780 American Legion Highway, Roslindale

Mixed-Use Residential/Institutional Development

PROJECT NOTIFICATION FORM September 6, 2019

Submitted Pursuant to Article 80B of the Boston Zoning Code

SUBMITTED BY:

The Home for Little Wanderers
10 Guest Street
Brighton, MA 02135
&
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SUBMITTED TO:

Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201

PREPARED BY:

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September 6, 2019

Mr. Brian Golden, Director
Boston Planning and Development Agency
One City Hall Square, 9th Floor
Boston, MA 02201
Attn: Mr. Michael Sinatra, Project Manager

RE: Project Notification Form
Proposed Mixed-Use Residential / Institutional Development
780 American Legion Highway, Roslindale

Dear Director Golden:

On behalf of The Home for Little Wanders and Alinea Capital LLC, (the "Proponent"), as developer of a 2.46-acres site, currently occupied by The Home for Little Wanderers and housing a variety of social service programs, which is bounded by American Legion Highway, Canterbury Street, and Stella Road ("Project Site"), we are pleased to submit this Project Notification Form ("PNF") for the 780 American Legion Highway Mixed-Use Project to the Boston Planning and Development Agency ("BPDA") in accordance with the Article 80B-2 Large Project Review requirements of the Boston Zoning Code.

The proposal is for sequentially constructing a single project consisting of two buildings: a behavioral and clinical health facility with twenty-two (22) units of supported housing for youths who are aging out of the Commonwealth's foster care system, and ninety-three (93) dwelling units of market rate and workforce rental units, and owner-occupied townhouse condominium units. The buildings will be sited perpendicular to each other with the clinical building located at the northern end of the site and the multi-family residence at the southern end abutting Stella Road. When complete, the development will provide new, state of the art, replacement offices for the HFLW as well as expanded clinical facilities for the Dimock Street Neighborhood Health Center and add 115 units of family and affordable housing as well as 133 covered (garage) and surface spaces as well as new public realm improvements ("Proposed Project").

The Project will include approximately 186,559 gsf of floor area with total building area is distributed between approximately 62,953 gsf for the mixed-use (behavioral-clinical/supported housing) building, and approximately 123,606 gsf for the multi-family residential structure. The Proponent is also exploring arrangements for additional parking spaces on adjacent and nearby parcels.

The Proposed Project has been designed and programmed to advance the housing creation goals of Mayor Martin Walsh's 2030 Housing Plan. In accordance with BPDA requirements, the public notice for the PNF appears under Legal Notices in the September 6, 2019 edition of the *Boston Herald*.

The Proposed Project will exceed the 50,000 square foot size threshold of Article 80 for a project within a Boston neighborhood, and therefore requires several additional filings pursuant to Large Project Review regulations. A Letter of Intent to File a Project Notification Form was filed with the BPDA on February 8, 2018 (attached hereto as Appendix "A").

In support of the Article 80 Large Project Review process, the Proponent has conducted, and continues to conduct, community outreach with neighbors and abutters of the site, including meetings and discussions with elected representatives and other officials. The Proponent has also made presentations to residents of the surrounding neighborhood sponsored by relevant local civic associations.

On behalf of the entire project team, we would like to thank you and the BPDA staff assigned to the 780 American Legion Highway Project, particularly the Project Manager Michael Sinatra and the reviewing BPDA Urban Designers, Alexa Pinard and Michael Cannizzo, for their invaluable assistance to date in assisting the development team in shaping the Proposed Project and in completing this comprehensive PNF filing.

We believe that the Proposed Project will constitute a significant positive addition to the Roslindale neighborhood, by revitalizing this underutilized site with much-needed new office and clinical space for the Home for Little Wanderers and multi-family housing in two attractive and thoughtfully designed buildings. We look forward to continuing the Large Project Review process and advancing the Proposed Project through public review with the cooperation of the BPDA, other City officials, members of the Impact Advisory Group, and the Roslindale community.

In accordance with BPDA requirements, please find attached ten (10) copies of the PNF plus a CD containing the electronic PNF file to be uploaded to the BPDA's online portal for public review.

Very truly yours,
MITCHELL L. FISCHMAN ("MLF") CONSULTING LLC

Mitchell L. Fischman, Principal

PUBLIC NOTICE

The Boston Redevelopment Authority ("BRA"), d/b/a Boston Planning & Development Agency ("BPDA"), pursuant to Article 80A and Article 80B of the Boston Zoning Code ("Code"), hereby gives notice that The Home for Little Wanderers and Alinea Partners Capital Partners LLC (the "Proponent") has submitted a Project Notification Form for Large Project Review ("PNF") on September 6, 2019 to the BPDA for a mixed-use office/clinical and multi-family residential development at 780 American Legion Highway in the Roslindale neighborhood of Boston. The proposal is for the sequential construction consisting of two buildings: a building with 62,953 gsf of floor area for a behavioral and clinical health facility and 22 units of supported housing for youths who are aging out of the Commonwealth's foster care system, and a building with 123,606 gsf of floor area for 93 dwelling units of market rate and workforce rental units and owner-occupied townhouse condominiums, along with total on-site parking for the two buildings of 133 covered (garage) and surface spaces as well as other public realm improvements ("Proposed Project"). The project site, bounded by American Legion Highway, Canterbury Street, and Stella Road, includes a 2.46-acre site, currently occupied by Home for Little Wanderers, and housing a variety of social service programs (the "Project Site"). Approvals are requested of the BPDA pursuant to Article 80. In the required Scoping Determination for this PNF, the BPDA may waive further review pursuant to Section 80B-5.3(d), if, after reviewing public comments, the BPDA finds that such PNF adequately describes the Proposed Project's impacts. The PNF may be reviewed at the Office of the Secretary of the BPDA, Room 910, Boston City Hall, One City Hall Square, Boston, MA 02201, between 9:00 AM and 5:00 PM, Monday through Friday except legal holidays. A copy of the PNF is on reserve and available for review at the Roslindale Branch - Boston Public Library, 4246 Washington Street, Roslindale, MA 02131 during scheduled business hours. Public comments on the PNF, including the comments of public agencies, should be submitted by email to: michael.a.sinatra@boston.gov or in writing to: Mr. Michael Sinatra, Project Manager, BPDA, One City Hall Square, Boston, MA 02201 by October 11, 2019, at the close of business.

BOSTON REDEVELOPMENT AUTHORITY
Teresa Polhemus, Executive Director/Secretary
September 6, 2019

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The Home for Little Wanderers ("HFLW") (the "Proponent"), as represented by Alinea Capital Partners, LLC (the "Developer's Representative"), is submitting, this Project Notification Form ("PNF") for a mixed-use residential/institutional development project at 780 American Legion Highway in the Roslindale neighborhood (the "Proposed Mixed-Use Project"), in accordance with the Article 80B requirements of the Boston Zoning Code ("Code").

The HFLW Project encompasses a 2.46-acres (107,129 sf) site and is currently occupied by Home for Little Wanderers, housing a variety of social service programs. The site is bounded by American Legion Highway, vacant property along American Legion Highway, rear of residential properties along Canterbury Street, and Stella Road.

The proposed mixed-use project consists of demolishing the existing 32,308 gsf HFLW building and sequentially constructing a single project consisting of two buildings: a behavioral and clinical health facility with twenty-two (22) units of supported housing for youths who are aging out of the Commonwealth's foster care system, and ninety-three (93) dwelling units of market rate and workforce rental units, and owner-occupied townhouse condominium units. The two buildings will be sited perpendicular to each other with the clinical building located at the northern end of the site and the multi-family residence at the southern end abutting Stella Road. When complete, the overall development will provide new state of the art replacement offices for the HFLW as well as expanded clinical facilities for the Dimock Street Neighborhood Health Center, and one-hundred and fifteen (115) units of new family and affordable housing.

The Project will include approximately 186,559 gsf of floor area with an overall Floor Area Ratio (F.A.R.) of approximately 1.79. Total building area is distributed between approximately 62,953 gsf for the mixed-use use (behavioral-clinical/supported housing) building, and approximately 123,606 gsf for the multi-family residential structure, along with total on-site parking for 131 covered (garage), and surface spaces as well as other public realm improvements as summarized in **Table 1-1** ("Proposed Project"). The Project's mix of uses, which will generate a daytime parking demand from employees, social services, and medical clients, and night time parking demand from residents, will allow for some shared-parking activity. The Proponent is also exploring arrangements for additional parking spaces on adjacent and nearby parcels.

Table 1-1. Approximate Project Dimensions of Proposed Project

Lot Area	**2.46 Acres (107,129 SF)**
Gross Floor Area	**186,559+/- gsf**
FAR	**1.79**
Floors	**5-6 Floors**
Height	**Approx. 65 +/- Feet**

It is important to also recognize that the project will be sequentially built over three to four years and involve the initial construction of the mixed-use clinical facility and affordable residences, followed by relocating the existing HFLW building into the new clinical facility, and the demolition and construction of the 93 new multi-family units. It is also critical for the Proponent to be able to service the site during this transitional phase as well as once it is fully completed and stabilized. The new development will incorporate a variety of uses distributed between the two buildings: clinical, affordable rental, multi-family and (architecturally) integrated townhouses. Each of the uses requires specific access, parking and pedestrian circulation requirements to achieve an integrated, functional mixed use, residential and clinical environment.

In addition to the 22-units of supported affordable housing for youth who are aging out of the Commonwealth's foster care system, the breakdown of market rate residential units in the multi-family residence and townhouses includes approximately 16 one-bedroom units, approximately 52 two-bedroom units, and approximately 11 three-bedroom units, 6 two-bedroom townhouse units, and 8 three-bedroom townhouse units.

The Project's mix of uses, which will generate a daytime parking demand from employees and clinical users, and a nighttime parking demand from residents, will allow for some shared-parking activity. The Proponent is also exploring arrangements for additional parking spaces on adjacent or nearby parcels. Please refer to **Figures 1-1** through **1-8** for existing site photos.

With residential units being in close proximity to several bus lines connecting to downtown Boston via the Forest Hills MBTA Station, it is expected that many residents will utilize public transportation to commute to their jobs.

A Letter of Intent to File a Project Notification Form was filed with the Boston Planning and Development Agency for the proposed mixed-use development project on February 8, 2018 (See **Appendix A**).

780 American Legion Highway

Figure 1-1. Project Locus
780 American Legion Highway

Figure 1-2. USGS Map
780 American Legion Highway

Figure 1-3. Existing Site Photos

Front Door - The Home for Little Wanderers

780 American Legion Highway

Figure 1-4. Existing Site Photos

Adjacent Stella Road and Funeral Home at Corner of American Legion Highway

View of Adjacent Stella Road from Canterbury Street

Figure 1-5. Existing Site Photos

Front Access Roadway to 780 American Legion Highway

Existing Onsite Parking along Stella Road side of Site

Figure 1-6. Existing Site Photos

American Legion Highway in Front of HFLW

View of Existing Site from Across American Legion Highway

Figure 1-7. Existing Site Photos

Homes on Opposite Side of American Legion Highway from Site

Homes Along Canterbury Street to rear of Site

Figure 1-8. Existing Site Photos

View North along American Legion Highway

Nearby American Legion Highway
Shopping Center Parking Lot

1.2 Existing Conditions, Development Options, Project Sequencing and Project Access

1.2.1 Existing Site Conditions and Development Options

Site Conditions

The overall project site includes a parcel of land of 107,129 Square feet (2.46-acres) fronting on American Legion Highway ("ALH") with two curb-cuts, both two-ways, from ALH, and adjacent to Stella Street, a vacant property along ALH, and the rear of residential properties along Canterbury Street. The existing 2-3 story HFLW building includes 32,308 gsf of floor area and is used for HFLW administrative and clinical activities, and the site includes 81-existing surface parking spaces on both sides of the existing 780 American Legion Highway structure (see **Figure 3-3**. Existing Conditions Survey).

The existing HFLW building was built many decades ago as a state hospital and is now used to house The Home's CSA (Hyde Park), Clinic, Preschool Outreach, Therapeutic After School and Family Resource Center programs. In addition to having space inefficiencies (e.g. wide hallways, small hospital style rooms with bathrooms attached) that contribute to the $450,000 in annual operating costs, the building needs major repairs including to the overall structure, roof, painting, WIFI, and HVAC. It should also be noted that HFLW has reached its space capacity at this location. Due to these circumstances, HFLW needed to make some critical decisions with respect to the future of the property.

Development Options

During the planning phase for the project, HFLW had three options for the property:

- (1) invest in the major repairs and continue its present operation,
- (2) sell the property and lease space elsewhere, or
- (3) work with a developer to raze the building and rebuild a new development.

Option (1) was ruled out after an external company estimated the repairs to be in excess of $1,000,000.00. This figure included only repair work and excluded improvements and/or expansion to make the existing building more conducive to current programming. Option (2) was ruled out after being unable to find lease space in the area that could house all our programs. The programs at HFLW's Roslindale site are complementary and utilized by clients in combination so there is tremendous benefit to having them housed together. In addition, our CSA – Hyde Park program is mandated by contract to remain in the Roslindale area.

HFLW decided to go with option (3). This option allows HFLW to have customized programmatic space, keep all programs under one roof, and expand capacity for future programming. A more modern building would also reduce our annual operating costs.

Rebuilding Roslindale Site

HFLW selected Developer Duane Jackson of Alinea Capital Partners to redevelop the Roslindale property. HFLW has previously partnered with Mr. Jackson and his company on its Roxbury Village Program, a residential program for youth ages 18+ who age out of state care into homelessness. Alinea utilized city and state funding to purchase and renovate the Roxbury Village property and lease it to HFLW at an affordable rate.

HFLW's plan for the Roslindale site is for Alinea to utilize a combination of tax credits, city and state funding to construct space that can house all of HFLW's existing programs as well as rental housing for Alinea to expand its Roxbury Village programming concept. These new spaces would include approximately 17,000 square feet of programmed space and another approximate 17,000 square feet of low-income housing comprised of 16 two-bedroom dwelling units, both of which will be leased to HFLW. The project will also include 93 mixed-income residential dwelling units comprised of market-rate condominiums, low income rental units, and workforce rental units and/or condominiums.

1.2.2 Project Sequencing

As earlier indicated, the project will be sequentially constructed over three to four years, and involve the initial construction of the mixed-use, clinical facility and affordable residences, followed by relocating the existing HFLW building, and demolishing and constructing the new 93 multi-family units in an adjacent building. It is also critical to be able to service the site during the transitional phase, while the parking garage in the multi-family building is under construction, as well as once it is fully completed and stabilized. The new development will incorporate a variety of uses distributed between the two buildings: clinical, affordable rental, multi-family and (architecturally) integrated townhouses. Each of the uses requires specific access, parking and pedestrian circulation requirements to achieve an integrated, functional mixed use, residential and clinical environment.

1.2.3 Project Access

The Site circulation plan is designed to create a safe and pleasant entry to the Proposed Project from American Legion Highway, front door vehicle drop-offs for the HFLW and multi-family residence buildings. Service access, and the covered and surface parking spaces will also be accessed from American Legion Highway.

During the Article 80 public and agency review process, the Project will be further reviewed with the city and neighborhood to finalize the proposed project's access. The Proponent will also contact the Boston Parks Commission because of the site's adjacency to the Greenbelt Protection Overlay District (GPOD) to help determine whether impacts presented by the Site Plan options are acceptable to the Commission.

Proponent's Original Site Plan - Two-Vehicular Access (From American Legion Highway)

The Proponent's original site plan retained the existing dual access to the site creating a one-way, in-only, entrance at the southern end of the site and a second, northern two-way access point, leading directly to the parking garages. The southern point led to a hardscape drop-off area designed to accommodate arrivals and deliveries and provide convenient access to residents living in the new multi-story rental residence as well as owner-occupied townhouses. The southern one-way stem intersected with the northern, perpendicular, two-way stem facilitating either a left-hand turn leading to American Legion Highway ("ALH") or a right-hand turn into the garage. In addition, the second, northern access point, leads directly to the garages (See **Figure 1-9**).

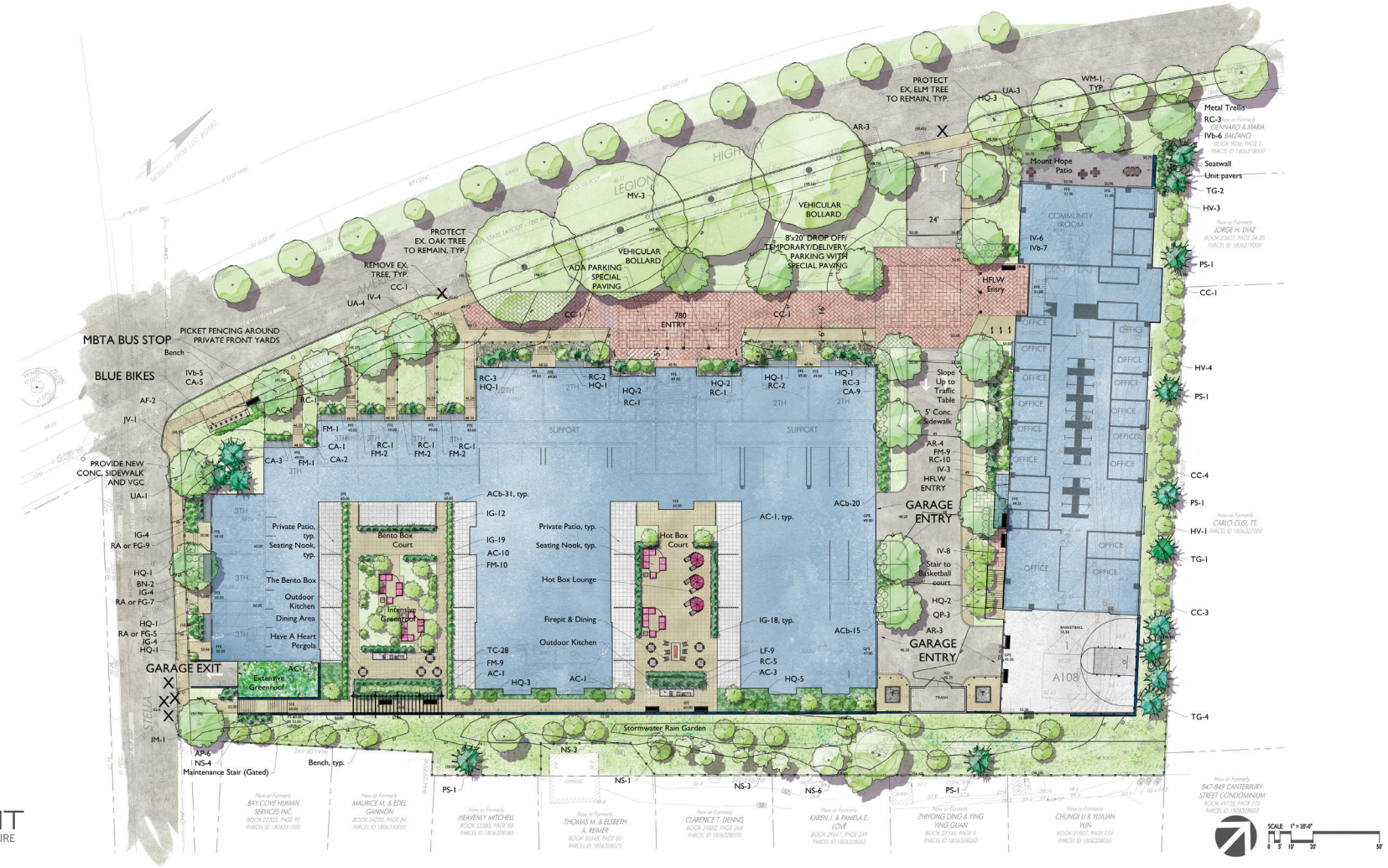
The original Site plan's proposed dual access recommendation is deemed a critical element of the site design yielding the following:

- Pedestrian and vehicular safe access to the site;
- Accommodation of adequate vehicular flow off ALH avoiding backups and associated hazards on the street;
- Convenient pedestrian/resident access to multi-family and owner-occupied residences;
- Increased vehicular maneuverability (e.g., delivery trucks, Boston Fire Department);
- Increased and consolidated green space(s);
- In accordance with the Boston Zoning Code, compliance with the Greenbelt Planning Overlay District (GPOD); and
- Established a clear individual project identity (Clinic vs. Residences).

The BPDA has requested that the Proponent also evaluate additional site circulation options for the project, as described below:

Option 1: Two-Vehicular Access (From American Legion Highway) - Alternative Site Plan

Following the discussions with the BPDA, the Proponent has also considered maintaining two curb-cuts which would also address the increased vehicular access demands while achieving the operational goals and objectives for the entire site. Option 1 reverses the direction from the Proponent's Original Site Plan for the southerly driveway, and designating it as an **exit only** onto American Legion Highway. The northerly driveway would continue to be two-way, and serve both entering and exiting vehicles. In addition, a secondary exit-only driveway from the Project's garage continues to be proposed onto Stella Road, serving as a one-way egress via Stella toward American Legion Highway (See **Figure 1-10**).



VERDANT
LANDSCAPE ARCHITECTURE

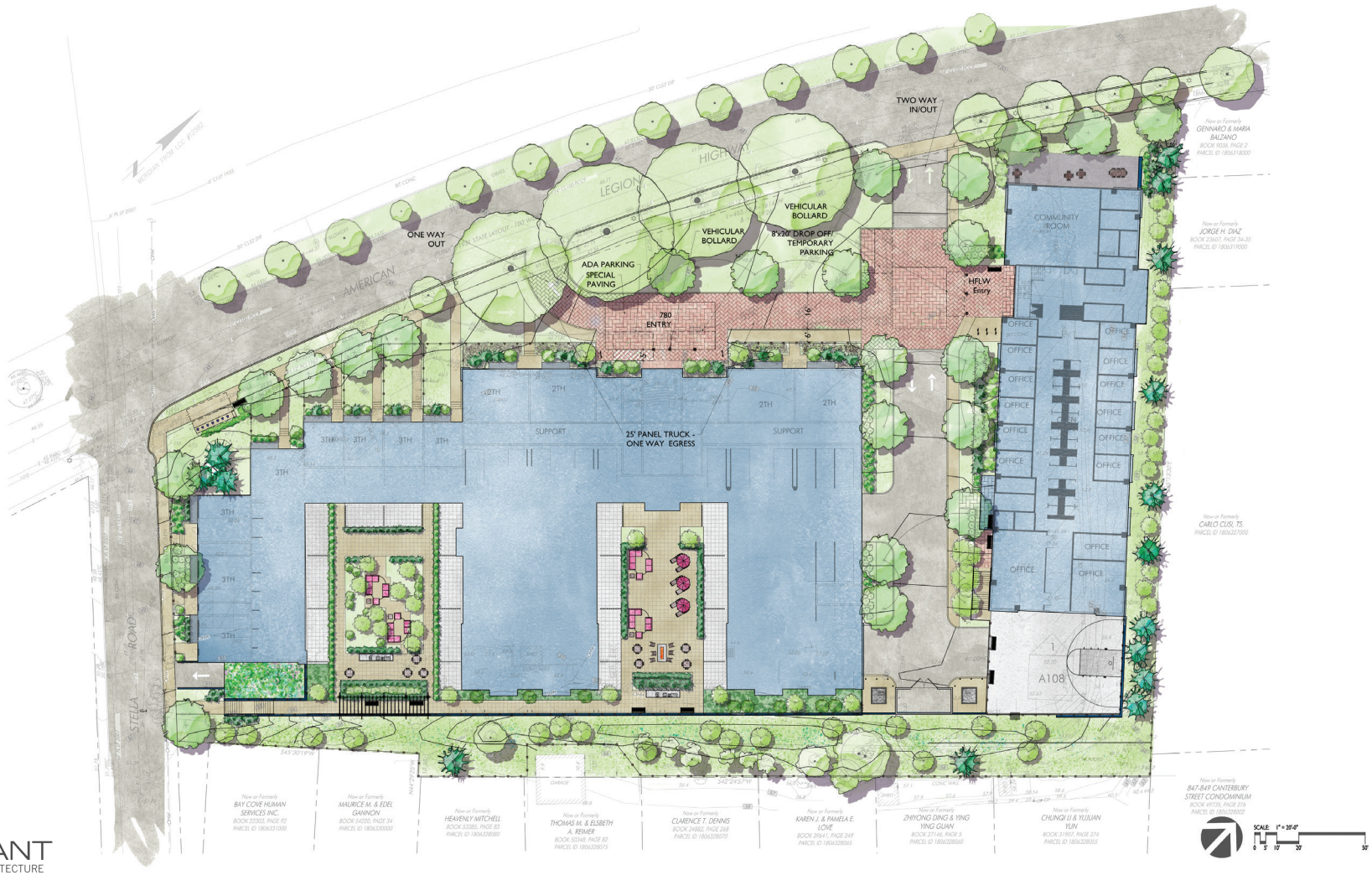
780 AMERICAN LEGION HWY
ROSLINDALE , MA

8// 2019 DHK ARCHITECTS, INC

FIGURE 1 - 9
PROPONENT'S ORIGINAL SITE PLAN (TWO VEHICULAR ACCESS)

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS



VERDANT
LANDSCAPE ARCHITECTURE

780 AMERICAN LEGION HWY
ROSLINDALE , MA

8/12/2019 DHK ARCHITECTS, INC

FIGURE 1-10
OPTION 1 : ALTERNATIVE SITE PLAN (TWO VEHICULAR ACCESS TO AMERICAN LEGION HIGHWAY)

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

The Home for Little Wanderers
Strong families. Strong life.

Alinea
CAPITAL PARTNERS

DHK
ARCHITECTS

Option 1 will also result in preservation of a large open space in the front of the multi-family building (while requiring some large tree elimination to enlarge the curb-cut along ALH needed for an exit only driveway). It will also provide easy fire access and turnaround capacity for trucks exiting onto American Legion Highway. Option 1 also establishes a separate and distinct residential access to the multi-family residential building and adjoining townhouses, while unifying an attractive and effective arrival zone for the behavioral-clinical health activities associated with the HFLW and the Dimock Community Health Center building. The Proponent has utilized the Option 1 site access arrangement in its design plans contained in **Section 3.0**, and specifically in **Figures 3-6** and **3-7**, the proposed site and landscape plans, respectively.

Option 2: Single Curb-Cut (Two-Ways) From American Legion Highway

Under Option 2, vehicular access to the site would be provided via the existing, two-way northern curb-cut on American Legion Highway. This curb-cut would continue to provide both access to and egress from the Project site. Direct access to the main entrance of the clinical building, both garage entrances, and trash removal would be available via ONLY this curb-cut. Vehicular access to the residential building would be limited to vehicles that are able to access the garage. Pedestrian access to the main entrance of the residential building would only be possible by utilizing a sidewalk from the main driveway.

While the BPDA has suggested utilizing a form of a "roundabout" to allow for turnaround on site including for emergency fire apparatus, the required roundabout circumference would negatively impact on the existing site plan and building placement. The result would be that fire apparatus would need to backout onto American Legion Highway, and turnarounds for those vehicles dropping off users to the Clinical Building, and utilizing the existing garages would be more complicated. Direct access to the multi-family building would not be achievable under Option 2 with a front door entrance on American Legion Highway.

Option 3 (BPDA Suggested): Single Curb-Cut (Two-Ways) with On-Street Marked Parking / Loading on American Legion Highway

Vehicular access and circulation related to this suggested BPDA's Option 3 would be the same as with Option 2. Under this option, however, the City would also install a new curbside parking lane along American Legion Highway in front of the site. In addition to parking, deliveries, taxi trips, and any other pick-up/drop off activities could occur from this curb. Given the existing roadway width, the city has suggested that two narrower northbound travel lanes on American Legion Highway could also be maintained.

It is expected that implementing this BPDA option would also be reviewed as a part of the City's current planning investigation for an American Legion Highway corridor study which is being directed by the Boston Transportation Department.

1.3 Summary of Project Impacts and Mitigation

1.3.1 Urban Design Overview

Local Area and Project Site

The proposed site plan accommodates a larger program than currently on the site, and is designed to enhance the street frontage along American Legion Highway, and to provide safe visual access for both pedestrians and drivers. It is a more intense use of the site, yet increases the amount of landscaped areas and greatly reduces the amounts of visible asphalt paving. The plan includes two new buildings: one to replace the existing Home for Little Wanderers (HFLW) with a new modern facility, and – upon demolition of the existing building – construction of the Residences, a new multi-family residential building containing apartments and townhouse condominiums with covered parking. Recognizing the visual importance of American Legion Highway and the Greenbelt Protection Overlay District (GPOD), both buildings will comply with the front and side setback lines specified for this zoning district.

The new HFLW building will be a five-story structure with a basement. The lower three floors will house the HFLW programs as well as a satellite clinic for the Dimock Community Health Center. The upper two levels will house 22 apartments to be run by HFLW for their clients. The first floor will contain the main entrance to the building on its south side. Further into the site will be a secondary pedestrian entrance that will serve as access to the elevator lobby for the upper floors' apartments and a separate entrance for one of the HFLW programs, which needs its own access apart from the main HFLW entrance. Along the driveway beyond those doors will be the vehicular entrance to the basement-level garage, which will accommodate 30 cars, bicycle parking, and elevator access to the upper office floors.

The Residences building will be a six-story structure that will accommodate parking behind the townhouse units at the first floor and below a landscaped deck. The deck will be level with the yards of the abutting houses along Canterbury Road, so the building will be perceived as a five-story building from the back. Along this edge, the building will step down to four floors (three floors perceived) in two increments, further helping to reduce the scale of the building along this edge.

Building Design, Streetscape, and Architectural Character

The two proposed buildings – the new HFLW building and the new Residences – respect the street line of American Legion Highway and the prescribed/required zoning setbacks. The HFLW building will have a more compact footprint than the building it replaces. The building will be oriented so that the narrow side of its 60' x 200' footprint will orient to face the street. Functionally, the building is organized into two segments: three clinical floors at the lower levels plus two residential floors above. At the west end of the building fronting American Legion

Highway will be a large community room that will provide an open, transparent façade facing out to the adjoining neighborhood.

The two buildings will complement each other architecturally. Using a palette of similar cladding materials, and with complementary window materials and patterns, the structures, though different, will be perceived as being part of a campus feel. The HFLW building will be a combination of glass and solid materials to reflect its social service office and medical clinic uses.

Across the drive are two vehicular entrances to the Residences garage, which has spaces for 100 cars, bicycle storage, and direct access to the main elevator lobby, as well as direct access to the rear entrances of the eight townhouse units. Because the parking is essentially located at grade level, this allows the introduction of two large landscaped courtyards to be located on portions of the roof on the garage. These courtyards can be directly accessed from second floor units; there will also be access for other building residents via a hallway entrance close to the elevator core. Because the site slopes up toward the rear of the site, these two courtyards will appear to be at grade, and not on an elevated roof, further reducing the visual impact to other abutting neighbors. Rooftop mechanical equipment will be screened or located to minimize their visibility.

1.3.2 Landscape Design

The design of the landscape is based on five objectives:

1. Extend and preserve the "parkway" character of American Legion Highway;
2. Create a pedestrian/oriented landscape that fosters residential living on the site;
3. Support the social services program of the Home for Little Wanderers;
4. Mitigate the impact of the new buildings on the abutting residences; and
5. Utilize best practices for environmental landscape design.

The existing parkway oak tree planting will be extended all along the frontage on American Legion Highway and along the frontage on Stella Road. The southernmost curb cut may negatively impact one of the four large existing oak trees. The Site Preparation and Demolition Plan will fence off all four trees until the very end of construction when the entry drop off lane will be constructed using careful and limited excavation. A temporary irrigation system will be installed to support the trees during construction with twice weekly watering unless significant natural rainfall occurs.

Pedestrian oriented design will be expressed with the design and paving of the entry drop-off courtyard in front of the HFLW and the drop off plaza in front of the new Residential Building. This extensive area of permeable pavement will be designed as a "woonerf" including bollards, seating, and shade tree plantings. The main outdoor amenity spaces will be developed over the below-grade garage and will include semi-private patios for garden floor residents and a central amenity space for all residents. One courtyard is designed for active social gathering including BBQ with outdoor dining, a fire pit, and social seating arrangements in a garden setting. The second outdoor courtyard is designed as a quieter gathering space with smaller social gathering

spaces and a smaller BBQ/dining area. Walkways connect the outdoor courtyards with Stella Road.

The building has been significantly setback from the rear property line. Most of the existing trees along the property line will be preserved and a series of stormwater planters are proposed to demonstrate best practices for stormwater management and will be planted with species that support pollinators and birds.

1.3.2 Sustainable Design / Energy Conservation

To meet the City of Boston Requirements, the Proposed Project demonstrates compliance with the LEED BD&C v4 criteria. The mixed-use (clinical) portion of the project is currently tracking 52 points in the YES column with 17 in the study column as presented in **Figure 3-28** in **Section 3.0**, and the multi-family residential portion of the project is tracking 54 points in the YES column with 16 in the study column as presented in **Figure 3-29.** Further study over the coming weeks and months will determine final credit achievement. We have outlined in the narrative below, how the two project components intend to achieve the prerequisites and credits for the LEED BD&C v4 certification

1.3.3 Pedestrian Wind Analysis

The Proposed Project will only rise 5- to 6-stories in height along American Legion Highway, replacing an existing 3-story building on a portion of the site, which should not result in any new pedestrian level wind impacts. At a maximum of approximately 65 feet, with setbacks proposed, the proposed heights of the two building will not exceed a 2:1 increase in height over the existing building, thereby not expected to require preparation of a qualitative pedestrian level wind analysis.

1.3.4 Shadow Impact Analysis

DHK Architects, the Project's architects, prepared a shadow study to assess the potential shadow impacts of the Proposed Project on the surrounding area (see **Section 4.1**). With a proposed height of 6-floors above grade, the Proposed Project's shadow impacts are generally minimal to moderate. New shadow for most of the year is primarily limited to the front and north side of the buildings onto its property, and some of the sidewalk along American Legion Highway. During the evening hours in spring and fall, and during the morning and evening hours in winter, some shadows will extend to nearby properties, and across American Legion Highway to the opposite side residences. Overall, the Proposed Project's shadow impacts will not adversely impact the Project site and surroundings.

1.3.5 Daylight Analysis

Under the Existing/No-Build Condition, the Project Site contains a two-three story building that is set back from the surrounding public ways. As a result of the relatively low height and density

of this structure, less than five percent of daylight is obstructed when viewed from the adjacent public ways.

Under the Build Condition, there would be an increase in obstruction of the skydome to 16.6 percent along American Legion Highway, and 25.6 percent along Stella Road. This effect is to be expected when replacing the existing two-story building with a new development of five-six-stories. See **Section 4.2** for the complete evaluation.

1.3.6 Solar Glare

It is not expected that the Proposed Project will include the use of reflective glass or other reflective materials on the building facades that would result in adverse impacts from reflected solar glare.

1.3.7 Air Quality Analysis

Tech Environmental, Inc., the Proposed Project's air quality consultant, conducted analyses to evaluate the existing air quality in the Project area, predict the worst-case air quality impacts from the Proposed Project's parking garages, and evaluate the potential impacts of project-generated traffic on the air quality at the most congested local intersections (See **Section 4.3**).

Recent representative air quality measurements from the Massachusetts Department of Environmental Protection (DEP) monitors reveal that the existing air quality in the Proposed Project area is in compliance with Massachusetts and National Ambient Air Quality Standards (NAAQS) for all of the criteria air pollutants.

The worst-case air quality impacts from the Proposed Project's enclosed parking garage will not have an adverse impact on air quality. The maximum one-hour and eight-hour ambient CO impacts from the parking garage, at all locations around the Proposed Project site, including background CO concentrations, are predicted to be safely in compliance with the NAAQS for CO.

A microscale CO air quality analysis was conducted for one intersection in the Proposed Project area that met the Boston Planning and Development Agency (BPDA)/DEP selection criteria. Three cases were analyzed: 2019 Existing, 2026 No-Build, and 2026 Build. The worst-case impacts for all three cases are safely in compliance with the NAAQS for CO at all modeled receptors.

1.3.8 Noise Analysis

Tech Environmental, Inc., the Proposed Project's noise consultant, conducted a noise study to determine whether the operation of the Project will comply with the Massachusetts DEP Noise Policy and City of Boston Noise Regulations (See **Section 4.4**).

This acoustical analysis involved five steps: (1) establishment of pre-construction ambient sound levels in the vicinity of the Site; (2) identification of potential major noise sources; (3) development of noise source terms based on manufacturer specifications (where available) and similar project designs; (4) conservative predictions of maximum sound level impacts at sensitive locations using industry standard acoustic methodology; and (5) the incorporation of mitigation measures to ensure compliance with applicable City of Boston noise regulations, ordinances and guidelines and with the DEP Noise Policy.

Nighttime ambient baseline sound level (L_{90}) monitoring was conducted at two locations deemed to be representative of the nearby residential areas, during the time period when human activity is at a minimum and any future noise would be most noticeable. The lowest nighttime L_{90} measured in the Proposed Project area was 36.6 dBA.

The potential significant sources of exterior sound from the Proposed Project have been identified as:

- One-hundred and twenty (120) rooftop air handling units (AHUs)

The Proposed Project will not create a noise nuisance condition and will fully comply with the most stringent sound level limits set by the Massachusetts DEP Noise Policy, City of Boston Noise Regulations, and HUD's Residential Site Acceptability Standards.

1.3.9 Stormwater Management and Water Quality

The Proposed Project is expected to substantially improve the water quality (See **Section 4.5**) and will meet the Boston Water and Sewer Commission (BWSC) Site Plan requirements. The Project will result in an increase in impervious area, but will improve the quality and attenuate the quantity of stormwater runoff being discharged to BWSC storm drain system through the installation of an on-site infiltration systems. It is anticipated that the equivalent of 1.25 inches over the site's impervious area can be recharged.

1.3.10 Solid and Hazardous Waste

Solid Waste

During the preparation of the site, debris including asphalt, trash, and demolition debris will be removed from the Proposed Project site. The Proponent will ensure that waste removal and disposal during construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste.

In order to meet the requirements for the Boston Environmental Department and the LEED™ rating system, the Project will include space dedicated to the storage and collection of recyclables, including dedicated dumpsters at the loading area. The recycling program will meet or exceed the City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (21 through 27, co-mingled).

Hazardous Waste

A Phase I Environmental Site Assessment ("ESA") was completed on October 28, 2016 for the Proposed Project site to identify environmental conditions of concern. The previous use of the site as an asphalt plant is considered a potential environmental concern based on possible impacts to soil and groundwater associated with undocumented releases of petroleum and/or asphalt mix materials according to the ESA, although based on aerial photographs it is considered more likely that the site was maintained for exterior storage areas to store bulk quantities of asphalt rather than for the performance of batch plant operations. Additional information on this site is discussed in more detail in **Section 4.6.2.**

1.3.11 Geotechnical/Groundwater Impacts Analysis

Based on the available information, the project site is anticipated to be underlain by a 5 to 10-foot thick miscellaneous fill deposit associated with the previous construction. The unsuitable fill deposit is anticipated to be underlain by a natural compact to very dense glacial deposit, which overlies bedrock. Groundwater at the site is anticipated to be present at a depth of about 10 feet below the existing ground surface.

Foundation support for the proposed buildings is anticipated to consist of conventional spread footings. The footings would bear directly on the glacial till or bedrock, and/or on compacted structural fill or lean concrete placed directly over the glacial till or bedrock to the bottom of footing.

Based on the observed site groundwater level and the proposed depth of excavation related to foundation construction, dewatering is expected to be limited to rainwater runoff.

Provisions will be incorporated into the design and contract documents to limit potential impacts to adjacent structures, streets and utilities. Additional geotechnical information and analysis is provided in **Section 4.7**.

1.3.12 Construction Impacts Analysis

Section 4.8 describes impacts likely to result from the Proposed Project's construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager that will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies.

Construction is expected to commence in the 2nd quarter of 2020 and will require approximately 18 months to complete the initial HFLW behavioral/clinical building, to be followed by the multi-family/townhouse residential building over an additional 18 months.

The Proponent will comply with applicable state and local regulations governing construction of the Proposed Project. The Proponent will require that the general contractor comply with the Construction Management Plan ("CMP") developed in consultation 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 Proposed Project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

Most construction activities will be accommodated within the current site boundaries. 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 to be filed with BTD in accordance with the City's transportation maintenance plan requirements. To minimize transportation impacts during the construction period, there will be limited construction worker parking on-site, carpooling will be encouraged, and secure on-site spaces will be provided for workers' supplies and tools so they do not have to be brought to the site each day. The Construction Management Plan to be executed with the City prior to commencement of construction will document all committed measures.

