

# **APPENDIX F: Mobility Management Plan**

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# XMBLY– (5 Middlesex Avenue) Somerville, Massachusetts

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PREPARED FOR

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# 1

## Project Information

### Contact Information

The Project development site address and contact information is as follows:

#### **XMBLY**

5 Middlesex Avenue (Lots 88-A-1 & 00-A-15)

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### Project Description

CDNV Assembly, LLC ("CDNV") intends to develop a dynamic, mixed-use, transit-oriented development (the "Project") at 5 Middlesex Avenue within the Assembly Square District of Somerville, Massachusetts. The Project will be developed within a combined 9.38-acre

site bounded by Mystic Avenue, Foley Street, Grand Union Boulevard, and Revolution Drive (the "Site"). The development program will include a mixture of residential, commercial, and retail uses with associated parking facilities and infrastructure improvements.

The Project will be undertaken over an extended period of time, with the initial development consisting of 329 residential units with 4,140 square feet (sf) ground floor retail space to be located within Block 23 at the northwest corner of Grand Union Boulevard and Revolution Drive.

## **Build Out/Program Estimates**

At its full build-out, the Project will include approximately 489 residential units, 612,500 square feet (sf) of general office space, and 335,500 sf of research & Development/lab space. The exact final breakdown of office and lab space will depend on market conditions. Approximately 27,140 sf of street-oriented retail/restaurant space also will be provided within multiple tenant spaces within the individual blocks comprising the Project. As part of this Project, a new, approximately 16,000 sf fire station serving the Assembly Square district also will be constructed. This amenity will be located at the northwest corner of the building adjacent to the Foley Street/Middlesex Avenue intersection. The development also will feature new publicly accessible and sustainably designed open spaces which will benefit both the Project tenants and residents as well as visitors to the surrounding Assembly Square area. More detailed information regarding the individual block making up the Project and the anticipated development phasing is provided in the following sections.

## **Anticipated Phasing**

The individual blocks comprising the overall Project will be developed on an ongoing basis over several years. The Project's initial phase will consist of the development of Block 23, as described in the following section.

### **Block 23**

The initial development of the Project will occur within Block 23. This new building will be bound by Grand Union Boulevard to the east, Road K to the west, and Road L and Revolution Drive to the north and south, respectively. A total of 329 residential units are proposed within Block 23, along with 4,140 sf of street-level retail/restaurant use. The parking needs for this parcel will be accommodated by 197 structured parking spaces contained within the ground- and second levels of the building. In addition to automobile parking, this Block also will include the number of secured bicycle parking spaces needed to comply with City of Somerville requirements.

The remainder of the Project development will occur within each of the remaining blocks as described below.

**Block 21**

Block 21 is located in the northwest corner of the Site, bordered by Middlesex Avenue to the west, Foley Street to the north, and the proposed "Road K" to the east. In total, 646,000 sf of office/research and development space will be provided within this parcel, with 373,500 sf assumed to be devoted to office, and the remaining 272,500 sf used as laboratory space. Ground floor retail/restaurant space also will be provided oriented towards Foley Street and Road K, including 17,000 sf of retail space and 3,000 sf of restaurant space. Block 21 also will include a new fire station serving the Assembly Square district. This amenity will be located at the northwest corner of the building adjacent to the Foley Street/Middlesex Avenue intersection. Block 21 also will feature parking for 1,352 vehicles, including one sub-grade level within the parking garage.

**Block 24**

The existing Block 24 building currently contains 162,000 sf of space mostly oriented towards general office uses. However, this building also includes a 25,000 sf Assembly Sports Club fitness club. It is expected that this facility will remain in place as part of the initial Site redevelopment, and likely also as part of the long-term use of the Site. However, to provide for a "worst-case" analysis in terms of peak-hour office traffic generation, the transportation analysis was conducted assuming that this area potentially could be converted to office space at some point in the future. Under that scenario, the entirety of the 162,000-sf building would be used as office space. The parking needs for this block will be satisfied by the 1,352-space parking garage within Block 21.

**Block 25**

Block 25 is located in the center of the Site, just south of Block 21 and west of and adjacent to Road K. This building will include 187,000 sf of building space mostly devoted to the proposed 160 residential units. The building also will include 3,000 sf of ground-floor retail space. A single level of underground parking including 110 spaces also will be provided within Block 25 for this development.

**Block 26**

Block 26 will be located at the northeast corner of the Mystic Avenue/Revolution Drive intersection and also will have frontage on the newly created Road K. The planned development within this block will include 140,000 sf of commercial space. For the purpose of this analysis, it is assumed that 77,000 sf of that area will be used for office, with the remaining 63,000 sf used for research and development space. Parking for this block will be provided within the Block 21 garage, along with an additional 36 surface parking spaces provided between Block 24 and Block 26.

A summary of the uses and associated building areas within the blocks described above is provided in Table 1. The building areas shown in Table 1 represent the total building areas for each block, including both leasable area, and "back-of-house" supporting space such as lobbies, mechanical rooms, etc.

**Table 1 Development Program**

| Development                      | Residential      | Office <sup>a</sup> | Research & Development <sup>a</sup> | Retail/<br>Restaurant space <sup>b</sup> | Fire Station     | Total               |
|----------------------------------|------------------|---------------------|-------------------------------------|--|------------------|---------------------|
| <b>Initial development</b>       |                  |                     |                                     |  |                  |                     |
| Block 23                         | 329 units        | 0 sf                | 0 sf                                | 4,140 sf                                 | 0 sf             | 420,000 sf          |
| Subtotal                         | 329 units        | 0 sf                | 0 sf                                | 4,140 sf                                 | 0 sf             | 420,000 sf          |
| <b>Subsequent development</b>    |                  |                     |                                     |  |                  |                     |
| Block 21                         | 0 units          | 373,500 sf          | 272,500 sf                          | 20,000 sf                                | 16,000 sf        | 682,000 sf          |
| Block 24 (existing) <sup>b</sup> | 0 units          | 162,000 sf          | 0 sf                                | 0 sf <sup>b</sup>                        | 0 sf             | 162,000 sf          |
| Block 25 <sup>c</sup>            | 160 units        | 0 sf                | 0 sf                                | 3,000 sf                                 | 0 sf             | 190,000 sf          |
| Block 26                         | 0 units          | 77,000 sf           | 63,000 sf                           | 0 sf                                     | 0 sf             | 140,000 sf          |
| Subtotal                         | 489 units        | 612,500 sf          | 335,500 sf                          | 23,000 sf                                | 0 sf             | 1,174,500 sf        |
| <b>Total Full Build-out</b>      | <b>489 units</b> | <b>612,500 sf</b>   | <b>335,500 sf</b>                   | <b>27,140 sf</b>                         | <b>16,000 sf</b> | <b>1,594,000 sf</b> |

a A total of 948,000 sf of building space will be devoted to office or research and development space. The exact breakdown for between these two uses is based on current development plans, but may change over time based on market conditions and tenant needs.

b Block 24 currently contains a health club facility oriented towards existing Assembly Square workers and visitors. While there are no plans for this use to vacate the Site, it was assumed that this 25,000 sf could be converted to office space under the future conditions evaluated in the Traffic Impact and Access Study accompanying this submittal so as to consider a “worst-case” analysis.

