2	1 2			1	
Permitted Phases	3		3	3		3	1 2			1		
Detector Phases	3	3	2	3	3	3	2	1 2		1	1	
Minimum Initial (s)	12.0	12.0	15.0	12.0	12.0	12.0	15.0			15.0	15.0	
Minimum Split (s)	20.0	20.0	22.0	20.0	20.0	20.0	22.0			22.0	22.0	
Total Split (s)	20.0	20.0	23.0	20.0	20.0	20.0	23.0	80.0	0.0	57.0	57.0	0.0
Total Split (%)	20.0%	20.0%	23.0%	20.0%	20.0%	20.0%	23.0%	80.0%	0.0%	57.0%	57.0%	0.0%
Maximum Green (s)	16.0	16.0	19.0	16.0	16.0	16.0	19.0			53.0	53.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	
Lead/Lag			Lag				Lag			Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	2.0	
Recall Mode	None	None	None	None	None	None	None			C-Min	C-Min	
Walk Time (s)			7.0				7.0			7.0	7.0	
Flash Dont Walk (s)			8.0				8.0			8.0	8.0	
Pedestrian Calls (#/hr)			10				10			10	10	
Act Effct Green (s)		12.5	27.5		12.5	12.5		75.5			60.5	
Actuated g/C Ratio		0.12	0.28		0.12	0.12		0.76			0.60	
v/c Ratio		0.13	0.02		0.19	0.61		0.09			0.24	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.5	13.0		42.2	14.1		1.1			12.3	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		40.5	13.0		42.2	14.1		1.1			12.3	
LOS		D	B		D	B		A			B	
Approach Delay		32.6			17.4			1.1			12.3	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		12	0		16	0		4			99	
Queue Length 95th (ft)		23	6		11	17		7			m125	
Internal Link Dist (ft)		217			390			2280			298	
Turn Bay Length (ft)			150			200						
Base Capacity (vph)		199	436		188	378		2263			1646	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.10	0.02		0.15	0.56		0.08			0.24	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 56 (56%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 47.5%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 37: Fargo Street & D Street

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	12	14	16	12	12	12	11	13
Storage Length (ft)		150		0	0		0	130		0	180	
Storage Lanes		1		0	0		1	1		0	1	
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	50		50	50
Trailing Detector (ft)	0	0	0		0	0	0	0	0		0	0
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Lane Util. Factor	0.95	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95	0.91	0.91
Ped Bike Factor		0.97	0.98				0.92	0.93	0.99		0.89	0.94
Frt			0.973				0.850		0.988			0.974
Flt Protected		0.950				0.991		0.950			0.950	0.986
Satd. Flow (prot)	0	1540	2863	0	0	3177	1599	1413	2841	0	1415	2877
Flt Permitted		0.495				0.532		0.950			0.950	0.986
Satd. Flow (perm)	0	779	2863	0	0	1705	1466	1311	2841	0	1254	2782
Right Turn on Red				Yes			No			Yes		
Satd. Flow (RTOR)			32						9			22
Headway Factor	1.14	1.19	1.17	1.14	1.14	1.05	0.97	1.14	1.22	1.14	1.19	1.10
Link Speed (mph)			30			30			30			30
Link Distance (ft)			635			580			378			297
Travel Time (s)			14.4			13.2			8.6			6.8
Volume (vph)	3	256	396	87	39	187	218	53	215	14	300	220
Confl. Peds. (#/hr)		34		67	67		34	66		68	68	
Peak Hour Factor	0.38	0.87	0.93	0.95	0.70	0.78	0.76	0.63	0.81	0.58	0.79	0.85
Heavy Vehicles (%)	0%	2%	6%	8%	0%	10%	3%	15%	5%	14%	1%	6%
Parking (#/hr)			0	0					0	0		
Adj. Flow (vph)	8	294	426	92	56	240	287	84	265	24	380	259
Lane Group Flow (vph)	0	302	518	0	0	296	287	84	289	0	238	485
Turn Type	D.P+P	D.P+P			Perm		pm+ov	Split			Split	
Protected Phases	4	4	1 4			1	2!	3	3		2	2
Permitted Phases	1	1			1		1					
Detector Phases	4	4	1 4		1	1	2	3	3		2	2
Minimum Initial (s)	6.0	6.0			10.0	10.0	6.0	6.0	6.0		6.0	6.0
Minimum Split (s)	12.0	12.0			27.0	27.0	21.0	18.0	18.0		21.0	21.0
Total Split (s)	18.0	18.0	46.0	0.0	28.0	28.0	27.0	27.0	27.0	0.0	27.0	27.0
Total Split (%)	18.0%	18.0%	46.0%	0.0%	28.0%	28.0%	27.0%	27.0%	27.0%	0.0%	27.0%	27.0%
Maximum Green (s)	13.0	13.0			22.0	22.0	22.0	22.0	22.0		22.0	22.0
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0			2.0	2.0	1.0	1.0	1.0		1.0	1.0
Lead/Lag							Lead	Lag	Lag		Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None			C-Max	C-Max	Ped	Ped	Ped		Ped	Ped
Walk Time (s)					7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)					14.0	14.0	7.0	5.0	5.0		7.0	7.0
Pedestrian Calls (#/hr)					0	0	0	0	0		0	0
Act Effct Green (s)		47.1	51.1			33.7	54.7	15.8	15.8		21.1	21.1
Actuated g/C Ratio		0.47	0.51			0.34	0.55	0.16	0.16		0.21	0.21

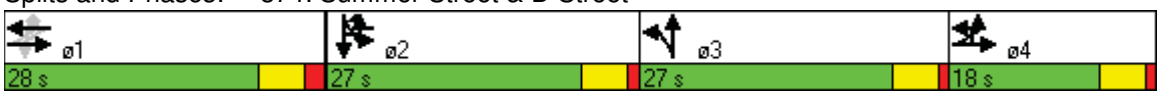
Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Lane Util. Factor	0.95
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Headway Factor	1.14
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	67
Confl. Peds. (#/hr)	66
Peak Hour Factor	0.80
Heavy Vehicles (%)	6%
Parking (#/hr)	
Adj. Flow (vph)	84
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio		0.64	0.35			0.52	0.35	0.38	0.63		0.80	0.78
Control Delay		22.5	11.7			38.3	14.4	39.8	42.9		56.5	44.5
Queue Delay		1.1	0.0			0.0	0.0	0.0	0.3		1.5	0.8
Total Delay		23.6	11.7			38.3	14.4	39.8	43.2		58.0	45.3
LOS		C	B			D	B	D	D		E	D
Approach Delay			16.1			26.5			42.4			49.5
Approach LOS			B			C			D			D
Queue Length 50th (ft)		30	0			94	102	50	89		170	165
Queue Length 95th (ft)		284	235			122	110	53	108		m218	m192
Internal Link Dist (ft)			555			500			298			217
Turn Bay Length (ft)		150						130			180	
Base Capacity (vph)		478	1449			574	861	325	660		325	679
Starvation Cap Reductn		0	0			0	0	0	0		20	49
Spillback Cap Reductn		53	0			0	0	0	78		0	0
Storage Cap Reductn		0	0			0	0	0	0		0	0
Reduced v/c Ratio		0.71	0.36			0.52	0.33	0.26	0.50		0.78	0.77

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 32.1 Intersection LOS: C
Intersection Capacity Utilization 71.9% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 374: Summer Street & D Street