1.3.13 Wetlands/Flood Hazard Zone

The existing Proposed Project site is not a part of a wetland resource area regulated by the Massachusetts Wetland Protection Act. Based on the Preliminary Flood Insurance Rate Maps (FIRM) for Suffolk County, the Proposed Project site is not located in a special flood hazard area, floodway area, or other flood area. It is located on City of Boston - Community Panel Number 25025C0086G, effective 09/25/19 as Flood Zone X, Area of Minimal Flood Hazard, outside the 0.2% annual chance of flooding.

1.3.14 Historic Resources Component

The site is currently improved with a 2-3 story Home for Little Wanderers institutional use providing community services for children in an office/clinical building with associated surface parking areas. According to files at the Massachusetts Historical Commission, there are no on-site structures listed in the National or State Register of Historic Places, or the Inventory of Historical and Archaeological Assets of the Commonwealth. It is not expected that the Proposed Project will cause adverse impacts on the historic or architectural elements of nearby historic resources outside the Proposed Project site, which includes the Mt. Hope Cemetery, which is on the National Register for Historic Places (see **Section 5.0**).

1.3.15 Infrastructure Systems Component

An infrastructure system's analysis (**Section 6.0**) was completed by Howard Stein Hudson (HSH), the Proposed Project's Civil Engineer. The existing infrastructure surrounding the site appears sufficient to service the needs of the Proposed Project. This section describes the existing

sewer, water, and drainage systems surrounding the site and explains how these systems will service the development. This analysis also discusses any anticipated Project-related impacts on the utilities and identifies mitigation measures to address these potential impacts.

1.3.16 Transportation Component

Section 7.0 presents the comprehensive transportation study completed by Howard Stein Hudson for the Proposed Project in conformance with the BTD Transportation Access Plan Guidelines (2001). The study analyzes existing conditions within the Proposed Project study area, as well as conditions forecast to be in place under the seven-year planning horizon of 2026.

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project-traffic impacts. TDM will be facilitated by the nature of the development, which does not generate a significant number of peak hour vehicle trips. The Proponent will work with the City to develop a TDM program appropriate to the Project and consistent with its level of impact. The detailed agreement of full TDM measures will be defined and codified in the Transportation Access Plan Agreement (TAPA).

1.3.17 Responses to Climate Change Questionnaire

Please see **Appendices E1** and **E2** for the Proponent's Responses to the City of Boston's Climate Change Questionnaire, and Energy Model Summaries following each appendix.

1.3.18 Responses to City of Boston Accessibility Guidelines

Please see **Appendices F1** and **F2** for the Proponent's Responses to the City of Boston's Accessibility Guidelines.

1.3.19 Response to BPDA Broadband Questionnaire

Please see **Appendix G** for the Proponent's Response to the BPDA Broadband Questionnaire.

1.3.20 Response to BPDA Smart Utilities Checklist

Please see **Appendix H** for the Proponent's Response to the BPDA Smart Utilities Checklist.

2.0 GENERAL INFORMATION

2.1 Applicant Information

2.1.1 Project Proponent

Home for Little Wanderers

The Home for Little Wanderers ("HFLW") is a child and family service agency whose mission is to ensure the healthy behavioral, emotional, social and educational development and physical well-being of children and their families living in at-risk circumstances. The HFLW plays a leadership role in delivering services to low income families and children through a system of residential and community-based prevention programs, direct care services and advocacy. It is enabled through integrated programs which range from educational and therapeutic treatment to residential and independent living for youth who have aged out of the state care system.

HFLW serves children and youth from birth to 22 and their caregivers, and provides services through programs and a network of affiliate agencies that provide assessment, therapeutic intervention and education, employment, social support and basic needs services. HFLW works with children that have learning, behavioral, developmental, mental health, educational, identity, exploitation, and trauma issues.

The central division of the HFLW's network serving Roslindale and the surrounding communities is the Child and Family Counseling Center (CFCC). Conveniently located within the Massachusetts Bay Transportation Authority (MBTA) network of neighborhood bus lines with access to mass transit and a site with ample parking, the Center provides both local and city-wide services. In addition, the Center also hosts the Hyde Park Community Service Agency (CSA), Center for Early Childhood (CEC) and Therapeutic After School Programs (TASP).

Through these programs, the CFCC offers assessment, treatment, consultation, and prevention services to children, adolescents and their families to promote healthy development and improve mental health functioning, parental competency, and local community connections. The Center for Early Childhood provides direct services to children and consultation services to early childcare/education providers and parents and TASP is a therapeutic after-school program.

Four Oaks is a collaboration between the HFLW and Alinea Capital Partners, LLC, to expand behavioral health and clinical services in the Roslindale community and establish and new mixed income, and mixed-use residential model for families and aging out youth.

Alinea Capital Partners, LLC

Alinea Capital Partners, LLC ("Alinea") is a real estate development, investment and advisory firm that is focused on urban and emerging markets. It employs a strategy of timely acquisitions of existing performing and non-performing asset and raw land to create projects which yield competitive risk adjusted returns. Alinea's principals and team of allied professionals comprise a skilled group with extensive, direct experience in all stages of the urban real estate investment cycle.

Alinea provides opportunities for competitively advantaged investments for our real estate partners, and provide advisory services to its institutional and not-for-profit clients seeking guidance seeking guidance on major capital projects and real estate investments.

Alinea uses structured financing as its primary tool to offset market volatility and achieve sustainable results and leverage public resources within the capital stack to mitigate risk, increase net operating income and secure measurable risk adjusted returns. Alinea pursues a balanced approach to urban investing, identifying deficiencies in core asset classes as it points of entry. Through this, Alinea acquires and repositions discounted performing and non-performing assets and develops new projects using raw land and underutilized buildings. We achieve long term neighborhood stability through successful sustainable operations and revenue streams.

2.1.2 Project Team

Project Name	780 American Legion Highway, Roslindale
Property Owner / Developer	**The Home for Little Wanderers ("HFLW")** 10 Guest Street Brighton, MA 02135 Tel: 617-927-0623 Ms. Lesli Suggs, President and CEO lsuggs@thehome.org Mr. Thomas Durling, CFO tdurling@thehome.org Renee Yourk renee@yourk.com

Developer's Representative	**Alinea Capital Partners, LLC** 1786 Washington Street Boston, MA 02118 Tel: 617-708-1313 L. Duane Jackson Managing Member ldjackson@alineacapitalpartners.com
Article 80 Permitting Consultant	**Mitchell L. Fischman Consulting ("MLF Consulting") LLC** 41 Brush Hill Road Newton, MA 02461 Mitchell Fischman mitchfischman@gmail.com Tel: 781-760-1726 Yvette Niwa yvetteniwa.mlfconsulting@gmail.com Tel : 818-426-8157
Legal Counsel	**Klein Hornig LLP** 101 Arch Street, Suite 1101 Boston, MA 02110 www.kleinhornig.com Tel: 617-224-0608 Joseph Lieber jlieber@kleinhornig.com Rita Schwantes rschwantes@kleinhornig.com Dan Kolodner dkolodner@kleinhornig.com
Architect	**DHK Architects** 54 Canal Street, Suite 200 Boston, MA 02114 Tel: 617-267-6408 Fernando Domench fdomenech@dhkinc.com Michael Kaufman mkaufman@dhkinc.com Toshihiko Taketomo ttaketomo@dhkinc.com

Landscape Architect	**Verdant Landscape Architecture** 318 Harvard Street, Suite 25 Brookline, MA 02446 Tel: 617-735-1180 Katya Podsiadlo kp@verdantla.com Blair Hines, Principal bh@verdantla.com
Transportation Planner / Engineer	**Howard Stein Hudson** 11 Beacon Street, Suite 1010 Boston, MA 02108 Tel: 617-482-7080 Elizabeth Peart epeart@hshassoc.com Michael White mwhite@hshassoc.com
Civil Engineer	**Howard Stein Hudson** 11 Beacon Street, Suite 1010 Boston, MA 02108 Tel: 617-482-7080 Richard Latini rlatini@hshassoc.com
Noise and Air Consultant	**Tech Environmental, Inc.** Hobbs Brook Office Park 303 Wyman Street, Suite 295 Waltham, MA 02451 Marc C. Wallace mwallace@techenv.com Tel: 781-890-2220 x30
Sustainability Consultant	**Soden Sustainability Consulting** 19 Richardson Street Winchester, MA 01890 Tel: 617-372-7857 Colleen Ryan Soden, LEED AP BD+C colleen@sodensustainability.com

Daylight Consultant	**VHB, Inc.** 101 Walnut Street Watertown, MA 02471 Tel: 617-924-1770 Seth Latrell slattrell@vhb.com
Environmental / 21E Engineer	**The Vertex Companies** One Congress Street Boston, MA 02114 Tel: 781-952-6000 Patrice Plante
Geotechnical Engineer	**McPhail Associates, LLC** 2269 Massachusetts Avenue Cambridge, MA 02140 Fatima Babic Konjic FBK@mcphailgeo.com Tel: 617-868-1420, ext. 321
Surveyor	**Feldman Survey** 152 Hampden Street Boston, MA 02119 Sean McDonagh smcdonagh@feldmansurveyors.com Tel: 617-357-9740

Construction Commencement	2nd Quarter 2020
Construction Completion	2nd Quarter 2023
Status of Project Design	Schematic

2.1.3 Legal Information

Legal Judgments or Actions Pending Concerning the Proposed Project

To the Proponent's knowledge, there are no legal judgments or actions pending concerning the Proposed Project.

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

There are no known tax arrears on property in Boston owned by the Proponent.

Nature and Extent of Any and All Public Easements

There are many utility easements for sewer, electric, cable, telephone and gas on or adjacent to the Proposed Project site based on the existing survey. Final design plans will accommodate these easements.

2.2 Public Benefits

The Proposed Project will provide the following substantial benefits to the City and its residents:

- The mixed-use project which will include new behavioral/clinical facilities for the Home for Little Wanderers and Dimock Mental Health Center will upgrade and expand these existing needed community services.
- The new 93-unit multi-family and townhouse residences will support Mayor Walsh's 2030 Plan for establishing new residential units in Boston, and in combination with the 22 units in the HFLW clinical/office/residences will provide on-site income restricted housing in compliance with the City's Inclusionary Development Policy;
- The pedestrian experience will be improved with establishment of an enhanced open space and new street trees, and other streetscape amenities;
- The Proposed Project will provide additional real estate tax revenue to the City; and
- The Proposed Project will create new construction jobs over an approximate 36-month construction period.

2.3 Regulatory Controls and Permits

Article 80 - Large Project Review

Because the Project involves new construction in excess of 50,000 square feet of Gross Floor Area, the Project is subject to Large Project Review pursuant to Article 80B of the Boston Zoning Code. On February 8, 2018, the Applicant filed a Letter of Intent to file this Project Notification Form to commence

study of the potential impacts of the Project. Under the Mayor's Executive Order dated October 10, 2000, and amended on April 3, 2001, regarding mitigation for development projects, the Mayor has appointed an Impact Advisory Group to advise the BPDA on mitigation measures for projects undergoing Large Project Review. In connection with Large Project Review, the Project will be subject to, among other requirements, Boston Civic Design Commission review and the green building requirements pursuant to Article 37 of the Boston Zoning Code.

Zoning District

The Project Site is located entirely within a 2F-5000 Subdistrict of the Roslindale Neighborhood District, governed by Article 67 of the Boston Zoning Code. The Project Site is also located within the American Legion Highway Greenbelt Protection Overlay District ("GPOD"), and therefore the provisions of Article 29 of the Boston Zoning Code are applicable.

Use and dimensional requirements are governed by Article 67, and any necessary relief will be obtained through the BOA/ZBA process.

Relief required from the Zoning Board of Appeal is set forth in **Tables 2-1**, **2-2** and **2-3** below on the following pages, which also describe the proposed uses.

Table 2-1. 780 American Legion Highway - Two-Family (2F-5000) Subdistrict – Uses (Table A)

Proposed HFLW Use	Relief Required	Proposed Multi-Family Residential Use	Relief Required
Health Clinic Use (4,000+/- GSF)	Variance	------	-----
Office (Agency) Use (33,000+/- GSF)	Variance	-----	----
Multi-Family Use (22 dwelling units)	Variance	Multi-Family Use (93 dwelling units)	Variance
Accessory Parking	No (32 Spaces)	Accessory Spaces	No (101 Spaces)

The following **Tables 2-2** and **2-3** describes the proposed dimensions and relief required based on the total project and by project component, respectively.

Table 2-2. 780 American Legion Highway- Two-Family (2F-5000) Subdistrict - Dimensional Requirements By Total Project (Tables C and F)

Dimensional Element	2F-5000 District Requirements	Proposed Total Project (Buildings 1 and 2)	Relief Required
Min. Lot Area	8,000 SF (for "Other Use")	107,129SF	No
Min. Lot Width	50 feet	441 feet +/-	No
Min. Lot Frontage	50 feet	111 feet	No

Dimensional Element	2F-5000 District Requirements	Proposed Total Project (Buildings 1 and 2)	Relief Required
Max. Floor Area Ratio	0.5	1.79	Variance
Max. No. of Stories	2-1/2 stories	5-6 stories	Variance
Max. Building Height	35 feet	64.66 feet	Variance
Usable Open Space	1,750 SF/du	55,919 SF (486 SF/du)	Variance
Minimum Front Yard Depth	20 feet	19.5- 20 feet	Variance
Minimum Side Yard Depth	10 feet	10 feet	No
Minimum Rear Yard Depth	40 feet	35- 75 feet	Variance

Table 2-3. 780 American Legion Highway- Two-Family (2F-5000) Subdistrict - Dimensional Requirements By Project Component (Tables C and F)

Dimensional Element	2F-5000 District Requirements	Proposed HFLW	Relief Required	Proposed Multi-Family Residences	Relief Required
Min. Lot Area	8,000 SF (for "Other Use")	30,482 SF	Depends on ISD interpretation	76,649 SF	Depends on ISD interpretation
Min. Lot Width	50 feet	99 feet	No	342 +/- feet	No

Dimensional Element	2F-5000 District Requirements	Proposed HFLW	Relief Required	Proposed Multi-Family Residences	Relief Required
Min. Lot Frontage	50 feet	111 ft	No	373 ft	No
Max. Floor Area Ratio	0.5	1.95	Variance	1.59	Variance
Max. No. of Stories	2-1/2 stories	5-stories	Variance	6-stories	Variance
Max. Building Height	35 feet	64.66 feet	Variance	63.33 feet	Variance
Usable Open Space	1,750 SF/du	15,086 SF (686 SF/du)	Variance	42,607 SF (458 SF/du)	Variance
Minimum Front Yard Depth	20 feet	20 feet	No	19.5 feet	Variance
Minimum Side Yard Depth	10 feet	10 feet	No	10 feet	No
Minimum Rear Yard Depth	40 feet	75 feet	No	35 feet	Variance

1. The dimensions described in this above table are approximations and may change as the Proposed Project undergoes design review with the BPDA.
2. Off-street parking and loading requirements are determined through the Article 80 Large Project Review process, and are discussed in **Section 7.0.**
3. Screening and Buffering requirements will also be determined through the Article 80 Large Project Review process. The proposed project will incorporate screening and buffering components, as described in **Section 3.1.4**, that are intended generally, but not entirely, to meet the requirements of underlying zoning, found in Section 67–30, which would otherwise be applicable outside the Article 80 context.

2.3.1 Preliminary List of Permits or Other Approvals Which May be Sought

Preliminary List of Permits or Other Approvals Which May be Sought

The table below presents a preliminary list of governmental permits and approvals that are expected to be required for the proposed redevelopment of 780 American Legion Highway. This preliminary list is

based on currently available information and is subject to change as the redevelopment program and design evolve.

MEPA Review

At this time, the Proponent anticipates that the Project will not require review by the Massachusetts Environmental Policy Act Office of the Massachusetts Office of Energy and Environmental Affairs.

Table 2-4. Preliminary List of Permits or Other Approvals Which May be Sought

Agency Name	Permit or Action
City of Boston	
Boston Planning & Development Agency (BPDA)	Large Project Review and associated reviews and agreements (including Cooperation Agreement, Affordable Housing Agreement, Green Building Review, Responses to Climate Change Preparedness and Resiliency Checklists, Responses to Accessibility Questionnaires, Response to Broadband Questionnaire, and Response to BPDA Smart Utilities Checklist); Section 80B-6 Certificate of Compliance
Boston Civic Design Commission	Advisory Design Review
Boston Transportation Department	Transportation Access Plan Agreement Construction Management Plan
Boston Zoning Board of Appeal	Zoning Relief
Boston Landmarks Commission	Demolition Delay (Article 85)
Boston Water and Sewer Commission	Site Plan Review Water and Sewer Connection Permits
Boston Public Safety Commission, Committee on Licenses	Inflammables Storage License/Garage Permit
Boston Parks Commission	Review in accordance with Ordinance 7.4-11 because of adjacent to American Legion Highway GPOD
Boston Public Improvement Commission	Possible Specific Repair Plan approval for changes in the public rights of way
Boston Public Works Department	Curb-Cut and Street/Sidewalk Opening Permits

Boston Inspectional Services Department	Building/Occupancy Permits
Commonwealth of Massachusetts	
MA Water Resource Authority	8(M) Permit
MA Department of Environmental Protection, Division of Water Pollution Control	Sewer Connection Self-Certification
MA Department of Environmental Protection, Division of Air Quality Control	Notice of Asbestos Removal; Notice of Commencement of Demolition and Construction
Federal	
Environmental Protection Agency	Coverage under National Pollutant Discharge Elimination System Permit - General Permit
Federal Aviation Administration	Determination of No Hazard to Air Navigation (if required for cranes)

2.4 Public Review Outreach and Agency Coordination

The Home for Little Wanderers in association with Alinea Capital Partners formulated and executed a process of community and elected official engagement between March 2016 and February 2018. Through neighborhood presentations and local meetings with public officials the proponents informed, solicited advice and information and reported on activities of the agency, development team and project. The following memo and logs document the Community Engagement process and information shared with public officials and the Mount Hope/Canterbury/Manning Neighborhood Association.

Preliminary plans for the Proposed Project have been discussed with Roslindale elected officials and will be more fully discussed with the Roslindale neighborhood during the Article 80 public review process. Outreach completed to date has included with the Mayor's Office of Neighborhood Services Roslindale Liaison, Legislative Aide to Councilor Annissa Essaibi-George, Chief of Staff to State Senator Sonia Chang-Diaz, Chief of Staff to City Councilor Michelle Wu, City Councilor Andrea Campbell, and Policy Director to former City Councilor Ayanna Pressley

Addressing Mount Hope, Canterbury, and Manning Streets Neighborhood Association

In November of 2014, The Home's Director of Business Development, Renee Yourk, presented at the Mount Hope, Canterbury, and Manning Streets Neighborhood Association's monthly meeting. She informed the Association of the three development options discussed in Section 1 of the PNF that The Home was considering. On November 12, 2015, Ms. Yourk and Duane Jackson attended the Association meeting to let them know that The Home was going with option (3) - to have customized programmatic space, keep all programs under one roof, and expand capacity for future programming., and answered community questions that could be answered at the time.

The Proponent has also discussed the Proposed Project with representatives of the Boston Planning and Development Agency ("BPDA") prior to filing this Project Notification Form in order to identify issues/concerns as well as design requirements related to the Project.

In accordance with Article 80 requirements, an Impact Advisory Committee ("IAG") has been formed and a neighborhood meeting will be scheduled to review the PNF and receive community comments on the Project during the PNF public review period.

The Proponent will continue to meet with public agencies, neighborhood representatives, local business organizations, abutting property owners, and other interested parties, and will follow the requirements of Article 80 pertaining to the public review process.

2.5 Development Impact Payment ("DIP") Status

Based on current schematic design plans, it is not anticipated that Development Impact Payments ("DIP"), in accordance with Article 80B-7 of the Code, will be required as the proposed office use, while a DIP eligible portion of the project, is below 100,000 gsf.

3.0 URBAN DESIGN AND SUSTAINABILITY COMPONENT

3.1 Urban Design Overview

3.1.1 Local Area and Project Site

The site at 780 American Legion Highway has an area of approximately 2.5 acres and contains a single, existing 3-story, aging brick building, of approximately 32,500 square feet, currently being used as clinical office space for The Home for Little Wanderers. Built as a hospital in the 1940's, the building is now bordered on two sides by paved surface parking areas. There is a small lawn area and walkway at the front of the building. The most significant feature of the site is the line of four mature oak trees planted along the American Legion Highway parkway.

The block where the site is located is contained by Mt. Hope Street to the north, Canterbury Street to the east, and Stella Road to the south. Vehicular access to the site is now limited from and to American Legion Highway. There are two curb-cuts that connect to a curved entry drive serving the building's front steps and door, as well as to the parking areas on each side. The project site abuts an unused greenhouse lot on the north and Stella Road on the south. A previous access from/to Stella Road - which is one-way west to American Legion Highway - has been barricaded. The western property line faces the back yards of several detached homes facing on Canterbury Street, which are several feet higher in elevation than the project site. The site is currently edged with trees on its north and east.

The areas around the site contain several different land uses. North of Mt. Hope Street is populated by commercial and automotive repair businesses and strip malls with large parking lots facing the street, and a sizable military building on the opposite side. South of Mt. Hope Street, American Legion Highway becomes more residential; on the west side are mostly single-family homes. Across the street on the east, in addition to HFLW, are a few single-family homes, an unused farm stand, an automotive shop, and a funeral home.

The proposed site plan accommodates a larger program than currently on the site, and is designed to enhance the street frontage along American Legion Highway and to provide safe visual access for both pedestrians and drivers. It is a more intense use of the site, yet increases the amount of landscaped areas and greatly reduces the amounts of visible asphalt paving. The plan includes two new buildings: one to replace the existing home for the Home for Little Wanderers (HFLW) with a new modern facility, and – upon demolition of the existing building – construction of the Residences, a new residential building containing apartments and townhouse condominiums with covered parking. Recognizing the visual importance of the American Legion Highway (parkway) and the Greenbelt Protection Overlay District, both buildings will comply with the front and side setback lines specified for this zoning district.

The HFLW building will be a five-story structure with a basement. The lower three floors will house the HFLW programs as well as a satellite clinic for the Dimock Community Health Center.

The upper two levels will house 22 apartments to be run by HFLW for their clients. The first floor will contain the main entrance to the building on its south side. Further into the site will be a secondary pedestrian entrance that will serve as access to the elevator lobby for the upper floors' apartments and a separate entrance for one of the HFLW programs, which needs its own access apart from the main HFLW entrance. Along the driveway beyond those doors will be the vehicular entrance to the basement-level garage, which will accommodate 30 cars, bicycle parking, and elevator access to the upper office floors.

The Residences building will be a six-story structure that will accommodate parking behind the townhouse units at the first floor and below a landscaped deck. The deck will be level with the yards of the abutting houses along Canterbury Road, so the building will be perceived as a five-story building from the back. Along this edge, the building will step down to four floors (three floors perceived) in two increments, further helping to reduce the scale of the building along this edge.

By placing all of the long-term parking within each of the two buildings, the impervious paved area of the site is greatly reduced. The site plan also includes heavily landscaped areas, especially at the side and rear lot lines. In addition, there are two landscaped courtyards at the rear of the Residences. Continuous asphalt paving will be minimized to reduce surface run-off, and to further contain run-off a landscaped stormwater bioswale will be created along the rear property line, abutting the neighboring homes. A fenced and landscape-screened area for trash and recycling pick-up will be located at the far eastern end of the main drive, at the rear of the site and below the yards of the neighboring properties. This area will be to collect waste from interior spaces in the HFLW building and the Residences where it can be picked up for removal. The only parking visible on the site will be two accessible spaces and a delivery van turn-out on the drive-in front of the Residences.

The site will be accessed from American Legion Highway via a single two-way driveway entrance toward the northern end of its frontage at the location of one of its two existing curb cuts. This portion of the driveway will be covered with individual pavers to further reduce surface run-off. In addition to these two drives, there will be a single vehicular exit from the Residences garage directly onto Stella Road. Because Stella is a one-way street, this will result in a right-turn only toward American Legion Highway. In addition, in the selected Option 1 Site Plan, there will be an exit only egress from a roadway in front of the Residences onto American Legion Highway.

3.1.2 Building Design, Streetscape, and Architectural Character

The two proposed buildings – the new HFLW building and the new Residences – will respect the street line of American Legion Highway and the prescribed zoning setbacks. The HFLW building will have a more compact footprint than the building it replaces. The building will be oriented so that the narrow side of its 60' x 200' footprint will orient to face the street. Functionally, the building is organized into two segments: three clinical floors at the lower levels plus two residential floors about that. At the west end of the building American Legion Highway will be a

large community room that will provide an open, transparent façade facing out to the neighborhood.

In place of the existing 1940's brick building that faces the street will, be the new Residences building. To help relate to the neighborhood scale, eight of the 16 townhouse units will wrap the three lower levels of the six-story structure and reduce its perceived massing. The other eight three-story townhouses step down the height of the building toward Stella Road. The front doors of the all of townhouses will be located along a landscaped path along the front of, and along, the Stella Road side the Residences. The upper-floor apartment units will be accessed by a recognizable front entry facing on to American Legion Highway, leading to the main elevator lobby. The townhouses, as well as the spacing of the buildings and their forms, look to reference traditional locations and orientations to the street and the neighborhood.

The two buildings will complement each other architecturally. Using a palette of similar cladding materials, and with complementary window materials and patterns, the structures, though different, will be perceived as being part of a campus feel. The HFLW building will be a combination of glass and solid materials to reflect its social service office and medical clinic uses. However, as the two upper floors of the building will be residential, the windows sizes and patterns will change to reflect that difference. The main entrance to the HFLW building will be on the south side of the building, facing the main drive. There is another entry point further down the drive that will serve as a separate pedestrian entrance for the upper-floor apartments, and another entrance lobby for one of the HFLW special programs. Beyond that entry canopy for those doors is the vehicular entrance to the below-grade parking for the HFLW building. There will be spaces for 30 cars and bicycle storage in the below-grade garage, as well as a changing room and shower, and access to the building elevators. A meeting room that will also be made available for community uses will face onto American Legion Highway at the ground level and will look onto to its own outdoor patio.

Across the drive are two vehicular entrances to the Residences garage, which has spaces for 100 cars, bicycle storage, and direct access to the main elevator lobby, as well as direct access to the rear entrances of the eight townhouse units. Because the parking is essentially located at grade level, this allows the introduction of two large landscaped courtyards to be located on portions of the roof on the garage. These courtyards can be directly accessed from second floor units; there will also be access for other building residents via a hallway entrance close to the elevator core. Because the site slopes up toward the rear of the site, these two courtyards will appear to be at grade, and not on an elevated roof, further reducing the visual impact to other abutting neighbors. Rooftop mechanical equipment will be screened or located to minimize their visibility.

The urban design drawings, perspectives, and LEED v4 for BD+C Checklists are included at the end of this section (**Figures 3-1** thru **3-29**).

3.1.3 Landscape Design

The design of the landscape is based on five objectives:

1. Extend and preserve the "parkway" character of American Legion Highway;
2. Create a pedestrian/oriented landscape plan that fosters residential living on the site;
3. Support the social services program of the Home for Little Wanders;
4. Mitigate the impact of the new buildings on the abutting residences; and
5. Utilize best practices for environmental landscape design.

The existing parkway oak tree planting will be extended all along the frontage on American Legion Highway and along the frontage on Stella Road. Site egress will negatively impact one of the four large existing oak trees. The Site Preparation and Demolition Plan will fence off all four trees until the very end of construction when the entry drop off lane will be constructed until careful and limited excavation. A temporary irrigation system will be installed to support the trees during construction with twice weekly watering unless significant natural rainfall occurs.

Pedestrian oriented design will be expressed with the design and paving of the entry drop-off courtyard in front of the HFLW and the drop off plaza in front of the new Residential Building. This extensive area of permeable pavement will be designed as a "woonerf" including bollards, seating, and shade tree plantings. The main outdoor amenity spaces will be developed over the below-grade garage and will include semi-private patios for garden floor residents and a central amenity space for all residents. One courtyard is designed for active social gathering including BBQ with outdoor dining, a fire pit, and social seating arrangements in a garden setting. The second outdoor courtyard is designed as a quieter gathering space with smaller social gathering spaces and a smaller BBQ / dining area. Walkways connect the outdoor courtyards with Stella Road.

The design includes three important components that support the program of the HFLW. The front entry plaza will include seating for residents and visitors. A large half-court basketball court is provided for recreation and can also provide ample space for other court games that serve the interests of all the residents and non-residents who use the support services. Also included is a large outdoor terrace off the community room that will serve both the program and will be available to the community for events and meetings.

The building has been significantly setback from the rear property line. Most of the existing trees along the property line will be preserved and a series of stormwater planters are proposed to demonstrate best practices and will be planted with species that support pollinators and birds. The planting plan will use native plantings along the exterior of the site with non-native plant species limited to showy perennials and shrubs at the building entrances. The rooftop will be designed with plant species that can thrive in the limited depth of soils and other microclimatic factors concomitant with rooftop landscapes. Other than within the stormwater planters, all plantings will be selected for their drought tolerance.

3.1.4 Screening and Buffering

All screening and buffering at the proposed project will comply with the requirements of Section 67-30 of the Code, except where other provisions may be established through the Article 80 process for Large Project Review.

With the exception of one accessible parking space and temporary drop-off areas, all parking on the site will be covered and not visible from view. Disposal areas, dumpsters, and ground-mounted mechanical equipment will be screened from view as provided in Section 67-30. The rear of the disposal area that contains the dumpster and recycling containers will set into the slope approximately 10 feet below the elevation of the abutting residential properties. The entire area will be screened with an opaque fence at least six feet high and by vegetation.

Any ground-mounted mechanical equipment will be screened with an opaque fence to provide screening from view. Any roof-mounted mechanical equipment will be located in the center of the roof and be painted to blend with adjacent building materials or be screened.

Plantings, shrubs, and trees will meet the requirements of Section 67-30. Existing mature trees and shrubs will be retained to the extent possible. Most of the existing trees along the property line will be preserved and a series of stormwater planters are proposed to demonstrate best practices and will be planted with species that support pollinators and birds. The planting plan will use native plantings along the exterior of the site with non-native plant species limited to showy perennials and shrubs at the building entrances. All landscaping will be maintained in a healthy growing condition.

3.2 Sustainable Design/Energy Conservation

3.2.1 LEED BD&C – Mixed-Use Behavioral and Clinical Health Facility at 780 American Legion Highway

Overview

The proposed mixed-use behavioral and clinical health facility consists of the construction of a 62,953 gross square foot building, which will include a behavioral and clinical health facility (with office and clinical spaces) along with twenty-two (22) units of supporting housing for youth who are aging out of the Commonwealth's foster care system in a building to the north of a two-way access from American Legion Highway, and a one-way exit driveway in the front of the Residences.

Sustainability informs every design decision. Enduring and efficient buildings conserve embodied energy and preserve natural resources. The Project embraces the opportunity to positively influence the urban environment. Its urban location takes advantage of existing infrastructure.

The LEED v4 for Building Design and Construction (BD&C) rating system tracks the sustainable features of a Project by achieving points in following categories: Integrative Process; Location & Transportation; Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation and Design Process.

Sustainability/Green Building Design Approach

To meet the requirements of Article 37, the following section describes how the Project complies with the LEED Building Design & Construction v4 criteria.

The Project will demonstrate compliance with the LEED Certifiably Requirements. Further study over the coming weeks and months will determine and confirm final credit achievement. At this stage in the project we are tracking 52 YES credits and 17 Maybe credits.

Integrative Process

The Proponent and Project team are committed to an integrated design approach using early modeling and extensive design team coordination to achieve synergies across disciplines and building systems.

Location and Transportation

The Location and Transportation credit category encourages development on previously developed land, minimizing a building's impact on ecosystems and waterways, regionally appropriate landscaping, and smart transportation choice.

The Project site has been previously developed, meeting the criteria for the sensitive land protection credit. The Project site is also located in an area that meets the designation for a high priority site.

The Project site area exceeds the density requirements of 22,000 SF/acre and is in a neighborhood with several amenities within 0.5 miles of the Project site. The Project is providing bicycle facilities and showers for the occupants of the building.

The parking is reduced by more than 60% earning the Reduced Parking Footprint Credit. The project is also designed to comply with the Green Vehicles credit.

Sustainable Sites

The development of sustainable sites is at the core of sustainable design. Sustainable Site design provides quality open space with active landscape elements that can both mitigate stormwater and provide shade and thermal comfort for the building occupants.

The Project will evaluate Low Impact Development (LID) Strategies to promote infiltration for quality stormwater management. The Project will meet the 85th percentile of rainfall retained on site for the Rainwater Management credit.

The building roof and all hardscape material will comply with the SRI standards set forth by LEED and achieve both Heat Island credits. All exterior lighting fixtures will comply with the Light Pollution Reduction credit, but we will confirm this in the next submission.

As required by LEED, the Project will create and implement an erosion and sedimentation control plan for all construction activities associated with the Project. The plan will conform to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent.

The Project is developing the site assessment credit that will demonstrate the relationships between the Project site features and topics, Topography, Hydrology, Climate, Vegetation, Soils, Human use.

Water Efficiency

Buildings are major users of our potable water supply and conservation of water preserves a natural re-source while reducing the amount of energy and chemicals used for sewage treatment. The goal of the Water Efficiency credit category is to encourage smarter use of water, both inside and outside.

Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside. To satisfy the requirements of the Indoor Water Use Reduction Prerequisite and credit, the Project will incorporate water conservation strategies that include low-flow plumbing fixtures for water closets and faucets. To satisfy the requirements of the Outdoor Water Use Reduction Prerequisite and credit, the landscape will be designed to reduce potable water use by at least 50% and the design will only have plant material that is native and adaptive.

The Project is targeting significant indoor water use reduction from the baseline. All newly installed toilets, lavatory faucets, kitchen sinks and showerheads that are eligible for labeling will be low-flow and have the Water Sense label.

The Project will also install permanent water meters that measure the total potable water use for the building and associated grounds in addition to water meters for two or more of the following water sub-systems, as applicable to the project: irrigation, indoor plumbing fixtures and fittings, domestic hot water and the boiler for additional metering.

Metering data will be compiled into monthly and annual summaries, and the resulting whole-project water usage data will be shared with USGBC.

Energy & Atmosphere

According to the U.S. Department of Energy, buildings use 39 percent of the energy and 74 percent of the electricity produced each year in the United States. The Energy and Atmosphere credit category encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances, systems and lighting; the use of renewable and clean sources of energy, generated on-site or off-site; and other innovative practices.

Fundamental Commissioning and Enhanced Commissioning will be pursued for the Project. Envelope Commissioning will also be evaluated as an alternative.

A whole-building energy simulation was performed for the Project. This is included in **Appendix E1.** Points were calculating using EA pilot credit 95 – Alternative Energy Performance Metric, the average of the energy cost and carbon emissions savings is 24.4%, resulting in 10 LEED points.

The Project team will continue to analyze efficiency measures during the design process and account for the results in design decision making. The team will use energy simulation of efficiency opportunities and past energy simulation analyses for similar buildings. The Project will also prove compliance with the Stretch Code, which requires a minimum of 10 percent improvement over ASHRAE Standard 90.1–2013.

The Project will evaluate installing new building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc.).

The Project will also evaluate incorporating clean/renewable energy production. A solar study will be provided in the coming weeks.

As required by LEED, the Project will not use chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems. The Project will target the use of refrigerants used in heating, ventilating, air-conditioning, and refrigeration (HVAC&R) equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change.

The Proponent is evaluating engaging in a contract for 50 percent and perhaps 100 percent of the Project's energy from green power, carbon offsets, or renewable energy certificates (RECs).

Materials & Resources

During both construction and operations, buildings generate tremendous waste and use many materials and resources. The Materials & Resources credit category encourages the selection of

sustainable materials, including those that are harvested and manufactured locally, contain high-recycled content, and are rapidly renewable. It also promotes the reduction of waste through building and material reuse, construction waste management, and ongoing recycling programs.

As required by LEED, the Project will provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials will include mixed paper, corrugated cardboard, glass, plastics, and metals. The Project will also take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

To comply with both the prerequisite and credit requirements related to construction waste management, the Project will develop and implement a construction and demolition waste management plan that will identifying at least five materials (both structural and nonstructural) targeted for diversion and approximate a percentage of the overall Project waste that these materials represent. The Project will divert a minimum of 75 percent of the total construction and demolition material; diverted materials will include at least four material streams.

Careful material selection will be performed for the Project. The Project will evaluate products that have Environmental Product Declarations (EPDs), Sourcing of Raw Materials and Material Ingredients disclosures to meet the LEED Criteria.

Indoor Environmental Quality

The U.S. Environmental Protection Agency estimates that Americans spend about 90 percent of their day in-doors, where the air quality can be significantly worse than outside. The Indoor Environmental Quality credit category promotes strategies that can improve indoor air through low emitting materials selection and increased ventilation. It also promotes access to natural daylight and views.

As required by LEED, the Project will meet the minimum requirements of ASHRAE Standard 62.1–2010, Sections 4–7, Ventilation for Acceptable Indoor Air Quality (with errata), or a local equivalent, whichever is more stringent. Also, during building operations the Proponent will institute a No Smoking Policy to prohibit the use of all tobacco products inside the building and within 25 feet of the building entrance, air intakes, and operable windows.

The Project will provide entryway systems, interior cross-contamination prevention, and filtration. The Project will develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building, meeting or exceeding all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3. The Project will follow strict IAQ

guidelines and protect absorptive materials stored on-site from moisture damage. The Project also will pursue either a building flush out or air quality testing.

The Project will meet the thermal comfort criteria both for controllability and the ASHRAE 55 standards. Additionally, individual lighting controls will be provided.

Innovation and Design Process

The Innovation in Design and Innovation in Operations credit categories provide additional points for projects that use new and innovative technologies, achieve performance well beyond what is required by LEED credits, or utilize green building strategies that are not specifically addressed elsewhere in LEED. This credit category also rewards projects for including a LEED Accredited Professional on the team to ensure a holistic, integrated approach to design, construction, operations and maintenance. The following five credits are being pursued and/or evaluated for the project:

- Innovation in Design- Exemplary Performance - Reduced Parking
- Innovation in Design Exemplary Performance - Heat Island
- Innovation in Design: Education & Outreach
- Innovation in Design: Green Housekeeping & Integrated Pest Management
- Innovation in Design: Thermal Comfort Survey
- Innovation in Design: LEED Accredited Professional

Regional Priority

The Project anticipates achieving the following regional priority credits.

- Regional Priority: High Priority Site (maybe)
- Regional Priority: Rainwater Management (yes)
- Regional Priority: Optimize Energy Performance (yes)
- Regional Priority: Renewable Energy Production (maybe)

3.2.2 LEED BD&C – Multi-Family Residential Building at 780 American Legion Highway

Overview

The proposed Multi-Family Residential Building consists of 123,606 GSF which will include a residential building housing ninety-three (93) units of market rate and workforce rental units, and owner-occupied townhouse condominium units in a building closer to Stella Road.

Sustainability/Green Building Design Approach

To meet the requirements of Article 37, the following section describes how the Project complies with the LEED Building Design & Construction v4 criteria.

The Project will demonstrate compliance with the LEED Certifiably Requirements. Further study over the coming weeks and months will determine and confirm final credit achievement. At this stage in the project we are tracking 54 YES credits and 16 Maybe credits.

Integrative Process

The Proponent and Project team are committed to an integrated design approach using early modeling and extensive design team coordination to achieve synergies across disciplines and building systems.

Location and Transportation

The Location and Transportation credit category encourages development on previously developed land, minimizing a building's impact on ecosystems and waterways, regionally appropriate landscaping, and smart transportation choice.

The Project site has been previously developed, meeting the criteria for the sensitive land protection credit. The Project site is also located in an area that meets the designation for a high priority site.

The Project site area exceeds the density requirements of 22,000 SF/acre and is in a neighborhood with several amenities within 0.5 miles of the Project site. The Project is providing bicycle facilities and showers for the occupants of the building.

The parking is reduced by more than 60% earning the Reduced Parking Footprint Credit. The project is also designed to comply with the Green Vehicles credit.

Sustainable Sites

The development of sustainable sites is at the core of sustainable design. Sustainable Site design provides quality open space with active landscape elements that can both mitigate stormwater and provide shade and thermal comfort for the building occupants.

The Project will evaluate Low Impact Development (LID) Strategies to promote infiltration for quality stormwater management. The Project will meet the 85th percentile of rainfall retained on site for the Rainwater Management credit.

The building roof and all hardscape material will comply with the SRI standards set forth by LEED and achieve both Heat Island credits. All exterior lighting fixtures will comply with the Light Pollution Reduction credit, but we will confirm this in the next submission.

As required by LEED, the Project will create and implement an erosion and sedimentation control plan for all construction activities associated with the Project. The plan will conform to the

erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent.