## Parking Plan

The following section summarizes the proposed Project parking supply.

### Proposed Parking Supply

During the initial phase of development, the new Block 23 residential building will be constructed. The parking needs for the 329 residential units within that building will be accommodated by the 197-space two-level parking structure within the building. The required number of secured bicycle parking spaces also will be provided within the building. Patrons of the proposed 4,140 sf of street-level retail/restaurant use are expected primary to be in the form of shared trips with other nearby businesses or residences within the Project Site and/or the surrounding area. The parking needs for this block will be accommodated by 197 structured parking spaces contained within the ground- and second levels of the building.

The existing Block 24 development will remain in operation while the Block 23 residential development is being advanced. There currently is an approximately 652-space parking field available for the 162,000 sf of space within that building. While a portion of that parking supply will be unavailable due to the construction of Block 23, there still will be ample parking available at the northerly end of the Project Site, and in the 83-space lot immediately to the south of the existing building.

With the subsequent full build-out of the Project, a new 1,352-space parking garage will be constructed within Block 21. This parking supply will serve the 646,000 sf of office/research and development space, and 20,000 sf of combined retail/restaurant space to be provided within this parcel. This parking supply also will serve the 162,000 sf of planned office space within Block 24.

Following the initial Site development, the 160 remaining residential units will be constructed within Block 25. This new building also will include 110-space of structured parking within the building footprint.

The parking facilities within each Project building will be controlled through gating, ticketing, reader cards or other means. This will help avoid this parking being used for the MBTA or other nearby developments so that it will be available only for Project use.

As noted earlier, the proposed number of secured bicycle parking spaces will satisfy the City of Somerville requirements. In total, 164 secured bicycle parking spaces are required for the residential component of the Site. For the non-residential uses, a total of 60 secured bike spaces are provided. In total, the resulting 224 parking spaces that will be provided satisfy the Somerville Zoning Ordinance requirements. The Project also will be providing short-term bicycle racks within 50 feet of each building entrance. The exact capacity and location of each rack will be determined during the Special Permit process for each individual block, but the bicycle parking provided will comply with City requirements.

In addition to the parking facilities discussed above, there will be 36 newly created on-street parallel parking spaces provided along Road K. In addition to this parking there also is an abundance of on-street parking in the immediate vicinity of the Site. The parking spaces along Foley Street and Grand Union Boulevard along the Site frontage are metered. The cost for the spaces currently is \$0.25 per fifteen minutes, with a 2-hour time limit during the Monday-Saturday (8 AM-8PM) metered operation of these spaces.

A graphic depicting the proposed Project parking supply, and the nearby on-street existing parking supply, is provided in Figure 1.