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

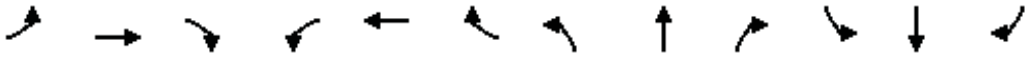
Intersection Summary

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
Lane Width (ft)	9	10	11	11	10	12	11	12	11	11	11	10
Storage Length (ft)	100		0	0		100	0		100	0		100
Storage Lanes	1		0	0		1	0		1	1		1
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	50		50
Trailing Detector (ft)	0	0			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								1.00		0.98		
Frt						0.850			0.850			0.850
Flt Protected	0.950							0.998		0.950		
Satd. Flow (prot)	1624	1722	0	0	1598	1482	0	1826	1459	1711	0	1478
Flt Permitted	0.661							0.998		0.950		
Satd. Flow (perm)	1130	1722	0	0	1598	1482	0	1824	1459	1677	0	1478
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						68			60			169
Headway Factor	1.14	1.09	1.04	1.04	1.09	1.00	1.04	1.00	1.04	1.04	1.04	1.09
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1095			878			915			2360	
Travel Time (s)		24.9			20.0			20.8			53.6	
Volume (vph)	5	37	0	0	70	56	1	77	54	275	0	135
Confl. Peds. (#/hr)							12		8	8		12
Peak Hour Factor	0.63	0.71	0.92	0.92	0.76	0.82	0.25	0.92	0.90	0.92	0.92	0.80
Heavy Vehicles (%)	0%	3%	0%	0%	11%	9%	0%	4%	7%	2%	0%	2%
Adj. Flow (vph)	8	52	0	0	92	68	4	84	60	299	0	169
Lane Group Flow (vph)	8	52	0	0	92	68	0	88	60	299	0	169
Turn Type	D.P+P					pm+ov	Split		Prot	Prot		custom
Protected Phases	2	2 3			3	4	1	1	1	4		2 4
Permitted Phases	3					3						
Detector Phases	2	2 3			3	4	1	1	1	4		2 4
Minimum Initial (s)	6.0				12.0	6.0	14.0	14.0	14.0	6.0		
Minimum Split (s)	10.0				17.0	22.0	22.0	22.0	22.0	22.0		
Total Split (s)	10.0	27.0	0.0	0.0	17.0	46.0	27.0	27.0	27.0	46.0	0.0	56.0
Total Split (%)	10.0%	27.0%	0.0%	0.0%	17.0%	46.0%	27.0%	27.0%	27.0%	46.0%	0.0%	56.0%
Maximum Green (s)	6.0				13.0	42.0	23.0	23.0	23.0	42.0		
Yellow Time (s)	3.0				3.0	3.0	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0				1.0	1.0	1.0	1.0	1.0	1.0		
Lead/Lag	Lag				Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0				2.0	2.0	2.0	2.0	2.0	2.0		
Recall Mode	None				None	None	C-Min	C-Min	C-Min	None		
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					5.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					5		5	5	5			
Act Effct Green (s)	15.8	22.2			12.2	43.2		38.8	38.8	30.2		37.0
Actuated g/C Ratio	0.16	0.22			0.12	0.43		0.39	0.39	0.30		0.37
v/c Ratio	0.04	0.14			0.47	0.10		0.12	0.10	0.58		0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	30.8	32.3			49.5	2.8		26.5	8.6	26.2		2.1
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	30.8	32.3			49.5	2.8		26.5	8.6	26.2		2.1
LOS	C	C			D	A		C	A	C		A
Approach Delay		32.1			29.6			19.2				
Approach LOS		C			C			B				
Queue Length 50th (ft)	4	27			56	0		38	0	92		1
Queue Length 95th (ft)	12	45			88	14		88	32	120		5
Internal Link Dist (ft)		1015			798			835			2280	
Turn Bay Length (ft)	100					100			100			100
Base Capacity (vph)	208	396			208	846		709	603	719		808
Starvation Cap Reductn	0	0			0	0		0	0	0		0
Spillback Cap Reductn	0	0			0	0		0	0	0		0
Storage Cap Reductn	0	0			0	0		0	0	0		0
Reduced v/c Ratio	0.04	0.13			0.44	0.08		0.12	0.10	0.42		0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 45.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1484: West First & D Street



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
Lane Width (ft)	12	12	12	12	12	11	12	12	12	12	12	12
Storage Length (ft)	0		150	0		200	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
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	50		50	50	
Trailing Detector (ft)	0	0	0	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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.95	0.76		0.86	0.93		0.99			1.00	
Frt			0.850			0.850		0.979			0.998	
Flt Protected		0.957			0.958						0.984	
Satd. Flow (prot)	0	1131	1425	0	1158	1049	0	2844	0	0	2961	0
Flt Permitted		0.870			0.815			0.955			0.661	
Satd. Flow (perm)	0	980	1080	0	846	979	0	2714	0	0	1984	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			72		40			2	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		289			573			2348			384	
Travel Time (s)		6.6			13.0			53.4			8.7	
Volume (vph)	4	1	4	16	1	53	4	391	49	142	297	5
Confl. Peds. (#/hr)	39		68	68		39	36		5	5		36
Peak Hour Factor	0.50	0.92	0.50	0.54	0.25	0.74	0.75	0.92	0.69	0.88	0.93	0.63
Heavy Vehicles (%)	50%	2%	2%	47%	0%	34%	67%	9%	21%	2%	10%	20%
Adj. Flow (vph)	8	1	8	30	4	72	5	425	71	161	319	8
Lane Group Flow (vph)	0	9	8	0	34	72	0	501	0	0	488	0
Turn Type	Perm		pm+ov	Perm		Perm	pm+pt			Perm		
Protected Phases		3	2		3		2	1 2			1	
Permitted Phases	3		3	3		3	1 2			1		
Detector Phases	3	3	2	3	3	3	2	1 2		1	1	
Minimum Initial (s)	12.0	12.0	15.0	12.0	12.0	12.0	15.0			15.0	15.0	
Minimum Split (s)	16.0	16.0	22.0	16.0	16.0	16.0	22.0			22.0	22.0	
Total Split (s)	25.0	25.0	31.0	25.0	25.0	25.0	31.0	75.0	0.0	44.0	44.0	0.0
Total Split (%)	25.0%	25.0%	31.0%	25.0%	25.0%	25.0%	31.0%	75.0%	0.0%	44.0%	44.0%	0.0%
Maximum Green (s)	21.0	21.0	27.0	21.0	21.0	21.0	27.0			40.0	40.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	
Lead/Lag			Lag				Lag			Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	2.0	
Recall Mode	None	None	None	None	None	None	None			C-Min	C-Min	
Walk Time (s)			7.0				7.0			7.0	7.0	
Flash Dont Walk (s)			8.0				8.0			8.0	8.0	
Pedestrian Calls (#/hr)			10				10			10	10	
Act Effct Green (s)		12.3	24.9		12.3	12.3		78.9			63.9	
Actuated g/C Ratio		0.12	0.25		0.12	0.12		0.79			0.64	
v/c Ratio		0.07	0.02		0.33	0.39		0.23			0.38	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.2	13.5		49.1	16.5		1.3			1.7	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		40.2	13.5		49.1	16.5		1.3			1.7	
LOS		D	B		D	B		A			A	
Approach Delay		27.6			27.0			1.3			1.7	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		5	0		20	0		9			7	
Queue Length 95th (ft)		20	4		13	25		15			m25	
Internal Link Dist (ft)		209			493			2268			304	
Turn Bay Length (ft)			150			200						
Base Capacity (vph)		206	427		178	262		2464			1269	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.04	0.02		0.19	0.27		0.20			0.38	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 42 (42%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 4.3		Intersection LOS: A	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 32: Fargo Street & D Street

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	13	12	12	12	14	16	12	12	12	12	11
Storage Length (ft)	150		0		0		0	130		0		180
Storage Lanes	1		0		1		1	1		0		1
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	50		50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	9	15
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.91
Ped Bike Factor	0.99	0.98					0.94	0.98	0.97			0.95
Frt		0.962					0.850		0.955			
Flt Protected	0.950				0.950			0.950				0.950
Satd. Flow (prot)	1510	2819	0	0	1543	1721	1584	1518	2671	0	0	1362
Flt Permitted	0.195				0.148			0.950				0.950
Satd. Flow (perm)	307	2819	0	0	240	1721	1492	1486	2671	0	0	1293
Right Turn on Red			Yes				No			Yes		
Satd. Flow (RTOR)		56							63			
Headway Factor	1.19	1.17	1.14	1.14	1.14	1.05	0.97	1.14	1.22	1.14	1.14	1.19
Link Speed (mph)		30				30			30			
Link Distance (ft)		635				580			384			
Travel Time (s)		14.4				13.2			8.7			
Volume (vph)	124	332	100	17	92	366	529	113	264	107	2	267
Confl. Peds. (#/hr)	22		53		53		22	19		36		36
Peak Hour Factor	0.88	0.94	0.85	0.50	0.90	0.91	0.93	0.88	0.91	0.85	0.50	0.91
Heavy Vehicles (%)	4%	6%	8%	0%	7%	6%	4%	7%	7%	7%	0%	5%
Parking (#/hr)		0	0						0	0		
Adj. Flow (vph)	141	353	118	34	102	402	569	128	290	126	4	293
Lane Group Flow (vph)	141	471	0	0	136	402	569	128	416	0	0	218
Turn Type	D.P+P			Perm	Perm		pm+ov	Split			Split	Split
Protected Phases	4	1 4				1	2!	3	3		2!	2
Permitted Phases	1			1	1		1					
Detector Phases	4	1 4		1	1	1	2	3	3		2	2
Minimum Initial (s)	6.0			10.0	10.0	10.0	6.0	6.0	6.0		6.0	6.0
Minimum Split (s)	12.0			27.0	27.0	27.0	19.0	17.0	17.0		19.0	19.0
Total Split (s)	15.0	46.0	0.0	31.0	31.0	31.0	27.0	27.0	27.0	0.0	27.0	27.0
Total Split (%)	15.0%	46.0%	0.0%	31.0%	31.0%	31.0%	27.0%	27.0%	27.0%	0.0%	27.0%	27.0%
Maximum Green (s)	10.0			25.0	25.0	25.0	22.0	22.0	22.0		22.0	22.0
Yellow Time (s)	4.0			4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0			2.0	2.0	2.0	1.0	1.0	1.0		1.0	1.0
Lead/Lag							Lead	Lag	Lag		Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None			C-Max	C-Max	C-Max	Ped	Ped	Ped		Ped	Ped
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0	7.0	5.0	5.0		7.0	7.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0		0	0
Act Effct Green (s)	43.4	47.4			33.3	33.3	54.9	19.0	19.0			21.6
Actuated g/C Ratio	0.43	0.47			0.33	0.33	0.55	0.19	0.19			0.22