The Project is developing the site assessment credit that will demonstrate the relationships between the Project site features and topics, Topography, Hydrology, Climate, Vegetation, Soils, Human use. Additionally, the project anticipates meeting the open space requirement, encouraging building occupants to enjoy their environment.

Water Efficiency

Buildings are major users of our potable water supply and conservation of water preserves a natural re-source while reducing the amount of energy and chemicals used for sewage treatment. The goal of the Water Efficiency credit category is to encourage smarter use of water, both inside and outside.

Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside. To satisfy the requirements of the Indoor Water Use Reduction Prerequisite and credit, the Project will incorporate water conservation strategies that include low-flow plumbing fixtures for water closets and faucets. The project is aiming for a 50% water use reduction. To satisfy the requirements of the Outdoor Water Use Reduction Prerequisite and credit, the landscape will be designed to reduce potable water use by at least 50% and the design will only have plant material that is native and adaptive.

The Project will also install permanent water meters that measure the total potable water use for the building and associated grounds in addition to water meters for two or more of the following water sub-systems, as applicable to the project: irrigation, indoor plumbing fixtures and fittings, domestic hot water and the boiler for additional metering.

Metering data will be compiled into monthly and annual summaries, and the resulting whole-project water usage data will be shared with USGBC.

Energy & Atmosphere

According to the U.S. Department of Energy, buildings use 39 percent of the energy and 74 percent of the electricity produced each year in the United States. The Energy and Atmosphere credit category encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances, systems and lighting; the use of renewable and clean sources of energy, generated on-site or off-site; and other innovative practices.

Fundamental Commissioning and Enhanced Commissioning will be pursued for the Project. Envelope Commissioning will also be evaluated as an alternative.

A whole-building energy simulation was performed for the Project. This is included in **Appendix E2.** Points were calculating using EA pilot credit 95 – Alternative Energy Performance Metric, the average of the energy cost and carbon emissions savings is 20.9%, resulting in 8 LEED points.

The Project team will continue to analyze efficiency measures during the design process and account for the results in design decision making. The team will use energy simulation of efficiency opportunities and past energy simulation analyses for similar buildings. The Project will also prove compliance with the Stretch Code, which requires a minimum of 10 percent improvement over ASHRAE Standard 90.1–2013.

The Project will evaluate installing new building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc.).

The Project will also evaluate incorporating clean/renewable energy production. A solar study will be provided in the coming weeks.

As required by LEED, the Project will not use chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems. The Project will target the use of refrigerants used in heating, ventilating, air-conditioning, and refrigeration (HVAC&R) equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change.

The Proponent is evaluating engaging in a contract for 50 percent and perhaps 100 percent of the Project's energy from green power, carbon offsets, or renewable energy certificates (RECs).

Materials & Resources

During both construction and operations, buildings generate tremendous waste and use many materials and resources. The Materials & Resources credit category encourages the selection of sustainable materials, including those that are harvested and manufactured locally, contain high-recycled content, and are rapidly renewable. It also promotes the reduction of waste through building and material reuse, construction waste management, and ongoing recycling programs.

As required by LEED, the Project will provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials will include mixed paper, corrugated cardboard, glass, plastics, and metals. The Project will also take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

To comply with both the prerequisite and credit requirements related to construction waste management, the Project will develop and implement a construction and demolition waste management plan that will identifying at least five materials (both structural and nonstructural) targeted for diversion and approximate a percentage of the overall Project waste that these materials represent. The Project will divert a minimum of 75 percent of the total construction and demolition material; diverted materials will include at least four material streams.

Careful material selection will be performed for the Project. The Project will evaluate products that have Environmental Product Declarations (EPDs), Sourcing of Raw Materials and Material Ingredients disclosures to meet the LEED Criteria.

Indoor Environmental Quality

The U.S. Environmental Protection Agency estimates that Americans spend about 90 percent of their day in-doors, where the air quality can be significantly worse than outside. The Indoor Environmental Quality credit category promotes strategies that can improve indoor air through low emitting materials selection and increased ventilation. It also promotes access to natural daylight and views.

As required by LEED, the Project will meet the minimum requirements of ASHRAE Standard 62.1–2010, Sections 4–7, Ventilation for Acceptable Indoor Air Quality (with errata), or a local equivalent, whichever is more stringent. Also, during building operations the Proponent will institute a No Smoking Policy to prohibit the use of all tobacco products inside the building and within 25 feet of the building entrance, air intakes, and operable windows.

The Project will provide entryway systems, interior cross-contamination prevention, and filtration. The Project will develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building, meeting or exceeding all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3. The Project will follow strict IAQ guidelines and protect absorptive materials stored on-site from moisture damage.

The Project will meet the thermal comfort criteria both for controllability and the ASHRAE 55 standards. Additionally, individual lighting controls will be provided.

Innovation and Design Process

The Innovation in Design and Innovation in Operations credit categories provide additional points for projects that use new and innovative technologies, achieve performance well beyond what is required by LEED credits, or utilize green building strategies that are not specifically addressed elsewhere in LEED. This credit category also rewards projects for including a LEED Accredited Professional on the team to ensure a holistic, integrated approach to design, construction,

operations and maintenance. The following five credits are being pursued and/or evaluated for the project:

- Innovation in Design: Exemplary Performance -Heat Island
- Innovation in Design: Exemplary Performance Reduced Parking
- Innovation in Design: Green Housekeeping / Integrated Pest Management
- Innovation in Design: Thermal Comfort Survey
- Innovation in Design: Education & Outreach
- Innovation in Design: LEED Accredited Professional

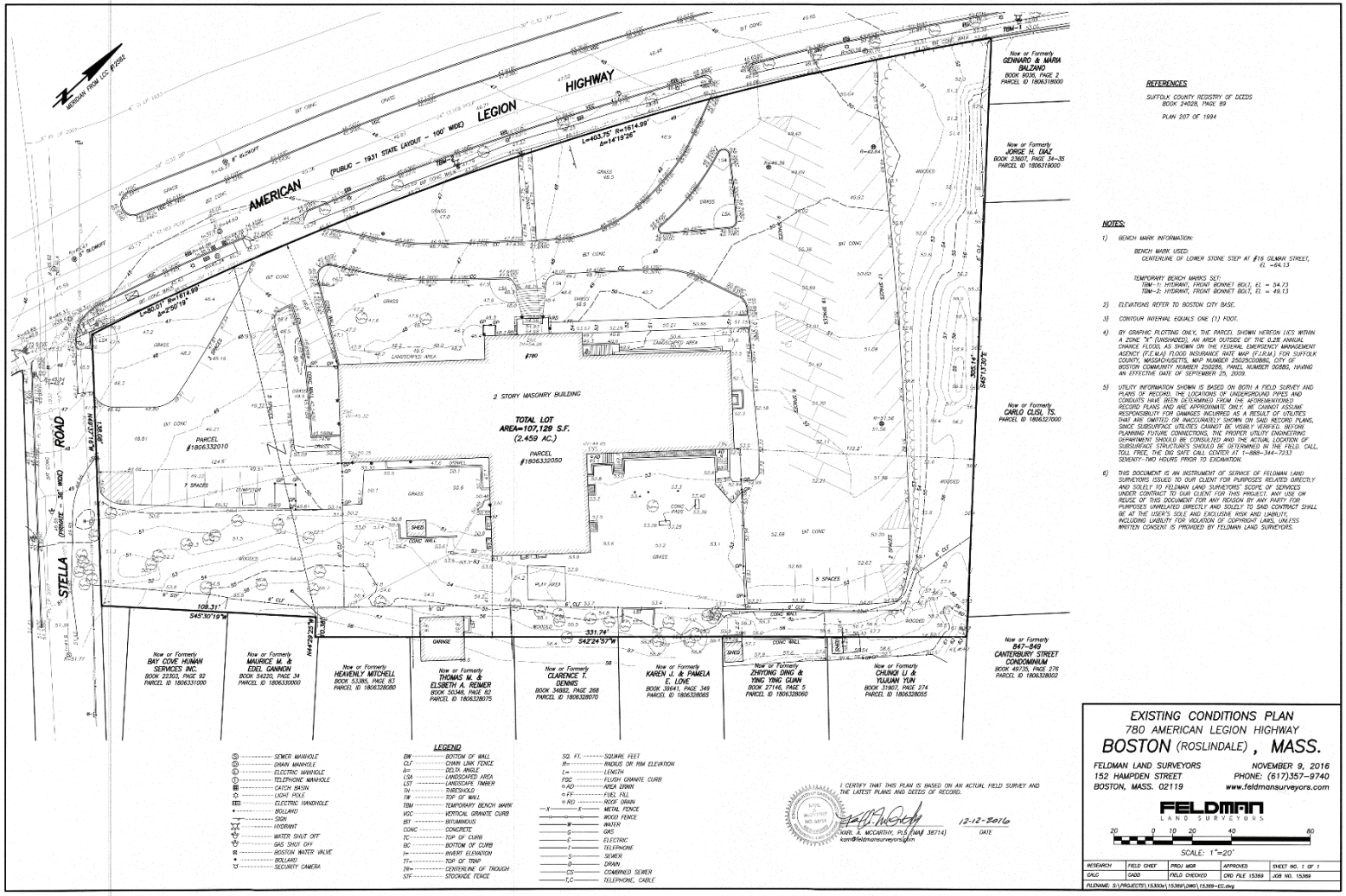
Regional Priority

The Project anticipates achieving the following regional priority credits.

- Regional Priority: Indoor Water Use Reduction (yes)
- Regional Priority: High Priority Site (maybe)
- Regional Priority: Rainwater Management (yes)
- Regional Priority: Optimize Energy Performance (yes)
- Regional Priority: Renewable Energy Production (maybe)

3.3 Urban Design Drawings and LEED Checklist

Urban design drawings and renderings depicting the Proposed Project and the LEED v4 for BD+C Checklists include:



780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 3-1
EXISTING CONDITIONS SURVEY

THE HOME FOR LITTLE WANDERERS

8/12/2019 DHK ARCHITECTS, INC

ALINEA DEVELOPMENT PARTNERS

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 3-2
EXISITNG CONDITIONS(FRONT)

THE HOME FOR LITTLE
WANDERERS

AERIAL VIEW

ALINEA DEVELOPMENT PARTNERS

780 AMERICAN LEGION HWY
ROSLINDALE , MA

8/12/2019 DHK ARCHITECTS, INC

FIGURE 3-3
PROPOSED BUILDING(FRONT)

AERIAL VIEW

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 3-4
EXISTING CONDITIONS(REAR)

THE HOME FOR LITTLE
WANDERERS

AERIAL VIEW

ALINEA DEVELOPMENT PARTNERS

780 AMERICAN LEGION HWY
ROSLINDALE , MA

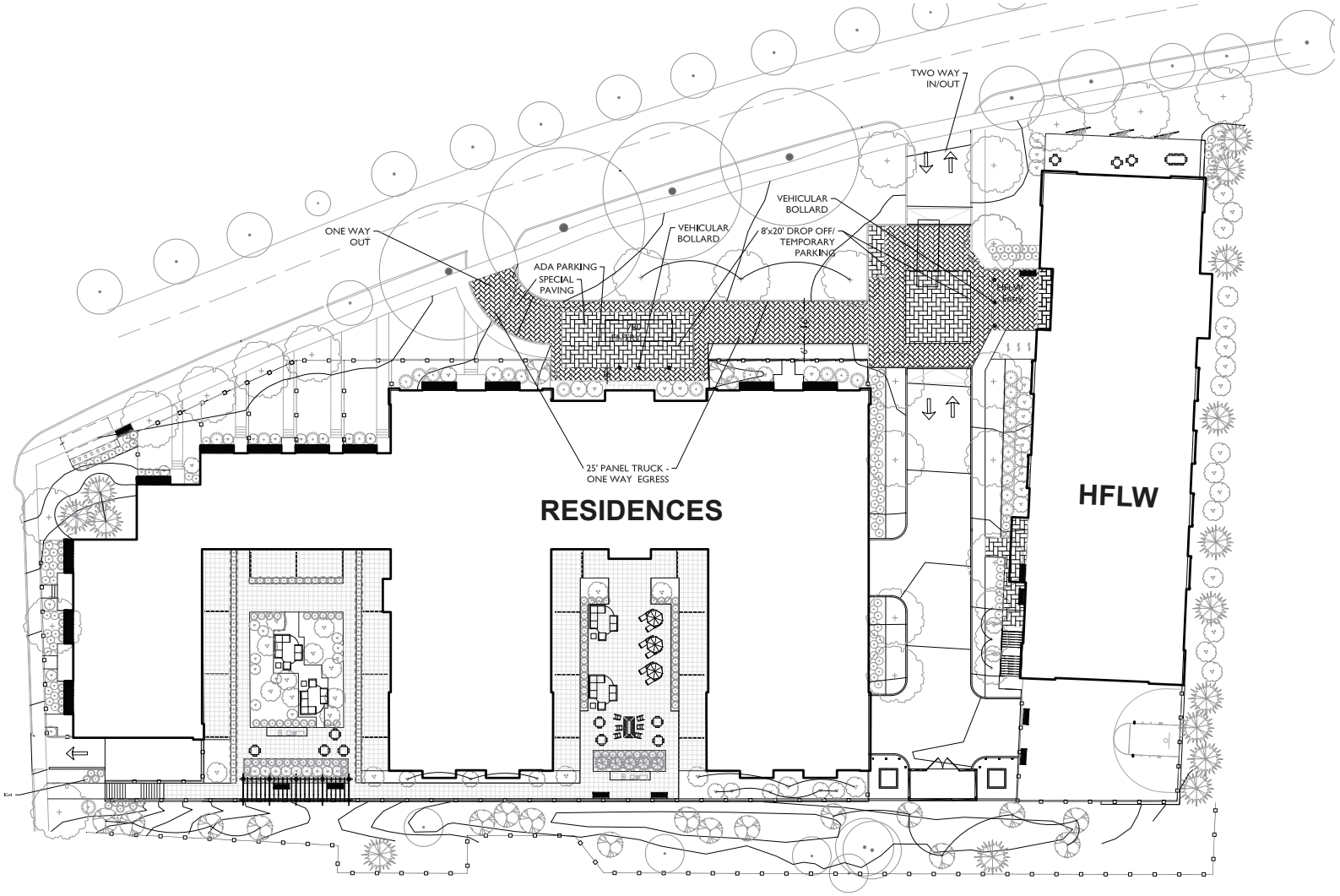
8/12/2019 DHK ARCHITECTS, INC

FIGURE 3-5
PROPOSED BUILDING(REAR)

AERIAL VIEW

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS



780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 3-6
PROPOSED SITE PLAN
(OPTION 1)

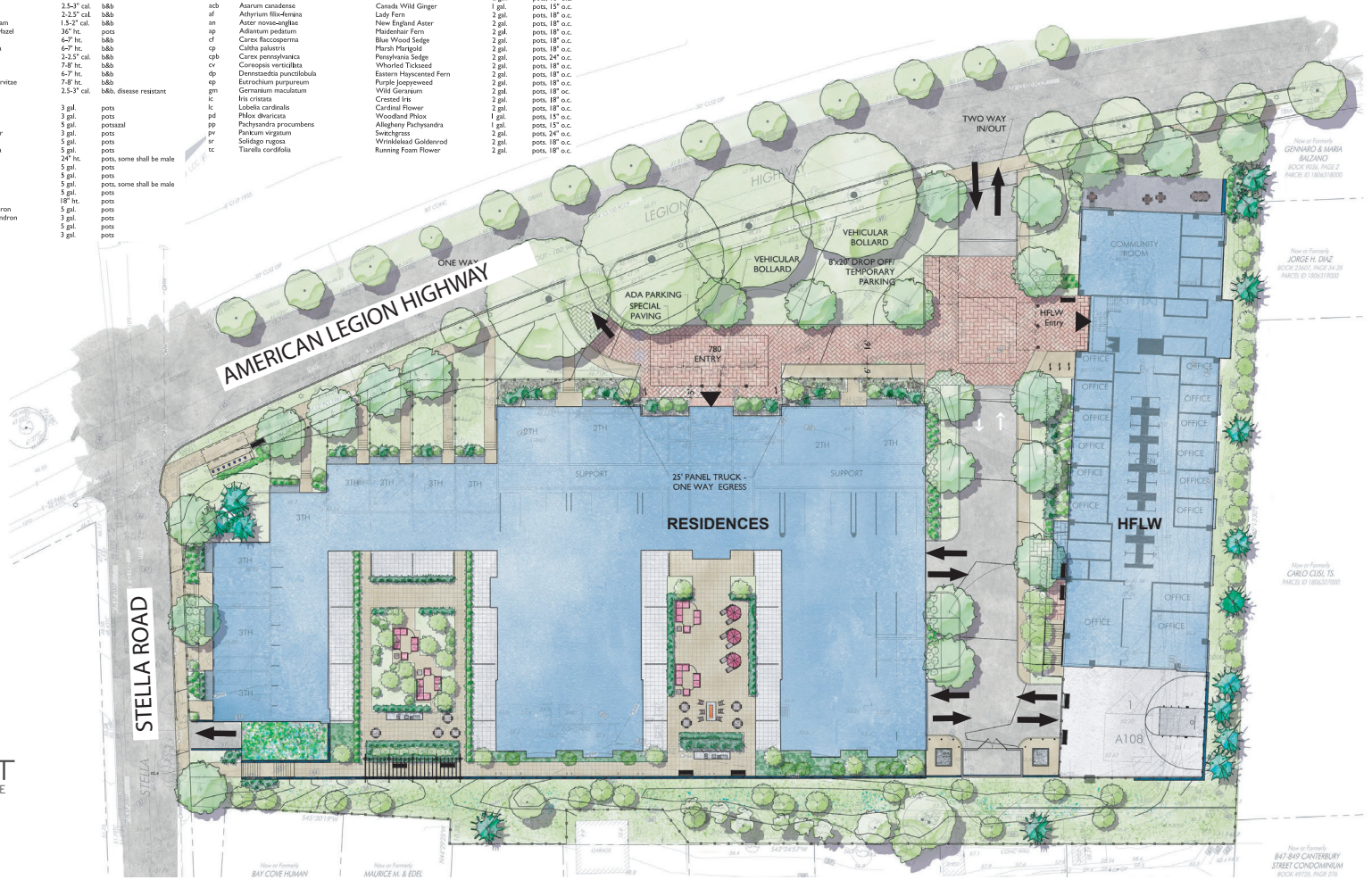
THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

PROPOSED PLANT LIST

SYMB		LATIN NAME	COMMON NAME	SIZE	NOTES
TREES					
AC	19	Amelanchier canadensis	Shadblow Serviceberry	36" ht.	pots
AF	2	Abies fraseri	Fraser Fir	6-7' ht.	b&b
AR	10	Acer rubrum	Red Maple	2.5-3" cal.	b&b
BN	2	Betula nigra	River Birch	2-2.5" cal.	b&b
CC	10	Carpinus caroliana	American Hornbeam	1.5-2" cal.	b&b
HV	8	Hamamelis virginiana	American Witch-Hazel	36" ht.	pots
JV	1	Juniperus virginiana	Eastern Redcedar	6-7' ht.	b&b
MV	3	Magnolia virginiana	Sweetbay Magnolia	6-7' ht.	b&b
NS	17	Nyssa sylvatica	Black Tupelo	2-2.5" cal.	b&b
PS	5	Pinus strobus	White Pine	7-8' ht.	b&b
QP	3	Quercus palustris 'Green Pillar'	Fastigiate Pin Oak	6-7' ht.	b&b
TG	7	Thuja 'Green Giant'	Green Giant Arborvitae	7-8' ht.	b&b
UA	8	Ulmus americana 'Princeton'	American Elm	2.5-3" cal.	b&b, disease resistant
SHRUBS & VINES (TOTAL: 360 from this list)					
ACb		Azalea calendulaceum	Flame Azalea	3 gal.	pots
AP		Andromeda polifolia	Bog-Rosemary	3 gal.	pots
CA		Clethra alnifolia	Summersweet	5 gal.	potsazal
FG		Fothergilla gardenii	Dwarf Witch Alder	3 gal.	pots
FM		Fothergilla major	Witch Alder	5 gal.	pots
HQ		Hydrangea quercifolia	Oakleaf Hydrangea	5 gal.	pots
IG		Ilex glabra	Inkberry	24" ht.	pots, some shall be male
IM		Ilex x meserveae	Blue Holly	5 gal.	pots
IV		Itea virginica	Sweetspire	5 gal.	pots
IVb		Ilex verticillata 'Winter Red or Red Sprite'	Winterberry	5 gal.	pots, some shall be male
LF		Leucothoe fontanesia	Fetter-bush	5 gal.	pots
RA		Rhus aromatica 'Lo-Gro'	Lo-Gro Sumac	18" ht.	pots
RC		Rhododendron catawbiense	Purple Rhododendron	5 gal.	pots
RCb		Rhododendron carolinianum	Carolina Rhododendron	3 gal.	pots
TC		Taxus canadensis	Canada Yew	5 gal.	pots
WM		Wisteria macrostachya 'Blue Moon'	Kentucky Wisteria	3 gal.	pots

SYMB		LATIN NAME	COMMON NAME	SIZE	NOTES
PERENNIALS (TOTAL: 500 from this List)					
aa		Anemone americana	Blunt-Lobed Hepatica	2 gal.	pots, 18" o.c.
ac		Anemone canadensis	Canadian Anemone	2 gal.	pots, 18" o.c.
acb		Asarum canadense	Canada Wild Ginger	1 gal.	pots, 15" o.c.
af		Athyrium filix-femina	Lady Fern	2 gal.	pots, 18" o.c.
an		Aster novae-angliae	New England Aster	2 gal.	pots, 18" o.c.
ap		Adiantum pedatum	Maidenhair Fern	2 gal.	pots, 18" o.c.
cf		Carex flaccosperma	Blue Wood Sedge	2 gal.	pots, 18" o.c.
cp		Caltha palustris	Marsh Marigold	2 gal.	pots, 18" o.c.
cpb		Carex pennsylvanica	Pensylvania Sedge	2 gal.	pots, 24" o.c.
cv		Coreopsis verticillata	Whorled Tickseed	2 gal.	pots, 18" o.c.
dp		Dennstaedtia punctilobula	Eastern Hayscented Fern	2 gal.	pots, 18" o.c.
ep		Eutrochium purpureum	Purple Joepyeweed	2 gal.	pots, 18" o.c.
gm		Geranium maculatum	Wild Geranium	2 gal.	pots, 18" oc.
ic		Iris cristata	Crested Iris	2 gal.	pots, 18" o.c.
lc		Lobelia cardinalis	Cardinal Flower	2 gal.	pots, 18" o.c.
pd		Phlox divaricata	Woodland Phlox	1 gal.	pots, 15" o.c.
pp		Pachysandra procumbens	Allegheny Pachysandra	1 gal.	pots, 15" o.c.
pv		Panicum virgatum	Switchgrass	2 gal.	pots, 24" o.c.
sr		Solidago rugosa	Wrinklelead Goldenrod	2 gal.	pots, 18" o.c.
tc		Tiarella cordifolia	Running Foam Flower	2 gal.	pots, 18" o.c.



VERDANT
LANDSCAPE ARCHITECTURE

SCALE: 1" = 20'-0"
0 5' 10' 20' 50'

780 AMERICAN LEGION HWY
ROSLINDALE , MA

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FIGURE 3-7
PROPOSED LANDSCAPE PLAN
(OPTION 1)

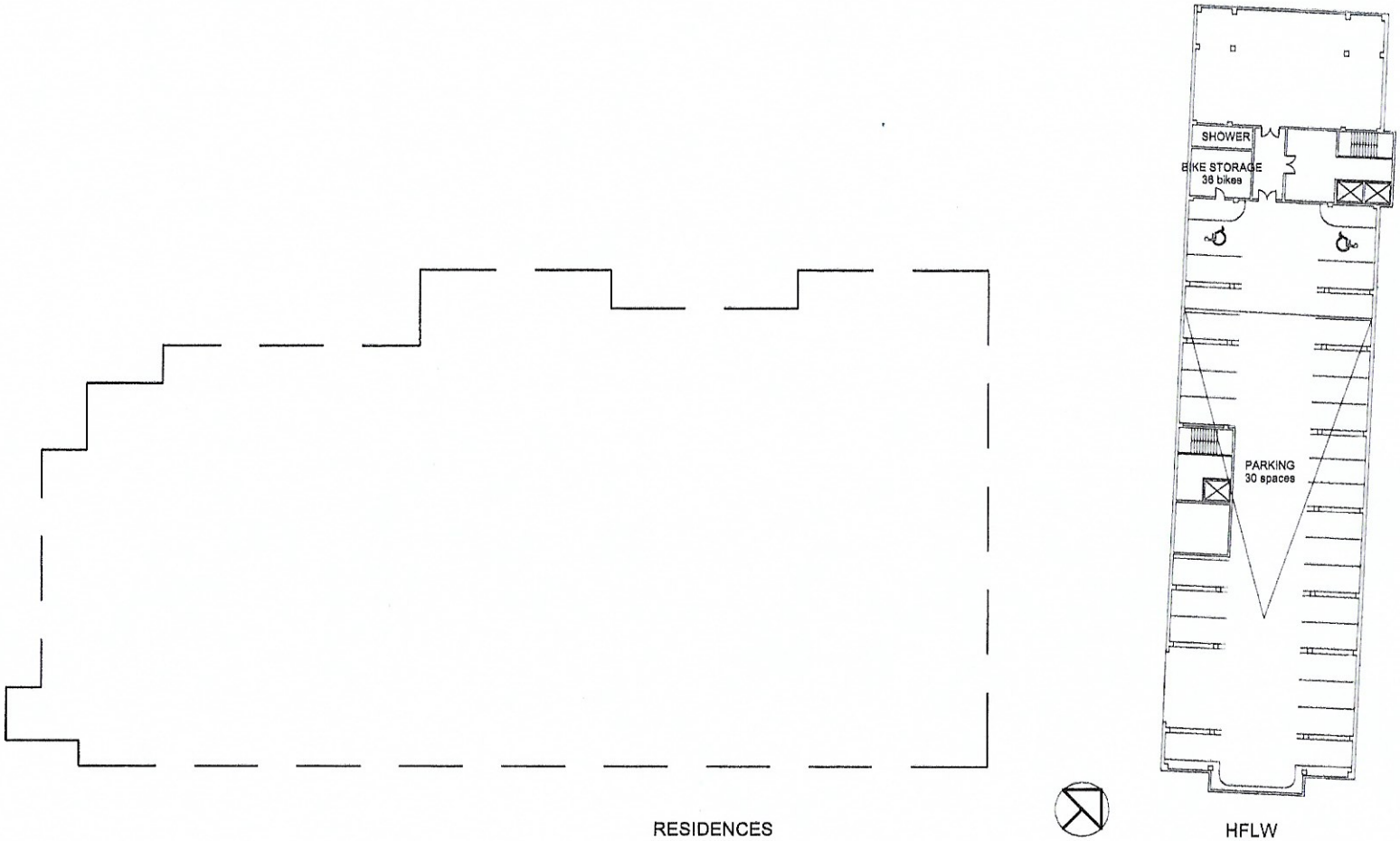
THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

The Home for Little Wanderers
Strong families. Strong life.

Alinea
CAPITAL PARTNERS

DHK
ARCHITECTS



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ROSLINDALE , MA
8/12/ 2019 DHK ARCHITECTS, INC

FIGURE 3-8
BASEMENT LEVEL FLOOR PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS

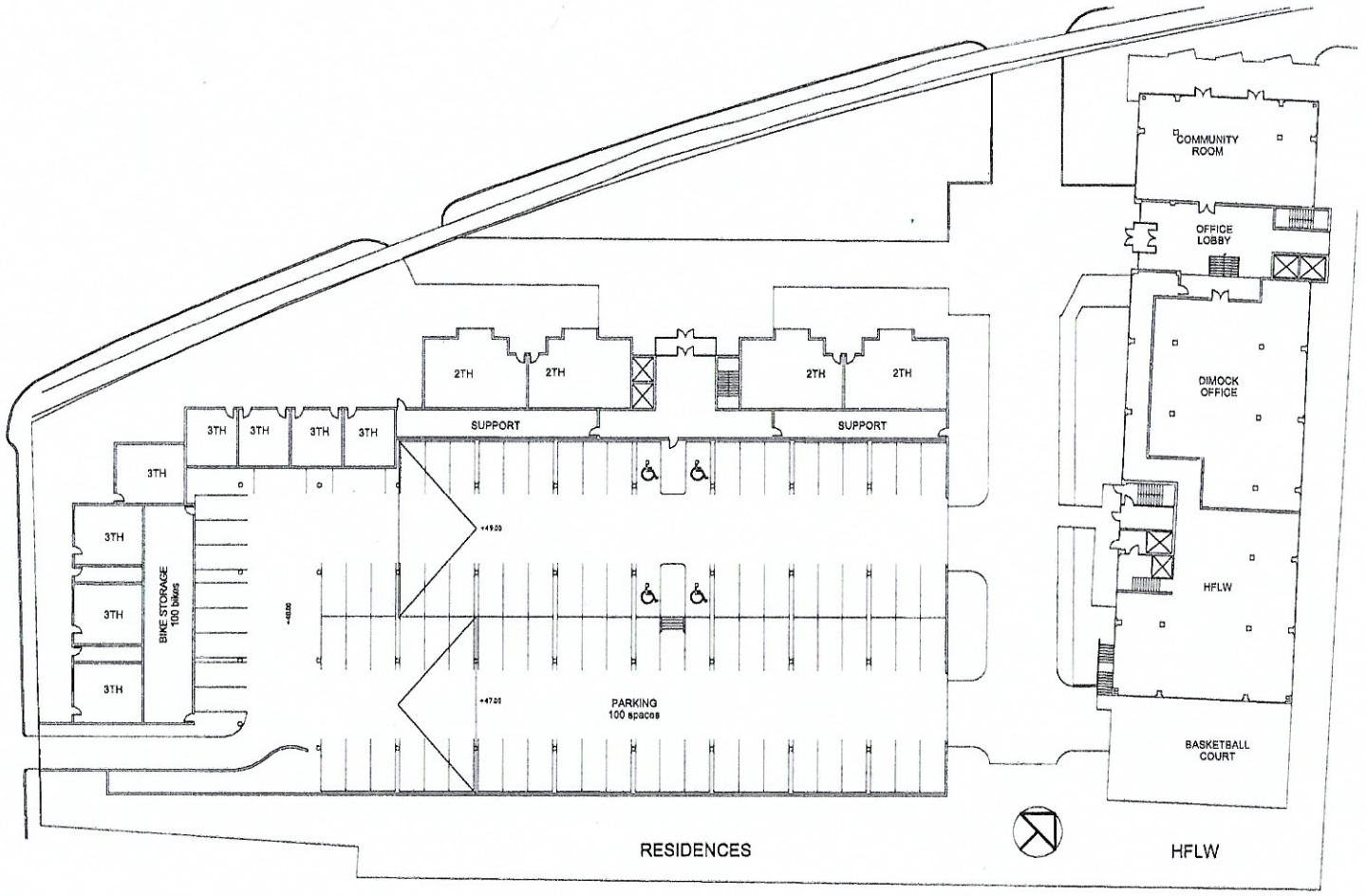

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FIGURE 3-9
GROUND LEVEL FLOOR
(GARAGE PARKING) PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS

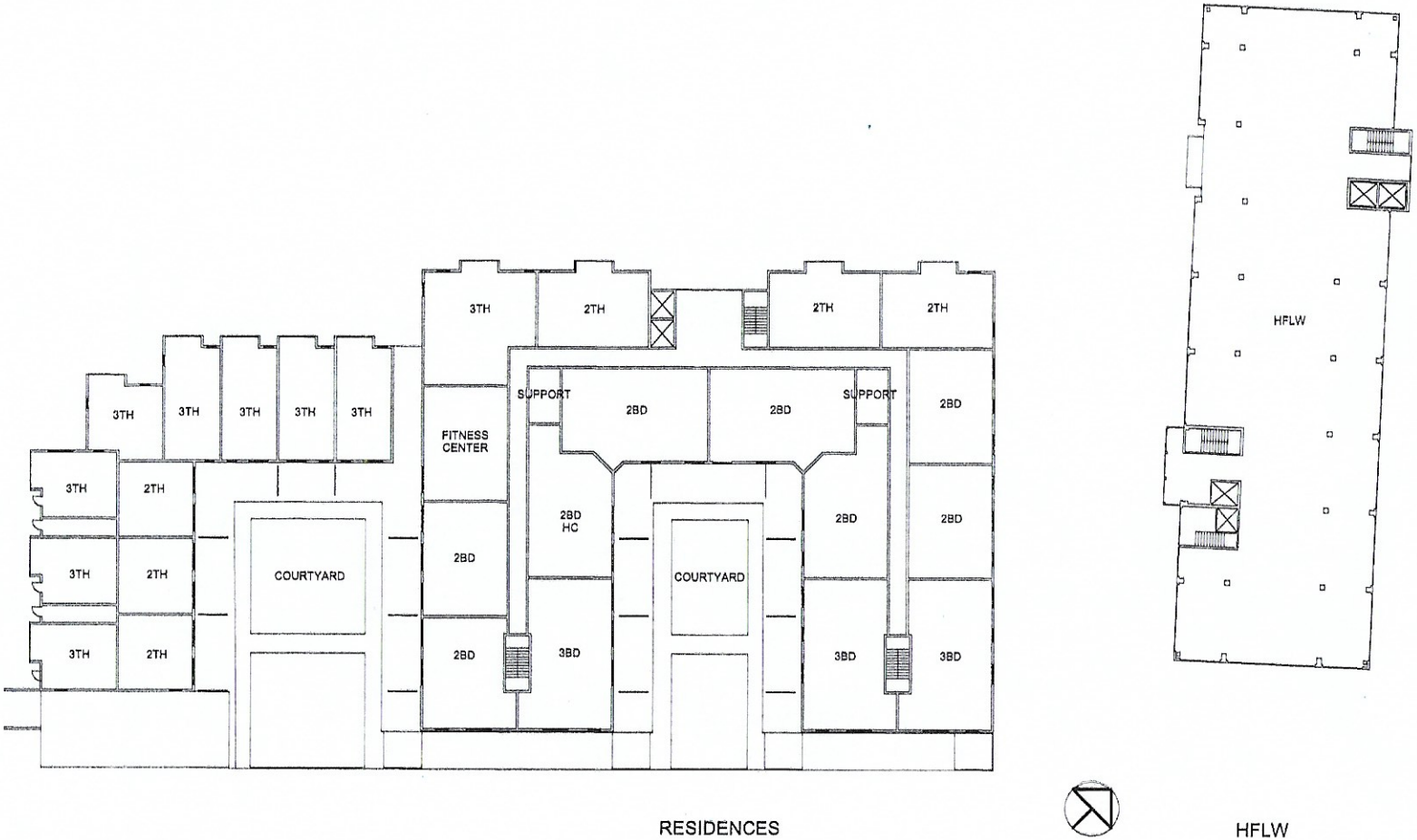

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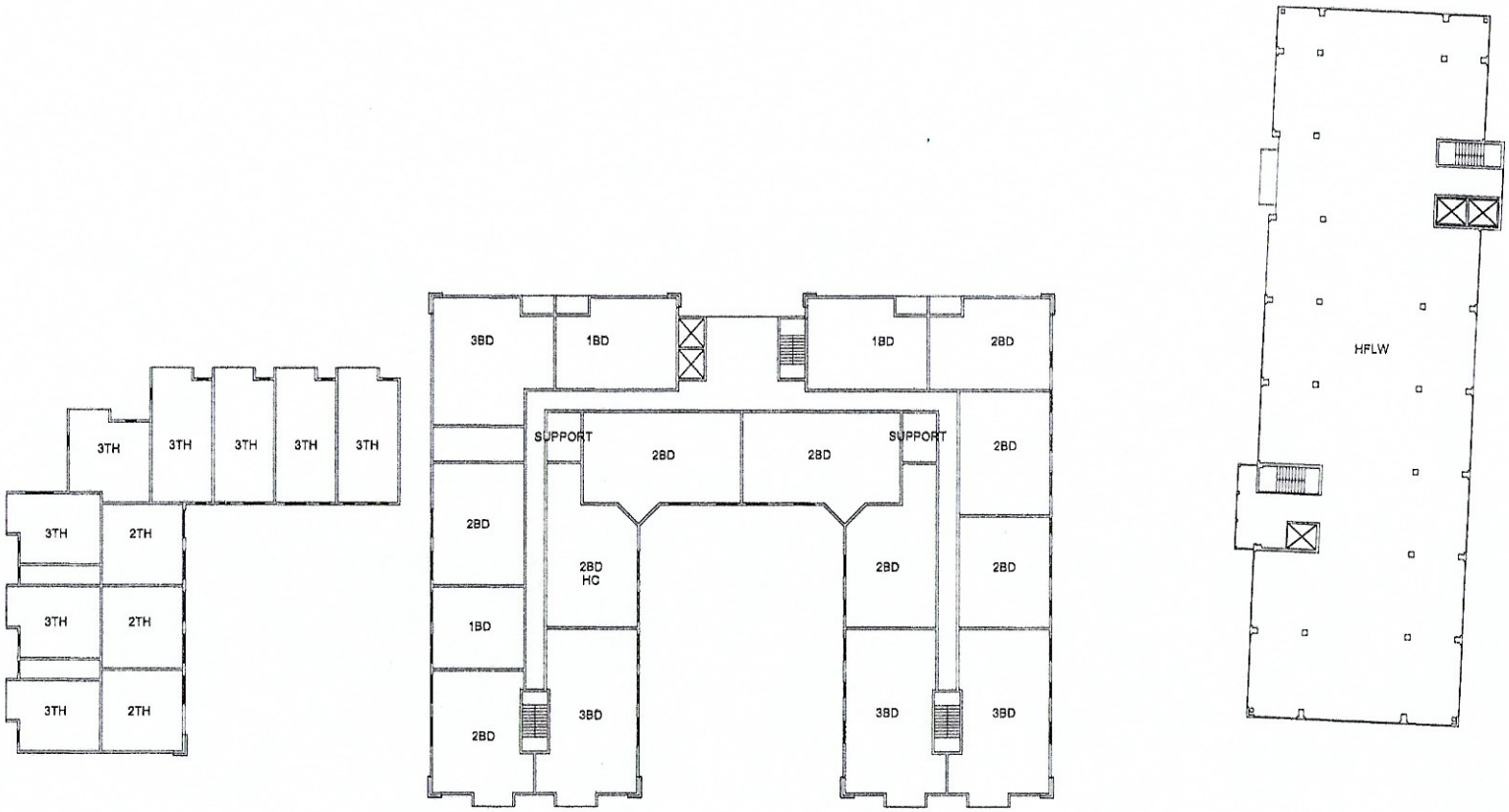
FIGURE 3-10
SECOND LEVEL FLOOR PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS



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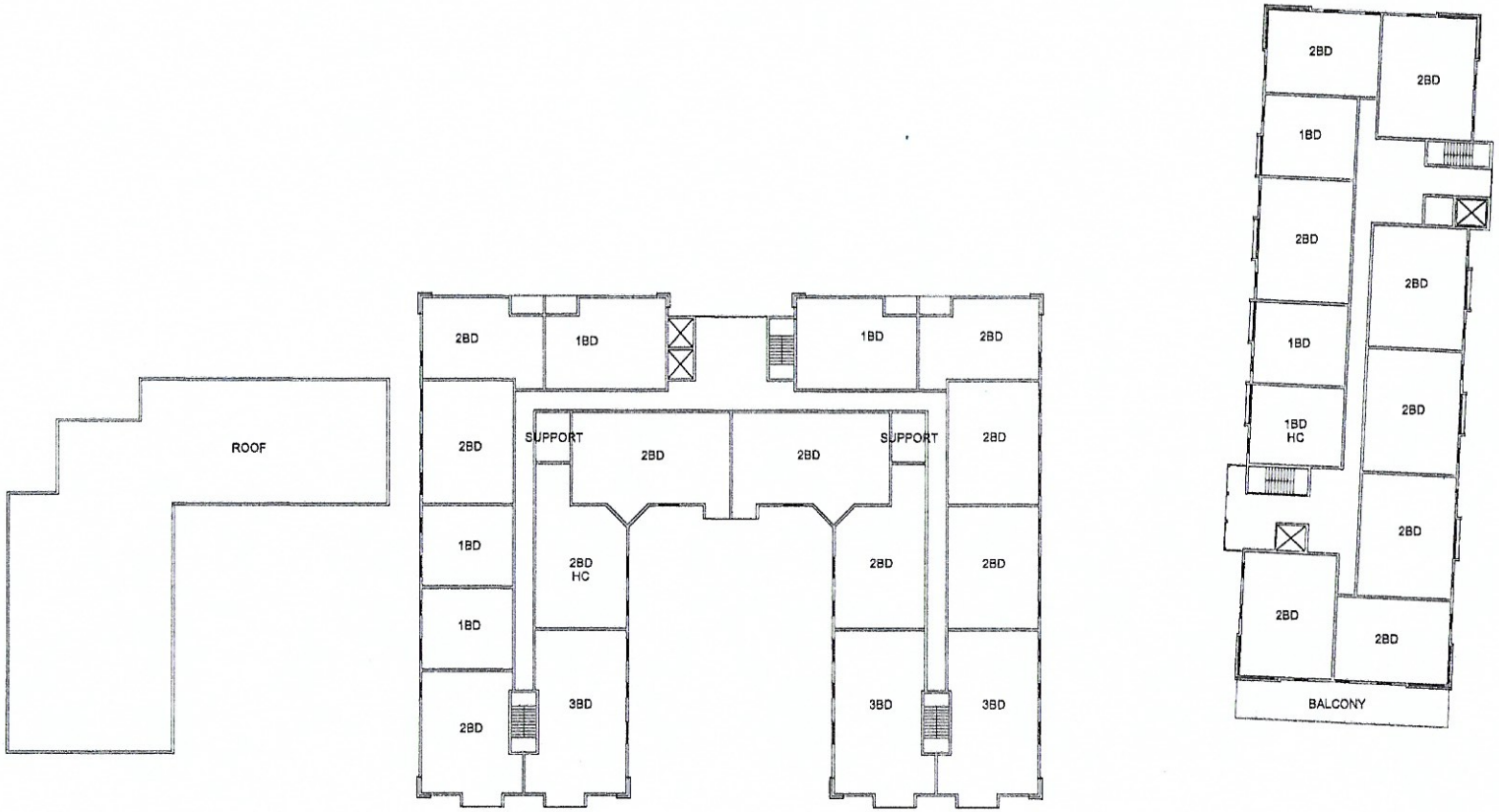
8/12/2019 DHK ARCHITECTS, INC