Motor Vehicle Parking Plan – Project and On-Street parking

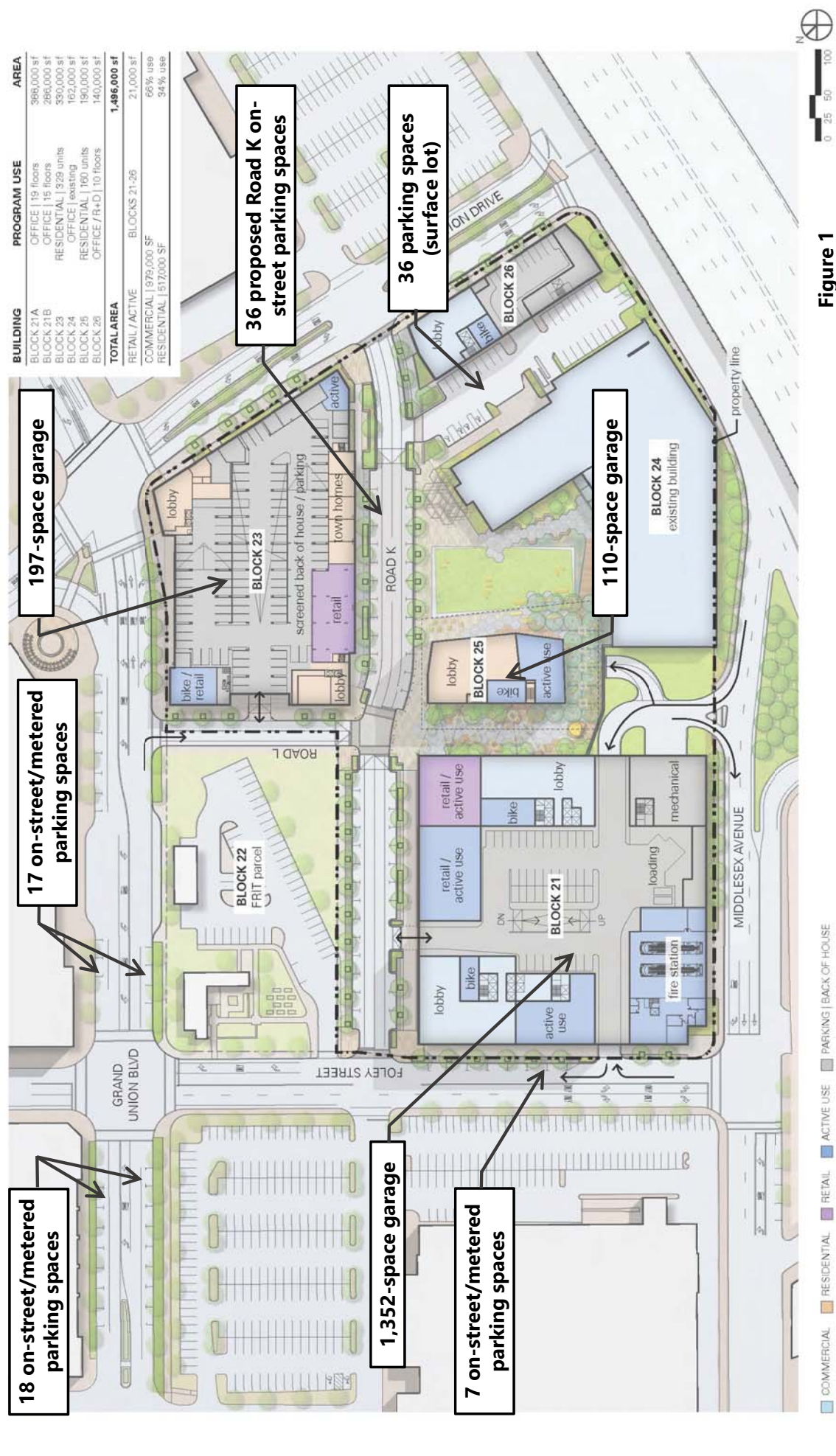


Figure 1

## Nearby Transit Services

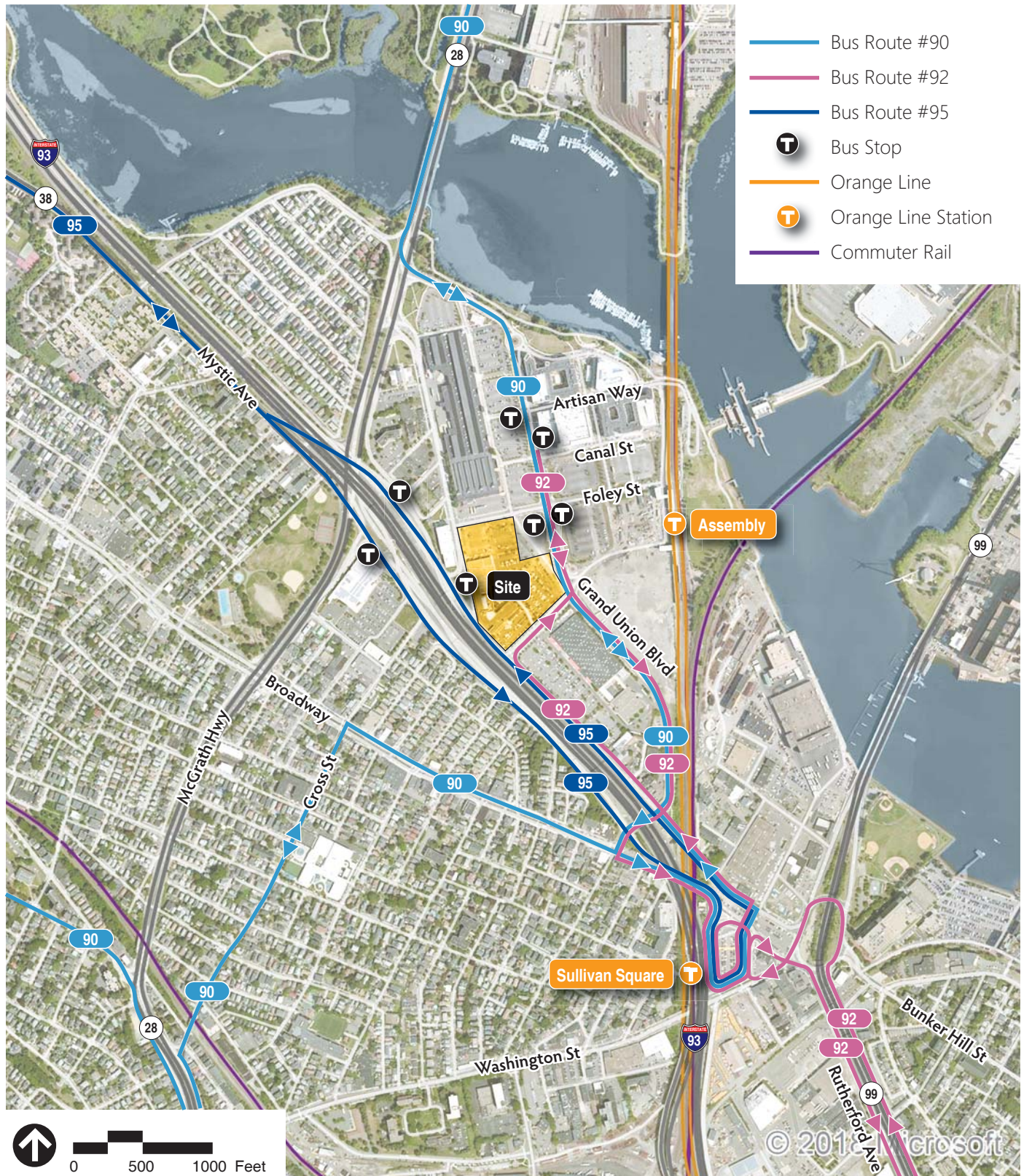
Ample public transportation services by the Massachusetts Bay Transportation Authority (MBTA) currently are provided in the immediate vicinity of the Project Site as summarized in the following section.

### Existing Conditions

The study area is currently served by five MBTA bus routes within 0.5 miles of the Project Site. The area is serviced by MBTA Bus Routes 89, 90, 92, 95, and 101. MBTA Bus Routes 90, 92, and 95 directly serve the Site with stops on Mystic Avenue and Grand Union Boulevard. In addition, the Site is served by the Orange Line of the MBTA with Assembly Station located less than 1,000 feet east of the Site. Descriptions of each transit service is provided below:

- › Bus Route 89 travels between Sullivan Square and Davis Square or Clarendon Hill via Broadway. The nearest stop to the Site is approximately 0.5 miles away at the intersection of Broadway and Lombardi Way / Mt. Vernon Street. During peak periods, Bus Route 89 has a frequency of approximately 7-15 minutes.
- › Bus Route 90 travels between Wellington Station and Davis Square via Assembly Square Mall, Sullivan Square, and Highland Avenue. The nearest stop to the Site is on Grand Union Boulevard adjacent to the Site, at Foley Street. During peak periods, Bus Route 90 has a frequency of approximately 40-50 minutes.
- › Bus Route 92 travels between Assembly Square Mall and Downtown Boston via Sullivan Square and Haymarket. The nearest stop to the Site is on Grand Union Boulevard adjacent to the Site, at Foley Street. On weekday, Bus Route 92 terminates at Sullivan Square before 9:30 AM and after 4:00 PM, therefore not providing service to the Site during peak periods.
- › Bus Route 95 travels between Sullivan Square and West Medford via Mystic Avenue and Medford Square. The nearest stop to the Site is on Mystic Avenue (Route 38) adjacent to the Site, at Middlesex Avenue. During peak periods, Bus Route 95 has a frequency of approximately 25-40 minutes.
- › Bus Route 101 travels between Sullivan Square and Malden Center via Broadway and Medford Square. The nearest stop to the Site is approximately 0.5 miles away at the intersection of Broadway and Lombardi Way / Mt. Vernon Street. During peak periods, Bus Route 89 has a frequency of approximately 5-20 minutes.

Peak period frequencies/headways for MBTA bus services are summarized in Table 2, and are shown graphically in Figure 2.