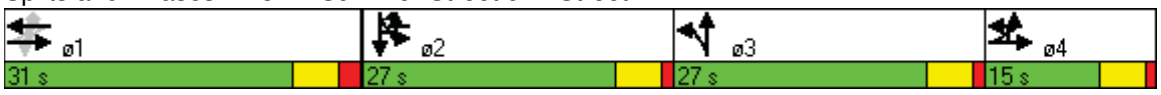
Lane Group	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width (ft)	13	12
Storage Length (ft)		0
Storage Lanes		0
Total Lost Time (s)	4.0	4.0
Leading Detector (ft)	50	
Trailing Detector (ft)	0	
Turning Speed (mph)		9
Lane Util. Factor	0.91	0.95
Ped Bike Factor	0.98	
Frt	0.965	
Flt Protected	0.992	
Satd. Flow (prot)	2893	0
Flt Permitted	0.992	
Satd. Flow (perm)	2869	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	35	
Headway Factor	1.10	1.14
Link Speed (mph)	30	
Link Distance (ft)	297	
Travel Time (s)	6.8	
Volume (vph)	253	97
Confl. Peds. (#/hr)		19
Peak Hour Factor	0.88	0.86
Heavy Vehicles (%)	6%	3%
Parking (#/hr)		
Adj. Flow (vph)	288	113
Lane Group Flow (vph)	480	0
Turn Type		
Protected Phases	2	
Permitted Phases		
Detector Phases	2	
Minimum Initial (s)	6.0	
Minimum Split (s)	19.0	
Total Split (s)	27.0	0.0
Total Split (%)	27.0%	0.0%
Maximum Green (s)	22.0	
Yellow Time (s)	4.0	
All-Red Time (s)	1.0	
Lead/Lag	Lead	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	Ped	
Walk Time (s)	7.0	
Flash Dont Walk (s)	7.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)	21.6	
Actuated g/C Ratio	0.22	

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
v/c Ratio	0.56	0.35			1.70	0.70	0.68	0.44	0.74			0.74
Control Delay	36.7	11.9			389.8	41.9	15.2	41.0	41.6			42.4
Queue Delay	0.5	0.0			0.0	0.0	0.0	0.0	0.0			0.9
Total Delay	37.1	11.9			389.8	41.9	15.2	41.0	41.6			43.3
LOS	D	B			F	D	B	D	D			D
Approach Delay		17.7				70.9			41.5			
Approach LOS		B				E			D			
Queue Length 50th (ft)	0	17			~132	235	133	76	122			152
Queue Length 95th (ft)	105	66			#259	#403	104	132	173			#254
Internal Link Dist (ft)		555				500			304			
Turn Bay Length (ft)	150							130				180
Base Capacity (vph)	268	1324			80	573	861	349	663			313
Starvation Cap Reductn	0	0			0	0	0	0	0			15
Spillback Cap Reductn	16	0			0	0	0	0	0			0
Storage Cap Reductn	0	0			0	0	0	0	0			0
Reduced v/c Ratio	0.56	0.36			1.70	0.70	0.66	0.37	0.63			0.73

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 7 (7%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.70
Intersection Signal Delay: 46.2 Intersection LOS: D
Intersection Capacity Utilization 85.8% 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.
! Phase conflict between lane groups.

Splits and Phases: 374: Summer Street & D Street



Lane Group	SBT	SBR
v/c Ratio	0.74	
Control Delay	31.2	
Queue Delay	0.7	
Total Delay	31.9	
LOS	C	
Approach Delay	35.5	
Approach LOS	D	
Queue Length 50th (ft)	157	
Queue Length 95th (ft)	205	
Internal Link Dist (ft)	217	
Turn Bay Length (ft)		
Base Capacity (vph)	692	
Starvation Cap Reductn	52	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.75	

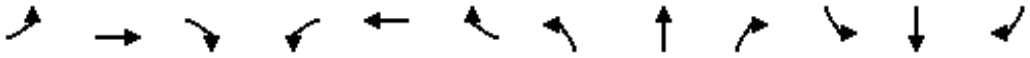
Intersection Summary

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
Lane Width (ft)	9	10	11	11	10	12	11	12	11	11	11	10
Storage Length (ft)	100		0	0		100	0		100	0		100
Storage Lanes	1		0	0		1	0		1	1		1
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	50		50
Trailing Detector (ft)	0	0			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	1.00					0.99		1.00		0.98		
Frt						0.850			0.850			0.850
Flt Protected	0.950							0.999		0.950		
Satd. Flow (prot)	1624	1739	0	0	1739	1553	0	1843	1446	1616	0	1396
Flt Permitted	0.333							0.999		0.950		
Satd. Flow (perm)	569	1739	0	0	1739	1530	0	1842	1446	1581	0	1396
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						253			68			136
Headway Factor	1.14	1.09	1.04	1.04	1.09	1.00	1.04	1.00	1.04	1.04	1.04	1.09
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1114			1146			921			2348	
Travel Time (s)		25.3			26.0			20.9			53.4	
Volume (vph)	24	34	0	0	179	220	2	257	61	181	0	121
Confl. Peds. (#/hr)	1					1	20		12	12		20
Peak Hour Factor	0.67	0.62	0.92	0.92	0.92	0.87	0.50	0.82	0.85	0.85	0.92	0.89
Heavy Vehicles (%)	0%	2%	2%	2%	2%	4%	0%	3%	8%	8%	2%	8%
Adj. Flow (vph)	36	55	0	0	195	253	4	313	72	213	0	136
Lane Group Flow (vph)	36	55	0	0	195	253	0	317	72	213	0	136
Turn Type	D.P+P					pm+ov	Split		Prot	Prot		custom
Protected Phases	2	2 3			3	4	1	1	1	4		2 4
Permitted Phases	3					3						
Detector Phases	2	2 3			3	4	1	1	1	4		2 4
Minimum Initial (s)	6.0				12.0	6.0	14.0	14.0	14.0	6.0		
Minimum Split (s)	14.0				16.0	14.0	22.0	22.0	22.0	14.0		
Total Split (s)	18.0	34.0	0.0	0.0	16.0	22.0	44.0	44.0	44.0	22.0	0.0	40.0
Total Split (%)	18.0%	34.0%	0.0%	0.0%	16.0%	22.0%	44.0%	44.0%	44.0%	22.0%	0.0%	40.0%
Maximum Green (s)	14.0				12.0	18.0	40.0	40.0	40.0	18.0		
Yellow Time (s)	3.0				3.0	3.0	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0				1.0	1.0	1.0	1.0	1.0	1.0		
Lead/Lag	Lag				Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0				2.0	2.0	2.0	2.0	2.0	2.0		
Recall Mode	None				None	None	C-Min	C-Min	C-Min	None		
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					5.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					5		5	5	5			
Act Effct Green (s)	20.6	24.6			12.0	27.9		47.5	47.5	15.9		24.5
Actuated g/C Ratio	0.21	0.25			0.12	0.28		0.48	0.48	0.16		0.24
v/c Ratio	0.17	0.13			0.93	0.41		0.36	0.10	0.83		0.31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	29.7	28.9			92.3	5.3		19.6	5.4	71.0		8.1
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	29.7	28.9			92.3	5.3		19.6	5.4	71.0		8.1
LOS	C	C			F	A		B	A	E		A
Approach Delay		29.2			43.2			17.0				
Approach LOS		C			D			B				
Queue Length 50th (ft)	18	28			125	0		125	1	138		6
Queue Length 95th (ft)	30	37			#261	47		194	26	#212		74
Internal Link Dist (ft)		1034			1066			841			2268	
Turn Bay Length (ft)	100					100			100			100
Base Capacity (vph)	283	428			209	640		875	722	291		539
Starvation Cap Reductn	0	0			0	0		0	0	0		0
Spillback Cap Reductn	0	0			0	0		0	0	0		0
Storage Cap Reductn	0	0			0	0		0	0	0		0
Reduced v/c Ratio	0.13	0.13			0.93	0.40		0.36	0.10	0.73		0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 81 (81%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 35.1		Intersection LOS: D	
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1484: West First & D Street



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
Lane Width (ft)	12	12	12	12	12	11	12	12	12	12	12	12
Storage Length (ft)	0		150	0		200	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
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	50		50	50	
Trailing Detector (ft)	0	0	0	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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.98	0.85		0.89	0.95		0.99			0.99	
Frt			0.850			0.850		0.988			0.997	
Flt Protected		0.971			0.959			0.999			0.996	
Satd. Flow (prot)	0	1469	1454	0	1559	1326	0	3052	0	0	3080	0
Flt Permitted		0.880			0.807			0.955			0.906	
Satd. Flow (perm)	0	1303	1230	0	1171	1261	0	2915	0	0	2797	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			176		22			3	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		297			470			2360			378	
Travel Time (s)		6.8			10.7			53.6			8.6	
Volume (vph)	6	5	5	17	1	150	3	250	18	41	493	12
Confl. Peds. (#/hr)	20		41	41		20	65		10	10		65
Peak Hour Factor	0.50	0.63	0.63	0.67	0.25	0.85	0.75	0.85	0.71	0.98	0.92	0.92
Heavy Vehicles (%)	11%	16%	0%	6%	0%	6%	0%	4%	13%	17%	3%	13%
Adj. Flow (vph)	12	8	8	25	4	176	4	294	25	42	536	13
Lane Group Flow (vph)	0	20	8	0	29	176	0	323	0	0	591	0
Turn Type	Perm		pm+ov	Perm		Perm	pm+pt			Perm		
Protected Phases		3	2		3		2	1 2			1	
Permitted Phases	3		3	3		3	1 2			1		
Detector Phases	3	3	2	3	3	3	2	1 2		1	1	
Minimum Initial (s)	12.0	12.0	15.0	12.0	12.0	12.0	15.0			15.0	15.0	
Minimum Split (s)	20.0	20.0	22.0	20.0	20.0	20.0	22.0			22.0	22.0	
Total Split (s)	20.0	20.0	23.0	20.0	20.0	20.0	23.0	80.0	0.0	57.0	57.0	0.0
Total Split (%)	20.0%	20.0%	23.0%	20.0%	20.0%	20.0%	23.0%	80.0%	0.0%	57.0%	57.0%	0.0%
Maximum Green (s)	16.0	16.0	19.0	16.0	16.0	16.0	19.0			53.0	53.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	
Lead/Lag			Lag				Lag			Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	2.0	
Recall Mode	None	None	None	None	None	None	None			C-Min	C-Min	
Walk Time (s)			7.0				7.0			7.0	7.0	
Flash Dont Walk (s)			8.0				8.0			8.0	8.0	
Pedestrian Calls (#/hr)			10				10			10	10	
Act Effct Green (s)		12.3	27.3		12.3	12.3		75.7			60.7	
Actuated g/C Ratio		0.12	0.27		0.12	0.12		0.76			0.61	
v/c Ratio		0.12	0.02		0.20	0.57		0.14			0.35	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.9	13.4		43.0	14.1		1.1			16.6	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.5	
Total Delay		40.9	13.4		43.0	14.1		1.1			17.1	
LOS		D	B		D	B		A			B	
Approach Delay		33.0			18.2			1.1			17.1	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		12	0		17	0		7			141	
Queue Length 95th (ft)		23	7		12	51		10			m133	
Internal Link Dist (ft)		217			390			2280			298	
Turn Bay Length (ft)			150			200						
Base Capacity (vph)		208	432		187	350		2354			1699	
Starvation Cap Reductn		0	0		0	0		0			673	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.10	0.02		0.16	0.50		0.14			0.58	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 56 (56%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 52.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 37: Fargo Street & D Street