FIGURE 3-11
THIRD LEVEL FLOOR PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS



RESIDENCES

HFLW

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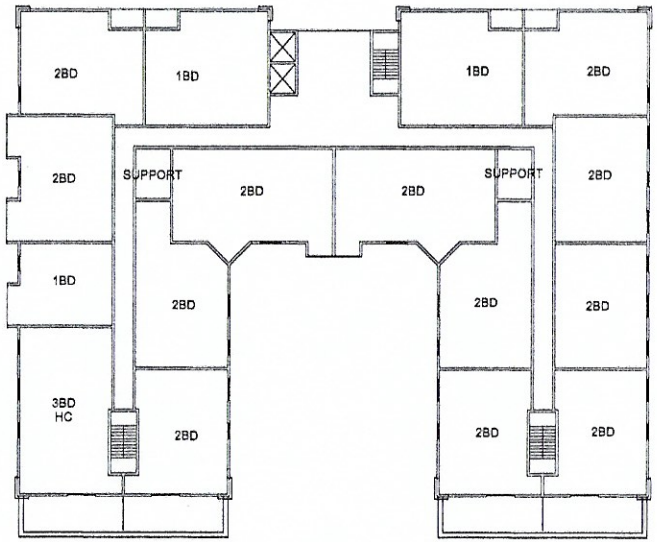
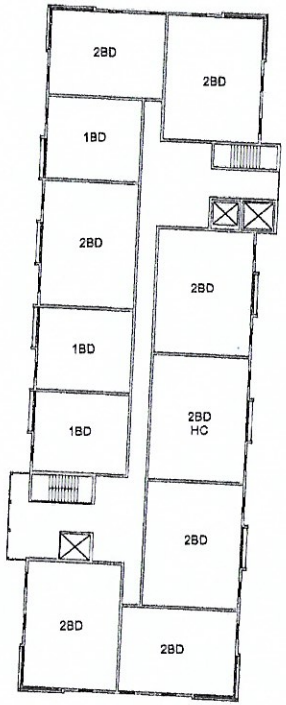
FIGURE 3-12
FOURTH LEVEL FLOOR PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS





RESIDENCES

HFLW

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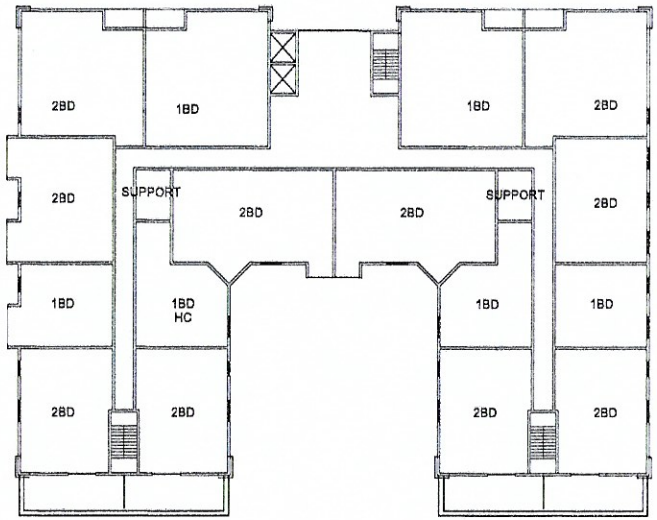
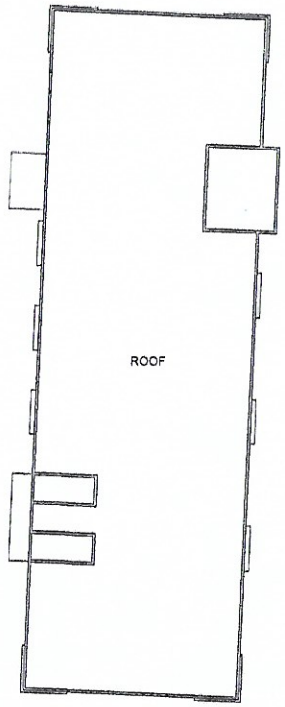
FIGURE 3-13
FIFTH LEVEL FLOOR PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS





RESIDENCES

HFLW

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FIGURE 3-14
SIXTH LEVEL FLOOR PLAN

THE HOME FOR LITTLE WANDERERS
ALINEA DEVELOPMENT PARTNERS

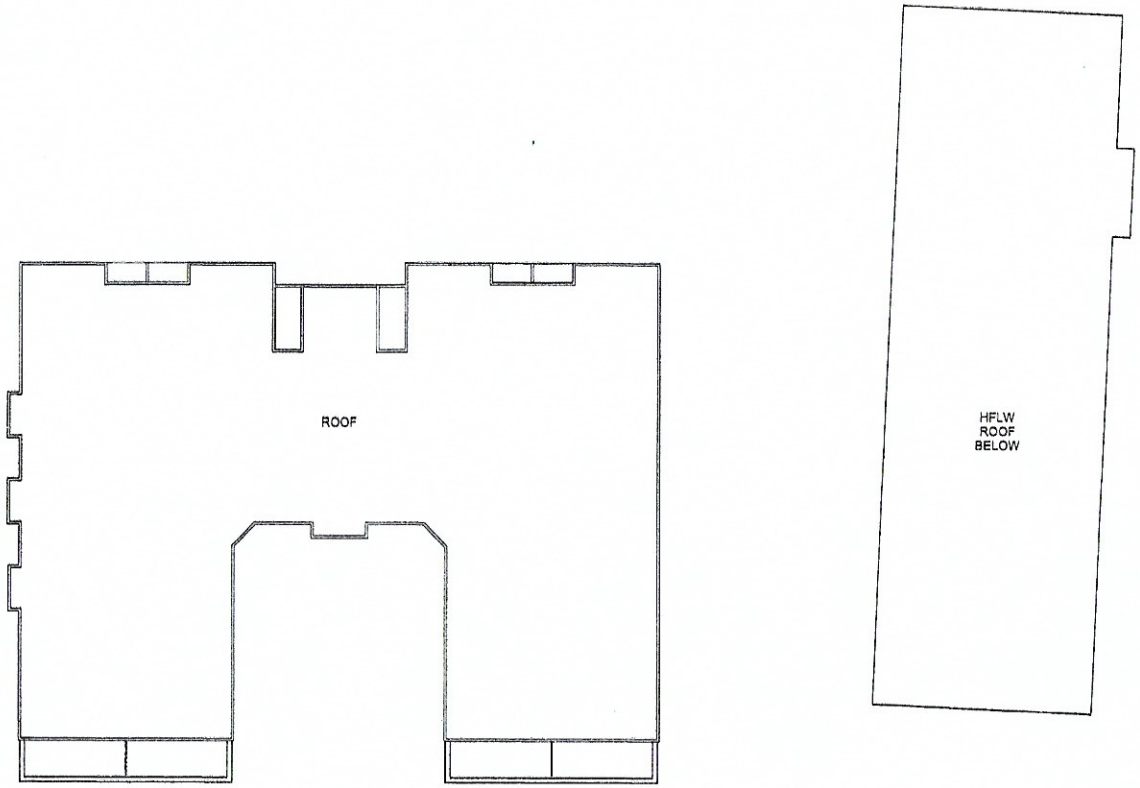

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FIGURE 3-15
ROOF PLAN

THE HOME FOR LITTLE
WANDERERS
ALINEA DEVELOPMENT PARTNERS

Rear (East) Elevation

Front (West) Elevation

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ROSLINDALE , MA

FIGURE 3-16
BUILDING ELEVATIONS - OVERALL
FRONT AND REAR ELEVATIONS

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

Residential South Elevation

Residential North Elevation

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FIGURE 3-17
BUILDING ELEVATIONS - HFLW AND MULTI-FAMILY NORTH AND SOUTH ELEVATIONS

THE HOME FOR LITTLE WANDERERS

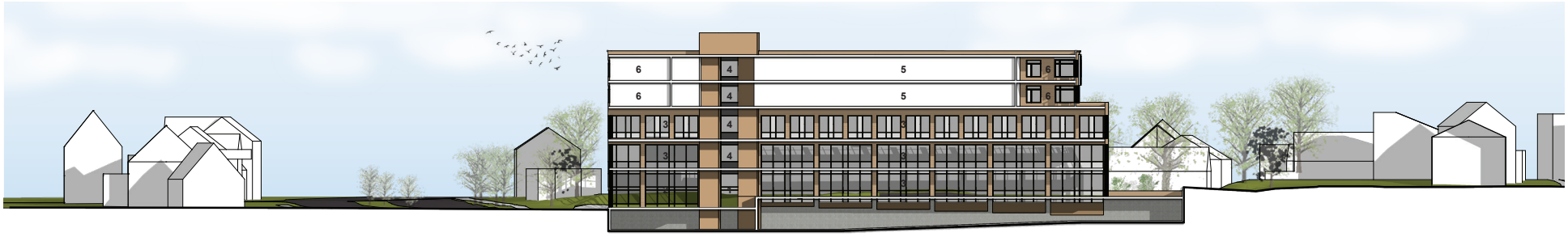
ALINEA DEVELOPMENT PARTNERS

Section Through Courtyards

1 PARKING
2 STORAGE
3 3TH
4 2TH
5 2BD
6 3BD
7 1BD
8 CIRCULATION
9 OFFICE
10 LOBBY

Section Through Lobby

1 LOBBY
2 PARKING
3 CIRCULATION
4 2BD



Section Through HFLW

1 LOBBY
2 COMMUNITY ROOM
3 OFFICE
4 CORE
5 CIRCULATION
6 DWELLING UNITS

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ROSLINDALE , MA

FIGURE 3-18
BUILDING SECTIONS

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

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ROSLINDALE , MA

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FIGURE 3-19
VIEW FROM AMERICAN LEGION HIGHWAY LOOKING NORTH
EXISTING CONDITION

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

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FIGURE 3-20
VIEW FROM AMERICAN LEGION HIGHWAY LOOKING NORTH
PROPOSED BUILDINGS

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

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FIGURE 3-21
VIEW FROM AMERICAN LEGION HIGHWAY LOOKING SOUTH
EXISTING CONDITION

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

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ROSLINDALE , MA

FIGURE 3-22
VIEW FROM AMERICAN LEGION HIGHWAY LOOKING SOUTH
PROPOSED BUILDINGS

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

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FIGURE 3-23
VIEW FROM AMERICAN LEGION HIGHWAY LOOKING NORTH
RENDERING

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 3-24
VIEW TOWARDS THE RESIDENTIAL BUILDING'S ENTRANCE
RENDERING

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

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FIGURE 3-25
VIEW TOWARDS HOME FOR LITTLE WANDERERS
RENDERING

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

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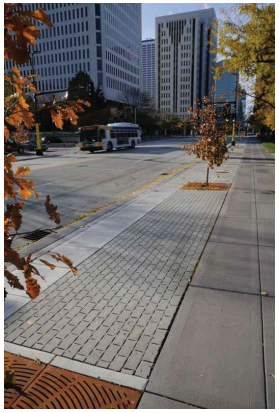
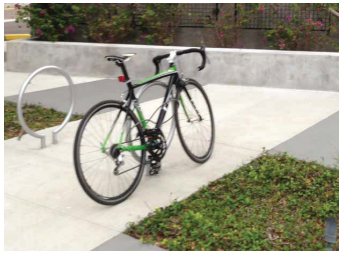
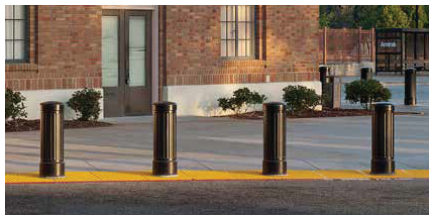
FIGURE 3-26
VIEW TOWARDS THE ENTRANCES OF THE BUILDINGS
RENDERING

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS







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ROSLINDALE , MA

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FIGURE 3-27
PUBLIC REALM PLAN

VERDANT
LANDSCAPE ARCHITECTURE

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

The Home for Little Wanderers
Strong families. Strong life.

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ARCHITECTS

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: 780 American Legion Mixed
Date: 25-Jun-19

Figure 3-28

Y	?	N			
1			Credit	Integrative Process	1

7	4	5		**Location and Transportation**	**16**
			Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
1	1		Credit	High Priority Site	2
2	3		Credit	Surrounding Density and Diverse Uses	5
		5	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

5	5	0		**Sustainable Sites**	**10**
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
	3		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

4	2	5		**Water Efficiency**	**11**
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit	Outdoor Water Use Reduction	2
2	1	3	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

16	6	10		**Energy and Atmosphere**	**33**
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
4	2		Credit	Enhanced Commissioning	6
10	1	7	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	1	1	Credit	Renewable Energy Production	3

1	3	9		**Materials and Resources**	**13**
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
	1	1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
		2	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit	Construction and Demolition Waste Management	2

4	2	10		**Indoor Environmental Quality**	**16**
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1		1	Credit	Enhanced Indoor Air Quality Strategies	2
		3	Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	2		Credit	Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1		1	Credit	Interior Lighting	2
		3	Credit	Daylight	3
		1	Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

6	0	0		**Innovation**	**6**
5			Credit	Innovation - EP reduced parking footprint, IPM, Green Cleaning, Education, School as Teaching, Food Production	5
1			Credit	LEED Accredited Professional	1

1	2	1		**Regional Priority**	**4**
		1	Credit	Regional Priority: Indoor Water Use (4pts req)	1
	1		Credit	Regional Priority: High Priority Site	1
1			Credit	Regional Priority: Optimize Energy	1
	1		Credit	Regional Priority: Renewable	1

45	24	40	**TOTALS**	Possible Points:	**110**

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: 780 American Legion Residential

Date: 8-Jul-19

Figure 3-29

Y	?	N			
1			Credit	Integrative Process	1

9	1	6	**Location and Transportation**		**16**
			Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
1	1		Credit	High Priority Site	2
4		1	Credit	Surrounding Density and Diverse Uses	5
		5	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

7	1	2	**Sustainable Sites**		**10**
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
1`			Credit	Open Space	1
2	1		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

8	1	2	**Water Efficiency**		**11**
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1		1	Credit	Outdoor Water Use Reduction	2
6			Credit	Indoor Water Use Reduction	6
	1	1	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

14	8	11	**Energy and Atmosphere**		**33**
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
4	2		Credit	Enhanced Commissioning	6
8	3	7	Credit	Optimize Energy Performance	18
	1		Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	1	2	Credit	Renewable Energy Production	3

2	2	9	**Materials and Resources**		**13**
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
	1	1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
		2	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

4	2	10	**Indoor Environmental Quality**		**16**
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1		1	Credit	Enhanced Indoor Air Quality Strategies	2
		3	Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	2		Credit	Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1		1	Credit	Interior Lighting	2
		3	Credit	Daylight	3
		1	Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

6	0	0	**Innovation**		**6**
5			Credit	Innovation - EP reduced parking footprint,heat island, IPM, Green Cleaning, Education,	5
1			Credit	LEED Accredited Professional	1

3	1	0	**Regional Priority**		**4**
1			Credit	Regional Priority: Indoor Water Use (4pts req)	1
	1		Credit	Regional Priority: High Priority Site	1
1			Credit	Regional Priority: Optimize Energy	1
1			Credit	Regional Priority: Rainwater	1

54	16	40	**TOTALS**	Possible Points:	**110**

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

4.0 ENVIRONMENTAL PROTECTION COMPONENT

4.1 Shadow Impacts Analysis

4.1.1 Introduction

The following shadow study describes and graphically depicts anticipated new shadow impacts from the Proposed Project compared to shadows from existing buildings. The study presents the existing and built conditions for the Proposed Project for the hours 9:00 AM, 12:00 Noon, and 3:00 PM for the vernal equinox, summer solstice, autumnal equinox, and winter solstice. In addition, shadows are depicted for 6:00 PM during the vernal equinox, summer solstice and autumnal equinox.

4.1.2 Vernal Equinox (March 21)

Figures 4.1-1 through **4.1-4** depict shadows on March 21.

At 9:00 AM, shadows are cast in a westerly direction onto portions of American Legion Highway on a residence across the highway.

At 12:00 Noon, new shadow is cast in a northwesterly direction mostly onto Proposed Project site, with some limited shadow on the easterly sidewalk of American Legion Highway adjacent to the proposed site.

At 3:00 PM, new shadow from the Proposed Project is cast in a northeasterly direction mostly onto the Proposed Project site and a section of the adjacent vacant lot to the north which fronts on American Legion Highway.

At 6:00 PM, new shadow from the Proposed Project is cast in an easterly direction onto the rear properties fronting on Canterbury Street, and extending as far north as Mount Hope Street.

4.1.3 Summer Solstice (June 21)

Figures 4.1-5 through **4.1-8** depict shadow impacts on June 21.

At 9:00 AM, shadows are cast in a westerly direction onto portions of American Legion Highway and adjacent sidewalk along the highway.

At 12:00 Noon, new shadow is cast in a northwesterly direction onto small portions of the Proposed Project site.

At 3:00 PM, new shadow from the Proposed Project is cast in a northeasterly direction mostly onto the Proposed Project site and a small section on the adjoining vacant lot to the north along American Legion Highway.

At 6:00 PM, new shadow from the Proposed Project is cast in an easterly direction onto the rear backyards of the adjoining existing Canterbury Street residences, and onto the vacant property adjoining the new HFLW building along American Legion Highway.

4.1.4 Autumnal Equinox (September 21)

Figures 4.1-9 through **4.1-12** depict shadow impacts on September 21.

At 9:00 AM, shadows are cast in a westerly direction onto portions of American Legion Highway on a residence across the highway.

At 12:00 Noon, new shadow is cast in a northwesterly direction mostly onto Proposed Project site, with some limited shadow on the easterly sidewalk of American Legion Highway adjacent to the proposed site.

At 3:00 PM, new shadow from the Proposed Project is cast in a northeasterly direction mostly onto the Proposed Project site and a section of the adjacent vacant lot to the north which fronts on American Legion Highway.

At 6:00 PM, new shadow from the Proposed Project is cast in an easterly direction onto the rear properties fronting on Canterbury Street, and extending as far north as Mount Hope Street.

4.1.5 Winter Solstice (December 21)

Figures 4.1-13 through **4.1-15** depict shadow impacts on December 21. Winter sun casts the longest shadows of the year.

At 9:00 AM, shadows are cast in a northwesterly direction across American Legion Highway to the residences fronting on the highway in front of the existing site.

At 12:00 Noon, new shadow is cast in a northwesterly direction mostly onto the front portion of the Proposed Project site, but partially onto the adjacent vacant site that fronts on the Highway.

At 3:00 PM, new shadow from the Proposed Project is cast in a north-northeasterly direction onto the adjoining vacant lot which fronts on the Highway, and extending to beyond Mr. Hope Street.

4.1.6 Summary

With a proposed height of 6-floors above grade, the Proposed Project's shadow impacts are generally minimal to moderate. New shadow for most of the year is primarily limited to the front and north side of the buildings onto its property, and some of the sidewalk along American Legion Highway. During the evening hours in spring and fall, and during the morning and evening hours in winter, some shadows will extend to nearby properties, and across American Legion Highway to the opposite side residences. Overall, the Proposed Project's shadow impacts will not adversely impact the Project site and surroundings.

Vernal Equinox UTC -04:00 Azimuth 280.7° Altitude 23.8°

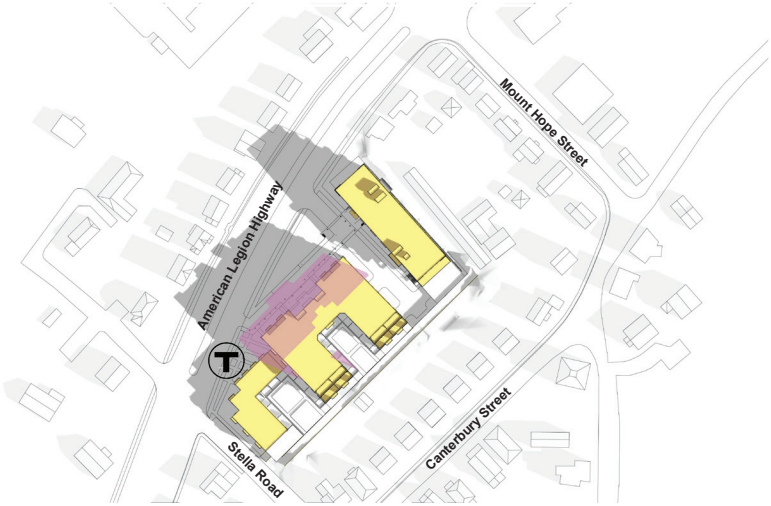


Figure 4.1-1 March 21 at 9 AM

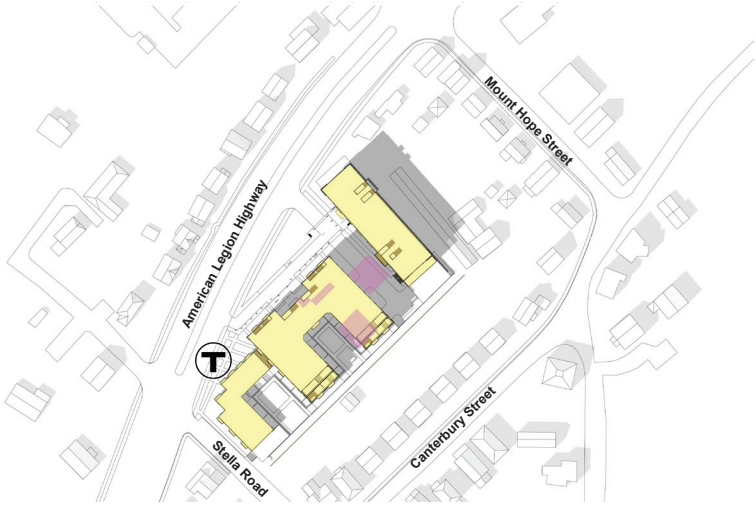


Figure 4.1-3 March 21 at 3 PM

Figure 4.1-2 March 21 at 12 PM

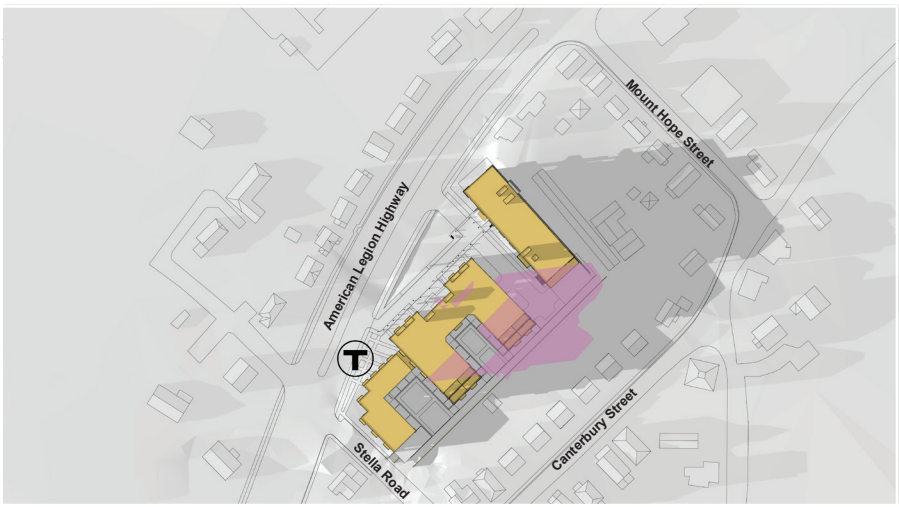


Figure 4.1-4 March 21 at 6 PM

Bus Stop | Existing Shadows | Proposed Shadows | Proposed Building

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 4.1-1 - 4.1-4
SHADOW STUDY DIAGRAMS

THE HOME FOR LITTLE
WANDERERS

8/8/ 2019 DHK ARCHITECTS, INC

ALINEA DEVELOPMENT PARTNERS

Summer Solstice UTC -04:00 Azimuth 280.7° Altitude 23.8°

Figure 4.1-5 June 21 at 9 AM

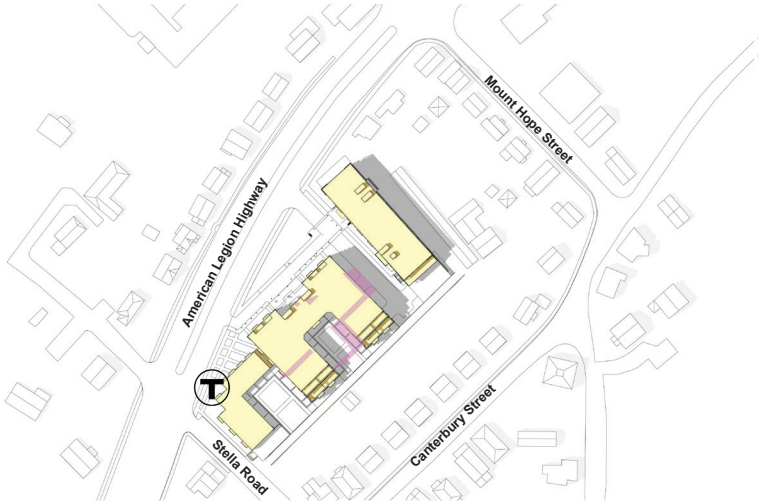


Figure 4.1-7 June 21 at 3 PM

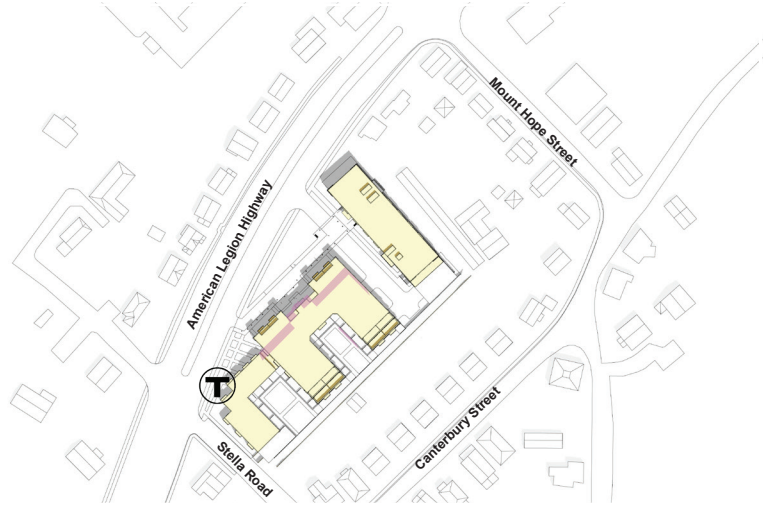


Figure 4.1-6 June 21 at 12 PM

Figure 4.1-8 June 21 at 6 PM

Bus Stop | Existing Shadows | Proposed Shadows | Proposed Building

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 4.1-5 - 4.1-8
SHADOW STUDY DIAGRAMS

THE HOME FOR LITTLE WANDERERS

8/8/2019 DHK ARCHITECTS, INC

ALINEA DEVELOPMENT PARTNERS

Autumnal Equinox UTC -04:00 Azimuth 280.7° Altitude 23.8°

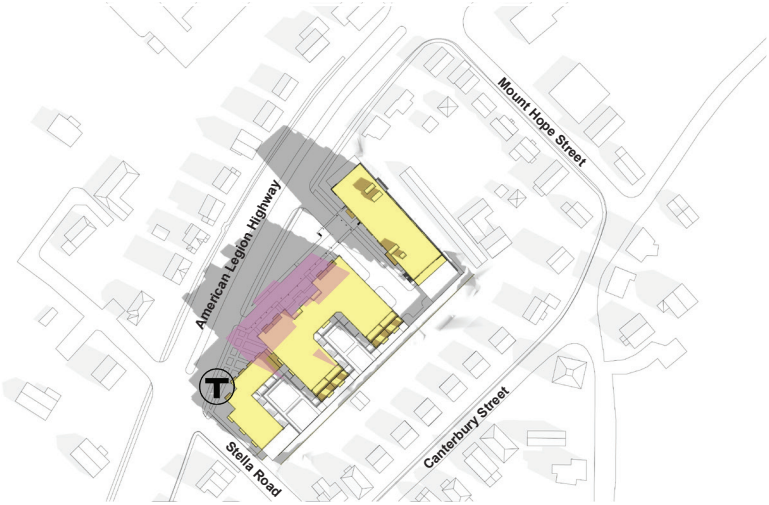


Figure 4.1-9 September 21 at 9 AM

Figure 4.1-11 September 21 at 3 PM

Figure 4.1-10 September 21 at 12 PM

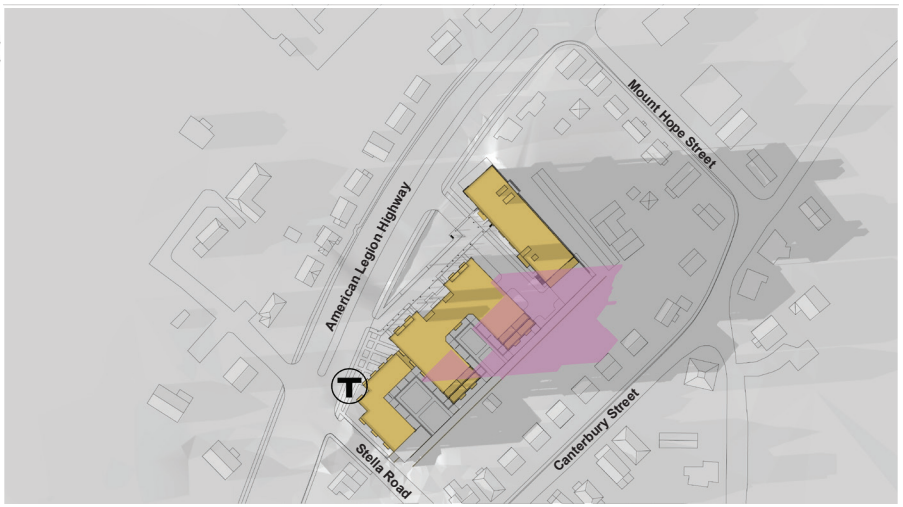


Figure 4.1-12 September 21 at 6 PM

Bus Stop | Existing Shadows | Proposed Shadows | Proposed Building

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 4.1-9 - 4.1-12
SHADOW STUDY DIAGRAMS

THE HOME FOR LITTLE WANDERERS

8/8/ 2019 DHK ARCHITECTS, INC

ALINEA DEVELOPMENT PARTNERS

Winter Solstice UTC -05:00 Azimuth 280.7° Altitude 23.8°

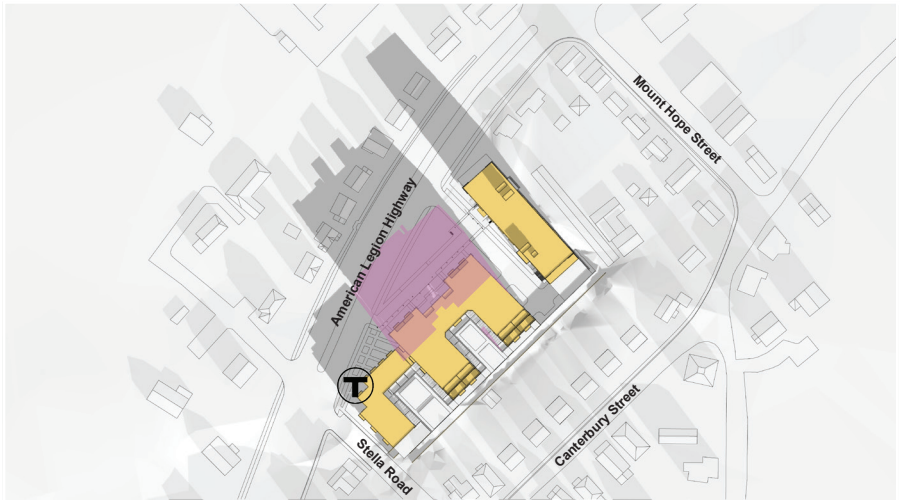


Figure 4.1-13 December 21 at 9 AM

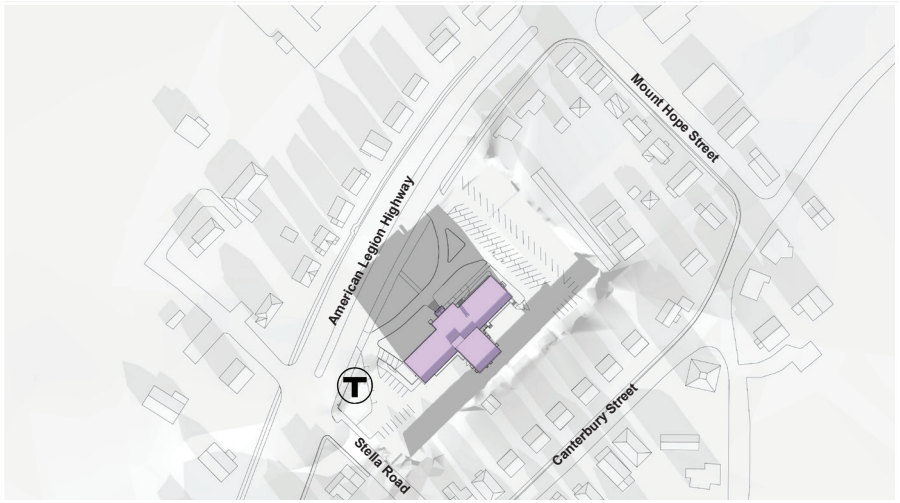


Figure 4.1-14 December 21 at 9 AM

Figure 4.1-15 December 21 at 12 PM

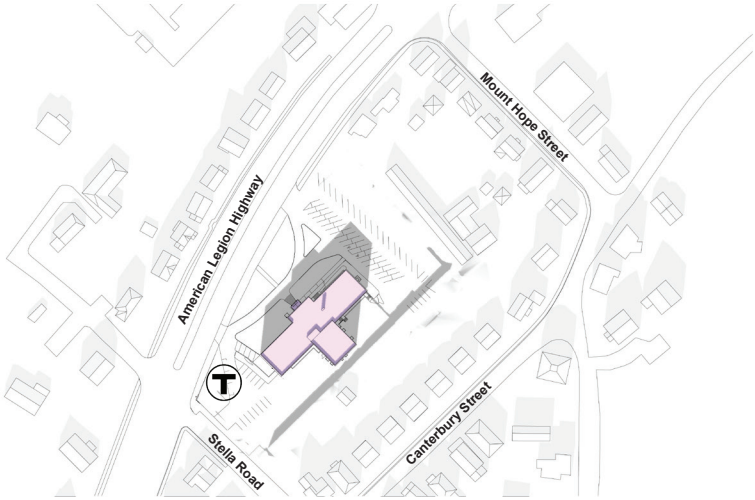


Figure 4.1-16 December 21 at 12 PM

Bus Stop | Existing Shadows | Proposed Shadows | Proposed Building | Existing Building

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 4.1-13 - 4.1-16
SHADOW STUDY DIAGRAMS

THE HOME FOR LITTLE
WANDERERS

8/8/2019 DHK ARCHITECTS, INC

ALINEA DEVELOPMENT PARTNERS

Winter Solstice UTC -05:00 Azimuth 280.7° Altitude 23.8°

Figure 4.1-17 December 21 at 3 PM

Figure 4.1-18 December 21 at 3 PM

Bus Stop | Existing Shadows | Proposed Shadows | Proposed Building | Existing Building

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE 4.1-17 - 4.1-18
SHADOW STUDY DIAGRAMS

THE HOME FOR LITTLE WANDERERS

8/8/ 2019 DHK ARCHITECTS, INC

ALINEA DEVELOPMENT PARTNERS

4.2 Daylight Analysis

The following section describes the anticipated effect on daylight coverage at the Project Site as a result of the Proposed Project. An analysis of the percentage of skydome obstructed under the No-Build and Build Conditions is a requirement of Article 80 (Section 80B-2(c)).

The results of the analysis are presented in attached **Figures 4.2-1** and **4.2-2** at the end of this section.

4.2.1 Methodology

The daylight analysis was conducted by VHB, Inc. for the Proposed Project using the BRADA program developed in 1985 by the Massachusetts Institute of Technology to estimate the pedestrian's view of the skydome, taking into account building massing and building materials used. The software approximates a pedestrian's view of a given site based on input parameters such as: location of viewpoint; length and height of buildings and the relative reflectivity of the building façades. The model typically uses the midpoint of an adjacent right-of-way or sidewalk as the analysis viewpoint. Based on these data, the model calculates the perceived skydome obstruction, and provides a graphic depicting the analysis conditions.

The model inputs used for the study presented herein were taken from a combination of the BPDA's City of Boston model data, an existing conditions survey, and schematic design plans prepared by the Project's architects. As described above, the BRADA software considers the relative reflectivity of building façades when calculating perceived daylight obstruction. Highly reflective materials are thought to reduce the perceived skydome obstruction when compared to non-reflective materials. For the purposes of this daylight analysis, the building façades are considered to be non-reflective, resulting in a conservative estimate of daylight obstruction.

4.2.2 Viewpoints

The following viewpoints were used for this daylight analysis:

- **American Legion Highway** – This viewpoint is located on the centerline of the Project Site along American Legion Highway.

- **Stella Road** – This viewpoint is located on the centerline of the Project Site along Stella Road.

These points represent existing and proposed building façades when viewed from the adjacent public ways.

4.2.3 Daylight Analysis Results

Daylight Analysis - Existing / No-Build Conditions

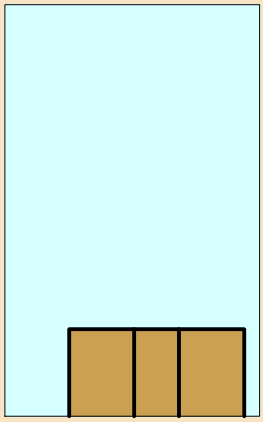
Under the Existing/No-Build Condition, the Project Site contains a 2-3-story building that is set back from the surrounding public ways. As a result of the relatively low height and density of this structure, less than five percent of daylight is obstructed when viewed from the adjacent public ways.

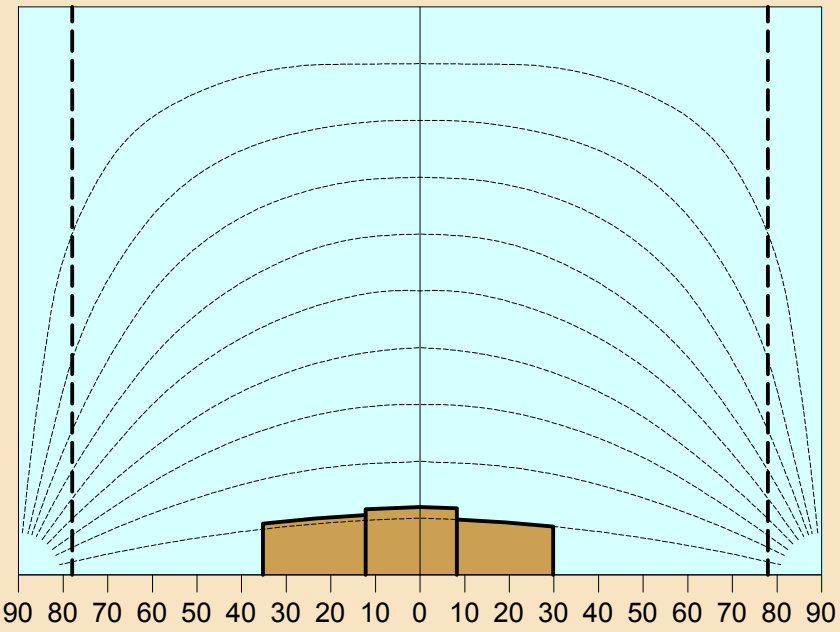
Daylight Analysis - Build Conditions

Under the Build Condition, there would be an increase in obstruction of the skydome to *16.6 percent* along American Legion Highway, and *25.6 percent* along Stella Road. This effect is to be expected when replacing the existing two-story building with a new development of 5-6 stories.