Source: Bing Aerial, MassGIS



Figure 2  
Public Transit

**XMBLY**  
Somerville, Massachusetts

**Table 2 Project Area MBTA Service**

| Bus Route | Origin / Destination  | Peak-Hour Frequency (minutes) |                 | Weekday      | Saturday     | Sunday     |
|-----------|---|-------------------------------|-----------------|--------------|--------------|------------|
| 89        | Charlestown; Clarendon Hill or Davis Square – Sullivan Station via Broadway | 7-15                          | Inbound         | 2,079        | 973          | 367        |
|           |   |                               | <u>Outbound</u> | <u>2,077</u> | <u>945</u>   | <u>492</u> |
|           |   |                               | Total           | 4,156        | 1,917        | 858        |
| 90        | Charlestown; Davis Square – Wellington Station                              | 45-50                         | Inbound         | 588          | 334          | 230        |
|           |   |                               | <u>Outbound</u> | <u>593</u>   | <u>350</u>   | <u>163</u> |
|           |   |                               | Total           | 1,182        | 684          | 393        |
| 92        | Charlestown; Assembly Square Mall – Downtown via Main Street                | 25-45                         | Inbound         | 667          | 294          | N/A        |
|           |   |                               | <u>Outbound</u> | <u>654</u>   | <u>285</u>   | <u>N/A</u> |
|           |   |                               | Total           | 1,321        | 579          | N/A        |
| 95        | Fellsbury; West Medford – Sullivan Square                                   | 25-40                         | Inbound         | 896          | 445          | 206        |
|           |   |                               | <u>Outbound</u> | <u>986</u>   | <u>491</u>   | <u>236</u> |
|           |   |                               | Total           | 1,881        | 936          | 442        |
| 101       | Charlestown; Malden Station – Sullivan Station via Medford Square           | 20-30                         | Inbound         | 2,453        | 1,165        | 603        |
|           |   |                               | <u>Outbound</u> | <u>2,314</u> | <u>1,232</u> | <u>516</u> |
|           |   |                               | Total           | 4,767        | 2,397        | 1,119      |

a Based on MBTA's Ridership and Service Statistics – Fourteenth Edition, 2014.

### Assembly Square Orange Line Station

Assembly Station on the Orange Line of the MBTA is approximately 800- to 1,000 feet east of the Site via Revolution Drive or Foley Street. The Orange Line travels from Oak Grove in the north to Forest Hills in the south and serves the cities of Malden, Medford, and Somerville, as well as the Boston neighborhoods of Charlestown, Downtown, Chinatown, Back Bay, South End, Roxbury, and Jamaica Plain. The Orange Line runs approximately every six minutes during peak periods. The Assembly Square Station on the Orange Line opened in 2014.

Additional transit service is available within the study area beyond the 0.5 miles range discussed above. Additional stops on the Orange Line are located at Sullivan Square Station (located approximately 0.6 miles south of the Site) and Wellington (located approximately 1 mile north of the Site). Both Sullivan Square Station and Wellington Station are local transit hubs and provide connections to several additional MBTA bus routes as well.

### Bicycle Network

As part of the traffic data collection, current biking activity was recorded for the study area intersections. The area surrounding the Project Site has ample bike accommodations which were implemented as part of the adjacent Assembly Row development. These include new bike lanes, a multi-use path, and other amenities. The nearest Hubway (soon to be "Blue

Bikes”) bike-sharing station to the Site is located at Broadway at Mt. Pleasant Street approximately 0.40 miles to the south. The new internal Site roadways proposed as part of the Project will be designed to accommodate bicycle traffic within the mixture of vehicular and pedestrian traffic along Road K and Road L.

## Sidewalks

Each of the existing roadways adjacent to the overall Project Site have sidewalks located along both sides of the roadway. The only exception to this is Middlesex Avenue, which does not have a sidewalk along the westerly side of the roadway opposite the Project Site. There is a crosswalk on Middlesex Avenue approximately 170 feet to the north of the point where this road diverges from Mystic Avenue. The crosswalk connects to a sidewalk within the grassed island area that restricts Middlesex Avenue to one-way traffic. This walkway extends to an unstriped crossing of the southbound right-turn lane from Middlesex Avenue southbound onto Mystic Avenue northbound. While there also is an existing sidewalk along the westerly edge of Mystic Avenue northbound, that walkway has a maximum width of only five-feet and is located immediately adjacent to the Route I-93 retaining wall to the west. The sidewalks along the Foley Street frontage are approximately 6-feet wide, with the sidewalk being located adjacent to the on-street parallel parking along the southerly edge of that roadway. On the Grand Union Boulevard frontage, there is an existing eight-foot wide sidewalk separated from Grand Union Boulevard by an approximately ten-foot wide landscape strip. This roadway also features an approximately ten-foot wide pick-up/drop-off area to the south of Foley Street abutting property owned by others. On the Revolution Drive side of the Site, approximately seven-foot wide sidewalks are provided along the Site frontage, while the sidewalks on the opposite side of the roadway are approximately six-feet wide.

As part of this Project, new sidewalks will be installed on the frontages of the blocks noted earlier. The sidewalk on the northerly side of Road L will be approximately nine-feet wide. The sidewalk along the southerly side will be approximately ten-feet wide, and will be separated from Road L by a five-foot strip to be used for landscaping, street furniture, or hardscape. This same treatment will be provided along both sides of Road K, with wider sections being provided at some points depending on the building footprint. In addition to the crosswalks provided at the intersections of Road K and Road L with the surrounding streets, there also will be a raised intersection provided at the Road K/Road L intersection. Accompanying standard warning signage will be provided on the approaches to this crossing so that both motorists and pedestrians are fully aware of its presence. This traffic-calming feature will require both Road K and Road L traffic to reduce its speed, which will help maintain a pedestrian-friendly environment in conjunction with the Project.

## Mode Split / Trip Generation

The Project is comprised of office/lab, residential, and retail use being developed over time as shown in Table 1. The rate at which any development generates traffic is dependent upon a number of factors such as size, location, and concentration of surrounding developments. The Trip Generation Manual<sup>1</sup> published by the Institute of Transportation Engineers (ITE) categorizes these land uses and provides weekday daily, weekday morning, weekday evening, Saturday daily and midday peak hour unadjusted vehicle trip generation estimates for each use. For the proposed development, the trip generation estimates for the planned uses were projected using Land Use Code (LUC) 221 (Mid-Rise Residential), LUC 710 (General Office Building), LUC 760 (Research & Development Center) and LUC 820 (Shopping Center). The resulting overall Project trip generation was compared to that associated with the existing uses on the Site, with the additional traffic compared that to condition being added to the study area roadway network.

Table 3 summarizes the Project-related trip projections for the existing uses within the Project Site.

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<sup>1</sup> Trip Generation Manual (10<sup>th</sup> Edition), Institute of Transportation Engineers, Washington D.C., 2017.