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	12	14	16	12	12	12	11	13
Storage Length (ft)		150		0	0		0	130		0	180	
Storage Lanes		1		0	1		1	1		0	1	
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	50		50	50
Trailing Detector (ft)	0	0	0		0	0	0	0	0		0	0
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.91	0.91
Ped Bike Factor		0.98	0.98				0.92	0.94	0.98		0.90	0.95
Frt			0.969				0.850		0.980			0.978
Flt Protected		0.950			0.950			0.950			0.950	0.987
Satd. Flow (prot)	0	1540	2846	0	1624	1705	1599	1504	2832	0	1415	2917
Flt Permitted		0.311			0.167			0.950			0.950	0.987
Satd. Flow (perm)	0	492	2846	0	286	1705	1466	1412	2832	0	1276	2841
Right Turn on Red				Yes			No			Yes		
Satd. Flow (RTOR)			40						16			17
Headway Factor	1.14	1.19	1.17	1.14	1.14	1.05	0.97	1.14	1.22	1.14	1.19	1.10
Link Speed (mph)			30			30			30			30
Link Distance (ft)			635			580			378			297
Travel Time (s)			14.4			13.2			8.6			6.8
Volume (vph)	3	269	432	116	107	253	337	68	316	31	413	325
Confl. Peds. (#/hr)		34		67	67		34	66		68	68	
Peak Hour Factor	0.38	0.87	0.93	0.95	0.85	0.85	0.92	0.80	0.92	0.58	0.92	0.92
Heavy Vehicles (%)	0%	2%	6%	7%	0%	7%	3%	8%	4%	6%	1%	5%
Parking (#/hr)			0	0					0	0		
Adj. Flow (vph)	8	309	465	122	126	298	366	85	343	53	449	353
Lane Group Flow (vph)	0	317	587	0	126	298	366	85	396	0	289	601
Turn Type	D.P+P	D.P+P			Perm		pm+ov	Split			Split	
Protected Phases	4	4	1 4			1	2!	3	3		2	2
Permitted Phases	1	1			1		1					
Detector Phases	4	4	1 4		1	1	2	3	3		2	2
Minimum Initial (s)	6.0	6.0			10.0	10.0	6.0	6.0	6.0		6.0	6.0
Minimum Split (s)	12.0	12.0			27.0	27.0	21.0	18.0	18.0		21.0	21.0
Total Split (s)	18.0	18.0	46.0	0.0	28.0	28.0	27.0	27.0	27.0	0.0	27.0	27.0
Total Split (%)	18.0%	18.0%	46.0%	0.0%	28.0%	28.0%	27.0%	27.0%	27.0%	0.0%	27.0%	27.0%
Maximum Green (s)	13.0	13.0			22.0	22.0	22.0	22.0	22.0		22.0	22.0
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0			2.0	2.0	1.0	1.0	1.0		1.0	1.0
Lead/Lag							Lead	Lag	Lag		Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None			C-Max	C-Max	Ped	Ped	Ped		Ped	Ped
Walk Time (s)					7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)					14.0	14.0	7.0	5.0	5.0		7.0	7.0
Pedestrian Calls (#/hr)					0	0	0	0	0		0	0
Act Effct Green (s)		41.6	45.6		27.6	27.6	50.3	19.7	19.7		22.7	22.7
Actuated g/C Ratio		0.42	0.46		0.28	0.28	0.50	0.20	0.20		0.23	0.23

Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Lane Util. Factor	0.95
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Headway Factor	1.14
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	70
Confl. Peds. (#/hr)	66
Peak Hour Factor	0.80
Heavy Vehicles (%)	6%
Parking (#/hr)	
Adj. Flow (vph)	88
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio		0.90	0.44		1.59	0.63	0.48	0.29	0.69		0.90	0.89
Control Delay		50.1	16.4		347.7	44.9	18.8	36.7	44.0		69.5	54.1
Queue Delay		8.0	0.0		0.0	0.0	0.0	0.0	0.7		6.7	5.6
Total Delay		58.1	16.4		347.7	44.9	18.8	36.7	44.7		76.1	59.7
LOS		E	B		F	D	B	D	D		E	E
Approach Delay			31.0			81.1			43.3			65.1
Approach LOS			C			F			D			E
Queue Length 50th (ft)		60	42		~124	185	144	49	122		207	210
Queue Length 95th (ft)		#360	258		#228	266	186	76	155		m#370	m#306
Internal Link Dist (ft)			555			500			298			217
Turn Bay Length (ft)		150						130			180	
Base Capacity (vph)		352	1320		79	471	773	346	664		325	684
Starvation Cap Reductn		0	0		0	0	0	0	0		19	51
Spillback Cap Reductn		22	0		0	0	0	0	74		0	0
Storage Cap Reductn		0	0		0	0	0	0	0		0	0
Reduced v/c Ratio		0.96	0.44		1.59	0.63	0.47	0.25	0.67		0.94	0.95

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.59
Intersection Signal Delay: 55.7 Intersection LOS: E
Intersection Capacity Utilization 85.1% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 374: Summer Street & D Street

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

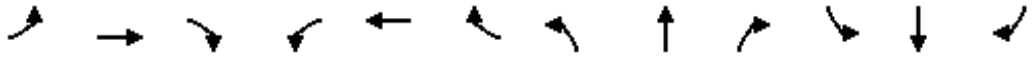
Intersection Summary

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
Lane Width (ft)	9	10	11	11	10	12	11	12	11	11	11	10
Storage Length (ft)	100		0	0		100	0		100	0		100
Storage Lanes	1		0	0		1	0		1	1		1
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	50		50
Trailing Detector (ft)	0	0			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								1.00		0.98		
Frt						0.850			0.850			0.850
Flt Protected	0.950							0.999		0.950		
Satd. Flow (prot)	1624	1722	0	0	1642	1524	0	1844	1459	1728	0	1492
Flt Permitted	0.661							0.999		0.950		
Satd. Flow (perm)	1130	1722	0	0	1642	1524	0	1843	1459	1696	0	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						132			63			189
Headway Factor	1.14	1.09	1.04	1.04	1.09	1.00	1.04	1.00	1.04	1.04	1.04	1.09
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1095			878			915			2360	
Travel Time (s)		24.9			20.0			20.8			53.6	
Volume (vph)	17	39	0	0	74	112	1	134	57	410	0	207
Confl. Peds. (#/hr)							12		8	8		12
Peak Hour Factor	0.63	0.71	0.92	0.92	0.80	0.85	0.25	0.92	0.90	0.92	0.92	0.85
Heavy Vehicles (%)	0%	3%	0%	0%	8%	6%	0%	3%	7%	1%	0%	1%
Adj. Flow (vph)	27	55	0	0	92	132	4	146	63	446	0	244
Lane Group Flow (vph)	27	55	0	0	92	132	0	150	63	446	0	244
Turn Type	D.P+P					pm+ov	Split		Prot	Prot		custom
Protected Phases	2	2 3			3	4	1	1	1	4		2 4
Permitted Phases	3					3						
Detector Phases	2	2 3			3	4	1	1	1	4		2 4
Minimum Initial (s)	6.0				12.0	6.0	14.0	14.0	14.0	6.0		
Minimum Split (s)	10.0				17.0	22.0	22.0	22.0	22.0	22.0		
Total Split (s)	10.0	27.0	0.0	0.0	17.0	46.0	27.0	27.0	27.0	46.0	0.0	56.0
Total Split (%)	10.0%	27.0%	0.0%	0.0%	17.0%	46.0%	27.0%	27.0%	27.0%	46.0%	0.0%	56.0%
Maximum Green (s)	6.0				13.0	42.0	23.0	23.0	23.0	42.0		
Yellow Time (s)	3.0				3.0	3.0	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0				1.0	1.0	1.0	1.0	1.0	1.0		
Lead/Lag	Lag				Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0				2.0	2.0	2.0	2.0	2.0	2.0		
Recall Mode	None				None	None	C-Min	C-Min	C-Min	None		
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					5.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					5		5	5	5			
Act Effct Green (s)	15.8	22.2			12.2	50.4		31.6	31.6	37.4		44.2
Actuated g/C Ratio	0.16	0.22			0.12	0.50		0.32	0.32	0.37		0.44
v/c Ratio	0.13	0.14			0.46	0.16		0.26	0.12	0.69		0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	32.4	32.4			48.8	2.1		31.5	8.8	26.8		2.9
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	32.4	32.4			48.8	2.1		31.5	8.8	26.8		2.9
LOS	C	C			D	A		C	A	C		A
Approach Delay		32.4			21.3			24.8				
Approach LOS		C			C			C				
Queue Length 50th (ft)	14	28			56	0		79	0	117		4
Queue Length 95th (ft)	25	47			93	19		139	33	188		26
Internal Link Dist (ft)		1015			798			835			2280	
Turn Bay Length (ft)	100					100			100			100
Base Capacity (vph)	208	396			213	897		582	504	726		825
Starvation Cap Reductn	0	0			0	0		0	0	0		0
Spillback Cap Reductn	0	0			0	0		0	0	0		0
Storage Cap Reductn	0	0			0	0		0	0	0		0
Reduced v/c Ratio	0.13	0.14			0.43	0.15		0.26	0.13	0.61		0.30