Existing

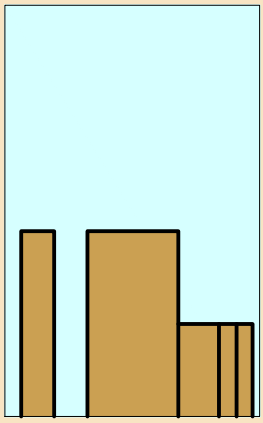
Obstruction of
Skyplane = 4.6%





Proposed

Obstruction of
Skyplane = 16.6%



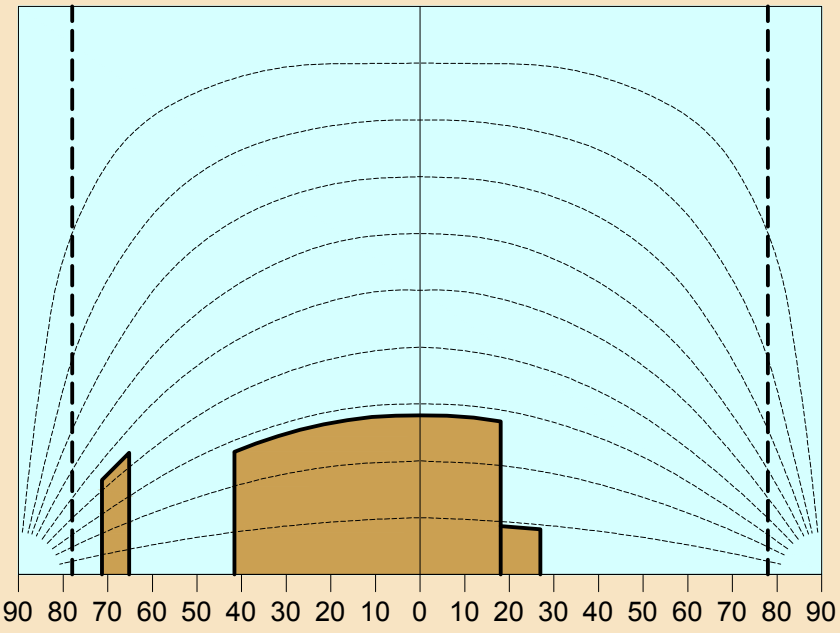


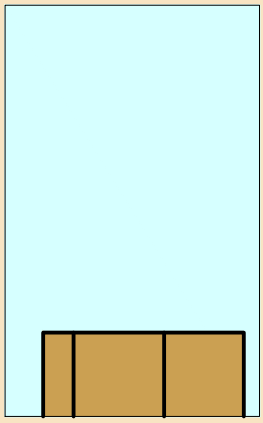
Figure 4.2-1

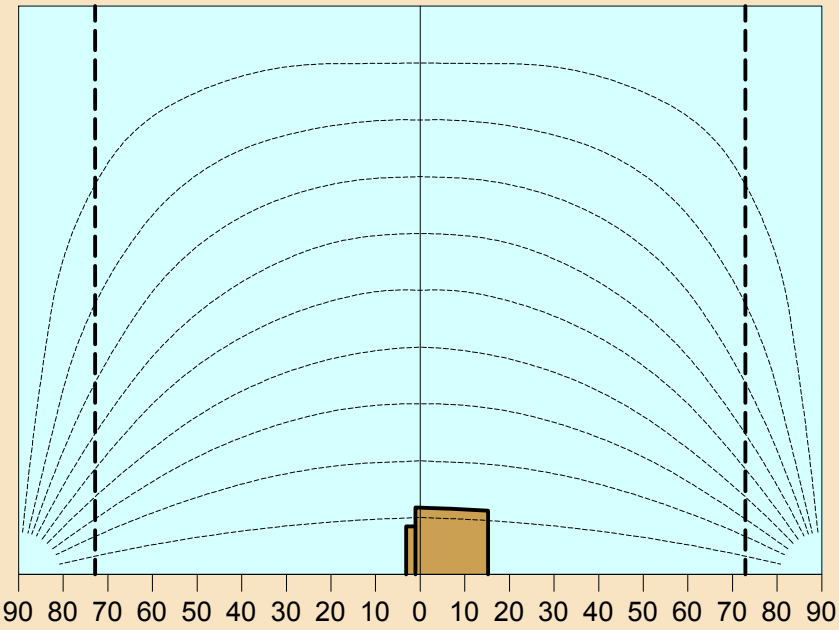
Daylight Analysis
Center of American Legion Highway

780 American Legion Highway
Boston, Massachusetts

Existing

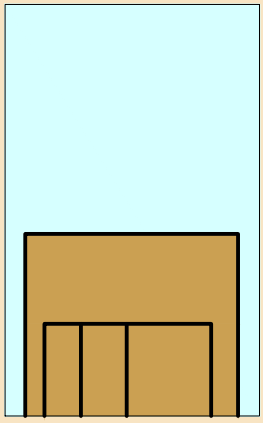
Obstruction of
Skyplane = 1.4%





Proposed

Obstruction of
Skyplane = 25.6%



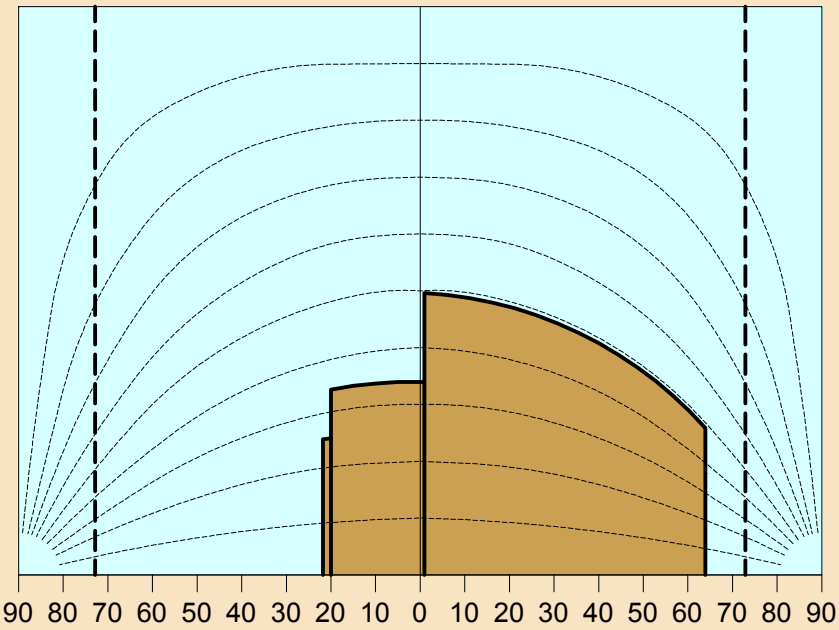


Figure 4.2-2

Daylight Analysis
Center of Stella Road

780 American Legion Highway
Boston, Massachusetts

4.3 Air Quality

Tech Environmental, Inc. performed air quality analyses for the proposed residential/supporting retail services development at 780 American Legion Highway in the Roslindale neighborhood. These analyses consisted of: 1) an evaluation of existing air quality; 2) an evaluation of potential carbon monoxide (CO) impacts from the operation of the Proposed Project's two enclosed parking garages; and 3) a microscale CO analysis for intersections in the Proposed Project area that meet the BPDA criteria for requiring such an analysis.

4.3.1 Existing Air Quality

The City of Boston is currently classified as being in attainment of the Massachusetts and National Ambient Air Quality Standards ("NAAQS") for all of the criteria air pollutants except ozone (see **Table 4.3-1**). These air quality standards have been established to protect the public health and welfare in ambient air, with a margin for safety.

The Massachusetts Department of Environmental Protection ("DEP") currently operates air monitors in various locations throughout the city. The closest, most representative, DEP monitors for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), fine particulate matter ($PM_{2.5}$), coarse particulate matter (PM_{10}), ozone (O_3), and lead are located at Dudley Square (Harrison Avenue).

Table 4.3-2 summarizes the DEP air monitoring data, for the most recent available, complete, three-year period (2015-2017), that are considered to be representative of the Proposed Project area. **Table 4.3-2** shows that the existing air quality in the Proposed Project area is generally much better than the NAAQS. The highest impacts relative to a NAAQS are for ozone, NO_2 and $PM_{2.5}$. Ozone is a regional air pollutant on which the small amount of additional traffic generated by this Proposed Project will have an insignificant impact. The Proposed Project's operations will not have a significant impact on local NO_2 and $PM_{2.5}$ concentrations.

Table 4.3-1. Massachusetts and National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	NAAQS (µg/m^3)
SO_2	1-hour^P 24-hour^P Annual^P (Arithmetic Mean)	196[a] 365[b] 80
CO	1-hour^P 8-hour^P	40,000[b] 10,000[b]
NO_2	1-hour^P Annual$^{P/S}$ (Arithmetic Mean)	188[c] 100
PM_{10}	24-hour$^{P/S}$	150
$PM_{2.5}$	24-hour$^{P/S}$ Annual$^{P/S}$ (Arithmetic Mean)	35[d] 12[e,f]
O_3	8-hour$^{P/S}$	147[g]
Pb	Rolling 3-Month Avg.$^{P/S}$ Calendar Quarter$^{P/S}$ (Arithmetic Mean)	0.15 1.5

P = primary standard; S = secondary standard.
[a] 99th percentile 1-hour concentrations in a year (average over three years).
[b] One exceedance per year is allowed.
[c] 98th percentile 1-hour concentrations in a year (average over three years).
[d] 98th percentile 24-hour concentrations in a year (average over three years).
[e] Three-year average of annual arithmetic means.
[f] As of March 18, 2013, the U.S. EPA lowered the $PM_{2.5}$ annual standard from 15 ug/m^3 to 12 ug/m^3.
[g] Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.075 ppm (147 ug/m^3) (effective May 27, 2008) and the annual PM_{10} standard was revoked in 2006.

Table 4.3-2. Representative Existing Air Quality in the Project Area

Pollutant, Averaging Period	Monitor Location	Value ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
CO, 1-hour	Von Hillern Street, Boston	1,925 (1.68 ppm)	40,000	5%
CO, 8-hour	Von Hillern Street, Boston	1,416 (1.24 ppm)	10,000	14%
NO_2, 1-hour	Von Hillern Street, Boston	89.0	188	47%
NO_2, Annual	Von Hillern Street, Boston	47.8	100	48%
Ozone, 8-hour	Harrison Avenue, Boston	120	137	87%
PM_{10}, 24-hour	Harrison Avenue, Boston	28	150	19%
$PM_{2.5}$, 24-hour	Von Hillern Street, Boston	14.2	35	41%
$PM_{2.5}$, Annual	Von Hillern Street, Boston	6.5	12	54%
Lead, Quarterly	Harrison Avenue, Boston	0.017	0.15	12%
SO_2, 1-hour	Harrison Avenue, Boston	15.8	196	8%

Source: MassDEP, http://www.mass.gov/eea/agencies/massdep/air/quality/air-monitoring-reports-and-studies.html.

Notes:

(1) Annual averages are highest measured during the most recent three-year period for which data are available (2015 - 2017). Values for periods of 24-hours or less are highest, second-highest over the three-year period unless otherwise noted.

(2) The eight-hour ozone value is the 3-year average of the annual fourth-highest values, the 24-hour $PM_{2.5}$ value is the 3-year average of the 98th percentile values, the annual $PM_{2.5}$ value is the 3-year average of the annual values – these are the values used to determine compliance with the NAAQS for these air pollutants.

(3) The one-hour NO_2 value is the -year average of the 98th percentile values and the one-hour SO_2 value is the -year average of the 99th percentile values.

(4) Three-year average of the annual 4th-highest daily maximum 8-hour ozone concentration must not exceed 0.070 ppm (137 ug/m^3) (effective December 28, 2015); the annual PM_{10} standard was revoked in 2006 and the 3-hour SO_2 standard was revoked by the US EPA in 2010.

4.3.2 Impacts from Parking Garage

The Proposed Project includes two enclosed ground level parking garages designed to provide parking spaces for 131 vehicles. The garage in the residential building will accommodate up to 101 vehicles, while the smaller garage in the mixed-use building will accommodate up to 30 vehicles. The Proposed Project is also considering two site driveway flow patterns, Options 1 and 2. An analysis of the worst-case air quality impacts from the proposed parking garages was performed for the option associated with more potential CO emissions, Option 1 (see **Appendix B**). The procedures used for the analysis are consistent with U.S. EPA's Volume 9 guidance.[1] The objective of this analysis was to determine the maximum CO concentrations inside the

[1] US EPA, "Guidelines for Air Quality Maintenance Planning and Analysis Volume 9 (Revised): Evaluating Indirect Sources," EPA-450/4-78-001, September 1978.

garages and at the closest sensitive receptors surrounding the Project. These closest sensitive receptors include: air intakes located on the proposed buildings and nearby existing buildings and pedestrians at ground level anywhere near the Proposed Project. CO emissions from motor vehicles operating inside the garages were calculated and the CO concentrations inside the garages and surrounding the Proposed Project were based on morning and afternoon peak traffic periods.

Garage Ventilation System

The proposed parking garages will require mechanical ventilation. The garage ventilation system will be designed to provide adequate dilution of the motor vehicle emissions before they are vented outside. The design of the garage ventilation system will meet all building code requirements. Full ventilation of the mixed-use garage will require a flow of approximately 6,000 cubic feet per minute (cfm) of fresh air. Full ventilation of the residential garage will require a flow of approximately 30,000 cfm of fresh air. These flow rates are designed to meet the building code and will be more than adequate to dilute the emissions inside the parking garage to safe levels before they are vented outside. The garage ventilation exhaust of the mixed-use garage will be near the garage entrance, below the proposed basketball court. The garage ventilation exhaust of the residential garage will be across from the proposed basketball court, near the garage entrance.

Peak Garage Traffic Volumes

The peak morning and afternoon one-hour entering and exiting traffic volumes for the garages are shown in **Table 4.3-3**. In the analysis, it was conservatively assumed that all site traffic was traveling to and from the larger garage, and 15 additional vehicles were traveling to and from the smaller garage.

Table 4.3-3. Peak-Hour Garage Traffic Volumes

Period	Entering (vehicles/hour)	Exiting (vehicles/hour)	Total (vehicles/hour)
Morning Peak Hour	26	33	59
Afternoon Peak Hour	52	66	118

Source: Howard-Stein Hudson

Motor Vehicle Emission Rates

The U.S. Environmental Protection Agency (EPA) MOVES2014b emission factor model was used to calculate single vehicle CO emissions rates, for a vehicle speed of 5 mph. The inputs to

the MOVES2014b model followed the latest guidance from the DEP and were performed for the future traffic year of 2026. The CO emission rate calculated by MOVES2014b, for vehicles moving at 5 miles per hour (mph), was 3.045 grams per vehicle-mile for each entering and exiting vehicle. These emission rates apply to wintertime conditions when motor vehicle CO emissions are greatest due to cold temperatures. MOVES2014b model output is provided in the **Appendix B.**

To determine the maximum one-hour CO emissions inside the garages, it was necessary to estimate the amount of time each motor vehicle will be in the either parking garage with its engine running. To be conservative, it was assumed that every car entering or leaving the two garages will be traveling to or from the furthest parking spot of either garage. The calculations in **Appendix B** show how long each vehicle will be operating in the garages for both the morning and afternoon peak periods.

Peak Garage CO Emission Rate and CO Concentration Inside the Garage

The peak one-hour CO emission rate for the residential parking garage was calculated to be 0.34 grams per minute for the morning peak hour and 0.68 grams per minute for the afternoon peak hour. Applying the anticipated volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the residential garage was calculated to be 0.35 parts of CO per million parts of air (ppm) for the morning peak hour and 0.70 ppm for the afternoon peak hour. Therefore, the peak one-hour CO concentration inside the garage will be 0.70 ppm with a peak one-hour emission rate of 0.68 grams/minute (0.011 grams/second), corresponding to the afternoon peak period. These predictions represent conservative estimates of the peak garage CO emissions and concentrations.

The peak one-hour CO emission rate for the mixed-use (HFLW) parking garage was calculated to be 0.020 grams per minute (0.00034 grams/second) for the morning peak hour and afternoon peak hour. Applying the anticipated volumetric garage ventilation flow rate for the parking garage, the peak one-hour CO concentration inside the mixed-use garage was calculated to be 0.10 parts of CO per million parts of air (ppm) for the morning peak hour and afternoon peak hour.

Peak Ambient CO Concentration

Worst-case concentrations of CO from the parking garages were predicted for locations around the building using AERMOD model (Version 18081) in screening-mode. The results of the air quality analysis for locations outside and around the building are summarized in **Table 4.3-4**. The results in **Table 4.3-4** represent all outside locations on and near the Proposed Project Site, including nearby building air intakes and nearby residences. **Appendix B** contains the AERMOD model output.

The AERMOD model in screening-mode was used to predict the maximum concentration of CO by modeling the parking garages emissions as horizontal point sources using worst-case

meteorological conditions for an urban area. The screening-mode option simulates modeling results predicted by AERMOD. The predicted concentrations presented here represent the worst-case air quality impacts from the parking garages at all locations on and around the Proposed Project. AERMOD predicted one-hour average concentrations of air pollutants.

AERMOD predicted that the maximum one-hour CO concentration from the parking garage will be 5.42 ppm (6207.3 $\mu g/m^3$). This concentration represents the maximum CO concentration at any location surrounding the Proposed Project. AERSCREEN guidance allows the maximum eight-hour CO impact to be conservatively estimated by multiplying the maximum one-hour impact by a factor of 0.9 (i.e. the eight-hour impact is 90% of the one-hour impact). The maximum predicted eight-hour CO concentration was determined to be approximately 4.88 ppm (5.42 ppm x 0.9).

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare in ambient air, with a margin for safety. The NAAQS for CO are 35 ppm for a one-hour average and 9 ppm for an eight-hour average. The Commonwealth of Massachusetts has established the same standards for CO. The CO background values of 1.68 ppm for a one-hour period and 1.24 ppm for an eight-hour period were added to the maximum predicted garage ambient impacts to represent the CO contribution from other, more distant, sources. With the background concentration added, the peak, total, one-hour and eight-hour CO impacts from the parking garages, at any location around the buildings, will be no larger than 7.10 ppm and 6.12 ppm, respectively. These conservative maximum predicted total CO concentrations (garage exhaust impacts plus background) are safely in compliance with the NAAQS. This analysis demonstrates that the operation of the parking garages will not have an adverse impact on air quality.

Table 4.3-3. Peak Predicted Parking Garage Air Quality Impacts

Location	Peak Predicted One-Hour Impact (ppm)	One-Hour CO NAAQS (ppm)	Peak Predicted Eight-Hour Impact (ppm)	Eight-Hour CO NAAQS (ppm)
Outside – Surrounding the Building*	7.10	35	6.12	9

NAAQS = Massachusetts and National Ambient Air Quality Standards for CO (ppm = parts per million)
* Representative of maximum CO impact at all nearby residences, buildings, and sidewalks.

Conclusions

A conservative air quality analysis demonstrates that there will be no adverse air quality impacts from the operation of the Proposed Project's proposed parking garages.

4.3.3 Microscale CO Analysis for Selected Intersections

The Boston Planning and Development Agency (BPDA) and the Massachusetts DEP typically require a microscale air quality analysis for any intersection in the Proposed Project study area where the level of service (LOS) is expected to deteriorate to D and the Proposed Project causes a 10% increase in traffic or where the level of service is E or F and the Proposed Project contributes to a reduction in LOS. For such intersections, a microscale air quality analysis is required to examine the carbon monoxide (CO) concentrations at sensitive receptors near the intersection.

A microscale CO air quality analysis was performed to predict the maximum one-hour and eight-hour CO concentrations for sensitive receptors at the single intersection in the Proposed Project area that meet the BPDA selection criteria. The analysis was performed for three cases: 2019 Existing, 2026 No-Build, and 2026 Build. Estimation of CO levels at the intersections that meet the BPDA/DEP selection criteria under the 2019 Build scenario provides a good indication of whether the Proposed Project will interfere with the maintenance of the NAAQS for CO. Since CO levels are highest near intersections where the worst traffic congestion occurs, compliance with the NAAQS at these intersections and receptors protects public health elsewhere in the community.

Dispersion Model

The latest version of the U.S. EPA CAL3QHC model[2] (Version 2.0, dated October 1995) was used to predict maximum one-hour CO concentrations at each intersection from both moving and idling vehicles. This model includes the U.S. EPA CALINE-3 dispersion model[3] along with methods for estimating queue lengths and the contribution of emissions from idling vehicles at intersections. The Air Quality Appendix (**Appendix B)** contains the CAL3QHC model output.

Meteorological Inputs

The following meteorological parameters were selected for the CAL3QHC modeling, in accordance with U.S. EPA and Massachusetts DEP guidance:

- Roughness Length: 108 cm (single family residential)
- Mixing Height: 1,000 meters
- Wind Speed: 1.0 m/s (minimum)
- Wind Direction: 360^{o} in 10^{o} increments
- Stability Class: Class D.

[2] U.S. EPA, User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollution Concentrations Near Roadway Intersections, Office of Air Quality Planning and Standards, September 1995.
[3] California Department of Transportation, CALINE-3, A Versatile Dispersion Model for Predicting Air Pollutant Levels Near Highways and Arterial Streets, FHWA/CA/TL-79/23, Sacramento, CA, November 1979.

Intersections

Four intersections were included in the transportation study area, and each of these intersections was considered for a microscale CO air quality analysis. **Table 4.3-4** shows a summary of the 2019 Build LOS analysis for each intersection. The Proposed Project will generate a total of 59 motor vehicle trips during the morning peak traffic period and 118 motor vehicle trips during the afternoon peak traffic period. Based on data presented in **Section 7.0** (summarized in **Table 4.3-4**), one intersection meets the DEP/BPDA criteria for a microscale analysis:

1. American Legion Highway & Stella Road

Table 4.3-4. Summary of Build Case Level of Service

Intersection	Build LOS (AM/PM)	Requires Analysis?
American Legion Highway & Stella Road – unsignalized	F/F	YES
American Legion Highway & Site Driveway (South) - unsignalized	B/B	NO
American Legion Highway & Site Driveway (North) – unsignalized	C/B	NO
American Legion Highway & Mt. Hope Street - signalized	B/B	NO

The LOS shown represents the overall delay at each signalized intersection and the worst approach at the unsignalized intersection.

Source: Howard Stein Hudson

Receptors

Receptors are the locations where the CAL3QHC model predicts CO concentrations. Receptors were placed at regular intervals along each modeled roadway, where the public could have access. These receptors conservatively cover all of the locations where the general public may have frequent and prolonged access to the ambient air at each intersection. Following U.S. EPA guidance, all receptors were placed at a height of 1.8 meters and were located at least 3 meters from roadway curbsides.

Modeled Roadways

Each roadway approach was modeled as a free-flow (moving vehicles), line source. The width of each free-flow link was set equal to the roadway width (excluding the parking areas) plus 3 meters on each side. Composite CO emission rates, in units of grams per mile, were applied to each free-flow link.

The American Legion Highway and Stella Road intersection is unsignalized, with stop signs for the vehicle traffic coming from Stella Road. Therefore, to represent the slow progression of

vehicle traffic typical of stop signs, the queueing vehicles on Stella Road were modeled as free flow links with a speed of 5 mph. The intersection is expected to remain unsignalized, so the American Legion Highway traffic was represented with free flow links at 30 mph, and the Stella Road traffic was represented with both free flow links at 25 mph (moving vehicles) and free flow links at 5 mph (queueing vehicles) for each 2019 Existing, 2026 No-Build, and 2026 Build case. The queuing vehicle free flow links were modeled with a width equal to the lane(s) width in which the queuing will occur and a length equal to the 95th percentile queue length. Queue lengths and traffic volumes were provided by Howard/Stein-Hudson Associates, Inc., the Proposed Project's transportation consultant, and are shown in the **Appendix B** for the peak periods that were modeled.

Eight-Hour Average CO Concentrations

Peak eight-hour CO concentrations from roadway traffic were calculated by multiplying the model-predicted one-hour CO values (without an added background concentration) by a persistence factor of 0.7.[4] The persistence factor takes into account that the intensity of the traffic during the peak eight-hour period will be less than that which will occur during the peak one-hour period. It also takes into account that the worst-case meteorological conditions (i.e. low wind speed blowing directly from the source to the receptor), corresponding to the peak one-hour concentrations, will not persist for an entire eight-hour period.

Background CO Concentrations

The one-hour and eight-hour traffic-related CO concentrations predicted by the CAL3QHC model were added to conservative one-hour and eight-hour background CO concentrations of 1.68 parts of CO ppm and 1.24 ppm, respectively, for the existing case. Background concentrations for the year 2019 will likely be lower than the existing background CO concentrations. To be conservative, the same background concentrations were used for the 2026 No-Build and Build cases. The sums of the CAL3QHC modeled CO concentrations plus background were compared to the NAAQS for CO.

CO Emission Factors

The U.S. Environmental Protection Agency (EPA) MOVES2014b emission factor model was used to calculate CO emissions factors. The inputs to the MOVES2014b model followed the latest guidance from the DEP and were performed for the existing (2019) and future (2026) traffic years. The free flow emission rate for vehicles traveling on American Legion Highway was based on the posted vehicle speed limit of 30 mph. The free flow emission rate for vehicles traveling on Stella Road was based on an assumed 25 mph vehicle speed. The free flow CO emission rates for a traffic speed of 30 mph were predicted to be 2.75 grams/mile in 2019 and 1.99 grams/mile in 2026. The free flow CO emission rates for a traffic speed of 25 mph were

[4] U.S. EPA, Guideline for Modeling Carbon Monoxide from Roadway Intersections, EPA-454/R-92-005, Office of Air Quality Planning and Standards, November 1992.

predicted to be 2.89 grams/mile in 2019 and 2.07 grams/mile in 2026. The CO emission rate calculated by MOVES2014b, for queued vehicles at unsignalized intersections (traveling at 5 mph), was 6.16 grams/mile in 2019 and 4.31 grams/mile in 2026. MOVES2014b model output is provided in the **Appendix B.**

Traffic Information

Traffic volume data were available for the peak weekday morning and afternoon periods. Traffic data for the period with the worst LOS (i.e. largest traffic congestion and vehicle delays) at the intersection was modeled to reflect the potential worst-case air quality impacts.

Predicted Project Impacts

The microscale air quality analysis predicted maximum one-hour and eight-hour CO concentrations for sensitive receptors around one intersection in the Proposed Project area which met the BPDA/DEP selection criteria. The highest predicted CO concentrations for the one-hour and eight-hour periods, which consist of the sum of the maximum predicted impacts from intersection traffic and a conservative background CO concentration, are summarized in **Tables 4.3-5** and **4.3-6**. The results in these tables do not represent typical air pollution levels in the Proposed Project area. Rather, they represent the highest concentrations that could exist during the joint occurrence of worst-case meteorology and peak roadway traffic.

2019 Existing Case: The maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, for the 2019 Existing case are 1.9 ppm and 1.4 ppm, respectively. These maximum air quality impacts are in compliance with the NAAQS for CO.

2026 No-Build Case: For the 2026 No-Build case, the maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, remained 1.9 ppm and 1.4 ppm, respectively. These maximum concentrations are equal those predicted for the 2019 Existing case and comply with the one-hour and eight-hour NAAQS for CO.

2026 Build Case: For the 2026 Build case, the maximum predicted one-hour and eight-hour CO concentrations, including conservative background concentrations of CO, are again 1.9 and 1.4 ppm, respectively. These maximum concentrations are equal to those predicted for the 2019 Existing case and 2026 No-Build case. The predicted CO impacts at all receptors are safely in compliance with the one-hour and eight-hour NAAQS for CO. These results demonstrate that the Proposed Project will not have an adverse impact on air quality at the most congested intersections in the Proposed Project area.

Table 4.3-5. Maximum Predicted One-Hour CO Concentrations at Sensitive Receptors (ppm)

Intersection	2019 Existing	2026 No-Build	2026 Build
American Legion Highway & Stella Road	1.9	1.9	1.9
NAAQS	**35**	**35**	**35**

Note: Maximum predicted one-hour concentrations include background concentrations. The added one-hour average background CO concentration is 1.68 ppm in 2019 and 2026.

Table 4.3-6. Maximum Predicted Eight-Hour CO Concentrations at Sensitive Receptors (ppm)

Intersection	2019 Existing	2026 No-Build	2026 Build
American Legion Highway & Stella Road	1.4	1.4	1.4
NAAQS	**9**	**9**	**9**

Note: Maximum predicted eight-hour concentrations include background concentrations. The added eight-hour average background CO concentration is 1.24 ppm in 2019 and 2026.

The maximum predicted CO impacts for the 2026 No-Build and Build cases are equal to those predicted for the 2019 Existing Case. This is a result of the lower CO emission rates for motor vehicles predicted by the MOVES2014b model for 2026, compared to 2019. Therefore, despite the increase in traffic between the Existing and Build cases, improvements to vehicle emissions are expected to prevent a similar increase in CO concentrations near the intersection. The reduction in motor vehicle CO emission rates is primarily a result of the improved motor vehicle emission controls, and occurs as newer vehicles with lower CO emissions replace older vehicles on the road. The maximum predicted CO impacts for the 2026 Build case is the same as those predicted for the 2026 No-Build Case. Therefore, the results show that the Proposed Project will not have a significant impact on the air quality at the analyzed intersections.

The worst-case air quality impacts at the Proposed Project site can be conservatively represented by the highest predicted one-hour and eight-hour CO concentrations of 1.9 ppm and 1.4 ppm, respectively. Adding in the impacts from the parking garages, the conservative estimate of the worst-case total one-hour and eight-hour CO impacts at the Proposed Project site will be 7.3 ppm and 6.3 ppm, respectively. These values are safely in compliance with the NAAQS for CO and indicate that the Proposed Project will not have an adverse impact on local air quality.

Conclusions

The microscale CO air quality dispersion modeling analysis clearly indicates that the worst-case traffic generated by the Proposed Project will not cause or contribute to any violations of the

NAAQS for CO, and will not significantly affect air quality. Total CO impacts at the intersections with the largest delays and at the Proposed Project site, including the impacts from the parking garages, are predicted to be safely in compliance with the NAAQS for CO.

4.4 Noise Impacts

Tech Environmental, Inc., performed a noise study to determine whether the operation of the Proposed Project will comply with the City of Boston Noise Regulations and the Massachusetts Department of Environmental Protection ("DEP") Noise Policy.

4.4.1 Common Measures of Community Noise

The unit of sound pressure is the decibel (dB). The decibel scale is logarithmic to accommodate the wide range of sound intensities to which the human ear is subjected. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 70 dB is added to another sound of 70 dB, the total is only a 3-decibel increase (or 73 dB), not a doubling to 140 dB. Thus, every 3 dB increase represents a doubling of sound energy. For broadband sounds, a 3 dB change is the minimum change perceptible to the human ear. **Table 4.4-1** gives the perceived change in loudness of different changes in sound pressure levels.[5]

Table 4.4-1. Subjective Effects of Changes in Sound Pressure Levels

Change in Sound Level	Apparent Change in Loudness
3 dB	Just perceptible
5 dB	Noticeable
10 dB	Twice (or half) as loud

Non-steady noise exposure in a community is commonly expressed in terms of the A-weighted sound level (dBA); A-weighting approximates the frequency response of the human ear. Levels of many sounds change from moment to moment. Some are sharp impulses lasting 1 second or less, while others rise and fall over much longer periods of time. There are various measures of sound pressure designed for different purposes. To establish the background ambient sound level in an area, the L_{90} metric, which is the sound level exceeded 90 percent of the time, is typically used. The L_{90} can also be thought of as the level representing the quietest 10 percent of any time period. Similarly, the L_{10} can also be thought of as the level representing the quietest 90 percent of any time period. The L_{10} and L_{90} are broadband sound pressure measures, i.e., they include sounds at all frequencies.

[5] American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1989 ASHRAE Handbook--Fundamentals (I-P) Edition, Atlanta, GA, 1989.

Sound level measurements typically include an analysis of the sound spectrum into its various frequency components to determine tonal characteristics. The unit of frequency is Hertz (Hz), measuring the cycles per second of the sound pressure waves, and typically the frequency analysis examines nine octave bands from 32 Hz to 8,000 Hz. A source is said to create a pure tone if acoustic energy is concentrated in a narrow frequency range and one octave band has a sound level 3 dB greater than both adjacent octave bands.

The acoustic environment in an urban area such as the Proposed Project area results from numerous sources. Observations show that major contributors to the background sound level in the Proposed Project area include motor vehicle traffic on local and distant streets, aircraft over-flights, mechanical equipment on nearby buildings, and general city noises such as street sweepers and police/fire sirens. Typical sound levels associated with various activities and environments are presented in **Table 4.4-2**.

4.4.2 Noise Regulations

Commonwealth Noise Policy

The DEP regulates noise through 310 CMR 7.00, "Air Pollution Control." In these regulations "air contaminant" is defined to include sound and a condition of "air pollution" includes the presence of an air contaminant in such concentration and duration as to "cause a nuisance" or "unreasonably interfere with the comfortable enjoyment of life and property."

Regulation 7.10 prohibits "unnecessary emissions" of noise. The DEP DAQC Policy Statement 90-001 (February 1, 1990) interprets a violation of this noise regulation to have occurred if the noise source causes either:

1. An increase in the broadband sound pressure level of more than 10 dBA above the ambient level; or
2. A "pure tone" condition.

The ambient background level is defined as the L_{90} level as measured during equipment operating hours. A "pure tone" condition occurs when any octave band sound pressure level exceeds both of the two adjacent octave band sound pressure levels by 3 dB or more.

The DEP does not regulate noise from motor vehicles accessing a site or the equipment backup notification alarms. Therefore, the provisions described above only apply to a portion of the sources that may generate sound following construction of the Proposed Project.

Local Regulations

The City of Boston Environment Department regulates noise through the Regulations for the Control of Noise as administered by the Air Pollution Control Commission. The Proposed Project is located in an area consisting of commercial and residential uses. The Proposed Project will

have low-rise residential uses to the north, east, and south. The Proposed Project must comply with Regulation 2.2 for noise levels in Residential Zoning Districts at these residential locations**.** **Table 4.4-3** lists the maximum allowable octave band and broadband sound pressure levels for residential and business districts. Daytime is defined by the City of Boston Noise Regulations as occurring between the hours of 7:00 a.m. and 6:00 p.m. daily except Sunday. Compliance with the most restrictive nighttime residential limits will ensure compliance for other land uses with equal or higher noise limits.

Table 4.4-2. Common Indoor and Outdoor Sound Levels

Outdoor Sound Levels	Sound Pressure (μPa)	Sound Level (dBA)	Indoor Sound Levels
	6,324,555	110	Rock Band at 5 m
Jet Over-Flight at 300 m		105	
	2,000,000	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		95	
	632,456	90	Food Blender at 1 m
Diesel Truck at 15 m		85	
Noisy Urban Area—Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		65	Normal Speech at 1 m
	20,000	60	
Quiet Urban Area—Daytime		55	Quiet Conversation at 1m
	6,325	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		45	
	2,000	40	Empty Theater or Library
Quiet Suburb—Nighttime		35	
	632	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		25	Empty Concert Hall
Rustling Leaves	200	20	Average Whisper
		15	Broadcast and Recording Studios
	63	10	
		5	Human Breathing
Reference Pressure Level	20	0	Threshold of Hearing

Notes: μPa, or micro-Pascals, describes sound pressure levels (force/area). DBA, or A-weighted decibels, describes sound pressure on a logarithmic scale with respect to 20 μPa (reference pressure level).

Table 4.4-3. Maximum Allowable Sound Pressure Levels (dB) City of Boston

Octave Band (Hz)	Zoning District		
	Residential (Daytime)	(All Other Times)	Business (anytime)
32 Hz	76	68	79
63 Hz	75	67	78
125 Hz	69	61	73
250 Hz	62	52	68
500 Hz	56	46	62
1000 Hz	50	40	56
2000 Hz	45	33	51
4000 Hz	40	28	47
8000 Hz	38	26	44
Broadband (dBA)	**60**	**50**	**65**

4.4.3 Pre-Construction Sound Level Measurements

Existing baseline sound levels in the Proposed Project area were measured during the quietest overnight period when human activity and street traffic were at a minimum, and when the Proposed Project's mechanical equipment (the principal sound sources) could be operating. Since the Proposed Project's mechanical equipment may operate at any time during a 24-hour day, a weekday between 11:00 p.m. and 4:00 a.m. was selected as the worst-case time period, i.e., the time period when project-related sounds may be most noticeable due to the quieter background sound levels. Establishing an existing background (L_{90}) during the quietest hours of the facility operation is a conservative approach for noise impact assessment and is required by the DEP Noise Policy.

The nighttime noise measurement locations are as follows (see the **Figure 1** in the **Appendix C**):

Monitoring Location #1: Lower Washington/ Mount Hope

Monitoring Location #2: 763 American Legion Highway

Monitoring Location #3: 120 Mount Hope Street

Monitoring Location #4: 845-879 Canterbury Street

Broadband (dBA) and octave band sound level measurements were made with a Larson Davis model 831 (LD 831)environmental sound level analyzer, at each monitoring location, for a duration of approximately thirty minutes. The full octave band frequency analysis was performed on the frequencies spanning 16 to 16,000 Hertz. A time-integrated statistical analysis of the data

used to quantify the sound variation was also performed, including the calculation of the L_{90}, which is used to set the ambient background sound level.

The LD 831 is equipped with a ½" precision condenser microphone and has an operating range of 5 dB to 140 dB and an overall frequency range of 3.5 Hz to 20,000 Hz. This meter meets or exceeds all requirements set forth in the ANSI S1.4-1983 Standards for Type 1 quality and accuracy and the State and City requirements for sound level instrumentation. Prior to any measurements, this sound analyzer was calibrated with an ANSI Type 1 calibrator that has an accuracy traceable to the National Institute of Standards and Technology (NIST). During all measurements, the LD 831 was tripod mounted at approximately five feet above the ground in open areas away from vertical reflecting surfaces.

The sound level monitoring was conducted on Thursday, May 16, 2019 through Friday, May 17, 2019. Weather conditions during the sound survey were conducive to accurate sound level monitoring: the temperature was in the 50s, the skies were mostly clear, and the winds were 0 to 12 mph. The microphone of the sound level analyzer was fitted with a 7-inch windscreen to negate any effects of wind-generated noise.

The nighttime sound level measurements taken in the vicinity of the Proposed Project Site reveal sound levels that are typical for an urban area. A significant source of existing sound at all locations is motor vehicle traffic on American Legion High way and adjacent streets.

The results of the nighttime baseline sound level measurements are presented in **Table 4.4-4**. The nighttime background L_{90} level was 42.4 dBA at Location #1, 49.8 dBA at Location #2 , 40.0 dBA at Location #3 and 36.6 dBA at Location #4. The octave band data in **Table 4.4-4** show that no pure tones were detected in the nighttime noise measurements.

Noise monitoring at the Proposed Project Site during the morning peak traffic period was used to evaluate the existing ambient sound levels and to evaluate conformance with the Site Acceptability Standards established by HUD for residential development. The purpose of the HUD guidelines is to provide standards for determining the acceptability of residential project locations with regards to existing sound levels. The HUD criteria regarding the day-night average sound level (L_{dn}) are listed below. These standards apply to L_{dn} measurements taken several feet from the building in the direction of the predominant source of noise.

- Normally Acceptable – L_{dn} not exceeding 65 dBA
- Normally Unacceptable – L_{dn} above 65 dBA but not exceeding 75 dBA
- Unacceptable – L_{dn} above 75 dBA.

These HUD standards do not apply to this Proposed Project, but are used as guidance regarding the suitability of the Proposed Project area with regard to background sound levels.