**Table 3 Existing Site Trip Generation**

|                 | Existing Office <sup>1</sup><br>(137,000 sf) | Existing Health Club <sup>2</sup><br>(25,000 sf) | Existing Block 24 (162,000 sf)         |   |
|-----------------|--|--|--|---|
|                 |  |  | Total Unadjusted Trips<br>(162,000 sf) | Total Net Vehicle Trips<br>(162,000 sf) |
| Weekday Daily   |  |  |  |   |
| Enter           | 720  | 538  | 1,258                                  | <b>668</b>                              |
| Exit            | <u>720</u>                                   | <u>538</u>                                       | <u>1,258</u>                           | <u><b>669</b></u>                       |
| Total           | 1,440  | 1,076  | 2516                                   | <b>1,337</b>                            |
| Weekday Morning |  |  |  |   |
| Enter           | 134  | 17   | 151                                    | <b>73</b>                               |
| Exit            | <u>22</u>                                    | <u>16</u>  | <u>38</u>                              | <u><b>15</b></u>                        |
| Total           | 156  | 33   | 189                                    | <b>88</b>                               |
| Weekday Evening |  |  |  |   |
| Enter           | 25   | 49   | 74                                     | <b>37</b>                               |
| Exit            | <u>129</u>                                   | <u>37</u>  | <u>166</u>                             | <u><b>82</b></u>                        |
| Total           | 154  | 86   | 240                                    | <b>119</b>                              |
| Saturday Daily  |  |  |  |   |
| Enter           | 151  | 339  | 490                                    | <b>265</b>                              |
| Exit            | <u>151</u>                                   | <u>339</u>                                       | <u>490</u>                             | <u><b>264</b></u>                       |
| Total           | 302  | 678  | 980                                    | <b>529</b>                              |
| Saturday Midday |  |  |  |   |
| Enter           | 39   | 39   | 78                                     | <b>41</b>                               |
| Exit            | <u>33</u>                                    | <u>41</u>  | <u>74</u>                              | <u><b>39</b></u>                        |
| Total           | 72   | 80   | 152                                    | <b>80</b>                               |

1 Source: Trip Generation Manual, 10<sup>th</sup> Edition; Institute of Transportation Engineers (ITE); Washington, D.C. (2017). Land use code 710 (General Office Building).

2 Ibid. Land use code 492 (Health/Fitness Club).

As shown in Table 3, the existing trip generation for Block 24 is lower than that which would be found in a more isolated suburban site. This is due to the availability of public transportation, shared trips with other nearby uses within the Assembly Square district, and the inherent benefits of being located within an area with bicycle and pedestrian accommodations. The details of these assumed mode splits are discussed in greater detail later in this section. With the proposed Project and continued ongoing development of the surrounding area the trend away from single-occupant automobile travel to and from the Project Site should continue.

Following the documentation of the existing Block 24 trip generation as shown in Table 3, trip generation was estimated for the full redevelopment of the Project Site. The methodology used and results of this analysis are discussed in detail in the following sections.

## **Proposed Project-Generated Traffic**

The proposed transit-oriented development will consist of a mixture of office/lab, residential, and supporting retail/restaurant/active uses. As noted above, traffic associated with the office/lab space was estimated using ITE LUC 710 (General Office Building) and LUC 760 (Research & Development Center) trip generation data. Residential trip generation was estimated using ITE LUC 221 (Mid-Rise Residential). The retail uses are expected to be small, service-oriented businesses. While exact tenants have not yet been secured, these are not expected to be large destination-retail uses. Instead, potential uses will include small eating establishments, coffee shops, or gallery uses. While these clearly do not fit the description of a transitional ITE "Shopping Center", retail traffic was estimated using this land use code (LUC 820), which results in an overly conservative analysis. The Project will also include a new 16,000 sf fire station to be located within Block 21. Traffic generation for emergency/municipal facilities such as this is typically associated mostly with personnel traffic, and vehicles leaving on calls, which occur randomly. As most staff will be arriving and departing the Site outside of the critical peak hours being evaluated, it is not necessary to quantify the trip generation, which should be nominal at most, for this use. The overall unadjusted vehicle trip estimates for the Project are presented in Table 4.

**Table 4 Project Trip Generation – Unadjusted Vehicle Trips**

|                        | Office <sup>a</sup> | R&D <sup>b</sup> | Residential <sup>c</sup> | Retail/<br>Restaurant <sup>d</sup> | Total<br>Unadjusted<br>Vehicle Trips |
|------------------------|---------------------|------------------|--------------------------|------------------------------------|--------------------------------------|
| <b>Weekday Daily</b>   |                     |                  |                          |                                    |                                      |
| Enter                  | 3,078               | 1,878            | 1,351                    | 512                                | <b>6,819</b>                         |
| Exit                   | <u>3,078</u>        | <u>1,878</u>     | <u>1,351</u>             | <u>512</u>                         | <b><u>6,307</u></b>                  |
| Total                  | 6,156               | 3,756            | 2,702                    | 1,024                              | <b>13,638</b>                        |
| <b>Weekday Morning</b> |                     |                  |                          |                                    |                                      |
| Enter                  | 518                 | 105              | 43                       | 16                                 | <b>682</b>                           |
| Exit                   | <u>84</u>           | <u>35</u>        | <u>122</u>               | <u>10</u>                          | <b><u>251</u></b>                    |
| Total                  | 602                 | 140              | 165                      | 26                                 | <b>933</b>                           |
| <b>Weekday Evening</b> |                     |                  |                          |                                    |                                      |
| Enter                  | 102                 | 25               | 126                      | 50                                 | <b>303</b>                           |
| Exit                   | <u>535</u>          | <u>139</u>       | <u>80</u>                | <u>54</u>                          | <b><u>808</u></b>                    |
| Total                  | 637                 | 164              | 206                      | 104                                | <b>1,111</b>                         |
| <b>Saturday Daily</b>  |                     |                  |                          |                                    |                                      |
| Enter                  | 677                 | 317              | 962                      | 626                                | <b>2,582</b>                         |
| Exit                   | <u>677</u>          | <u>317</u>       | <u>962</u>               | <u>626</u>                         | <b><u>2,582</u></b>                  |
| Total                  | 1,354               | 634              | 1,924                    | 1,252                              | <b>5,164</b>                         |
| <b>Saturday Midday</b> |                     |                  |                          |                                    |                                      |
| Enter                  | 75                  | 40               | 105                      | 64                                 | <b>284</b>                           |
| Exit                   | <u>149</u>          | <u>40</u>        | <u>110</u>               | <u>59</u>                          | <b><u>358</u></b>                    |
| Total                  | 324                 | 80               | 215                      | 123                                | <b>742</b>                           |

a Based on ITE LUC 710 (General Office Building), assumes 612,500 sf of office space.

b Based on ITE LUC 760 (Research & Development Center), assumes 333,500 sf of R&D space.

c Based on ITE LUC 221 (Mid-Rise Residential), based on 496 units (since reduced to 489 units).

d Based on ITE LUC 820 (Shopping Center), assumes 20,000 sf of retail space and 7,140 sf of restaurant space.

The values shown in Table 4 are the base unadjusted vehicle-trip estimates prior to the necessary adjustments for internal Assembly Square trip sharing, mode-splits, and other factors. The details of how these subsequent adjustments were made by each step are discussed in the following sections.

## Person Trips

The unadjusted vehicle trips calculated using the ITE data were subsequently converted into person trips by applying national data<sup>2</sup> for vehicle-occupancy rates for a variety of

<sup>2</sup> [Summary of Travel Trends – National Household Travel Survey](#); USDOT Federal Highway Administration (Washington, DC), 2017.

uses. This was done so that the national ITE-based data also would be converted to person trips using national data for consistency.