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1484: West First & D Street



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
Lane Width (ft)	12	12	12	12	12	11	12	12	12	12	12	12
Storage Length (ft)	0		150	0		200	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
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	50		50	50	
Trailing Detector (ft)	0	0	0	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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.95	0.85		0.92	0.93		0.99			1.00	
Frt			0.850			0.850		0.979			0.998	
Flt Protected		0.957			0.958						0.984	
Satd. Flow (prot)	0	1167	1425	0	1243	1049	0	2891	0	0	3001	0
Flt Permitted		0.870			0.815			0.955			0.658	
Satd. Flow (perm)	0	1011	1218	0	968	979	0	2760	0	0	2002	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			66		39			2	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		289			573			448			384	
Travel Time (s)		6.6			13.0			10.2			8.7	
Volume (vph)	4	1	4	16	1	53	4	404	49	142	306	5
Confl. Peds. (#/hr)	39		68	68		39	36		5	5		36
Peak Hour Factor	0.50	0.92	0.50	0.54	0.25	0.80	0.75	0.92	0.69	0.88	0.93	0.63
Heavy Vehicles (%)	45%	2%	2%	36%	0%	34%	42%	9%	10%	2%	8%	10%
Adj. Flow (vph)	8	1	8	30	4	66	5	439	71	161	329	8
Lane Group Flow (vph)	0	9	8	0	34	66	0	515	0	0	498	0
Turn Type	Perm		pm+ov	Perm		Perm	pm+pt			Perm		
Protected Phases		3	2		3		2	1 2			1	
Permitted Phases	3		3	3		3	1 2			1		
Detector Phases	3	3	2	3	3	3	2	1 2		1	1	
Minimum Initial (s)	12.0	12.0	15.0	12.0	12.0	12.0	15.0			15.0	15.0	
Minimum Split (s)	16.0	16.0	22.0	16.0	16.0	16.0	22.0			22.0	22.0	
Total Split (s)	25.0	25.0	31.0	25.0	25.0	25.0	31.0	75.0	0.0	44.0	44.0	0.0
Total Split (%)	25.0%	25.0%	31.0%	25.0%	25.0%	25.0%	31.0%	75.0%	0.0%	44.0%	44.0%	0.0%
Maximum Green (s)	21.0	21.0	27.0	21.0	21.0	21.0	27.0			40.0	40.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	
Lead/Lag			Lag				Lag			Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	2.0	
Recall Mode	None	None	None	None	None	None	None			C-Min	C-Min	
Walk Time (s)			7.0				7.0			7.0	7.0	
Flash Dont Walk (s)			8.0				8.0			8.0	8.0	
Pedestrian Calls (#/hr)			10				10			10	10	
Act Effct Green (s)		12.0	24.6		12.0	12.0		79.2			64.2	
Actuated g/C Ratio		0.12	0.25		0.12	0.12		0.79			0.64	
v/c Ratio		0.07	0.02		0.29	0.38		0.23			0.39	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.8	13.8		47.4	16.9		1.4			1.6	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		40.8	13.8		47.4	16.9		1.4			1.6	
LOS		D	B		D	B		A			A	
Approach Delay		28.1			27.3			1.4			1.6	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		5	0		20	0		11			8	
Queue Length 95th (ft)		21	4		13	31		16			m22	
Internal Link Dist (ft)		209			493			368			304	
Turn Bay Length (ft)			150			200						
Base Capacity (vph)		212	430		203	258		2512			1286	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.04	0.02		0.17	0.26		0.21			0.39	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 42 (42%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 4.2		Intersection LOS: A	
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 32: Fargo Street & D Street

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	13	12	12	12	14	16	12	12	12	12	11
Storage Length (ft)	150		0		0		0	130		0		180
Storage Lanes	1		0		1		1	1		0		1
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	50		50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0		0	0
Turning Speed (mph)	15		9	9	15		9	15		9	9	15
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.91
Ped Bike Factor	0.99	0.98					0.94	0.98	0.97			0.95
Frt		0.962					0.850		0.955			
Flt Protected	0.950				0.950			0.950				0.950
Satd. Flow (prot)	1510	2817	0	0	1543	1721	1584	1518	2672	0	0	1362
Flt Permitted	0.195				0.148			0.950				0.950
Satd. Flow (perm)	307	2817	0	0	240	1721	1492	1487	2672	0	0	1294
Right Turn on Red			Yes				No			Yes		
Satd. Flow (RTOR)		59							61			
Headway Factor	1.19	1.17	1.14	1.14	1.14	1.05	0.97	1.14	1.22	1.14	1.14	1.19
Link Speed (mph)		30				30			30			
Link Distance (ft)		635				580			384			
Travel Time (s)		14.4				13.2			8.7			
Volume (vph)	124	332	103	17	93	366	529	118	271	108	2	267
Confl. Peds. (#/hr)	22		53		53		22	19		36		36
Peak Hour Factor	0.88	0.94	0.85	0.50	0.90	0.91	0.93	0.88	0.91	0.85	0.50	0.91
Heavy Vehicles (%)	4%	6%	8%	0%	7%	6%	4%	7%	7%	7%	0%	5%
Parking (#/hr)		0	0						0	0		
Adj. Flow (vph)	141	353	121	34	103	402	569	134	298	127	4	293
Lane Group Flow (vph)	141	474	0	0	137	402	569	134	425	0	0	219
Turn Type	D.P+P			Perm	Perm		pm+ov	Split			Split	Split
Protected Phases	4	1 4				1	2!	3	3		2!	2
Permitted Phases	1			1	1		1					
Detector Phases	4	1 4		1	1	1	2	3	3		2	2
Minimum Initial (s)	6.0			10.0	10.0	10.0	6.0	6.0	6.0		6.0	6.0
Minimum Split (s)	12.0			27.0	27.0	27.0	19.0	17.0	17.0		19.0	19.0
Total Split (s)	15.0	46.0	0.0	31.0	31.0	31.0	27.0	27.0	27.0	0.0	27.0	27.0
Total Split (%)	15.0%	46.0%	0.0%	31.0%	31.0%	31.0%	27.0%	27.0%	27.0%	0.0%	27.0%	27.0%
Maximum Green (s)	10.0			25.0	25.0	25.0	22.0	22.0	22.0		22.0	22.0
Yellow Time (s)	4.0			4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0			2.0	2.0	2.0	1.0	1.0	1.0		1.0	1.0
Lead/Lag							Lead	Lag	Lag		Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None			C-Max	C-Max	C-Max	Ped	Ped	Ped		Ped	Ped
Walk Time (s)				7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0	7.0	5.0	5.0		7.0	7.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0		0	0
Act Effct Green (s)	43.1	47.1			33.1	33.1	54.7	19.3	19.3			21.6
Actuated g/C Ratio	0.43	0.47			0.33	0.33	0.55	0.19	0.19			0.22

Lane Group	SBT	SBR
Lane Configurations		
Ideal Flow (vphpl)	1900	1900
Lane Width (ft)	13	12
Storage Length (ft)		0
Storage Lanes		0
Total Lost Time (s)	4.0	4.0
Leading Detector (ft)	50	
Trailing Detector (ft)	0	
Turning Speed (mph)		9
Lane Util. Factor	0.91	0.95
Ped Bike Factor	0.98	
Frt	0.965	
Flt Protected	0.992	
Satd. Flow (prot)	2893	0
Flt Permitted	0.992	
Satd. Flow (perm)	2869	0
Right Turn on Red		Yes
Satd. Flow (RTOR)	35	
Headway Factor	1.10	1.14
Link Speed (mph)	30	
Link Distance (ft)	297	
Travel Time (s)	6.8	
Volume (vph)	258	97
Confl. Peds. (#/hr)		19
Peak Hour Factor	0.88	0.86
Heavy Vehicles (%)	6%	3%
Parking (#/hr)		
Adj. Flow (vph)	293	113
Lane Group Flow (vph)	484	0
Turn Type		
Protected Phases	2	
Permitted Phases		
Detector Phases	2	
Minimum Initial (s)	6.0	
Minimum Split (s)	19.0	
Total Split (s)	27.0	0.0
Total Split (%)	27.0%	0.0%
Maximum Green (s)	22.0	
Yellow Time (s)	4.0	
All-Red Time (s)	1.0	
Lead/Lag	Lead	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	Ped	
Walk Time (s)	7.0	
Flash Dont Walk (s)	7.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)	21.6	
Actuated g/C Ratio	0.22	