Daytime sound level measurements were taken to help estimate the L_{dn} for the Proposed Project Site. A 30-minute sound level measurement was taken during the morning, on Wednesday, May 15, 2018 between 3:20 p.m. and 3:50 p.m. at 763 American Legion Highway (Location #2) representing the closest location to the Proposed Project site. The weather conditions during the sound survey were conducive to accurate sound level monitoring: the temperature was 56ºF; the skies were cloudy, and the winds were 6 to 12 mph. The microphone of the sound level analyzer was fitted with a 7-inch windscreen to negate any effects of wind-generated noise.

The daytime sound level measurements taken in the vicinity of the Proposed Project site reveal sound levels that are typical for an urban area. The main sources of noise during the peak morning traffic period sound level measurement were motor vehicle traffic on American Legion Highway. The L_{eq} measured during the morning period was 73.0 dBA. The L_{eq} sound level measured during the nighttime at the same location was 69.3 dBA. Using both the daytime and nighttime L_{eq} sound levels, the calculated L_{dn} for the site is 76.5dBA, which is above the HUD guideline noise limit of 65 dBA primarily due to the vehicle traffic on American Legion Highway.

It is assumed that standard building construction practices will result in at least a 30-dBA reduction of sound from outdoor sound levels. The Proponent will incorporate sound mitigation, as necessary, to assure that motor vehicle traffic along American Legion Highway do not result in noise impacts greater than 45 dBA inside the residential units closest to the American Legion Highway.

Table 4.4-4. Nighttime Baseline Sound Level Measurements, May 16 and 17, 2019

Sound Level Measurement	(Location #1) Lower Washington/ Mount Hope 12:00 p.m. - 12:30 p.m.	(Location #2) 763 American Legion Highway 11:27 p.m. - 11:57 p.m.	(Location #3) 120 Mount Hope Street 12:34 p.m. - 1:04 a.m.	(Location #4) 845-879 Canterbury Street 1:07 a.m. – 1:37 a.m.
Broadband (dBA)				
Background (L_{90})	42.4	49.8	40.0	36.6
Octave Band L_{90} (dB)				
16 Hz	45.5	47.4	44.8	42.0
32 Hz	50.1	52.0	47.2	46.0
63 Hz	51.4	54.1	47.7	45.4
125 Hz	45.0	50.5	42.9	41.2
250 Hz	41.3	47.1	39.3	35.6
500 Hz	37.5	44.8	36.2	33.8
1000 Hz	38.6	45.6	36.0	32.3
2000 Hz	31.7	40.3	29.5	25.5
4000 Hz	19.3	28.7	22.1	14.4
8000 Hz	14.7	19.1	15.9	14.2
16000 Hz	16.3	17.1	16.1	17.1
Pure Tone?	No	No	No	No

4.4.4 Reference Data and Candidate Mitigation Measures

The mechanical systems for the Proposed Project are in the early design stage. Typical sound power data for the equipment of the expected size and type for the Proposed Project have been used in the acoustic model to represent the Proposed Project's mechanical equipment. The sound levels from all potential significant project noise sources are discussed in this section.

The design for the Proposed Project is expected to include the following significant mechanical equipment:

- One-hundred and twenty (120) rooftop air handling units (AHUs)

The equipment listed above, which will be located on three separate building roof levels, was included in the noise impact analysis. The Proposed Project's traffic was not included in the noise analysis because motor vehicles are exempt under both the City of Boston and DEP noise regulations.

The sound generation profiles for the mechanical equipment noise sources operating concurrently under full-load conditions were used to determine the maximum possible resultant sound levels from the Proposed Project Site as a whole, to define a worst-case scenario. To be in compliance with City and DEP regulations, the resultant sound level must not exceed the allowable octave

band limits in the City of Boston noise regulation and must be below the allowable incremental noise increase, relative to existing noise levels, as required in the DEP Noise Policy.

This sound level impact analysis was performed using sound generation data for representative equipment to demonstrate compliance with noise regulations. As the building design evolves, the sound generation for the actual equipment selected may differ from the values that were utilized for the analysis.

4.4.5 Calculated Future Sound Levels

Methodology

Future maximum sound levels at the upper floors of all existing residences bordering the Proposed Project were calculated with acoustic modeling software assuming simultaneous operation of all mechanical equipment at their maximum loads.

The Cadna-A computer program, a comprehensive 3-dimensional acoustical modeling software package was used to calculate project generated sound propagation and attenuation.[6] The model is based on ISO 9613, an internationally recognized standard specifically developed to ensure the highly accurate calculation of environmental noise in an outdoor environment. ISO 9613 standard incorporates the propagation and attenuation of sound energy due to divergence with distance, surface and building reflections, air and ground absorption, and sound wave diffraction and shielding effects caused by barriers, buildings, and ground topography.

Receptors

The closest/worst-case sensitive (residential) location is to the south of the Proposed Project area at 806 American Legion Highway. This location was selected based on the proximity of the equipment (smaller distances correspond to larger noise impacts) and the amount of shielding by other buildings (taller nearby residential locations will experience less shielding from the Proposed Project's rooftop mechanical equipment, which may result in larger potential noise impacts from the Proposed Project). This location is expected to receive the largest sound level impacts from the Proposed Project's rooftop mechanical equipment. It can be classified as a residential zone.

The sound level impacts from the building's mechanical equipment were predicted at the closest residential location, as well as at residential buildings to the west (763 American Legion Highway), north (131 Mount Hope Street), and east (863 Canterbury Street). **Figure 2** in **Appendix C** shows the locations of the modeled noise receptors. Noise impacts at other nearby noise-sensitive locations (residences, parks, etc.) farther from the Proposed Project Site will be less than those predicted for these receptors.

[6]Cadna-A Computer Aided Noise Abatement Program, Version 4.3

4.4.6 Compliance with State and Local Noise Standards

The City of Boston and DEP noise standards apply to the operation of the mechanical equipment at the Proposed Project. The details of the noise predictions are presented in **Tables 4.4-6** through **4.4-9**. The sound impact analysis includes the simultaneous operation of the Proposed Project's rooftop HVAC equipment. The predicted sound levels are worst-case predictions that represent all hours of the day, as the analysis assumes full operation of the mechanical equipment 24-hours a day. The typical sound level impacts from the mechanical equipment will likely be lower than what is presented here, since most of the mechanical equipment will operate at full-load only during certain times of the day and during the warmer months of the year, it is not likely that all of the mechanical equipment will operate at the same time. Sound level impacts at locations farther from the Proposed Project (e.g. other residences, etc.) will be lower than those presented in this report.

City of Boston Noise Standards

The noise impact analysis results, presented in **Tables 4.4-6** through **4.4-9**, reveal that the sound level impact at the closest residences will be between 36 and 39 dBA. The smallest sound level impact of 36 dBA is predicted to occur at the 763 American Legion Highway and at 131 Mount Hope Street. The largest sound level impact of 39 dBA is predicted to occur at the at 806 American Legion Highway. Noise impacts predicted at all locations are in compliance with the City of Boston's nighttime noise limit (50 dBA) for a residential area. Note that sound levels from the Proposed Project will be below the residential nighttime limits at all times. The results also demonstrate compliance with the City of Boston, residential, non-daytime, octave band noise limits at both closest locations.

The City of Boston noise limits for business areas are significantly higher than the nighttime noise limits for residential areas (see **Table 4.4-3**). The Proposed Project will also easily comply with the City of Boston business area noise limits at all surrounding commercial properties.

DEP Noise Regulations

The predicted sound level impacts at the worst-case property line and the worst-case residential locations were added to the measured L_{90} value of the quietest daily hour to test compliance with DEP's noise criteria. Assuming the Proposed Project's mechanical noise is constant throughout the day, the Proposed Project will cause the largest increase in sound levels during the period when the lowest background noise occurs. Minimum background sound levels (diurnal) typically occur between 12:00 a.m. and 4:00 a.m.

The predicted sound level impacts at the closest residences were added to the L_{90} values measured during the period with the least amount of background noise to test compliance with DEP's noise criteria. The predicted noise impacts at the closest residences were added to the most-

representative measured L_{90} values to determine the largest possible increase in the sound level at each location during the quietest hour at the Proposed Project Site.

As shown in **Tables 4.4-6** through **4.4-9**, the Proposed Project is predicted to produce a less than 4 dBA change in the background sound levels at all modeled locations. Therefore, the Proposed Project's worst-case sound level impacts during the quietest nighttime periods will be in compliance with the Massachusetts DEP allowed noise increase of 10 dBA. The noise predictions for each octave band indicate that the mechanical equipment will not create a pure tone condition at any location.

Table 4.4-6. Estimated Future Sound Level Impacts – Anytime, 806 American Legion Highway (Closest Residence) – Location R1

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	54
63 Hz	67	44
125 Hz	61	39
250 Hz	52	39
500 Hz	46	37
1000 Hz	40	34
2000 Hz	33	29
4000 Hz	28	21
8000 Hz	26	8
Broadband (dBA)	**50**	**39**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #1)	42.4
Proposed Project*	38.7
Calculated Combined Future Sound Level	44.0
Calculated Incremental Increase	+1.6
Compliance with DEP Noise Policy?	Yes

* Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA

Table 4.4-7. Estimated Future Sound Level Impacts – Anytime, 763 American Legion Highway – Location R2

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	48
63 Hz	67	42
125 Hz	61	36
250 Hz	52	36
500 Hz	46	34
1000 Hz	40	32
2000 Hz	33	27
4000 Hz	28	17
8000 Hz	26	0
Broadband (dBA)	**50**	**36**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #2)	49.8
Proposed Project*	36.4
Calculated Combined Future Sound Level	50.0
Calculated Incremental Increase	+0.2
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA.

Table 4.4-8. Estimated Future Sound Level Impacts – Anytime, 131 Mount Hope Street – Location R3

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	46
63 Hz	67	40
125 Hz	61	35
250 Hz	52	36
500 Hz	46	34
1000 Hz	40	32
2000 Hz	33	28
4000 Hz	28	20
8000 Hz	26	5
Broadband (dBA)	**50**	**36**

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #3)	40.0
Proposed Project*	36.5
Calculated Combined Future Sound Level	41.6
Calculated Incremental Increase	+ 1.6
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA.

Table 4.4-9. Estimated Future Sound Level Impacts – Anytime, 863 Canterbury Street – Location R4

Octave Bands	Residential Nighttime Noise Standards	Maximum Predicted Sound Levels*
32 Hz	68	51
63 Hz	67	44
125 Hz	61	38
250 Hz	52	38
500 Hz	46	36
1000 Hz	40	34
2000 Hz	33	28
4000 Hz	28	18
8000 Hz	26	2
Broadband (dBA)	**50**	**38**
Compliance with the City of Boston Noise Regulation?		Yes

Sound Level Metric	Maximum Sound Levels* (dBA)
Existing Nighttime Background, L_{90} (Location #4)	36.6
Proposed Project*	37.9
Calculated Combined Future Sound Level	40.3
Calculated Incremental Increase	+ 3.7
Compliance with DEP Noise Policy?	Yes

*Assumes full-load operation of all mechanical equipment.
Note: DEP Policy allows a sound level increase of up to 10 dBA.

4.4.7 Conclusions

Sound levels at all nearby sensitive locations will fully comply with the most stringent City of Boston and DEP daytime and nighttime sound level limits.

This acoustic analysis demonstrates that the Proposed Project's design will meet the applicable acoustic criteria.

4.5 Stormwater Management and Water Quality

The Proposed Project is expected to reduce the volume of stormwater runoff leaving the site as well as substantially improve the water quality. The Proposed Project will meet Boston Water and Sewer Commission (BWSC) standards for stormwater management.

4.5.1 Existing Stormwater Drainage System

The existing site is 107,129 square feet or 2.46 acres in size, of which approximately 50% is covered with existing impervious, roof and pavement surfaces. Stormwater runoff generated from the existing parking lot on the southwest corner of the site and front driveway flows offsite and is captured by catch basins within the American Legion Highway right of way. Runoff generated from the existing parking lot on the northeast corner of the site is captured by on-site catch basins that ultimately discharge to the municipal storm drain system.

4.5.2 Proposed Storm Drainage System

The stormwater drainage system will be designed with the intent of maintaining the same general predevelopment drainage patterns as the existing drainage patterns. The proposed stormwater management system will be compliance with all BWSC regulations.

The Proposed Project will incorporate stormwater Best Management Practices (BMPs) to improve the quantity and quality of the stormwater runoff, to promote infiltration to groundwater, and reduce the peak flow rates to be at or below existing rates. Stormwater runoff from the Proposed Project will be collected and treated, as necessary, onsite and routed through an infiltration system to mitigate any impacts to the existing drainage system.

4.5.3 Groundwater Conservation Overlay District

The Proposed Project site is <u>not</u> located within the Groundwater Conservation Overlay District (GCOD) as outlined in Article 32 of the City of Boston Zoning Code.

4.5.4 Water Quality and Construction Stormwater Management

The Proposed Project will incorporate water quality devices into the storm drainage system to provide effective treatment of stormwater runoff from the Proposed Project site. Stormwater will flow through water quality devices prior to discharge into the proposed stormwater infiltration/ detention system.

The Proposed Project will not impact the water quality of nearby water bodies. Erosion and sedimentation control measures will be implemented during construction to preclude the transport of sediment to abutting properties, Stella Road and American Legion Highway. Erosion control barriers will be staked around the perimeter of the site to prevent sediment from washing off site.

Existing catch basins will be equipped with silt sacks to keep sediment out of the storm drain system. These controls will be inspected and maintained throughout the course of construction until all surfaces are landscaped and stabilized.

The Proposed Project will disturb over one acre of land, thus requiring a National Pollutant Discharge Elimination System (NPDES) permit. A Stormwater Pollution Prevention Plan will be implemented to ensure that the Proposed Project will be in compliance with the NPDES Construction General Permit (CGP).

4.6 Solid and Hazardous Waste Materials

4.6.1 Solid Waste

During the preparation of the Site, buildings and debris from the existing lot will be removed from the Proposed Project Site. The Proponent will ensure that waste removal and disposal during construction and operation will be in conformance with the City and DEP's Regulations for Solid Waste.

Upon completion of construction, the Proposed Project is estimated to generate approximately 207 tons of solid waste per year, based on the conservative assumption that each of the 115 units will generate up to approximately 1.4 tons per year, totaling 161 tons annually. The mix of office and clinical uses have not been finalized at this time to be able to calculate solid waste for these uses. A significant portion of the waste will be recycled. The Proposed Project will also include ambitious goals for construction waste management in order to meet the requirements for the LEED™ rating system. This strategy will also divert demolition and construction waste by reusing and recycling materials.

In order to meet the requirements for the Boston Environmental Department and the LEED™ rating system, the Proposed Project will include space dedicated to the storage and collection of recyclables. The recycling program will meet or exceed the City's guidelines, and provide areas for waste paper and newspaper, metal, glass, and plastics (21 through 27, co-mingled).

4.6.2 Hazardous Waste and Materials

A Phase I Environmental Site Assessment ("ESA") was completed on October 28, 2016 for the Proposed Project site to identify environmental conditions of concern. The previous use of the site as an asphalt plant is considered a potential environmental concern based on possible impacts to soil and groundwater associated with undocumented releases of petroleum and/or asphalt mix materials according to the ESA, although based on aerial photographs it is considered more likely that the site was maintained for exterior storage areas to store bulk quantities of asphalt rather than for the performance of batch plant operations. The site is listed on the Recovered Archive Hazardous Waste Sites database, in Lead (Lead-based Paint) database, and in the State Hazardous Waste Sites and RELEASE databases (for the release of #2 fuel oil that was reported in 1995 and

assigned Release Tracking Number *RTN) 3-12933. A full copy of the Phase I ESA is available upon request.

4.7 Geotechnical/Groundwater Impacts Analysis

Based on the available information, the project site is anticipated to be underlain by a 5 to 10-foot thick miscellaneous fill deposit associated with the previous construction. The unsuitable fill deposit is anticipated to be underlain by a natural compact to very dense glacial deposit, which overlies bedrock. Groundwater at the site is anticipated to be present at a depth of about 10 feet below the existing ground surface.

Foundation support for the proposed buildings is anticipated to consist of conventional spread footings. The footings would bear directly on the glacial till or bedrock, and/or on compacted structural fill or lean concrete placed directly over the glacial till or bedrock to the bottom of footing.

Based on the anticipated subsurface conditions and the limits of the proposed structures, limited boulder or bedrock removal is likely to be required during the construction of the proposed building.

Ground vibrations are anticipated to be produced as a result of the rock removal procedures. Based on our experience, impacts from these vibrations are not anticipated to result in structural damage to existing, adjacent structures. Vibration monitoring with seismographs will be required during the rock removal activities. Prior to the start of construction, a pre-construction conditions survey of all existing structures and conditions on the site, adjacent to the site, and in the vicinity of the site will be required.

Based on the observed site groundwater level and the proposed depth of excavation related to foundation construction, dewatering is expected to be limited to rainwater runoff.

Provisions will be incorporated into the design and contract documents to limit potential impacts to adjacent structures, streets and utilities.

4.8 Construction Impact

The following section describes impacts likely to result from the 780 American Legion Highway Project construction and the steps that will be taken to avoid or minimize environmental and transportation-related impacts. The Proponent will employ a construction manager that will be responsible for developing a construction phasing and staging plan and for coordinating construction activities with all appropriate regulatory agencies. The Proposed Project's geotechnical consultant will provide consulting services associated with foundation design recommendations, prepare geotechnical specifications, and review the construction contractor's proposed procedures.

4.8.1 Construction Management Plan

The Proponent will comply with applicable state and local regulations governing construction of the Proposed Project. The Proponent will require that the general contractor comply with the

Construction Management Plan, ("CMP") developed in consultation 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 Proposed Project and will include specific mitigation measures and staging plans to minimize impacts on abutters.

Proper pre-construction planning with the neighborhood will be essential to the successful construction of this Proposed Project. Construction methodologies that will ensure safety will be employed, signage will include construction manager contact information with emergency contact numbers.

Proponent will also coordinate construction with other ongoing projects in the neighborhood.

4.8.2 Proposed Construction Program

Construction Activity Schedule

The construction period for the Proposed Project is expected to last approximately 36 months, beginning in the 2nd Quarter 2020 and reaching completion in the 2nd Quarter 2023. The City of Boston Noise and Work Ordinances will dictate the normal work hours, which will be from 7:00 AM to 6:00 PM, Monday through Friday.

Perimeter Protection/Public Safety

The CMP will describe any necessary sidewalk closures, pedestrian re-routings, and barrier placements and/or fencing deemed necessary to ensure safety around the Site perimeter. If possible, the sidewalk will remain open to pedestrian traffic during the construction period. Barricades and secure fencing will be used to isolate construction areas from pedestrian traffic. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to ensure pedestrian safety.

Proper signage will be placed at every corner of the Proposed Project as well as those areas that may be confusing to pedestrians and automobile traffic.

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.

4.8.3 Construction Traffic Impacts

Construction Vehicle Routes

Estimated truck deliveries and routes are identified in at the end of this section. Specific truck routes will be established with BTD through the CMP. These established truck routes will

prohibit travel on any residential side streets. Construction contracts will include clauses restricting truck travel to BTD requirements. Maps showing approved truck routes will be provided to all suppliers, contractors, and subcontractors. It is anticipated that all deliveries will be via American Legion Highway and not passing through local residential areas.

Construction Worker Parking

The number of workers required for construction of the Proposed Project will vary during the construction period. However, it is anticipated that all construction workers will arrive and depart prior to peak traffic periods.

Limited parking in designated areas of the Proposed Project Site and lay-down area(s) will be allowed. Parking will be discouraged in the immediate neighborhood. Further, public transit use will be encouraged with the Proponent and construction manager working to ensure the construction workers are informed of the public transportation options serving the area. Terms and conditions related to worker parking will be written into each subcontractor's contract. The contractor will provide a weekly orientation with all new personnel to ensure enforcement of this policy.

Pedestrian Traffic

The Site abuts sidewalks on two streets. Pedestrian traffic may be temporarily impacted in these areas. The Construction Manager will minimize the impact the construction of the proposed building will have and the adjacent sidewalks. The contractor will implement a plan that will clearly denote all traffic patterns. Safety measures such as jersey barriers, fencing, and signage will be used to direct pedestrian traffic around the construction site and to secure the work area.

4.8.4 Construction Environmental Impacts and Mitigation

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

- Using wetting agents to control and suppress dust from construction debris;
- Ensuring that all trucks traveling to and from the Proposed Project Site will be fully covered;
- Removing construction debris regularly;

- Monitoring construction practices closely to ensure any emissions of dust are negligible;
- Cleaning streets and sidewalks to minimize dust and dirt accumulation;
- Monitoring construction activities by the job site superintendent and safety officer; and
- Wheel-washing trucks before they leave the Proposed Project Site during the excavation phase.

Construction Noise Impacts

To reduce the noise impacts of construction on the surrounding neighborhood, a number of noise mitigation measures will be included in the CMP. Some of the measures that may be taken to ensure a low level of noise emissions include:

- Initiating a proactive program for compliance to the City of Boston's noise limitation impact;
- Scheduling of work during regular working hours as much as possible;
- Using mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously operating equipment, such as air compressors and welding generators;
- Scheduling construction activities so as to avoid the simultaneous operation of the noisiest construction activities;
- Turning off all idling equipment;
- Reminding truck drivers that trucks cannot idle more than five (5) minutes unless the engine is required to operate lifts of refrigeration units;
- Locating noisy equipment at locations that protect sensitive locations and neighborhoods through shielding or distance;
- Installing a site barricade at certain locations;
- Identifying and maintaining truck routes to minimize traffic and noise throughout the Proposed Project;
- Replacing specific construction techniques by less noisy ones where feasible-e.g., using vibration pile driving instead of impact driving if practical and mixing concrete off-site instead of on-site; and
- Maintaining all equipment to have proper sound attenuation devices.

4.8.5 Rodent Control

The City of Boston enforces the requirements established under Massachusetts State Sanitary Code, Chapter 11, 105 CMR 410.550. This policy establishes that the elimination of rodents is required for issuance of any building permits. During construction, rodent control service visits will be made by a certified rodent control firm to monitor the situation.

5.0 HISTORIC RESOURCES COMPONENT

This section provides a discussion of the history of the Proposed Project site and the historic resources/ districts in the Proposed Project vicinity.

5.1 Historic Resources on the Proposed Project Site and Property History

Based on a review of readily available historical information and presented in the Phase I Environmental Site Assessment (2016), the site is located in an area of mixed commercial and residential use and was previously developed with a small residential structure as early as 1898. By 1928, Stella Road was developed to the south of the site. American Legion Highway was developed to the west of the site in the 1930s -1950's, reflecting the influence of the automobile on the area's development leading to the introduction of strip shopping centers near the site. By 1928, the site was developed with a single automotive parking garage structure and was utilized as a "asphalt plant". The site was developed with its current improvements in 1947, and began operation as a hospital. By 1964, the site was purchased by Boston Community Services, a provider of community and health services. The site was purchased by The Home for Little Wanderers in 1999, and has operated as a provider for community services for children since that time.

Based on a review of buildings identified in this area, there were no historic buildings inventoried on site.

In summary, according to files at the Massachusetts Historical Commission, the on-site structures are not listed in the National or State Register of Historic Places, or the Inventory of Historical and Archaeological Assets of the Commonwealth. It is not expected that the Proposed Project will cause adverse impacts on any historic or architectural elements of nearby historic resources outside the Proposed Project Site (see **Figure 5-1** for identifications of historic resources in the Proposed Project vicinity).

5.2 Historic Resources Within the Vicinity of the Proposed Project Site

The Proposed site is located in the vicinity of several historic resources listed in the State and National Registers of Historic Places or included in the Inventory of Historic and Archaeological Assets of the Commonwealth. There are several buildings opposite on the other side of American Legion Highway (765-775) which have been inventoried, and the Mt. Hope Cemetery, which is on the National Register of Historic Places, is within the ¼ mile radius of the site.

The historic resources within ¼ mile radius of the Proposed Project are summarized in **Table 5-1** that follows.

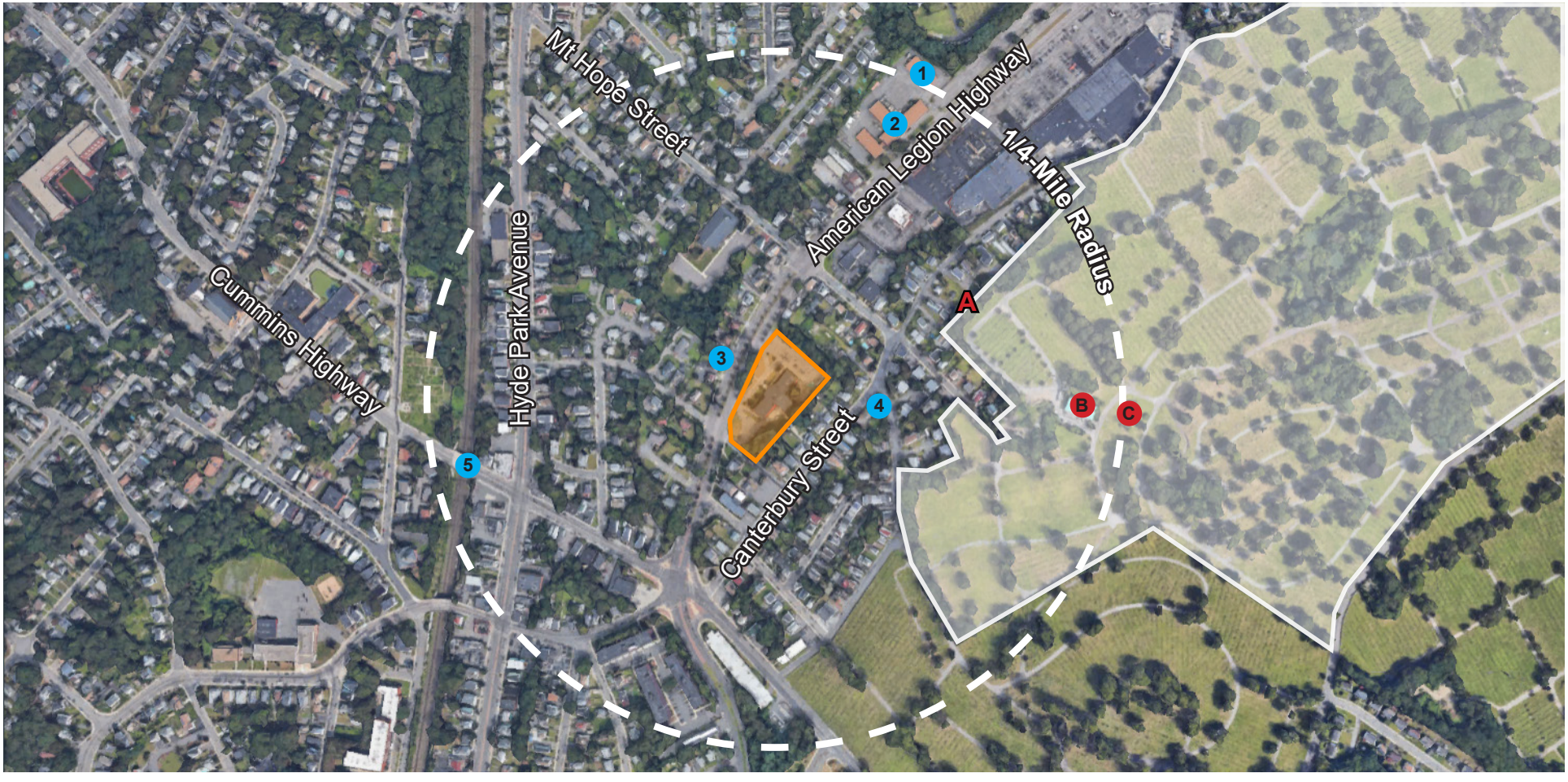
Table 5.1. Historic Resources in the Vicinity of the Project Site

Key to Historic Resources Figure (Figure 5-1)	Historic Resource	Address/Description
Inventoried Properties		
1	Guy Cardillo U. S. Army Reserve Center Garage	675 American Legion Highway
2	Pfc. Guy Cardillo U. S. Army Reserve Center	675 American Legion Highway
3	John Dematteo House	765-775 American Legion Highway
4	Thomas F. Manning House and Store	850 Canterbury St
5	Cummins Highway Bridge over Penn Central Railroad	Cummins Highway
National Register of Historic Places		
A	Mount Hope Cemetery	Historic cemetery located in southern Boston, between the neighborhoods of Roslindale and Mattapan
B	Mount Hope Cemetery Maintenance Building	355 Walk Hill Street
C	Mount Hope Cemetery - Sylvan Pond	355 Walk Hill Street

The Proposed Project is not expected to have effects on any of the listed historically significant resources in **Table 5-1.**

5.3 Archaeological Resources

The Proposed Project site has been disturbed with existing and prior uses.



780 American Legion Highway

National Register of Historic Places Area

Inventoried Property

National Register of Historic Places

Inventoried Property Points and Areas

1. Guy Cardillo U.S. Army Reserve Center Garage
2. Pfc. Guy Cardillo U.S. Army Reserve Center
3. John Dematteo House
4. Thomas F. Manning House and Store
5. Cummins Highway Bridge over Penn Central Railroad

National Register of Historic Places Points and Areas

A- Mount Hope Cemetery

B- Mount Hope Cemetery Maintenance Building

C- Mount Hope Cemetery- Sylvan Pond

MLF CONSULTING LLC

Figure 5-1. 780 American Legion Highway Historic Resources

Historic Resources Component

6.0 INFRASTRUCTURE SYSTEMS COMPONENT

6.1 Overview of Utility Services

This section, completed by the Project Civil Engineer, Howard Stein Hudson, provides a description of the existing utility systems in the vicinity of the Proposed Project site and evaluates potential impacts to those systems. The existing infrastructure surrounding the site appears sufficient to service the needs of the Proposed Project. The following sections describe the existing sewer, water, and drainage systems surrounding the site and explain how these systems will service the development. Appropriate mitigation measures are discussed to address project related impacts.

A detailed infrastructure analysis will be performed when the Project proceeds into the Design Development Phase. The Project's team will coordinate with the appropriate utilities to address the capacity of the area utilities to provide services for the Proposed Project. A Boston Water and Sewer Commission (BWSC) Site Plan and General Service Application is required for the new water, sanitary sewer, and storm drain connections.

A Drainage Discharge Permit Application is required from BWSC for any construction dewatering. The appropriate approvals from the Massachusetts Water Resource Authority (MWRA), Massachusetts Department of Environmental Protection (MassDEP), and the U.S. Environmental Protection Agency (EPA) will also be sought.

6.2 Sanitary Sewer Service

6.2.1 Existing Sanitary Sewer Services

The sanitary sewer system in the vicinity of the Project site is owned, operated, and maintained by BWSC (see **Figure 6-1)**. BWSC record drawings indicate there is an existing 10-inch sewer line in Stella Road.

The total sewer flow from the existing building is estimated at 1,966 gallons per day (gpd) based on the existing building use and design sewer flow provided in 310 CMR 15.203: System Sewage Flow Design Criteria, as summarized in **Table 6-1**.

Table 6-1. Existing Sanitary Sewer Flows

Use	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow (gpd)
Office	26,214 sf	75 gpd/1,000 sf	1,996 gpd
Total			**1,966 gpd**

Figure 6-1.
Sanitary Wastewater System

6.2.2 Estimated Proposed Project Wastewater Generation

The Project will generate an estimated 26,970 gallons per day (gpd) based on design sewer flows provided in 310 CMR 15.203: System Sewage Flow Design Criteria as summarized in **Table 6-2**. This is a net increase of 25,004 gpd over the estimated flows from the existing buildings.

Table 6-2. Projected Sanitary Sewer Flows

Use	Quantity	Unit Flow Rate	Estimated Maximum Daily Flow (gpd)
Building #1– Home for Little Wanderers – Mixed-Use			
Residential	38 bedrooms	110 gpd/bedroom	4,180 gpd
Doctors Office	8 doctors	250 gpd/doctor	2,000 gpd
Building #2 – Multi-Family Residential			
Residential	189 bedrooms	110 gpd/bedroom	20,790 gpd
Total			**26,970 gpd**

6.2.3 Sanitary Sewer Connection

It is anticipated that the sanitary services for the Project will tie into the 10-inch sanitary sewer in Stella Road. Each building is expected to have one 8-inch sanitary service. The proponent will submit a Site Plan to BWSC for review and approval. All existing building services will be cut and capped at the main if the wyes are not reused.

6.2.4 Sewer System Mitigation

To help conserve water and reduce the amount of wastewater generated by the Proposed Project, the Proponent will investigate the use of water-efficient toilets, aerated shower-heads, and low-flow lavatory faucets in compliance with all pertinent Code requirements to reduce water usage and sewer generation.

6.3 Water Supply System

6.3.1 Existing Water Supply

The water distribution system in the vicinity of the Project site is owned and maintained by BWSC and MWRA (see **Figure 6-2**).Within American Legion Highway, BWSC record drawings indicate there is an 8-inch cast iron (CI) BWSC-owned water main installed in 1949 and cement lined in 2006, a 30-inch ductile iron (DI) MWRA-owned water main cement lined in 1992, a 24-inch reinforced concrete (RC) MWRA-owned water main steel encased in 1951 and a 12-inch CI BWSC-owned water main installed in 1967. There is an 8-inch DI water main installed in

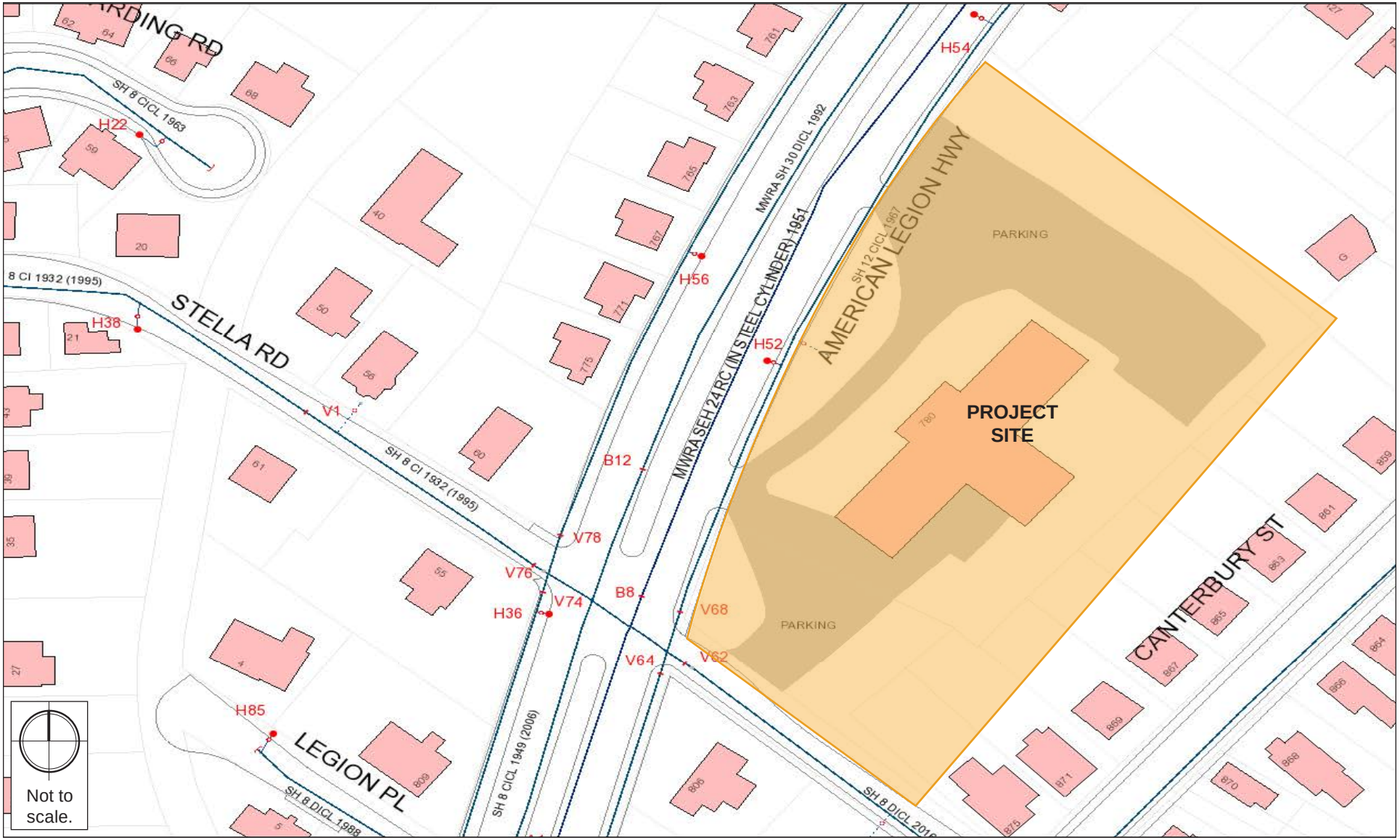


Figure 6-2.
Water Supply System

Stella Road and cement lined in 2016. All water mains adjacent to the Project site are part of the Southern Low Service Network. The existing water mains in the vicinity of the project site are anticipated to be of adequate capacity to serve the needs of the project.

There are four hydrants located in the vicinity of the Project site. There is one hydrant (H36) at the southwest corner of the American Legion Highway and Stella Road intersection, two hydrants (H52 & H54) in the sidewalk adjacent the Project Site on American Legion Highway and one hydrant (H56) opposite the Project site on Dorchester Street. The Proponent will confirm with BWSC and the Boston Fire Department (BFD) during the detailed design phase to determine if these public hydrants provide sufficient coverage for the project.

The BWSC record flow test data containing actual flow and pressure for hydrants within the vicinity of the site will be requested by the Proponent. If hydrant flow data is not available for any hydrants located near the project site, as the design progresses, the Proponent will request hydrant flows be conducted by the BWSC adjacent to the site. Hydrant flow data must be less than a year old to be used as a design tool. The Proponent will confirm that the flow and pressure is sufficient for the redevelopment and coordinate any proposed changes with BWSC and the Boston Fire Department (BFD) during the detailed design phase.

6.3.2 Proposed Water Service

It is anticipated that separate domestic water and fire protection services for the Project will be directly tapped from the 12-inch service main in American Legion Highway. The water supply systems servicing the building will be gated so as to minimize public hazard or inconvenience in the event of a water main break. Final locations and sizes of the services will be provided on a Site Plan during the detailed design phase and submitted to BWSC for review and approval.

Water service to the building will be metered in accordance with BWSC's requirements. The property owner will provide a suitable location for a Meter Transmission Unit (MTU) as part of BWSC's Automatic Meter Reading System. Water meters over 3-inches will be provided with a bypass to allow BWSC testing without service interruption. A backflow preventer will be installed on the fire protection service and will be coordinated with BWSC's Cross Connection Control Department. Separate services will be provided for domestic use and fire protection.

6.3.3 Estimated Proposed Project Water Consumption

The maximum daily water demand is estimated to be 29,667 gpd based on the sewage flow estimate, plus a factor of 10% to account for consumption, system losses and other usages. More detailed water use and meter sizing calculations will be submitted to BWSC as part of the Site Plan approval process.

6.3.4 Water Supply Conservation and Mitigation

As discussed in the Sewer System Mitigation Section, water conservation measures such as low-flow fixtures, aerated showerheads, and dual-flush toilets are being considered to reduce potable water usage.

6.4 Storm Drainage System

6.4.1 Existing Stormwater Drainage system

The storm drain system in the vicinity of the Project site is owned and maintained by BWSC (see **Figure 6-1**). BWSC record drawings indicate there is a 10-inch storm drain in Stella Road adjacent to the Project Site.

Stormwater runoff from the rooftop of the existing building is likely conveyed by building service pipes to the surrounding municipal storm drain system. Stormwater runoff generated from the existing parking lot on the southwest corner of the site and front driveway flows offsite and is captured by catch basins within the American Legion Highway right of way. Runoff generated from the existing parking lot on the northeast corner of the site is captured by on-site catch basins that ultimately discharge to the municipal storm drain system. Very little water quality treatment is realized before these areas are drained to the municipal storm drain system.

6.4.2 Proposed Storm Drainage System

A stormwater management system will be constructed to treat, detain and infiltrate stormwater runoff to maintain the existing hydrology of the site. It is expected that subsurface, stormwater infiltration systems will be constructed that can infiltrate the first 1.25 inches of runoff from the site's impervious areas. Rooftop runoff will be piped directly to the stormwater infiltration systems. Stormwater runoff from paved areas, such as the proposed driveway, will be captured by deep sump, hooded catch basins and provided pretreatment prior to being directed to the stormwater infiltration systems. The infiltration systems are expected to be provided with a bypass structures that allow overflows during larger storm events to be directed to the municipal drainage system.

All storm drain system improvements 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 storm drain work. Any storm 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.