### Internal Capture Trips

As described in the ITE Trip Generation Handbook "because of the complementary nature of these land uses, some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable land uses developed individually on stand-alone sites)...an internal capture rate can generally be defined as the percentage of total person trips generated by a site that are made entirely within the site. The trip origin, destination, and travel path are all within the site."

Based on the methodology outlined in the ITE Trip Generation Handbook, internal capture rates were applied to the gross person trips. The resulting peak-hour person trip estimates for the Project and are presented in Table 5.

**Table 5 Project Peak-Hour Person Trips**

|                        | Office <sup>a</sup> | R&D <sup>a</sup> | Residential <sup>a</sup> | Retail <sup>a</sup> | Total Person Trips |
|------------------------|---------------------|------------------|--------------------------|---------------------|--------------------|
| <b>Weekday Morning</b> |                     |                  |                          |                     |                    |
| Enter                  | 585                 | 119              | 48                       | 28                  | 780                |
| <u>Exit</u>            | <u>95</u>           | <u>40</u>        | <u>137</u>               | <u>17</u>           | <u>289</u>         |
| Total                  | 680                 | 159              | 185                      | 45                  | 1,069              |
| <b>Weekday Evening</b> |                     |                  |                          |                     |                    |
| Enter                  | 115                 | 28               | 142                      | 88                  | 373                |
| <u>Exit</u>            | <u>605</u>          | <u>157</u>       | <u>91</u>                | <u>96</u>           | <u>949</u>         |
| Total                  | 720                 | 185              | 233                      | 184                 | 1,322              |
| <b>Saturday Midday</b> |                     |                  |                          |                     |                    |
| Enter                  | 198                 | 45               | 119                      | 113                 | 475                |
| <u>Exit</u>            | <u>169</u>          | <u>45</u>        | <u>124</u>               | <u>104</u>          | <u>442</u>         |
| Total                  | 367                 | 90               | 243                      | 217                 | 917                |

<sup>a</sup> Person trip generation estimate with internal capture credits applied.

### Mode Share

The mode shares used for this evaluated were developed considering multiple sources. These include a traffic study<sup>3</sup> for a prior development proposal on the Project Site, and data from the Notice of Project Change (NPC)<sup>4</sup> prepared for the Partner's office development within Assembly Square. Mode shares presented as part of the nearby

<sup>3</sup> The Office and Research Center + The Residences at Assembly (Chapter 3 – Transportation) Design Consultants, Inc. (Somerville, Massachusetts), September 30, 2016.

<sup>4</sup> Assembly Row Revised Program for Partners Healthcare Site – Notice of Project Change; VHB, Watertown, Massachusetts (May 15, 2014).

North Point development also were considered due to the similarities in some components of that project. The resulting anticipated mode splits are presented in Table 6. These represent the mode-splits which were conservatively utilized in the Traffic Impact and Access Study accompanying this submittal. Through the implementation of this Mobility Management Plan it is the hope and expectation of the Proponent that the percentage of trips made by automobile can be reduced to under 50-percent.

**Table 6 Mode Share**

| Use                           | Vehicle | Transit | Bike/Walk |
|-------------------------------|---------|---------|-----------|
| Office/Research & Development | 54%     | 36%     | 10%       |
| Residential                   | 43%     | 47%     | 10%       |
| Retail/Restaurant             | 80%     | 10%     | 10%       |

Source: Based on hybrid of mode shares used in Partners Health Care Study PNF (2014), Certified NorthPoint TIS (with data from Kendall Square K2 City of Cambridge, "Hotel Parking and Transportation Demand Management Reports – City of Cambridge", Assembly Edge PUD-PMP (2017), US Census data, and Boston Transportation Department data for Zone 11 (Sullivan Square).

The mode shares discussed above were applied to the net-new person trips to generate the adjusted Project trips by mode. The local average vehicle occupancy, based on US Census data for each primary use then was applied to the vehicle mode to reflect the number of vehicle trips generated by the Site.

### Pass-By Trips

While the ITE rates provide estimates for all the traffic associated with each land use, not all of the traffic generated by the Project will be new to the area roadways. For example, a portion of the vehicle-trips generated by the retail land use will likely be drawn from the traffic volume roadways adjacent to the Project Site. For example, someone traveling on South Street may choose to deviate from their original travel path to visit the site retail, before heading back to continue to their final destination. For this evaluation, ITE pass-by rates for LUC 820 (Shopping Center) were utilized for the retail trip generation, and applied to existing trips on South Street. Specifically, 34- and 26-percent of the Site trip generation was assumed to be drawn from the surrounding roadway network during the weekday evening and Saturday midday peak hours, respectively. For all other time periods studied, a 25-percent pass-by rate was assumed.

### Project-Generated Trips

The mode share and local average vehicle occupancy were applied to the person trips to estimate net new trips by mode, and then the pass-by adjustments noted above were applied to the vehicle trips generated by the retail portion of the Site. Tables 7 and 8 summarize the net new trips by mode and net new vehicle trips by use, respectively.

**Table 7 Project-Generated Peak-Hour Trips by Mode**

|                        | <b>Bike/Walk</b> | <b>Transit</b> | <b>Vehicle<sup>a</sup></b> |
|------------------------|------------------|----------------|----------------------------|
| <b>Weekday Morning</b> |                  |                |                            |
| Enter                  | 77               | 274            | 343                        |
| <u>Exit</u>            | <u>27</u>        | <u>109</u>     | <u>109</u>                 |
| Total                  | 104              | 383            | 452                        |
| <b>Weekday Evening</b> |                  |                |                            |
| Enter                  | 32               | 109            | 132                        |
| <u>Exit</u>            | <u>89</u>        | <u>314</u>     | <u>401</u>                 |
| Total                  | 121              | 423            | 533                        |
| <b>Saturday Midday</b> |                  |                |                            |
| Enter                  | 41               | 135            | 181                        |
| <u>Exit</u>            | <u>39</u>        | <u>131</u>     | <u>163</u>                 |
| Total                  | 80               | 266            | 344                        |

a Total development vehicle trips (including pass-by trips associated with the retail portion).

As shown in Table 7, the Project is expected to generate between 344 and 533 total vehicle trips during the peak hours studied (including trips generated by the existing Site uses). The breakdown of these trips by use are summarized below in Table 8.