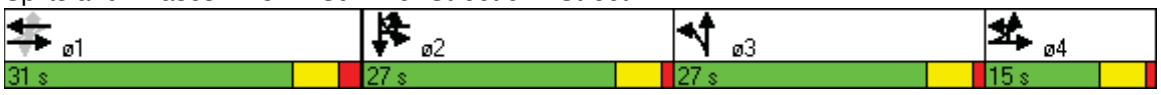
Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
v/c Ratio	0.56	0.35			1.73	0.71	0.68	0.46	0.75			0.74
Control Delay	37.2	11.9			400.6	42.3	15.4	41.1	42.1			42.6
Queue Delay	0.5	0.0			0.0	0.0	0.0	0.0	0.0			0.9
Total Delay	37.7	11.9			400.6	42.3	15.4	41.1	42.1			43.6
LOS	D	B			F	D	B	D	D			D
Approach Delay		17.8				72.8			41.9			
Approach LOS		B				E			D			
Queue Length 50th (ft)	31	17			~134	235	176	80	125			153
Queue Length 95th (ft)	105	66			#262	#403	104	136	176			#256
Internal Link Dist (ft)		555				500			304			
Turn Bay Length (ft)	150							130				180
Base Capacity (vph)	267	1318			79	569	857	349	662			313
Starvation Cap Reductn	0	0			0	0	0	0	0			15
Spillback Cap Reductn	16	0			0	0	0	0	0			0
Storage Cap Reductn	0	0			0	0	0	0	0			0
Reduced v/c Ratio	0.56	0.36			1.73	0.71	0.66	0.38	0.64			0.73

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 7 (7%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.73
Intersection Signal Delay: 46.9 Intersection LOS: D
Intersection Capacity Utilization 86.2% 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.
! Phase conflict between lane groups.

Splits and Phases: 374: Summer Street & D Street



Lane Group	SBT	SBR
v/c Ratio	0.74	
Control Delay	31.5	
Queue Delay	0.8	
Total Delay	32.2	
LOS	C	
Approach Delay	35.8	
Approach LOS	D	
Queue Length 50th (ft)	158	
Queue Length 95th (ft)	207	
Internal Link Dist (ft)	217	
Turn Bay Length (ft)		
Base Capacity (vph)	692	
Starvation Cap Reductn	52	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.76	

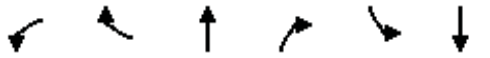
Intersection Summary

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
Lane Width (ft)	9	10	11	11	10	12	11	12	11	11	11	10
Storage Length (ft)	100		0	0		100	0		100	0		100
Storage Lanes	1		0	0		1	0		1	1		1
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	50		50
Trailing Detector (ft)	0	0			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	1.00					0.99		1.00		0.98		
Frt						0.850			0.850			0.850
Flt Protected	0.950							0.999		0.950		
Satd. Flow (prot)	1624	1739	0	0	1739	1553	0	1843	1446	1616	0	1396
Flt Permitted	0.333							0.999		0.950		
Satd. Flow (perm)	569	1739	0	0	1739	1530	0	1842	1446	1581	0	1396
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						254			68			138
Headway Factor	1.14	1.09	1.04	1.04	1.09	1.00	1.04	1.00	1.04	1.04	1.04	1.09
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1114			1146			921			1900	
Travel Time (s)		25.3			26.0			20.9			43.2	
Volume (vph)	24	34	0	0	179	221	2	259	61	183	0	123
Confl. Peds. (#/hr)	1					1	20		12	12		20
Peak Hour Factor	0.67	0.62	0.92	0.92	0.92	0.87	0.50	0.82	0.85	0.85	0.92	0.89
Heavy Vehicles (%)	0%	2%	2%	2%	2%	4%	0%	3%	8%	8%	2%	8%
Adj. Flow (vph)	36	55	0	0	195	254	4	316	72	215	0	138
Lane Group Flow (vph)	36	55	0	0	195	254	0	320	72	215	0	138
Turn Type	D.P+P					pm+ov	Split		Prot	Prot		custom
Protected Phases	2	2 3			3	4	1	1	1	4		2 4
Permitted Phases	3					3						
Detector Phases	2	2 3			3	4	1	1	1	4		2 4
Minimum Initial (s)	6.0				12.0	6.0	14.0	14.0	14.0	6.0		
Minimum Split (s)	14.0				16.0	14.0	22.0	22.0	22.0	14.0		
Total Split (s)	18.0	34.0	0.0	0.0	16.0	22.0	44.0	44.0	44.0	22.0	0.0	40.0
Total Split (%)	18.0%	34.0%	0.0%	0.0%	16.0%	22.0%	44.0%	44.0%	44.0%	22.0%	0.0%	40.0%
Maximum Green (s)	14.0				12.0	18.0	40.0	40.0	40.0	18.0		
Yellow Time (s)	3.0				3.0	3.0	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0				1.0	1.0	1.0	1.0	1.0	1.0		
Lead/Lag	Lag				Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0				2.0	2.0	2.0	2.0	2.0	2.0		
Recall Mode	None				None	None	C-Min	C-Min	C-Min	None		
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					5.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					5		5	5	5			
Act Effct Green (s)	20.6	24.6			12.0	28.0		47.4	47.4	16.0		24.6
Actuated g/C Ratio	0.21	0.25			0.12	0.28		0.47	0.47	0.16		0.25
v/c Ratio	0.17	0.13			0.93	0.41		0.37	0.10	0.83		0.31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	29.7	28.9			92.3	5.3		19.7	5.4	71.0		8.0
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	29.7	28.9			92.3	5.3		19.7	5.4	71.0		8.0
LOS	C	C			F	A		B	A	E		A
Approach Delay		29.2			43.1			17.1				
Approach LOS		C			D			B				
Queue Length 50th (ft)	18	28			125	0		127	1	139		6
Queue Length 95th (ft)	30	37			#261	46		196	26	#217		74
Internal Link Dist (ft)		1034			1066			841			1820	
Turn Bay Length (ft)	100					100			100			100
Base Capacity (vph)	283	428			209	641		873	721	291		541
Starvation Cap Reductn	0	0			0	0		0	0	0		0
Spillback Cap Reductn	0	0			0	0		0	0	0		0
Storage Cap Reductn	0	0			0	0		0	0	0		0
Reduced v/c Ratio	0.13	0.13			0.93	0.40		0.37	0.10	0.74		0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 81 (81%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 35.1		Intersection LOS: D	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

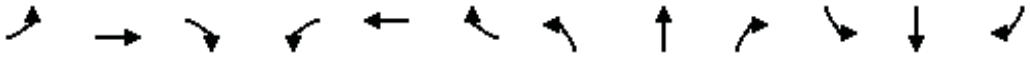
Splits and Phases: 1484: West First & D Street



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	4	13	440	3	9	332
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	14	478	3	10	361
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						448
pX, platoon unblocked						
vC, conflicting volume	680	241			482	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680	241			482	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	381	760			1077	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	18	319	163	130	241
Volume Left	4	0	0	10	0
Volume Right	14	0	3	0	0
cSH	616	1700	1700	1077	1700
Volume to Capacity	0.03	0.19	0.10	0.01	0.14
Queue Length 95th (ft)	2	0	0	1	0
Control Delay (s)	11.0	0.0	0.0	0.7	0.0
Lane LOS	B			A	
Approach Delay (s)	11.0	0.0		0.2	
Approach LOS	B				