Erosion and sediment controls will be used during construction to protect adjacent properties and the municipal storm drain system. An operation and maintenance plan will be developed to support the long-term functionality of the proposed stormwater management system.

6.5 Electrical Systems

Eversource owns and maintains the electrical transmission system located in in the vicinity of the Project site. The actual size and location of the proposed building services will be coordinated with Eversource during the detailed design phase. It is anticipated that the transformer will be provided on a concrete pad at ground level adjacent to the proposed buildings.

The Proponent is investigating energy conservation measures, including high efficiency lighting.

6.6 Telecommunications Systems

Verizon, Comcast, and RCN provide telephone service in the Project area. It is anticipated that telephone service can be provide by any of the providers. Any upgrades will be coordinated with the provider. Telephone systems will be reviewed with the provider as the design progresses.

Comcast and RCN provide cable and internet service in the Project area. It is expected that Comcast and/or RCN can provide services to the Project site. Any upgrade required to the services will be coordinated with the services providers.

6.7 Natural Gas System

National Grid owns and maintains a 6-inch gas main in American Legion Highway and Stella Road. The Project is expected to use natural gas for heating and domestic hot water. The actual size and location of the building services will be coordinated with National Grid during the detailed design phase.

6.8 Utility Protection During Construction

The contractor will notify the utility companies and will contact “Dig Safe” prior to any excavation at the Proposed Project. During construction, the infrastructure will be protected using sheeting and shoring, temporary relocations and construction staging as required. The contractor will be required to coordinate all protection measures, temporary supports, and temporary shutdowns of all utilities with the appropriate utility company and / or agency. The contractor will also be required to provide adequate notification to the utility company prior to any work commencing on their utility. Also, in the event that a utility cannot be maintained in service during switch over to a temporary or permanent system, the contractor will be required to coordinate the shutdown with the utility company and Proposed Project abutters to minimize impacts and inconveniences.

7.0 TRANSPORTATION COMPONENT

7.1 Introduction

Howard Stein Hudson (HSH) has conducted an evaluation of the transportation impacts of the proposed redevelopment to the Home for Little Wanderers at 780 American Legion Highway (the "Project" and/or "Site") in the Roslindale neighborhood of Boston. This transportation study adheres to the Boston Transportation Department's (BTD) Transportation Access Plan Guidelines and the Boston Planning and Development Agency (BPDA) Article 80 development review process. The study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, transit services, and pedestrian and bicycle activity.

7.2 Project Description

The Project site, located along American Legion Highway, currently houses the Home for Little Wanderers, an educational facility for families living in at-risk circumstances. The Project will provide replacement offices for the Home for Little Wanderers, new clinical facilities for the Dimock Street Neighborhood Health Center and 115 units of family and affordable housing. The Project will include two structures; the first structure will house the replacement Home for Little Wanderers, the Health Center, and approximately 22 units of the total residences. These 22 units will be specifically for youth who are aging out of the Commonwealth's foster care system. The second structure will house approximately 93 units of market rate and workforce rental units and owner-occupied town house condominium units. Additionally, the Project will provide 133 parking spaces.

7.2.1 Study Area

The transportation study area is generally bounded by Canterbury Street to the east, Hyde Park Avenue to the west, Mt. Hope Street to the north, and Cummins Highway to the south. The study area, shown in **Figure 7-1,** includes the following four intersections:

- American Legion Highway/Stella Road
- American Legion Highway/The Home for Little Wanderers South Driveway
- American Legion Highway/The Home for Little Wanderers North Driveway
- American Legion Highway/Mt. Hope Street

7.2.2 Study Methodology

The Existing Condition analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, and pedestrian circulation and bicycle facilities. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. The traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

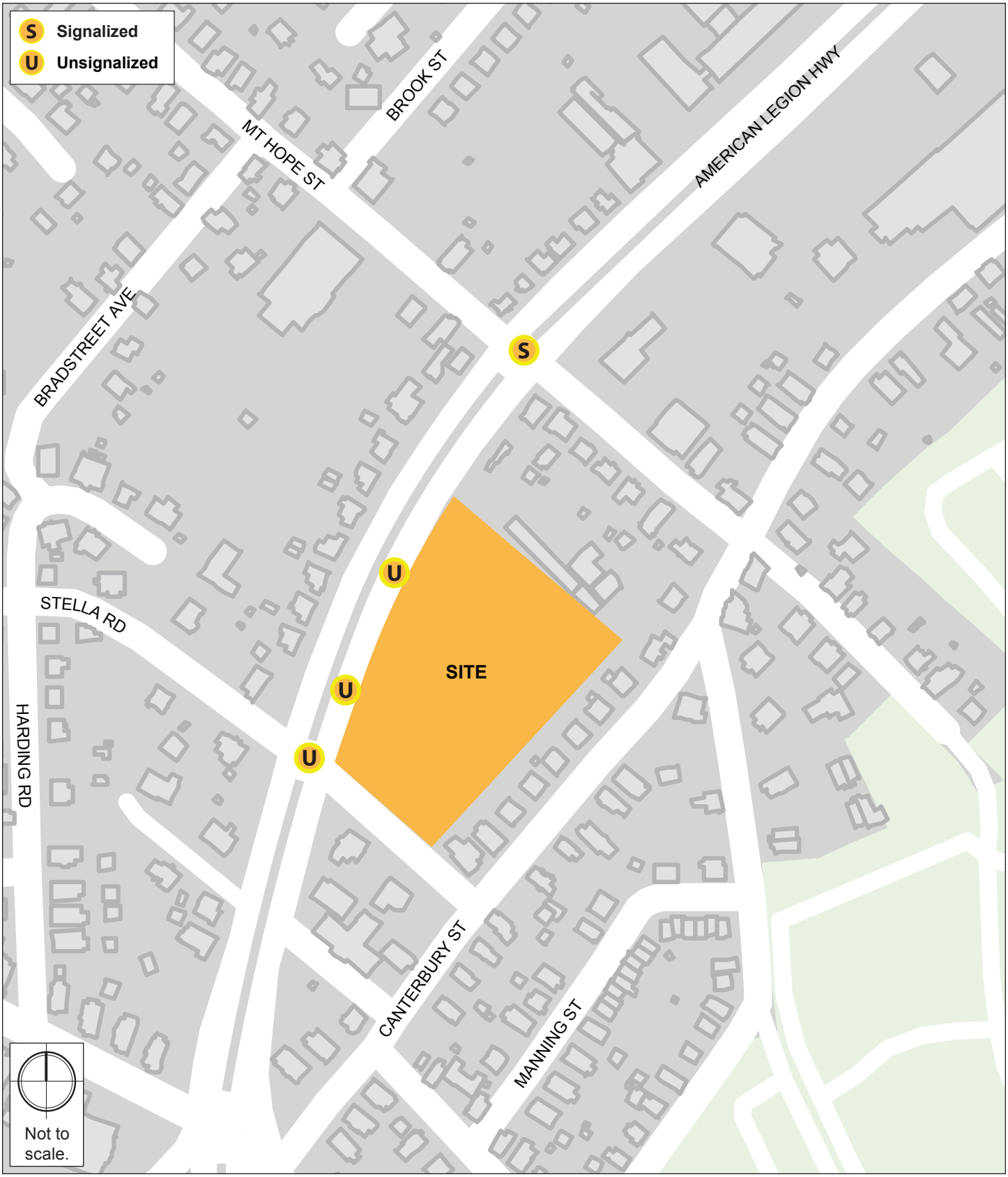


Figure 7-1.
Study Area

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. Long-term impacts are evaluated for the year 2026, based on a seven-year horizon from the year of the filing of this traffic study.

The No-Build (2026) Condition includes both general background traffic growth, traffic growth associated with specific developments (not including this Project), and transportation improvements that are planned near the Project site.

The Build (2026) Condition includes a net increase in traffic volume due to the addition of Project-generated trip estimates to the traffic volumes developed as part of the No-Build (2026) Condition. Expected roadway, parking, transit, pedestrian, and bicycle accommodations, as well as loading capabilities and deficiencies are identified.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction related issues that are necessary to accommodate the Project. An evaluation of short-term traffic impacts associated with construction activities is also provided.

7.2.3 Existing Condition

This section includes descriptions of existing study area roadway geometries, intersection traffic control, peak-hour vehicular and pedestrian volumes, average daily traffic volumes, transit availability, parking, curb usage, and loading conditions.

7.2.4 Existing Roadway Conditions

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

American Legion Highway is a two-way, four-lane urban minor arterial under the jurisdiction of the City of Boston and is located to the west of the project site. In the vicinity of the project site, the roadway follows a predominately north-south trajectory from Hyde Park Avenue to the southwest and Blue Hill Avenue to the northeast. The directions of travel on the roadway are divided by an approximately 16-foot wide landscaped median. Sharrows exist in the right-hand lane of both travel directions. Sidewalks are provided and on-street parking is restricted along both sides of the roadway.

Stella Road is a local roadway under the jurisdiction of the City of Boston and is located to the south of the project site. To the east of American Legion Highway, Stella Road is one-way, one-lane westbound. To the west of American Legion Highway, Stella Road is a two-way, two-lane roadway. A sidewalk is provided along the south side of the roadway east of American Legion Highway. The sidewalk on the south side of the roadway continues for approximately 125 feet along Stella Road west of American Legion Highway.

Mt. Hope Street is a local roadway under the jurisdiction of the City of Boston and is located to the north of the project site. To the east of American Legion Highway, Mt. Hope Street is a two-way, two-lane roadway. To the west of American Legion Highway, Mt. Hope Street is one-way, one-lane eastbound. A sidewalk is provided along both sides of the roadway.

7.2.5 Crash History

A review of crash history data was conducted for the American Legion Highway segment between Stella Road and Mt. Hope Street for period from 2014 through 2017. Assessment included both the City of Boston Vision Zero database and MassDOT crash database. Over the four-year period, five crashes were reported and none involved a pedestrian or bicyclist. Two of the crashes occurred between 1:00 a.m. and 4:00 a.m. This number of crashes is considered quite low given the overall traffic volumes and the data suggests there are no underlying safety issues along this segment of American Legion Highway.

7.2.6 Existing Intersection Conditions

Intersection characteristics such as traffic control, lane usage, pedestrian facilities, pavement markings, and adjacent land use are described below

American Legion Highway/Stella Road is a four-legged, unsignalized intersection with four approaches. The Stella Road westbound approach is a one-way, one-lane roadway. Both the Stella Road eastbound and westbound approaches are stop controlled and consist of a shared left-turn/through/right-turn lane. The American Legion Highway northbound and southbound approaches are both uncontrolled and consist of two travel lanes in each direction. The northbound approach consists of a shared left-turn/through lane and an exclusive through lane. The southbound approach consists of a shared through/right-turn lane and an exclusive through lane. On-street parking is not permitted at any of the approaches of this intersection. Sidewalks are provided along both sides of American Legion Highway as well as along the south side of the Stella Road westbound approaches. With the exception of the curb-ramp on the north side of the Stella Road eastbound approach, all the curb-ramps and crosswalks provided across the eastbound and westbound approaches of Stella Road are not compliant with the Americans with Disability Act (ADA) guidelines.

American Legion Highway/Site Driveway (south) is a two-legged, unsignalized intersection with two approaches. The south driveway westbound approach is uncontrolled and consists of an exclusive right-turn lane. The American Legion Highway northbound approach is uncontrolled and consists of an exclusive through lane and a shared through/right-turn lane. The driveway cannot be accessed from the American Legion Highway southbound direction. On-street parking is not permitted at any of the approaches of this intersection. Sidewalks are provided along both sides of American Legion Highway. Curb-ramps and crosswalks are not provided across the driveway.

American Legion Highway/Site Driveway (north) is a two-legged, unsignalized intersection with two approaches. The north driveway westbound approach is uncontrolled and consists of an exclusive right-turn lane. The American Legion Highway northbound approach is uncontrolled and consists of an exclusive through lane and a shared through/right-turn lane. The driveway cannot be accessed from the American Legion Highway southbound direction. On-street parking is not permitted at any of the approaches of this intersection. Sidewalks are provided along both sides of American Legion Highway. Curb-ramps and crosswalks are not provided across the driveway.

American Legion Highway/Mt. Hope Street is a four-legged, signalized intersection with four approaches. The American Legion Highway northbound approach consists of an exclusive through lane as well as a shared through/right-turn lane. The American Legion Highway southbound approach consists of an exclusive left-turn lane with approximately 100 feet of vehicle storage, as well as two shared through lanes. The Mt. Hope Street eastbound approach consists of a shared left-turn/through/right-turn lane. The Mt. Hope Street westbound approach consists of a shared left-turn/right-turn lane. On-street parking is not permitted at either approach of American Legion Highway and is not restricted along Mt. Hope Street. Sidewalks are provided along both sides of all approaches. ADA compliant curb-ramps and crosswalks are provided across all approaches except the curb-ramp on the north side of the Mt. Hope Street westbound approach, the curb-ramp on the west side of the American Legion Highway southbound approach, and the curb-ramp on the south side of the Mt. Hope Street eastbound approach does not exist.

7.2.7 Existing Parking and Curb Use

An inventory of the on-street parking and curbside regulations near the Project Site was conducted. While on-street parking is generally restricted, there are several local roadways in the area that provide unrestricted parking. Additionally, there are two MBTA bus stops within the study area. The on-street parking regulations within the study area are shown in **Figure 7-2**.

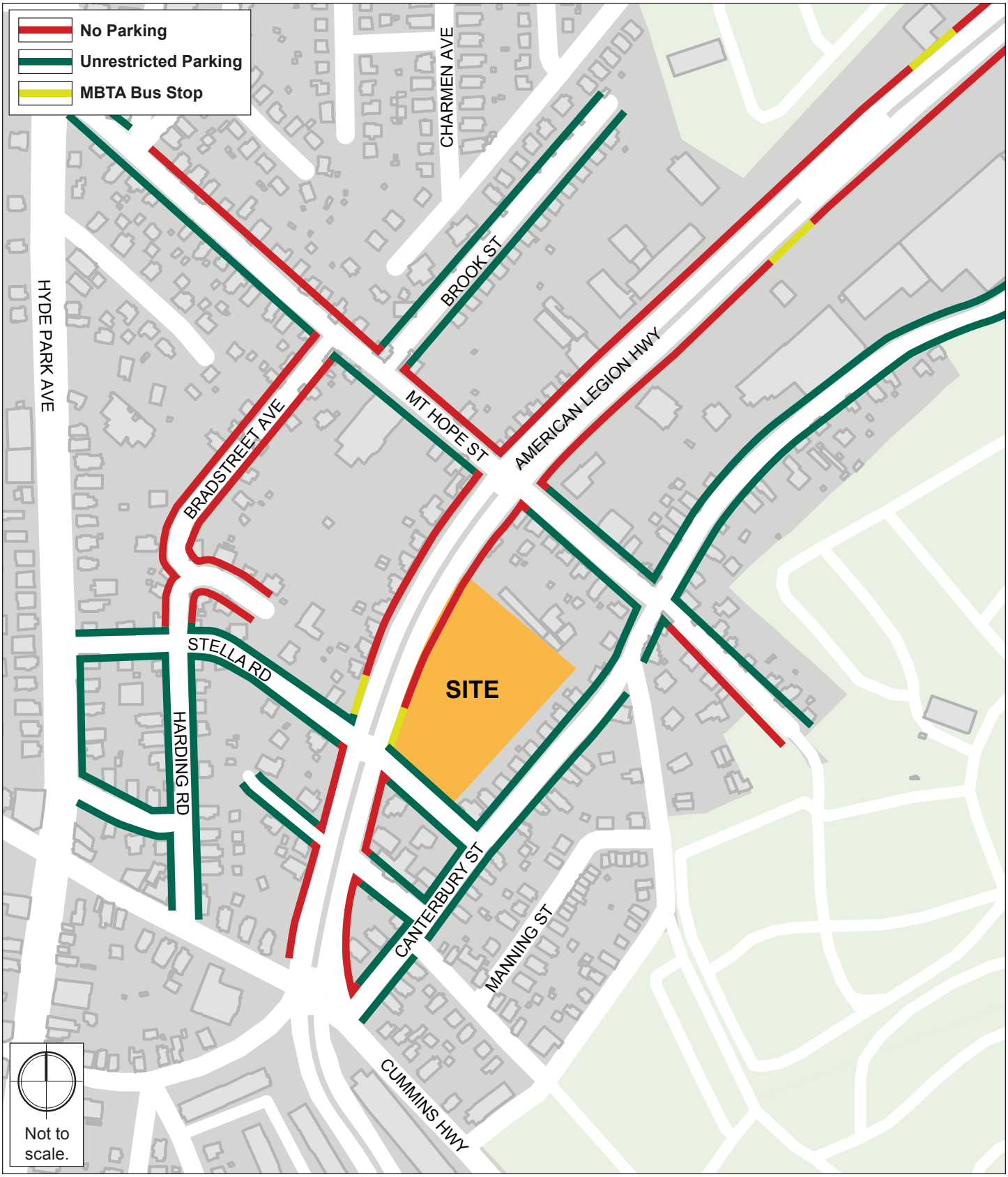


Figure 7-2.
On-Street Parking

7.2.8 Car Sharing Services

Car sharing, predominantly served by Zipcar in the Boston area, enables easy access to short-term vehicular transportation. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location. While no car sharing locations are within walking distance of the Project site, three are located approximately one mile to the northwest**.**

7.2.9 Existing Traffic Data

Traffic volume data was collected in the study area intersections on Thursday, April 11, 2019. Turning Movement Counts (TMCs) were conducted during the weekday a.m. and p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively) at the study area intersections. The TMCs collected vehicle classification including car, heavy vehicle, pedestrian, and bicycle movements. Based on the TMC data, the vehicular traffic peak hours for the study area intersections are generally 7:15 a.m. – 8:15 a.m. and 4:15 p.m. – 5:15 p.m. The detailed traffic counts are provided in **Appendix D.**

To account for seasonal variation in traffic volumes throughout the year, data provided by MassDOT were reviewed. The MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the April 2019 TMCs. The seasonal adjustment factor for roadways similar to the study area (Group U3 – Other Principal Arterials-Urban) during the month of April is 0.95. This indicates that average month traffic volumes are approximately 5% lower than the traffic volumes that were collected. Therefore, the traffic counts were not adjusted downward to reflect average month conditions and provide a conservatively high analysis consistent with the peak season traffic volumes. The MassDOT 2017 Weekday Seasonal Factors table is provided in **Appendix D**.

7.2.10 Existing Traffic Volumes

Existing traffic volumes were balanced between intersections to develop the Existing Condition vehicular traffic volumes. The Existing Condition weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 7-3** and **Figure 7-4**, respectively.

7.2.11 Existing Pedestrian Conditions

In general, the sidewalks provided along nearby roadways are in good condition. The sidewalk along American Legion Highway, adjacent to the west edge of the Project site, is approximately 4 – 6 feet wide. ADA compliant crosswalks and curb ramps are provided at the intersection of Mt. Hope Street and American Legion Highway. Non-compliant crosswalks and curb ramps are provided across both approaches of Stella Road at its intersection of Stella Road and American Legion Highway.

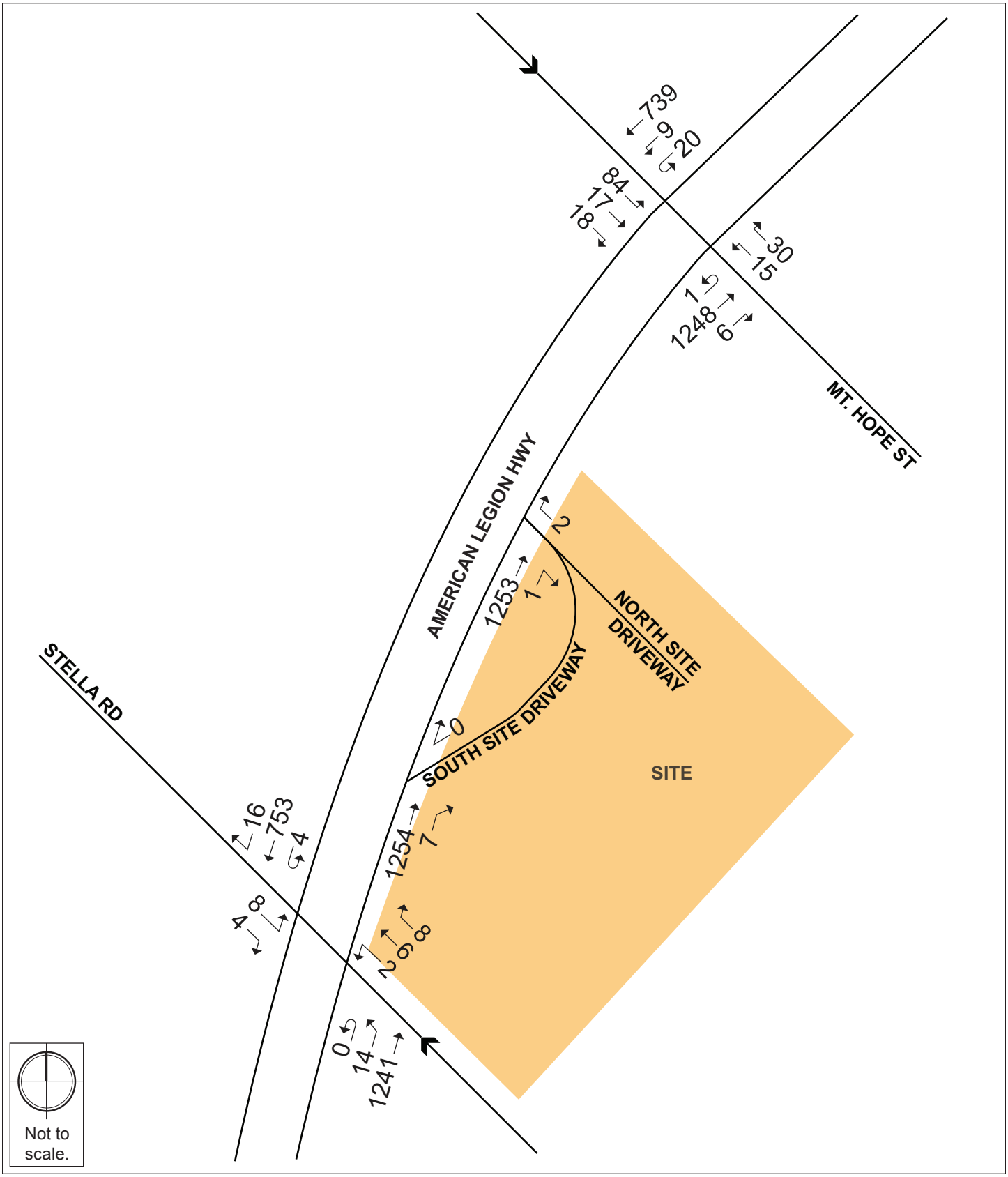


Figure 7-3.
Existing Condition Traffic Volumes, Weekday a.m. Peak Hour

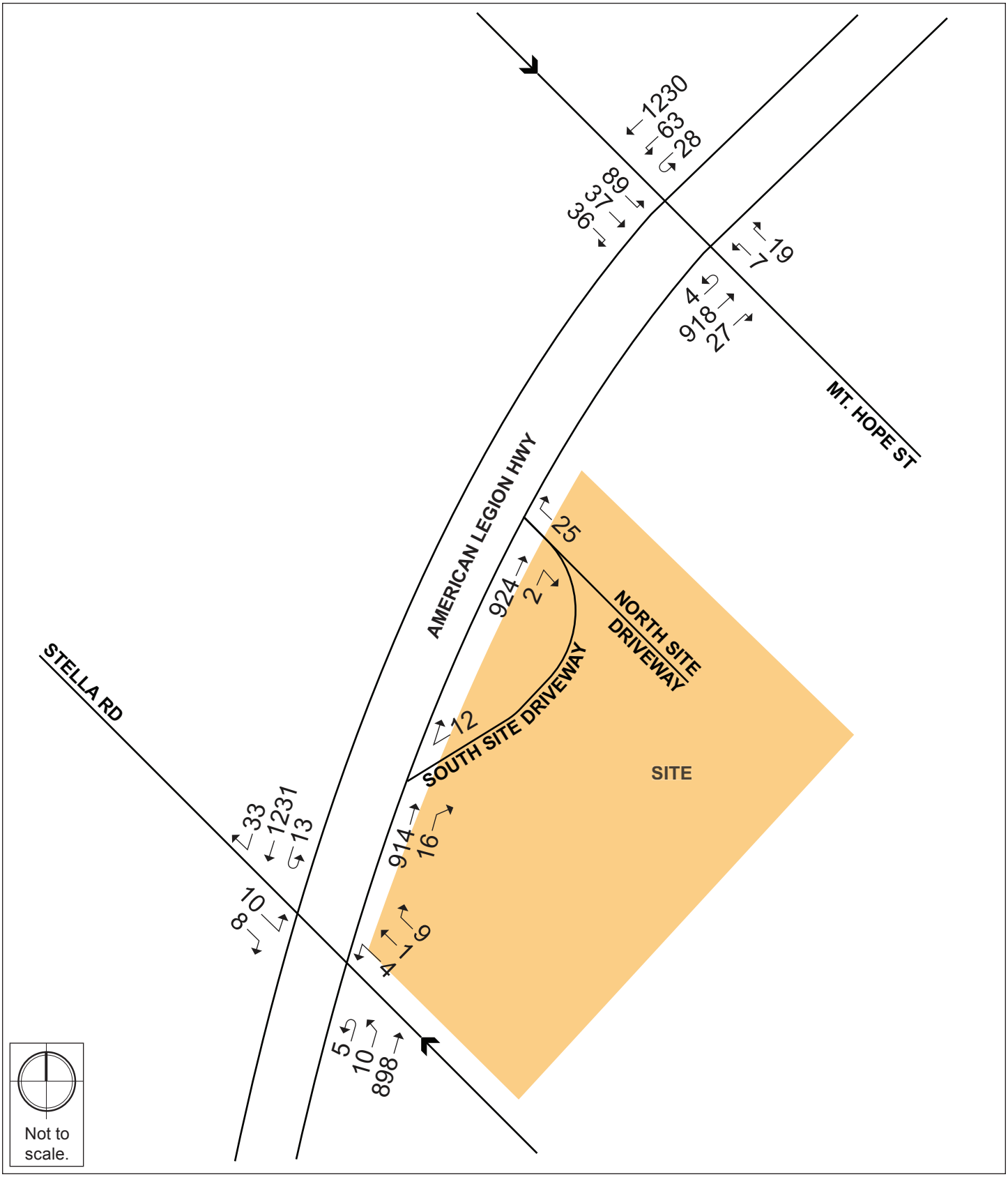


Figure 7-4.
Existing Condition Traffic Volumes, Weekday p.m. Peak Hour

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted concurrent with the TMCs at the study area intersection. The weekday a.m. and p.m. peak hour pedestrian volumes are presented in **Figure 7-5**. Even though the pedestrian counts were collected in warm weather (April 2019), the observed pedestrian activity in the area is quite low.

7.2.12 Existing Bicycle Conditions

Bicycle counts were conducted concurrently with the vehicular TMCs and are presented in **Figure 7-6**. In the vicinity of the Project site, sharrows are provided along American Legion Highway. The City of Boston's "Bike Routes of Boston" map, updated in August 2013, indicates that Canterbury Street is designated as a beginner route, suitable for all riders including new cyclists with no on-road experience. Hyde Park Avenue, Cummins Highway, and American Legion Highway are designated as advanced routes suitable for experienced, traffic-confident riders.

7.2.13 Bicycle Sharing Services

The site is also located in proximity to bicycle sharing stations provided by BlueBikes. BlueBikes is the major bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 185 stations and 1,800 bicycles in four municipalities. There are no bicycle sharing locations within walking distance of the Project site, however there are three locations approximately one mile to the northwest. Located in proximity to the Roslindale Village MBTA Commuter Rail Station, this location would take approximately one half-hour to walk to from the Project site.

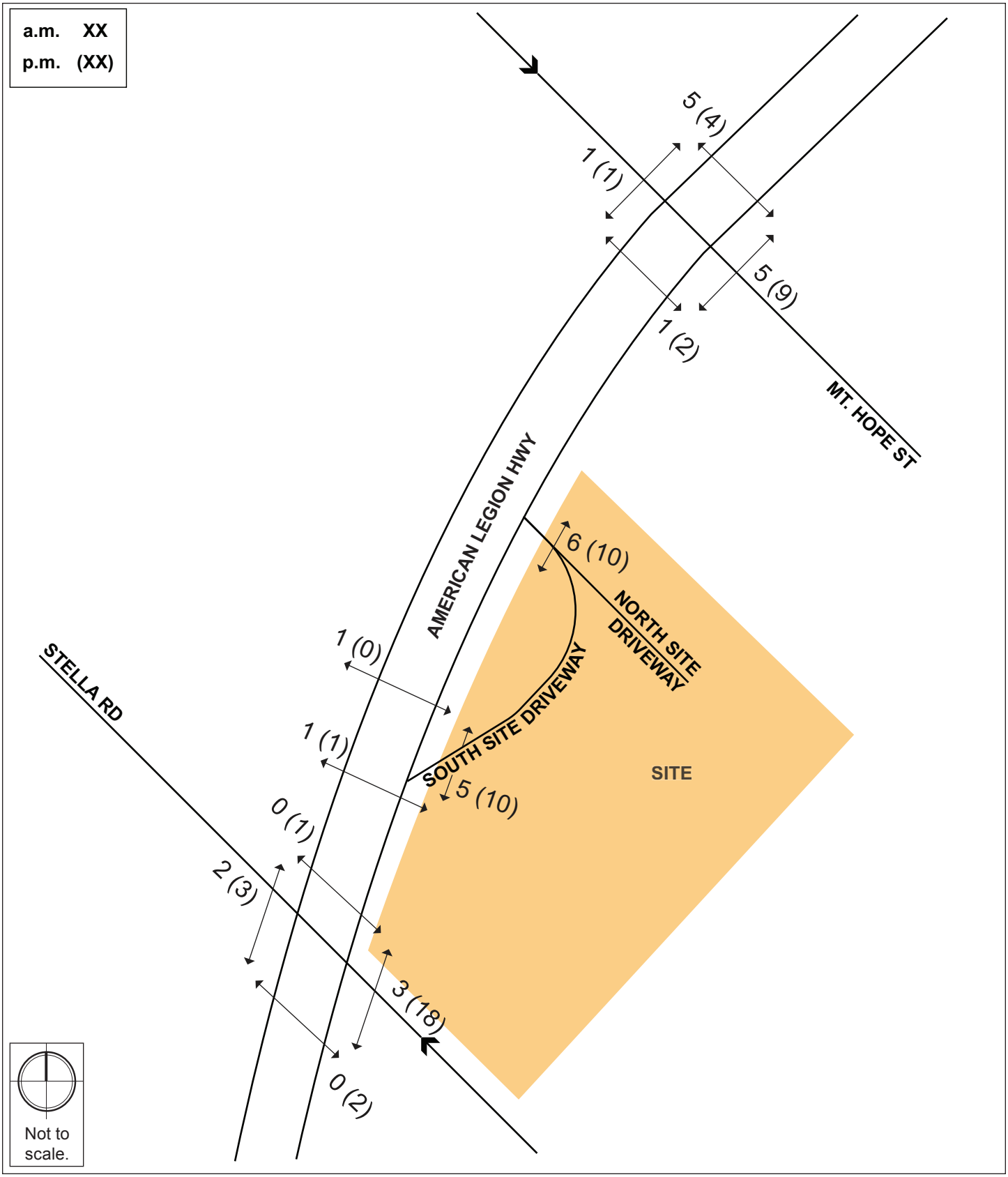


Figure 7-5.
Existing Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours

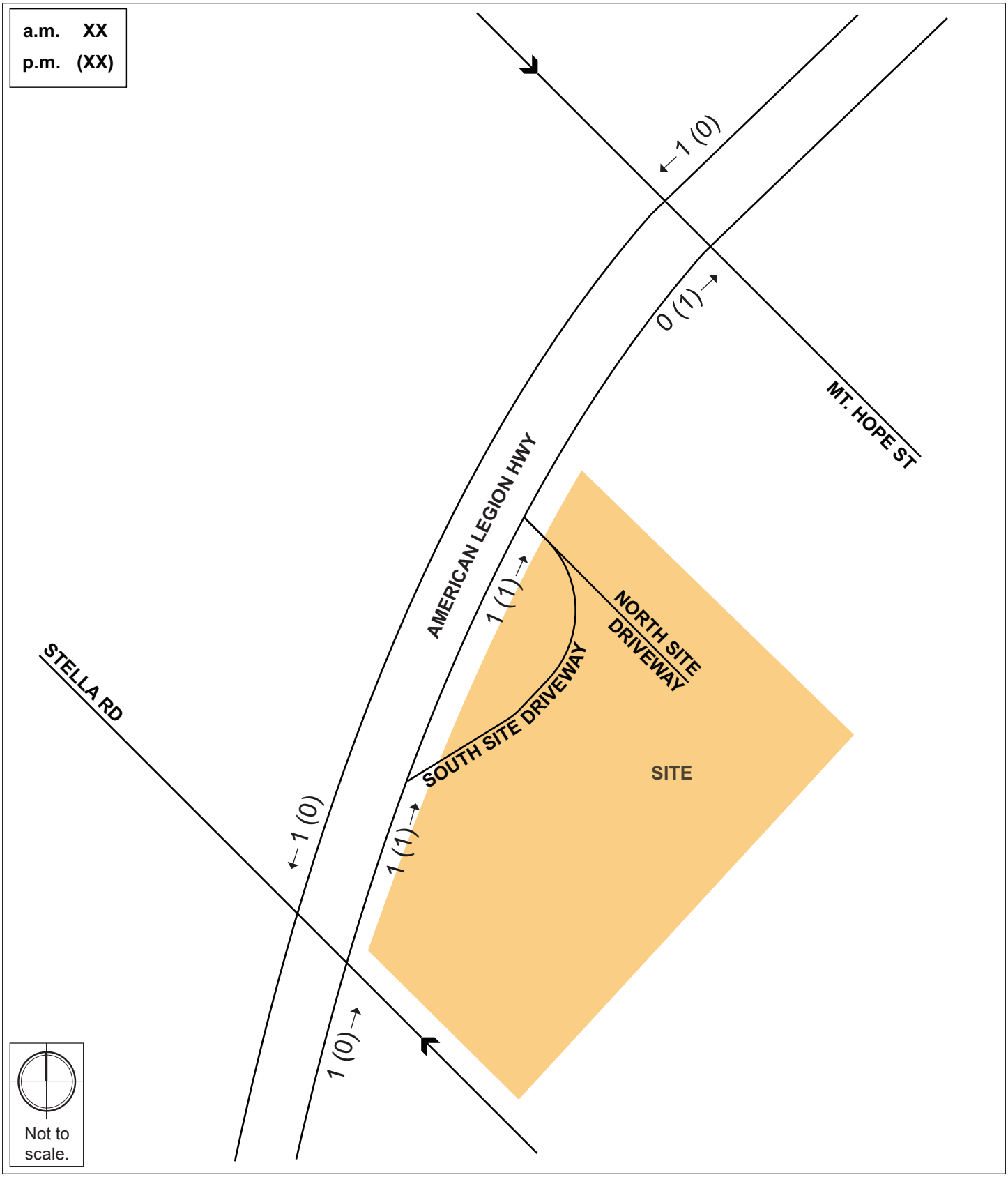


Figure 7-6.
Existing Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours

7.2.14 Existing Public Transportation

Several public transportation services operate near the Project, including three MBTA bus routes and the Franklin/Providence/Stoughton lines of the MBTA Commuter Rail. The nearby public transit services are shown in **Figure 7-7** and those within a half-mile of the site are summarized in **Table 7-1**. While the commuter rail tracks are relatively close to the site, the nearest commuter rail station is about two miles from the site at Hyde Park Station.

Table 7-1. Existing Public Transportation

Service	Description	Peak-hour Headway[1] (minutes)
Bus Routes		
14	Roslindale Square – Heath Street Station	45
30	Mattapan Station – Forest Hills Station	25
32	Wolcott Square/Clearly Square – Forest Hills Station	8-10
Commuter Rail[2]		
Franklin Line	South Station – Forge Park/495	30
Providence/ Stoughton Line	South Station – Wickford Junction	40

[1] Source: MBTA.com, April 2019. Headway is the time between vehicles

[2] Headway taken from arrivals/departures at Hyde Park Station.

Route 14, which operates along American Legion Highway in front of the Project site, has nearby inbound and outbound stops at Stella Road, as shown in **Figure 7-7**. The outbound stop is a near side stop (upstream of Stella Road) and the inbound stop is a far side stop (downstream of Stella Road). Weekday passenger activity at this bus stop is quite low, with only eight riders using this stop daily. On Saturdays, only five riders use each stop throughout the day. The route operates weekdays between 6:00 a.m. and 7:30 p.m. and on Saturdays from 9:00 a.m. to 7:30 p.m., with headways of 45-60 minutes.

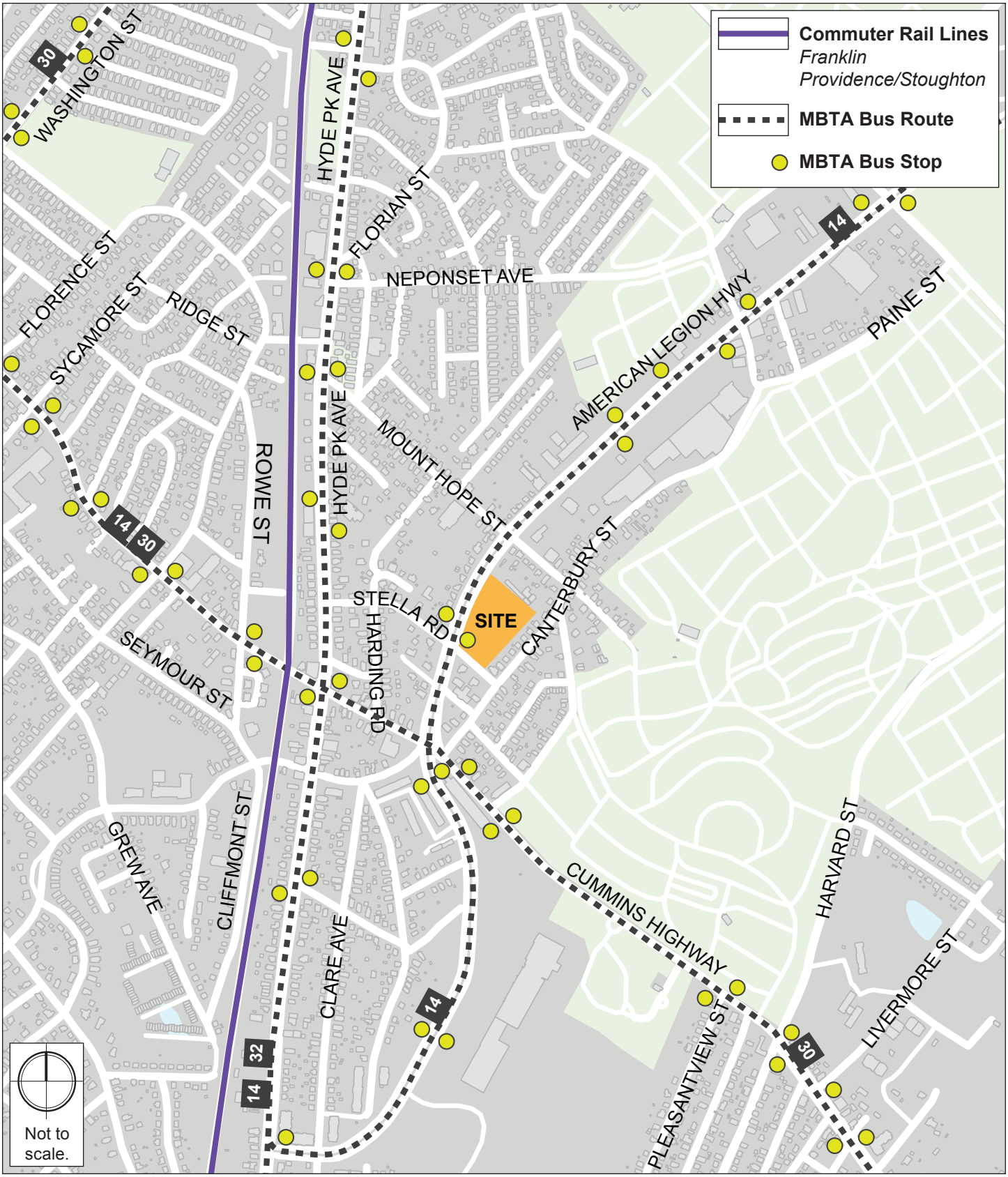


Figure 7-7.
Public Transportation

7.3 No-Build (2026) Condition

The No-Build (2026) Condition reflects a future scenario that incorporates any anticipated traffic volume changes independent of the Project, and any planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, or pedestrian and bicycle improvements. The methodology to account for future traffic growth, independent of the Project consists of two factors: an annual background growth rate and vehicles associated with specific developments near the Project. The No-Build (2026) Condition does not include the impact of the Project.