**Table 8 Project-Generated Peak-Hour Vehicle Trips by Use <sup>a</sup>**

|                        | Office     | R&D       | Residential | Retail    | Pass-By <sup>b</sup> | Total Trips | -Existing Trips | =Total Net Vehicle Trips |
|------------------------|------------|-----------|-------------|-----------|----------------------|-------------|-----------------|--------------------------|
| <b>Weekday Morning</b> |            |           |             |           |                      |             |                 |                          |
| Enter                  | 265        | 54        | 16          | 6         | 2                    | 343         | 73              | <b>270</b>               |
| <u>Exit</u>            | <u>41</u>  | <u>17</u> | <u>46</u>   | <u>3</u>  | <u>2</u>             | <u>109</u>  | <u>15</u>       | <b><u>94</u></b>         |
| Total                  | 306        | 71        | 62          | 9         | 4                    | 452         | 88              | <b>364</b>               |
| <b>Weekday Evening</b> |            |           |             |           |                      |             |                 |                          |
| Enter                  | 50         | 12        | 38          | 21        | 11                   | 132         | 37              | <b>95</b>                |
| <u>Exit</u>            | <u>272</u> | <u>71</u> | <u>27</u>   | <u>20</u> | <u>11</u>            | <u>401</u>  | <u>82</u>       | <b><u>319</u></b>        |
| Total                  | 322        | 83        | 65          | 41        | 22                   | 533         | 119             | <b>414</b>               |
| <b>Saturday Midday</b> |            |           |             |           |                      |             |                 |                          |
| Enter                  | 88         | 20        | 31          | 32        | 10                   | 181         | 41              | <b>140</b>               |
| <u>Exit</u>            | <u>73</u>  | <u>19</u> | <u>37</u>   | <u>24</u> | <u>10</u>            | <u>163</u>  | <u>39</u>       | <b><u>124</u></b>        |
| Total                  | 161        | 39        | 68          | 56        | 20                   | 344         | 80              | <b>264</b>               |

a New vehicle trips with internal capture credits applied.

b Pass-by credits of 25%, 34%, and 26% applied to weekday morning, weekday evening, and Saturday midday peak hour retail trip generation, respectively.

As shown in Tables 8, the Project is expected to generate a total 452, 533, and 344 vehicle trips during the respective weekday morning, weekday evening, and Saturday midday peak hours. However, these totals include traffic already being generated by the Site under existing conditions (as shown in Table 3). After considering this existing traffic generation, the Project will result in an additional 364, 414, and 264 vehicle trips compared to existing conduction during the weekday morning, weekday evening, and Saturday midday peak hours, respectively.

## Programs and Services

Transportation Demand Management (TDM) measures are most often directed at commuter travel and implemented at office sites. However, due to the mixed-use and transit-orientated nature of the Proposed Project, there also are opportunities to bring TDM programs to the Proposed Project's other land uses, including the residential housing, retail shops, restaurants, and active uses.

The following sections discuss the land use types for which TDM measures/Mobility Management Programs will be implemented for the Project. A description of the TDM elements is presented in this section along with information on how those elements aid employees, residents, visitors, residents, and retail patrons getting to and from the Project Site. As there may be multiple tenants located within the Site, TDM obligations will need to be included as part of the lease language between tenants and the property owner.

General TDM measures to be implemented as part of this Project will involve promoting transit use and facilitating bicycle and pedestrian travel both through Site amenities and ongoing practices and programs. These will include providing bicycle racks and amenities and also may involve providing a new "Hubway" bike-share station within the Project Site. The mixed-use nature of the Site by itself also effectively will function as a TDM measure. Specifically, with the variety of uses proposed both within the Project Site and already in place in the surrounding area, the need to travel off-site by automobile for dining or shopping opportunities will be minimized. With the mixture of residences and office/lab uses it is possible that some residents may specifically choose to work at the Site due to it also being their place of employment, further reducing the need for vehicular travel.

The following plan first addresses general TDM measures that apply to the whole Project Site, then special programs for the office/laboratory uses, residents, and retail shops and restaurants.

### General Measures

#### TMA involvement

The Proponent is committed to becoming an active member of the Assembly Square Transportation Management Association. Through this involvement, the pedestrian-friendly nature of the Site design, and internal roadway networks a framework for offering alternative transportation services will be provided. Post-construction traffic monitoring and evaluation of TDM programs also will be the responsibility of the Proponent as discussed later in this section.

#### Transportation Coordinator

An overall on-site TDM coordinator will be designated to oversee all TDM programs for each building of the Proposed Project, and the Project Site in its entirety. Starting with the initial phase of development, an overall on-site TDM coordinator will be designated.

The TDM Coordinator work location and contact information will be provided to the Director of Transportation & Infrastructure (the "Director") prior to the issuance of a Certificate of Occupancy. This person may be the office manager, human resources employee, or other individual serving a dual-role in another job on the Site. Also, the specific office location for the TDM Coordinator will be shown on plans to be submitted to the Director prior to the submittal of the Building Permit application.

If any buildings are sold to a separate property owner in the future (which is not anticipated), then any such building will be required to have its own TDM coordinator as well due to the separate ownership. The person(s) in this role will coordinate with other organizations within Assembly Square to help promote a reduced reliance on single-occupant motor-vehicle travel to the Project Site. To that end, the TDM measures identified in the following sections will be implemented under the direction and supervision of this person. The final job description for this role will be determined over time, but the duties of the on-site TDM coordinator will include, but not be limited to:

- › Acting as a liaison with Site employers and MassRIDES;
- › Assisting site employees and residents with ride matching and transportation planning;
- › Developing and implementing appropriate TDM measures;
- › Disseminating information on alternate modes of transportation and developing transportation related marketing and education materials;
- › Hosting an annual mobility management educational meeting for tenants and their employees (both the content of this meeting and associated posted material also shall be provided to the Director for review and approval prior to the issuance of a Certificate of Occupancy);
- › Developing and maintaining information pertaining to pedestrian and cycling access to and from the Project Site;
- › Distributing transit maps and passes;
- › In tenants' lease agreements the Proponent will require that tenants be registered with the MassRIDES Emergency Ride Home (ERH) program, or to provide a similar ERH service, with a copy of the lease agreement language specifying that being provided to the Director for review prior to the issuance of the building's Certificate of Occupancy; and
- › Tenants will make efforts to seek qualified candidates located within one-quarter mile (i.e., walking distance) of the Site.

Any tenants with more than fifty (50) employees also will submit their own Mobility Management Plan, with a copy of the lease noting this requirement being provided to the Director prior to the lease execution.

## **Promote Transit Use**

Access to public transportation will significantly reduce demand for vehicular travel and parking spaces. This should be particularly effective in relation to the MBTA Orange Line Assembly Square Station already being in operation within a short walking distance to the Site.

As noted earlier, the on-site TDM coordinator will provide a central commuter information center within the Project Site in a prominent location such as in a building foyer, or near garage elevators. This will provide employees, residents, and visitors with transit maps and schedules and route information for pedestrians and cyclists. One or two smaller centers also may be provided at central locations within the overall development, or possibly within each building. This also could include the residential lobbies or at the entrances to the office/lab buildings among other possible locations that would be identified by the on-site TDM coordinator in consultation with the City of Somerville planning staff.