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	25.7%	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
Lane Width (ft)	12	12	12	12	12	11	12	12	12	12	12	12
Storage Length (ft)	0		150	0		200	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
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	50		50	50	
Trailing Detector (ft)	0	0	0	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	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.98	0.91		0.94	0.95		1.00			0.99	
Frt			0.850			0.850		0.989			0.997	
Flt Protected		0.971			0.959			0.999			0.997	
Satd. Flow (prot)	0	1469	1454	0	1559	1326	0	3057	0	0	3084	0
Flt Permitted		0.880			0.807			0.955			0.906	
Satd. Flow (perm)	0	1303	1319	0	1228	1261	0	2919	0	0	2799	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8			176		21			3	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		297			470			455			378	
Travel Time (s)		6.8			10.7			10.3			8.6	
Volume (vph)	6	5	5	17	1	150	3	265	18	41	508	12
Confl. Peds. (#/hr)	20		41	41		20	65		10	10		65
Peak Hour Factor	0.50	0.63	0.63	0.67	0.25	0.85	0.75	0.85	0.71	0.98	0.92	0.92
Heavy Vehicles (%)	11%	16%	0%	6%	0%	6%	0%	4%	13%	17%	3%	13%
Adj. Flow (vph)	12	8	8	25	4	176	4	312	25	42	552	13
Lane Group Flow (vph)	0	20	8	0	29	176	0	341	0	0	607	0
Turn Type	Perm		pm+ov	Perm		Perm	pm+pt			Perm		
Protected Phases		3	2		3		2	1 2			1	
Permitted Phases	3		3	3		3	1 2			1		
Detector Phases	3	3	2	3	3	3	2	1 2		1	1	
Minimum Initial (s)	12.0	12.0	15.0	12.0	12.0	12.0	15.0			15.0	15.0	
Minimum Split (s)	20.0	20.0	22.0	20.0	20.0	20.0	22.0			22.0	22.0	
Total Split (s)	20.0	20.0	23.0	20.0	20.0	20.0	23.0	80.0	0.0	57.0	57.0	0.0
Total Split (%)	20.0%	20.0%	23.0%	20.0%	20.0%	20.0%	23.0%	80.0%	0.0%	57.0%	57.0%	0.0%
Maximum Green (s)	16.0	16.0	19.0	16.0	16.0	16.0	19.0			53.0	53.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0			1.0	1.0	
Lead/Lag			Lag				Lag			Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	2.0	
Recall Mode	None	None	None	None	None	None	None			C-Min	C-Min	
Walk Time (s)			7.0				7.0			7.0	7.0	
Flash Dont Walk (s)			8.0				8.0			8.0	8.0	
Pedestrian Calls (#/hr)			10				10			10	10	
Act Effct Green (s)		12.3	27.3		12.3	12.3		75.7			60.7	
Actuated g/C Ratio		0.12	0.27		0.12	0.12		0.76			0.61	
v/c Ratio		0.12	0.02		0.19	0.57		0.15			0.36	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		40.9	13.4		42.7	14.1		1.2			16.7	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.6	
Total Delay		40.9	13.4		42.7	14.1		1.2			17.3	
LOS		D	B		D	B		A			B	
Approach Delay		33.0			18.2			1.2			17.3	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		12	0		17	0		8			142	
Queue Length 95th (ft)		23	7		12	51		12			m135	
Internal Link Dist (ft)		217			390			375			298	
Turn Bay Length (ft)			150			200						
Base Capacity (vph)		208	444		196	350		2358			1701	
Starvation Cap Reductn		0	0		0	0		0			663	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.10	0.02		0.15	0.50		0.14			0.58	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 56 (56%), Referenced to phase 1:NBSB, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 37: Fargo Street & D Street

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	13	12	12	14	16	12	12	12	11	13
Storage Length (ft)		150		0	0		0	130		0	180	
Storage Lanes		1		0	1		1	1		0	1	
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	50		50	50
Trailing Detector (ft)	0	0	0		0	0	0	0	0		0	0
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.91	0.91
Ped Bike Factor		0.98	0.98				0.92	0.94	0.98		0.90	0.95
Frt			0.968				0.850		0.980			0.978
Flt Protected		0.950			0.950			0.950			0.950	0.987
Satd. Flow (prot)	0	1540	2840	0	1624	1705	1599	1504	2831	0	1415	2917
Flt Permitted		0.311			0.167			0.950			0.950	0.987
Satd. Flow (perm)	0	492	2840	0	286	1705	1466	1413	2831	0	1278	2844
Right Turn on Red				Yes			No			Yes		
Satd. Flow (RTOR)			43						16			17
Headway Factor	1.14	1.19	1.17	1.14	1.14	1.05	0.97	1.14	1.22	1.14	1.19	1.10
Link Speed (mph)			30			30			30			30
Link Distance (ft)			635			580			378			297
Travel Time (s)			14.4			13.2			8.6			6.8
Volume (vph)	3	269	432	122	108	253	337	74	324	32	413	333
Confl. Peds. (#/hr)		34		67	67		34	66		68	68	
Peak Hour Factor	0.38	0.87	0.93	0.95	0.85	0.85	0.92	0.80	0.92	0.58	0.92	0.92
Heavy Vehicles (%)	0%	2%	6%	7%	0%	7%	3%	8%	4%	6%	1%	5%
Parking (#/hr)			0	0					0	0		
Adj. Flow (vph)	8	309	465	128	127	298	366	92	352	55	449	362
Lane Group Flow (vph)	0	317	593	0	127	298	366	92	407	0	292	607
Turn Type	D.P+P	D.P+P			Perm		pm+ov	Split			Split	
Protected Phases	4	4	1 4			1	2!	3	3		2	2
Permitted Phases	1	1			1		1					
Detector Phases	4	4	1 4		1	1	2	3	3		2	2
Minimum Initial (s)	6.0	6.0			10.0	10.0	6.0	6.0	6.0		6.0	6.0
Minimum Split (s)	12.0	12.0			27.0	27.0	21.0	18.0	18.0		21.0	21.0
Total Split (s)	18.0	18.0	46.0	0.0	28.0	28.0	27.0	27.0	27.0	0.0	27.0	27.0
Total Split (%)	18.0%	18.0%	46.0%	0.0%	28.0%	28.0%	27.0%	27.0%	27.0%	0.0%	27.0%	27.0%
Maximum Green (s)	13.0	13.0			22.0	22.0	22.0	22.0	22.0		22.0	22.0
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0			2.0	2.0	1.0	1.0	1.0		1.0	1.0
Lead/Lag							Lead	Lag	Lag		Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None			C-Max	C-Max	Ped	Ped	Ped		Ped	Ped
Walk Time (s)					7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)					14.0	14.0	7.0	5.0	5.0		7.0	7.0
Pedestrian Calls (#/hr)					0	0	0	0	0		0	0
Act Effct Green (s)		41.7	45.7		27.7	27.7	50.5	19.5	19.5		22.8	22.8
Actuated g/C Ratio		0.42	0.46		0.28	0.28	0.50	0.20	0.20		0.23	0.23

Lane Group	SBR
Lane Configurations	
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	0
Storage Lanes	0
Total Lost Time (s)	4.0
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	9
Lane Util. Factor	0.95
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Headway Factor	1.14
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	70
Confl. Peds. (#/hr)	66
Peak Hour Factor	0.80
Heavy Vehicles (%)	6%
Parking (#/hr)	
Adj. Flow (vph)	88
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phases	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	0.0
Total Split (%)	0.0%
Maximum Green (s)	
Yellow Time (s)	
All-Red Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	
Recall Mode	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
v/c Ratio		0.90	0.45		1.61	0.63	0.48	0.31	0.72		0.91	0.90
Control Delay		49.7	16.3		352.7	44.7	18.6	37.3	45.0		70.4	54.8
Queue Delay		9.1	0.0		0.0	0.0	0.0	0.0	0.7		7.4	6.5
Total Delay		58.9	16.3		352.7	44.7	18.6	37.3	45.7		77.8	61.2
LOS		E	B		F	D	B	D	D		E	E
Approach Delay			31.1			82.1			44.2			66.6
Approach LOS			C			F			D			E
Queue Length 50th (ft)		57	39		~124	184	143	52	125		210	213
Queue Length 95th (ft)		#360	259		#231	267	185	82	158		m#376	m#310
Internal Link Dist (ft)			555			500			298			217
Turn Bay Length (ft)		150						130			180	
Base Capacity (vph)		352	1321		79	472	774	346	663		325	684
Starvation Cap Reductn		0	0		0	0	0	0	0		19	51
Spillback Cap Reductn		24	0		0	0	0	0	72		0	0
Storage Cap Reductn		0	0		0	0	0	0	0		0	0
Reduced v/c Ratio		0.97	0.45		1.61	0.63	0.47	0.27	0.69		0.95	0.96

Intersection Summary

Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.61
Intersection Signal Delay: 56.5 Intersection LOS: E
Intersection Capacity Utilization 85.5% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
! Phase conflict between lane groups.

Splits and Phases: 374: Summer Street & D Street

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

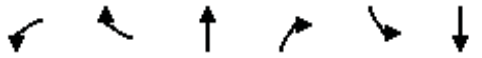
Intersection Summary

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
Lane Width (ft)	9	10	11	11	10	12	11	12	11	11	11	10
Storage Length (ft)	100		0	0		100	0		100	0		100
Storage Lanes	1		0	0		1	0		1	1		1
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	50		50
Trailing Detector (ft)	0	0			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								1.00		0.98		
Frt						0.850			0.850			0.850
Flt Protected	0.950							0.999		0.950		
Satd. Flow (prot)	1624	1722	0	0	1642	1524	0	1844	1459	1728	0	1492
Flt Permitted	0.661							0.999		0.950		
Satd. Flow (perm)	1130	1722	0	0	1642	1524	0	1843	1459	1696	0	1492
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						134			63			190
Headway Factor	1.14	1.09	1.04	1.04	1.09	1.00	1.04	1.00	1.04	1.04	1.04	1.09
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1095			878			915			1906	
Travel Time (s)		24.9			20.0			20.8			43.3	
Volume (vph)	18	39	0	0	74	114	1	136	57	413	0	209
Confl. Peds. (#/hr)							12		8	8		12
Peak Hour Factor	0.63	0.71	0.92	0.92	0.80	0.85	0.25	0.92	0.90	0.92	0.92	0.85
Heavy Vehicles (%)	0%	3%	0%	0%	8%	6%	0%	3%	7%	1%	0%	1%
Adj. Flow (vph)	29	55	0	0	92	134	4	148	63	449	0	246
Lane Group Flow (vph)	29	55	0	0	92	134	0	152	63	449	0	246
Turn Type	D.P+P					pm+ov	Split		Prot	Prot		custom
Protected Phases	2	2 3			3	4	1	1	1	4		2 4
Permitted Phases	3					3						
Detector Phases	2	2 3			3	4	1	1	1	4		2 4
Minimum Initial (s)	6.0				12.0	6.0	14.0	14.0	14.0	6.0		
Minimum Split (s)	10.0				17.0	22.0	22.0	22.0	22.0	22.0		
Total Split (s)	10.0	27.0	0.0	0.0	17.0	46.0	27.0	27.0	27.0	46.0	0.0	56.0
Total Split (%)	10.0%	27.0%	0.0%	0.0%	17.0%	46.0%	27.0%	27.0%	27.0%	46.0%	0.0%	56.0%
Maximum Green (s)	6.0				13.0	42.0	23.0	23.0	23.0	42.0		
Yellow Time (s)	3.0				3.0	3.0	3.0	3.0	3.0	3.0		
All-Red Time (s)	1.0				1.0	1.0	1.0	1.0	1.0	1.0		
Lead/Lag	Lag				Lead	Lag	Lead	Lead	Lead	Lag		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0				2.0	2.0	2.0	2.0	2.0	2.0		
Recall Mode	None				None	None	C-Min	C-Min	C-Min	None		
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					5.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					5		5	5	5			
Act Effct Green (s)	15.8	22.2			12.2	50.5		31.5	31.5	37.5		44.3
Actuated g/C Ratio	0.16	0.22			0.12	0.50		0.32	0.32	0.38		0.44
v/c Ratio	0.14	0.14			0.46	0.16		0.26	0.13	0.69		0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	32.5	32.4			48.8	2.1		31.5	8.8	27.3		3.0
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	32.5	32.4			48.8	2.1		31.5	8.8	27.3		3.0
LOS	C	C			D	A		C	A	C		A
Approach Delay		32.4			21.1			24.9				
Approach LOS		C			C			C				
Queue Length 50th (ft)	15	28			56	0		81	0	122		4
Queue Length 95th (ft)	27	47			93	20		141	33	193		27
Internal Link Dist (ft)		1015			798			835			1826	
Turn Bay Length (ft)	100					100			100			100
Base Capacity (vph)	208	396			213	898		582	503	726		825
Starvation Cap Reductn	0	0			0	0		0	0	0		0
Spillback Cap Reductn	0	0			0	0		0	0	0		0
Storage Cap Reductn	0	0			0	0		0	0	0		0
Reduced v/c Ratio	0.14	0.14			0.43	0.15		0.26	0.13	0.62		0.30

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 12 (12%), Referenced to phase 1:NBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1484: West First & D Street



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	5	15	271	5	15	515
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	16	295	5	16	560
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						455
pX, platoon unblocked	0.94					
vC, conflicting volume	610	150			300	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524	150			300	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	454	876			1273	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	22	196	104	203	373
Volume Left	5	0	0	16	0
Volume Right	16	0	5	0	0
cSH	710	1700	1700	1273	1700
Volume to Capacity	0.03	0.12	0.06	0.01	0.22
Queue Length 95th (ft)	2	0	0	1	0
Control Delay (s)	10.2	0.0	0.0	0.7	0.0
Lane LOS	B			A	
Approach Delay (s)	10.2	0.0		0.3	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C

Detailed Trip Generation

411 D Street

Detailed Trip Generation Estimation - Existing Use (100% Occupancy)

Howard/Stein-Hudson Associates
November 7, 2011

Component	Size	Category	Trip Rates (Trips/ksf or unit)	Directional Split	Unadjusted Vehicle Trips	National vehicle occupancy rate[1]	**Converted to Person trips**	Capture Rate	Person Trips less Capture Rate	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Daily Trip Generation																	
Light Industrial[4]	78	Total	6.97	100%	544	1.13	**615**	0%	615	19%	**117**	34%	**209**	47%	289	1.1	**263**
	ksf	In	3.49	50%	272	1.13	**307**	0%	307	19%	**58**	34%	**104**	47%	144	1.1	**131**
		Out	3.48	50%	272	1.13	**307**	0%	307	19%	**58**	34%	**104**	47%	144	1.1	**131**
AM Peak-hour Trip Generation																	
Light Industrial[4]	78	Total	0.92	100%	72	1.13	**81**	0%	81		**19**		**34**		29	1.1	**26**
	ksf	In	0.81	88%	63	1.13	**71**	0%	71	24%	**17**	42%	**30**	34%	24	1.1	**22**
		Out	0.11	12%	9	1.13	**10**	0%	10	16%	**2**	36%	**4**	48%	5	1.1	**5**
PM Peak-hour Trip Generation																	
Light Industrial[4]	78	Total	0.97	100%	76	1.13	**86**	0%	86		**20**		**36**		31	1.1	**28**
	ksf	In	0.12	12%	9	1.13	**10**	0%	10	16%	**2**	36%	**4**	48%	5	1.1	**5**
		Out	0.85	88%	67	1.13	**76**	0%	76	24%	**18**	42%	**32**	34%	26	1.1	**24**

Notes:

1. National vehicle occupancy rates based on the 2009 National Household Travel Survey.
2. Mode shares based on BTD data for Area 13
3. Local vehicle occupancy rates based on 2000 Census and 2009 National Household Travel Survey.
4. ITE Trip Generation, 8th Edition, LUC 110 (General Light Industrial), average rates per 1,000 sf.

411 D Street

Detailed Trip Generation Estimation - Proposed Project

Howard/Stein-Hudson Associates
August 26, 2011

Component	Size	Category	Trip Rates (Trips/ksf or unit)	Directional Split	Unadjusted Vehicle Trips	National vehicle occupancy rate[1]	**Converted to Person trips**	Capture Rate	Person Trips less Capture Rate	Transit Share[2]	**Transit Trips**	Walk/Bike/ Other Share[2]	**Walk/ Bike/ Other Trips**	Vehicle Share[2]	Vehicle Person Trips	Local vehicle occupancy rate[3]	**Total Adjusted Vehicle Trips**
Daily Trip Generation																	
Residential [4]	199	Total	4.95	100%	986	1.13	**1,114**	0%	1,114	19%	**212**	34%	**379**	47%	524	1.1	**476**
	units	In	2.48	50%	493	1.13	**557**	0%	557	19%	**106**	34%	**189**	47%	262	1.1	**238**
		Out	2.47	50%	493	1.13	**557**	0%	557	19%	**106**	34%	**189**	47%	262	1.1	**238**
Retail [5]	4	Total	42.94	100%	172	1.78	**306**	25%	230	5%	**12**	43%	**99**	52%	120	1.8	**67**
	KSF	In	21.47	50%	86	1.78	**153**	25%	115	5%	**6**	43%	**49**	52%	60	1.8	**33**
		Out	21.47	50%	86	1.78	**153**	25%	115	5%	**6**	43%	**49**	52%	60	1.8	**33**
Daily		Total			1,158		**1,420**		1,344		**224**		**478**				**543**
Total		In			579		**710**		672		**112**		**238**				**271**
		Out			579		**710**		672		**112**		**238**				**271**
AM Peak-hour Trip Generation																	
Residential [4]	199	Total	0.35	100%	69	1.13	**78**	0%	78		**17**		**32**		30	1.1	**27**
	units	In	0.11	31%	21	1.13	**24**	0%	24	16%	**4**	36%	**9**	48%	12	1.1	**11**
		Out	0.24	69%	48	1.13	**54**	0%	54	24%	**13**	42%	**23**	34%	18	1.1	**16**
Retail [5]	4	Total	1.00	100%	4	1.78	**7**	25%	5		**0**		**3**		3	1.8	**2**
	KSF	In	0.61	61%	2	1.78	**4**	25%	3	4%	**0**	43%	**1**	53%	2	1.8	**1**
		Out	0.39	39%	2	1.78	**4**	25%	3	6%	**0**	54%	**2**	40%	1	1.8	**1**
AM Peak		Total			69		**78**		78		**17**		**35**				**29**
Total		In			21		**24**		24		**4**		**10**				**12**
		Out			48		**54**		54		**13**		**25**				**17**
PM Peak-hour Trip Generation																	
Residential [4]	199	Total	0.42	100%	84	1.13	**95**	0%	95		**19**		**37**		38	1.1	**34**
	units	In	0.24	58%	49	1.13	**55**	0%	55	24%	**13**	42%	**23**	34%	19	1.1	**17**
		Out	0.18	42%	35	1.13	**40**	0%	40	16%	**6**	36%	**14**	48%	19	1.1	**17**
Retail [5]	4	Total	3.73	100%	15	1.78	**27**	25%	20		**1**		**10**		10	1.8	**6**
	KSF	In	1.83	49%	7	1.78	**12**	25%	9	6%	**1**	54%	**5**	40%	4	1.8	**3**
		Out	1.90	51%	8	1.78	**14**	25%	11	4%	**0**	43%	**5**	53%	6	1.8	**3**
PM Peak		Total			84		**95**		95		**20**		**47**				**40**
Total		In			49		**55**		55		**14**		**28**				**20**
		Out			35		**40**		40		**6**		**19**				**20**

Notes:

1. National vehicle occupancy rates based on the 2009 National Household Travel Survey.
2. Mode shares based on BTD data for Area 13
3. Local vehicle occupancy rates based on 2000 Census and 2009 National Household Travel Survey.
4. ITE Trip Generation, 8th Edition, LUC 222 (High-Rise Apartment), fitted curve equation - the daily rate for LUC 223 (Mid-Rise Apartment) is not available.
5. ITE Trip Generation, 8th Edition, LUC 820 (Shopping Center), average rates.
6. ITE Trip Generation, 8th Edition, LUC 223 (Mid-Rise Apartment), fitted curve equations.