## **Facilitate Bicycle and Pedestrian Travel**

Travel to the Project Site by cycling or walking will be promoted by the Proponent through the provision of improved bicycle and pedestrian connections within the Project Site and surrounding Assembly Square area. In addition to secured, covered bike storage within each building, bicycle racks also will be provided at locations near various buildings within the overall development. Walking to and from, and throughout the Project Site will be encouraged by the provision of a pedestrian-friendly site layout, which features sidewalks and crosswalks at key points both within the Site and connecting to adjacent planned developments. The bicycle and pedestrian infrastructure improvements will help to promote non-vehicular travel to the Project Site.

The nearest Hubway (soon to be "Blue Bikes") bike-sharing station to the Site is located at Broadway at Mt. Pleasant Street approximately 0.40 miles to the south. Therefore, the Proponent will work with Hubway to inquire about the possibility of a new station located next to the Project Site. The exact timing and number of bike at the station will be determined through consultation with Hubway.

Secured bicycle parking spaces will be provided to meet the City of Somerville requirements. In total, 164 secured bicycle parking spaces area required for the residential component of the Site. For the non-residential uses, a total of 60 secured bike spaces are provided. In total, the resulting 224 parking spaces that will be provide satisfy the Somerville Zoning Ordinance requirements. The Project also will be providing short-term bicycle racks within 50 feet of each building entrance. The exact capacity and location of each rack will be determined during the Special Permit process for each individual block, but the bicycle parking provided will comply with City requirements.

## **Parking Management**

The parking ratios proposed for the Project are considerably lower than those found in a suburban setting, and are low even for sites that are well-served by public transportation. With the limited supply, parking spaces will need to be allocated to a select number of residents and employees.

Office parking spaces either can be allocated only to certain employees through a process to be determined by individual tenants, or parking use could be managed through pricing strategies. With the Site being located within 800- to 1,000 feet of the MBTA Orange Line Assembly Square Station not having an automobile should not be a hardship to several employees.

Most of the Project retail space will consist of small shops, restaurants, or cafes within the ground-level of the buildings. Even without any formal shared parking program, there clearly will be shared activity. With those uses, most customer traffic should be in the form of residents or office/lab workers already on-site as opposed to destination retail traffic.

### **Shared Vehicle Services**

The parking needs for the Project will be lessened due to the nearby availability of public transit currently provided in the area. Furthermore, alternate means of travel, such as taxi, private ride services (Uber, Lyft, and others) should continue to reduce the parking needs for this area. The exact level of usage by these private ride-sharing services can be quantified through post-opening monitoring studies to be conducted as discussed later in this document.

## **Use-Specific Measures**

In addition to the general TDM measures outlined above, the following use-specific programs for the office/laboratory uses, residents, and retail shops and restaurants also will be provided.

### **Office/Laboratory Uses**

Office/lab employers within the Project Site will be required to implement appropriate TDM measures in their leases and to be overseen by the on-site building TDM coordinator. As not every TDM program will be suitable for every type of employer, such as telecommuting or flexible work hours, the on-site TDM coordinator will offer technical assistance to employers to evaluate potential programs and implement them when appropriate. Employer-based TDM measures may include the following programs:

- › Preferential carpool and vanpool parking within the parking garage and spaces near office building entrances within the parking garage as a convenience to commuters and to promote ride-sharing.
- › Ride matching assistance managed by the on-site TDM coordinator or by MassRIDES so that employees find appropriate carpool and vanpool partners.
- › Sponsored vanpools and subsidized expenses.
- › Tenants will provide employees with Qualified Transportation Fringe benefits per current U.S. Internal Revenue Service Code, with a copy of the lease agreement language specifying that being provided to the Director for review prior to the issuance of the building's Certificate of Occupancy.
- › Provide telecommuting options for employees in appropriate jobs.
- › Provide incentives for bicycle and pedestrian commutes, like covered bicycle storage, changing rooms, and shower facilities.
- › Hold promotional events for transit-riders, cyclists, and pedestrians.
- › Offer direct deposit to employees.

- › The Proponent will consider providing preferred parking for low-emitting fuel-efficient vehicles and/or electric vehicle charging stations within the Project garages.

## **Retail/Restaurants**

The Proponent will seek to attract a variety of retail shops, restaurants, and service tenants as ground-floor supporting uses. These shops will potentially include restaurants, apparel, furnishings, general merchandise, and service uses like banks and office supplies. As most of these businesses will be small shops, there will not be the same levels of TDM opportunities internal to each individual business as will be available with larger employers, but employees who work on the Project Site will be able to take advantage of the transportation guidance and programs coordinated by the transportation coordinator.

The suite of TDM measures to be implemented in association with the retail shops are fewer than for traditional offices, but will still have an impact in reducing single-occupant vehicle travel. The retail/restaurant TDM program may include the following:

- › Ride matching services and transit information provided by the on-site TDM coordinator or MassRIDES.
- › Tenants will provide employees with Qualified Transportation Fringe benefits per current U.S. Internal Revenue Service Code, with a copy of the lease agreement language specifying that being provided to the Director for review prior to the issuance of the building's Certificate of Occupancy;
- › Offer direct deposit to employees.
- › As noted earlier, the Proponent will consider providing preferred parking for low-emitting fuel-efficient vehicles and/or electric vehicle charging stations within each of the garages serving the buildings comprising the Proposed Project.

## **Residential**

In addition to providing a pedestrian friendly, mixed-use transit-orientated environment, the Proponent will enact a variety of additional strategies to reduce the need for auto trips by residents. This will include working with a car-sharing service (such as Zipcar) to provide cars for periodic use by residents if such as demand exists.

Several of the TDM measures to be implemented for the entire Project Site will be attractive to new residents. Specifically, the provision of secured bicycle storage, bicycle racks, pedestrian walkways, and proximity to public transportation, including several bus lines and the MBTA Assembly Square Orange Line station should help to minimize the need for vehicular travel and parking spaces. As noted earlier, the Proponent will consider providing preferred parking for low-emitting fuel-efficient vehicles and/or electric vehicle charging stations within each of the garages serving the buildings comprising the proposed Project.

## Monitoring and Annual Reporting

The Proponent will conduct annual travel surveys through the on-site TDM coordinators to be appointed as outlined above. These surveys will be developed through consultation with the City to determine the number of Site employees utilizing public transportation, those traveling to the Site by private automobile, and those using car-sharing services. Employees also will be surveyed to identify those that bike or walk to and from work.

Following the opening of the Site, the Proponent will conduct biennial (every other year) counts of entering and exiting automobile trips for each of the parking garages and lots proposed as part of the Project. The post-opening monitoring also will include the annual reporting of parking utilization for each parking garage and parking lot. This will be done through an inventory to be conducted for a representative weekday midday period when it can reasonably be assumed that the combined peak parking demand for employees, residents, and visitors would occur. As part of the summary report to be provided to the City, a status summary of the Mobility Management Plan in place at the Site also will be provided. In keeping with standard practices for the City of Somerville, all of the monitoring outlined above will occur during the months of April/May or September/October, unless other time periods are pre-approved by the City.