7.3.1 Background Traffic Growth

The first part of the methodology accounts for general future background traffic growth, independent of large development projects. The background traffic growth rate may be affected by changes in demographics, smaller scale development projects, or projects unforeseen at this time. Based on a review of current and historic traffic data collected recently and to account for any additional unforeseen traffic growth, a one-half percent annual traffic growth rate was used.

7.3.2 Nearby Development Traffic Growth

The second part of the methodology identifies specific planned developments that are expected to be constructed within the future analysis time horizon. One project, detailed below, has been identified as a large project in proximity to the Project site.

The Walk Hill Residences – The project will include approximately 157,000 square feet of residential space in a four/five story, multi-family residential building. The development includes approximately 136 residential units and 167 parking spaces, 147 of which will be underground. This project has been approved by the BPDA Board.

7.3.3 Proposed Infrastructure Improvements

Planned area improvements to roadway, transit, bicycle, and pedestrian facilities, independent of the Project, are described below:

Green Links Network – American Legion Highway has been identified in the Boston Transportation Department's GoBoston 2030 report as a candidate corridor in the continuing expansion of the Boston Green Links initiative to improve access to green spaces and active transportation options. The schedule and scope for improvements are indeterminate.

Better Bike Corridors - As part of GoBoston 2030's goals to improve the bicycle environment throughout the City, by building better bicycle corridors and providing facilities with low stress connections for cyclists. The American Legion Highway has been identified as one of 26

corridors for improvement by the City in the coming years, although the schedule and scope for these improvements are indeterminate.

7.3.4 No-Build (2026) Condition Traffic Volumes

The one-half percent per year annual growth rate was applied to the Existing Condition traffic volumes, then the traffic volumes associated with the background development projects were added to develop the No-Build (2026) Condition traffic volumes. The No-Build (2026) weekday a.m. and p.m. peak hour traffic volumes are shown on **Figure 7-8** and **Figure 7-9**, respectively.

7.4 Build (2026) Condition

As previously summarized, the proposed Project consists of a sequentially phased, single project, which includes constructing a behavioral and clinical health facility and 22 units of supporting housing for youth who are aging out of the Commonwealth's foster care system. The existing building will be demolished and an additional 93 units of market rate and workforce rental units and owner-occupied town house condominium units will be constructed. At completion, the development will provide replacement offices for the Home for Little Wanderers, provide new clinical facilities for the Dimock Street Neighborhood Health Center, and add 115 units of family and affordable housing. In total, the Project will include 133 on-site parking spaces. The Proponent is also exploring arrangements for additional parking spaces on adjacent parcels.

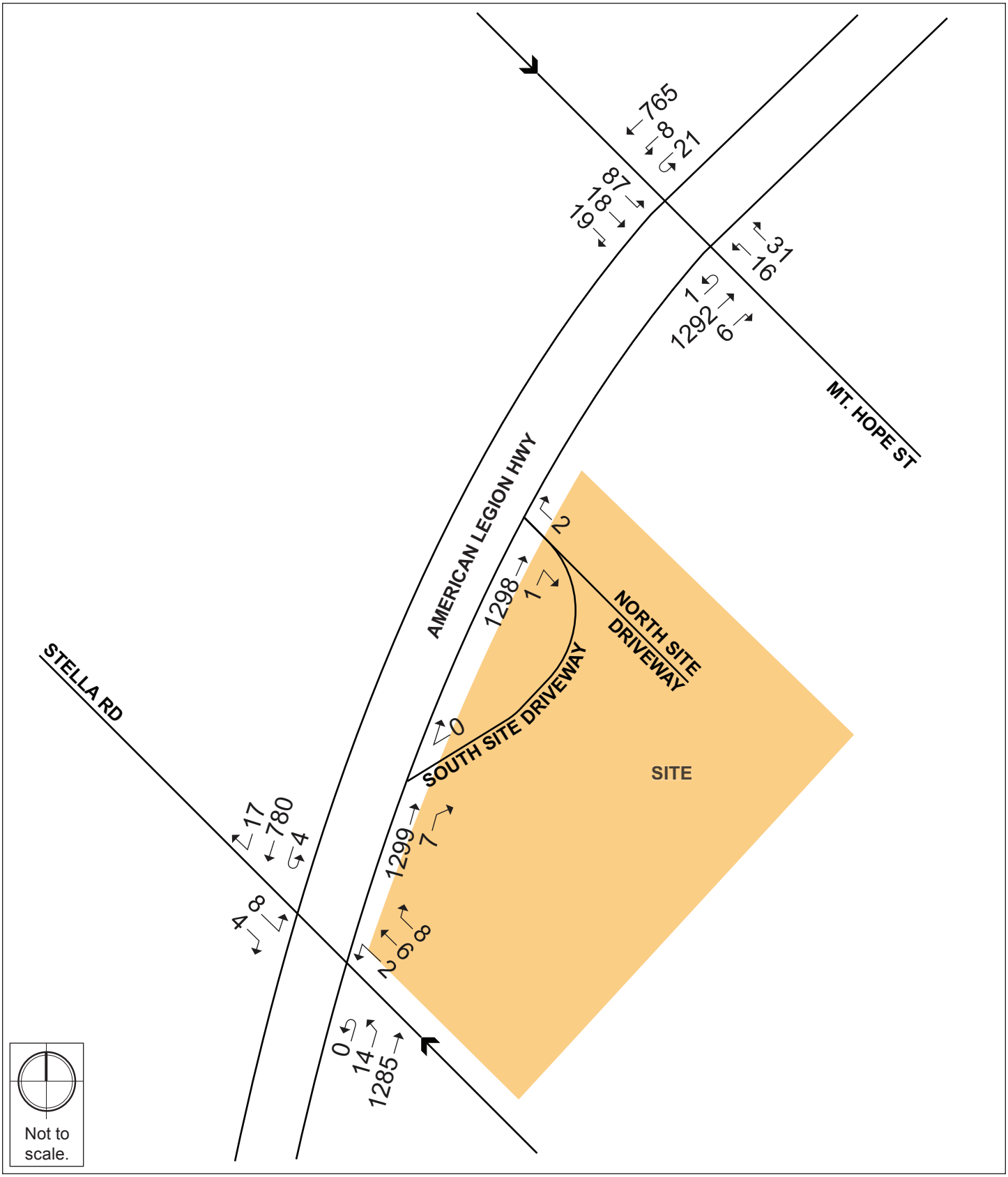


Figure 7-8.
No-Build (2026) Condition Traffic Volumes, Weekday a.m. Peak Hour

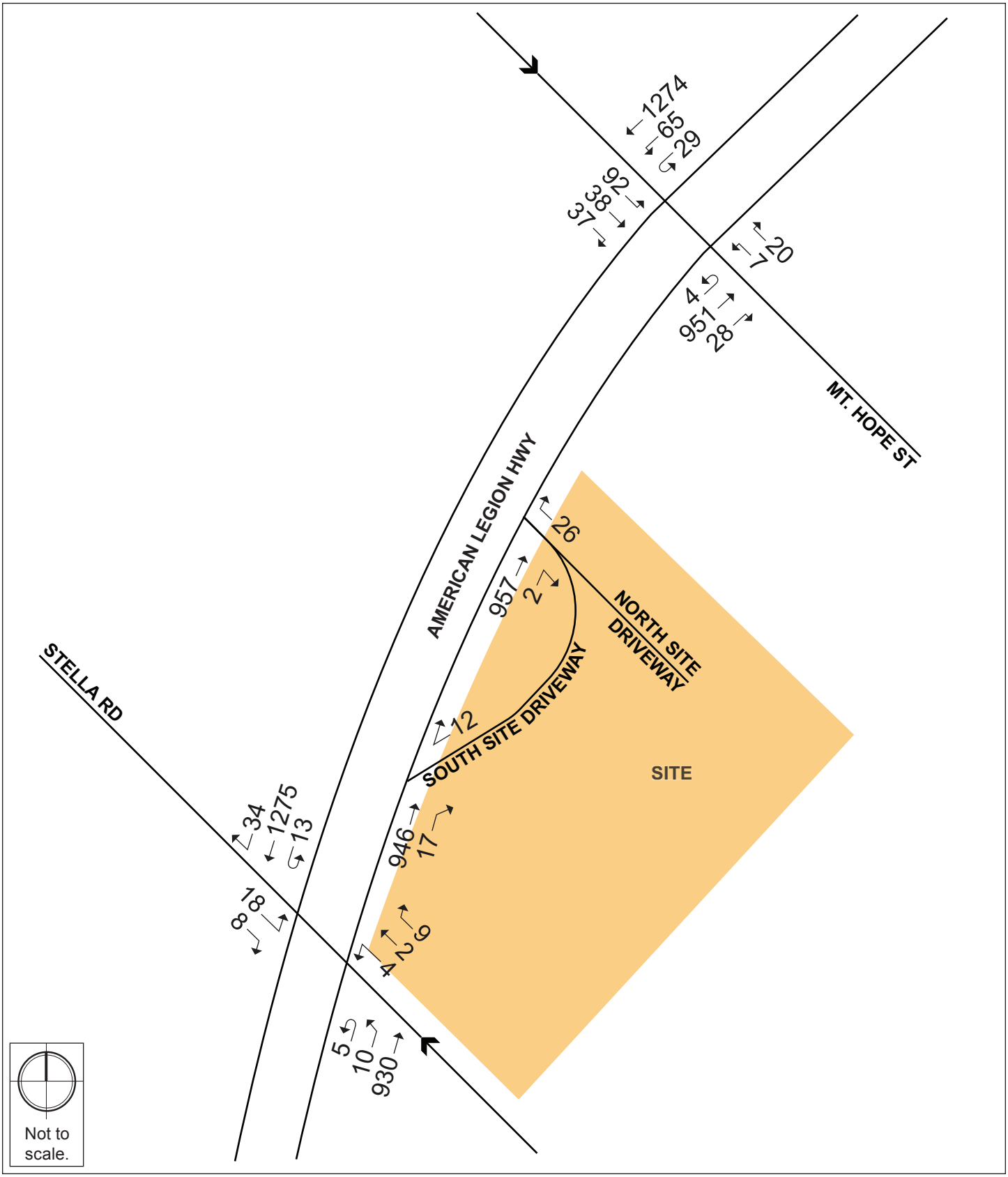


Figure 7-9.
No-Build (2026) Condition Traffic Volumes, Weekday p.m. Peak Hour

7.4.1 Site Access and Circulation

At the request of the BPDA, alternative site circulation options, as described below, have been developed for the Project.

Option 1 - American Legion Highway Access – Vehicular access to the site will be provided via the existing, northern curb-cut on American Legion Highway. This curb-cut will continue to provide both access to and egress from the Project site. Direct access to the main entrance of the clinical building, both garage entrances, and trash removal will be available via this curb-cut. Directly opposite of the main entrance to the clinical building will be another internal roadway that provides access to the main entrance of the residential building. This roadway will be one-way southbound direction and will provide right-turn only egress from the Project Site onto American Legion Highway. The site plan for Option 1 is shown in **Figure 7-10.**

Option 2 - American Legion Highway Access – Vehicular access to the site will be provided via the existing, northern curb-cut on American Legion Highway. This curb-cut will continue to provide both access to and egress from the Project site. Direct access to the main entrance of the clinical building, both garage entrances, and trash removal will be available via ONLY this curb-cut. Vehicular access to the residential building will be limited to vehicles that are able to access the garage. Pedestrian access to the main entrance of the residential building will be provided by a sidewalk from the main driveway.

While the BPDA has suggested utilizing a form of a "roundabout" to allow for turnaround on site including for emergency fire apparatus, the required roundabout circumference would severely alter the existing site plan and building placement. The result would be fire apparatus would need to backout onto American Legion Highway, turnarounds for those vehicles dropping off users to the Clinical Building and utilizing the existing garages would be more complicated, and direct access to the multi-family building would not be achievable under the preferred plan showing front door entrance on American Legion Highway. While no site plan was developed to reflect this option, traffic analysis was conducted and is presented later in this section.

Option 3 - BPDA Suggested Access Option – Vehicular access and circulation related to this option will be the same as Option 2. Under this option, however, the City would install a new curbside parking lane along American Legion Highway in front of the site. In addition to parking, deliveries, taxi trips, and any other pick-up/drop off activities could occur at this curb. Given the existing roadway width, the City has suggested that two narrower northbound travel lanes on American Legion Highway could also be maintained. It is expected that implementing this BPDA option would also be reviewed as a part of the City's current planning investigation for an American Legion Highway corridor study, which is being directed by the Boston Transportation Department.

Vehicle circulation into and out of the Project site under Option 3 would be the same as Option 2. Therefore, no additional traffic analysis was conducted for this option.

7.4.2 Parking

Currently, the Project site has 81 surface parking spaces used by the Home for Little Wanderers. These surface spaces will be removed as part of the redevelopment of the Project Site. At completion, the new Project will provide approximately 130 covered/garage parking spaces and three at-grade spaces. The Project's mix of uses, which will generate a daytime parking demand from staff, visitors, and patients, and evening parking demand from residents, will allow for some shared-parking activity.

For the 93 units of market rate/workforce residential units, parking will be provided at approximately 1.0 spaces per unit. (Note that the 22 units of housing associated with the Home for Little Wanderers will not be provided with parking, as these youth residents will not be permitted to have an automobile.) The remaining 40 spaces will be designated for use by the clinical building.

The existing peak parking demand at the Home for Little Wanderers was observed to be 66 vehicles (Thursday, April 25, 2019). Based on anticipated growth in services, the future peak parking demand will be approximately 73 spaces. A new use at the clinical building will be the Dimock Street Neighborhood Health Center and the associated peak parking demand at the health center will be approximately 12 spaces. In total, the peak parking demand for the clinical building will be approximately 85 spaces.

Based on the pattern of parking demand from residential tenants over the course of the day[7], it is anticipated that about 35% of residential parking spaces, or about 32 spaces, would be vacant midday. With proper on-site policies and management, these residential spaces can be shared with staff and/or visitors to the clinical building. Therefore, the clinical building will have an available midday parking supply of approximately 73 spaces (0.35 x 93 + 40).

The clinical building's peak parking demand for 85 spaces is higher than the 73 available spaces. To accommodate the midday additional demand and the occasional staff meetings which are attended by off-site personnel, the Proponent is exploring remote parking options to expand the supply of available parking. Remote lot usage would be for employees at the clinical building, preserving the on-site spaces for visitors and clients. As Project design evolves, the Proponent will provide additional information on off-site parking options.

[7] "Shared Parking", Urban Land Institute, Second Edition.

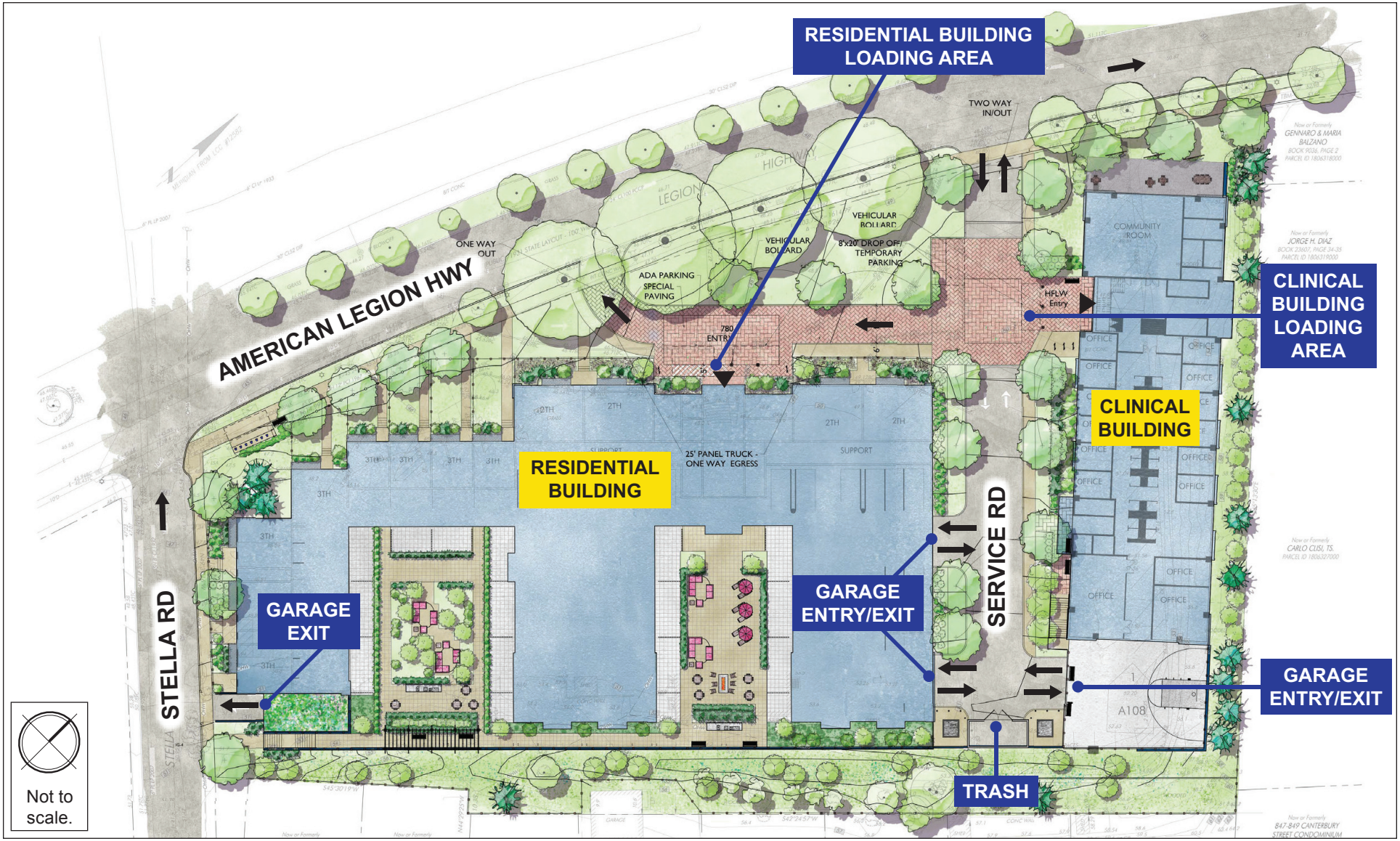


Figure 7-10.
Site Plan Option 1

7.4.3 Loading and Service Accommodations

As identified in the site plan in **Figure 7-10**, loading areas will be located adjacent to the primary entryways for the residential building and the clinical building.

Residential loading activity includes move-in/move-out, furniture deliveries, contractor/repair calls and shorter-term activity such as package delivery (USPS, UPS, Fed-Ex), laundry/dry cleaning pick-up/drop-off, and food delivery. This activity will occur at the main entrance to the residential building, where sufficient capacity on the driveway is available to service a single unit 25-foot truck while allowing other traffic to pass-by. All residential loading and delivery activity will be managed by an on-site transportation coordinator.

Loading activity at the clinical building will include office and medical supply delivery and will occur near the building main entrance along the service drive. All clinical building loading and delivery activity will be managed by an on-site transportation coordinator.

Trash from both the residential building and the clinical building will be stored in an area at the end of service drive.

7.4.4 Bicycle Accommodations

Secure bicycle parking will be provided for residents and employees. Based on BTD guidelines for bicycle accommodations, the Project will provide approximately 115 spaces for residents (1.0 space/ per residential unit). Additionally, approximately 20 secure bicycle parking/storage spaces for employees (0.3 per 1,000 sf of development) will be provided for the clinical building. Employees will have access to shower/changing room facilities. Additional storage will be provided by outdoor bicycle racks accessible to visitors to the site in accordance with BTD guidelines. The details of the bicycle facilities will be set forth in the Transportation Access Plan Agreement.

7.4.5 Trip Generation Methodology

Determining the future trip generation of a Project is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed development and a specific land use program. A project's location, proximity to different travel modes, and specific operational characteristics determine how people will travel to and from a project site.

To estimate the number of new trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the Trip Generation Manual was used. ITE provides data to estimate the total number of unadjusted vehicle trips associated with the Project.

In an urban setting served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

Below is a description of the ITE land use code (LUC) identified as most appropriate for the residential building and the Dimock Center, respectively:

- **Land Use Code 220 – Multifamily Housing (Low-Rise)**. The Multifamily Housing Low-Rise LUC includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have one or two floors. Calculations of the number of trips uses ITE's average rate per dwelling units. ITE also provides data for mid-rise residential buildings with more than two floors. While the Project will include residential units that are considered mid-rise in height, the study team adopted trip rates associated with the Low-Rise Residential LUC, which are higher, resulting in a more conservative analysis (higher impact).

- **Land Use Code 720 – Medical-Dental Office Building**. The Medical-Dental Office Building is a facility that provides diagnoses and outpatient care on a routine basis but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility. Calculations of the number of trips uses ITE's average rate per thousand square feet.

As previously discussed, the existing Home for Little Wanderers building will be demolished and a new facility will be built on the site. Based on discussions with staff, the trips associated with the new HFLW are expected to increase by about 10%, reflecting an increase in staff and client activity. Therefore, the traffic volumes observed at the site (as shown in **Figure 7-3** and **Figure 7-4**) were increased by 10% for the Build Condition.

7.4.6 Travel Mode Share

The American Census Survey (ACS) provides travel mode share rates for residents traveling from home to work and back via walking/biking, transit, and vehicles by census tract. The Project site is in Census Tract 1102.01 and borders Census Tract 1103.01, 1104.01, 1104.03, and 1404. An average of travel mode shares from the census tracts were adopted for the Project's residential land use. Additionally, the BTD provides vehicle, transit, and walking mode shares for different areas of Boston. The Project site is located in Area 16 – Roslindale. The BTD travel mode shares were adopted for the Project's Medical Office use.

The unadjusted vehicular trips were converted to person-trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA). The person-trips were then distributed to different modes according to the mode shares shown in **Table 7-2.**

Table 7-2. Travel Mode Shares and Vehicle Occupancy Rate

Land Use/ Direction		Vehicle Occupancy Rate[1]	Walk/Bike Share	Transit Share	Vehicle Share
Daily					
Residential	In	1.18	3%	30%	67%
	Out		3%	30%	67%
Medical Office	In		17%	4%	79%
	Out		17%	4%	79%
a.m. Peak Hour					
Residential	In	1.18	3%	30%	67%
	Out		3%	30%	67%
Medical Office	In		21%	5%	74%
	Out		18%	10%	79%
p.m. Peak Hour					
Residential	In	1.18	3%	30%	67%
	Out		3%	30%	67%
Medical Office	In		18%	10%	79%
	Out		21%	5%	74%

1 2009 National Household Travel Survey.

7.4.7 Project Trip Generation

The mode shares shown in **Table 7-2** were applied to the number of person trips to develop walk/bicycle, transit, and vehicle trip generation estimates for the Project. The trip generation for the Project by travel mode is shown in **Table 7-3**. Note that the trips associated with the Home for Little Wanderers are only the net new trips associated with facility and do not include the existing trips, which will continue to occur at the site. **Table 7-4** shows the new Project vehicle trips, the existing vehicle trips, and the resulting total vehicle trips for the Project. The detailed trip generation information is provided in **Appendix D**.

Table 7-3. Project Trip Generation – New Trips

Land Use/ Direction		Walk/Bike Trips	Transit Trips	Vehicle Trips
a.m. Peak Hour				
Residential	In	0	5	8
	Out	1	15	27
	Total	1	20	35
Medical Office	In	3	1	8
	Out	1	0	2
	Total	4	1	10
Home for Little Wanderers (new trips only)	In	0	1	2
	Out	0	1	2
	Total	0	2	4
p.m. Peak Hour				
Residential	In	1	15	27
	Out	1	9	15
	Total	2	24	42
Medical Office	In	1	1	3
	Out	4	1	9
	Total	5	2	12
Home for Little Wanderers (new trips only)	In	0	2	3
	Out	0	3	4
	Total	0	5	7

Table 7-4. Project Vehicle Trip Generation – Total Trips

Time Period		New Project Generated Trips	Existing Trips (maintained)	Total Project Trips
a.m. Peak Hour	In	18	8	26
	Out	31	2	33
	Total	49	10	59
p.m. Peak Hour	In	33	18	51
	Out	28	37	65
	Total	61	55	116

7.4.8 Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 16 – Roslindale and trip distribution patterns presented in traffic studies for nearby projects. The trip distribution patterns for the Project are shown in **Figure 7-11**.

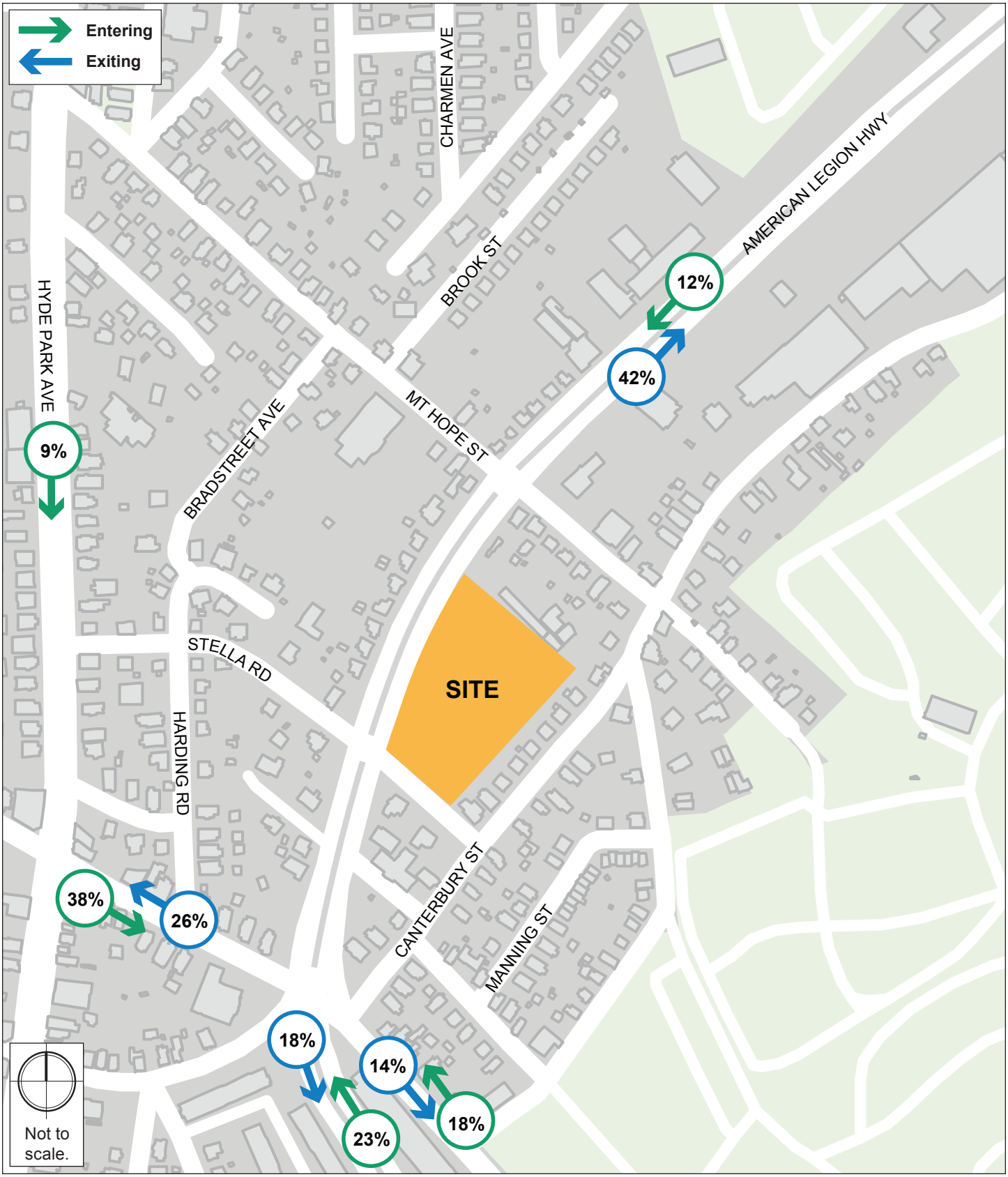


Figure 7-11.
Trip Distribution

7.4.9 Build (2026) Traffic Volumes

The vehicle trips were distributed through the study area based on the trip distribution shown in **Figure 7-11** to the Project site. As noted previously, three site circulation options have been developed for the Project. Option 1 project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure 7-12** and **Figure 7-13**, respectively. Option 2 project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure 7-14** and **Figure 7-15**, respectively. Project-generated trips under Option 3 would be the same as Option 2 and, therefore, are not shown separately.

The project-generated trips were added to the No-Build (2026) Condition vehicular traffic volumes to develop the Build (2026) Condition vehicular traffic volumes. The Option 1 Build (2026) weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 7-16** and **Figure 7-17**, respectively. The Option 2 Build (2026) weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 7-18** and **Figure 7-19**, respectively. Project-generated trips under Option 3 would be the same as Option 2 and, therefore, are not shown separately.

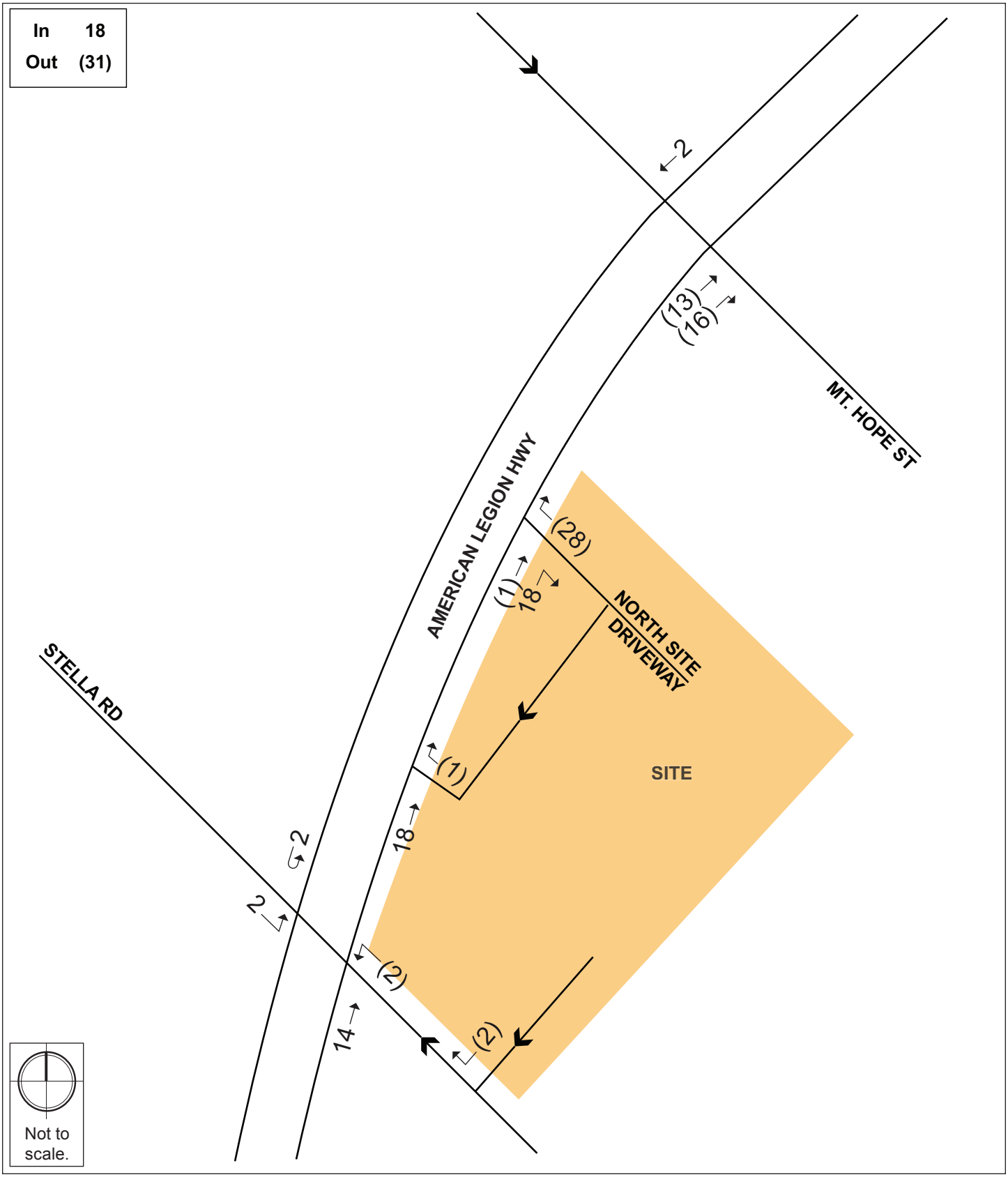


Figure 7-12.
Option 1 Project-Generated Vehicle Trips, Weekday a.m. Peak Hour

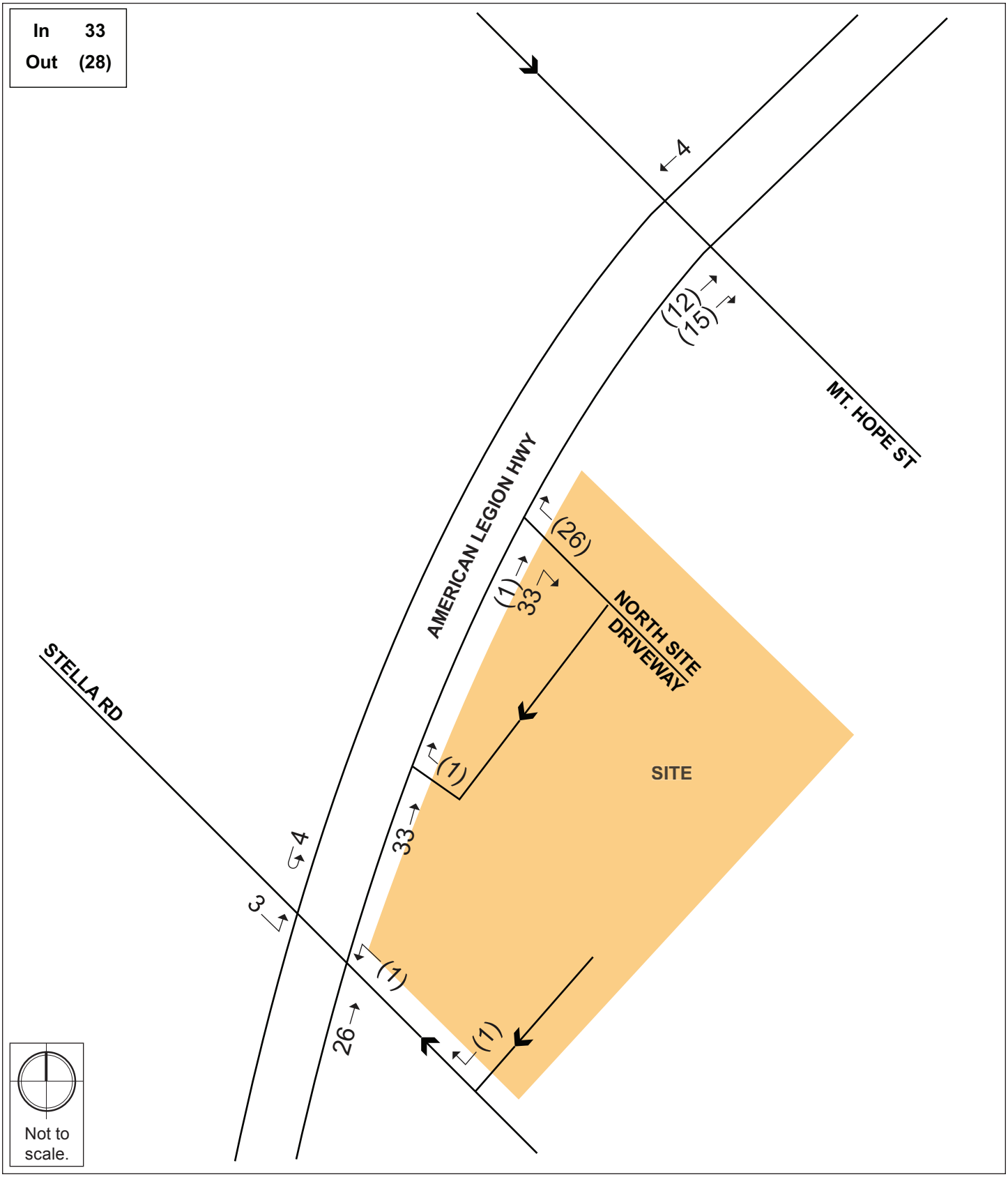


Figure 7-13.
Option 1 Project-Generated Vehicle Trips, Weekday p.m. Peak Hour

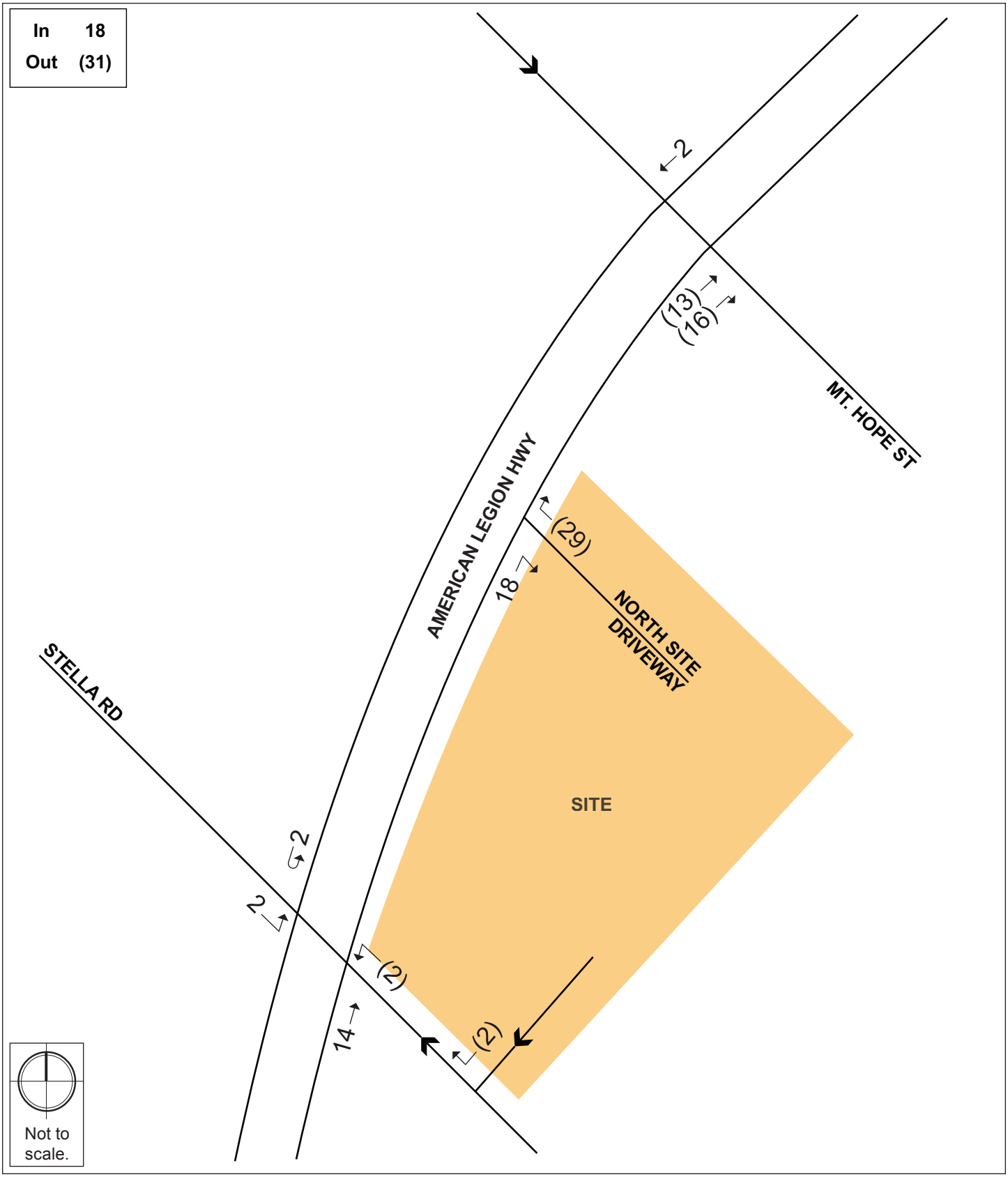


Figure 7-14.
Option 2 Project-Generated Vehicle Trips, Weekday a.m. Peak Hour

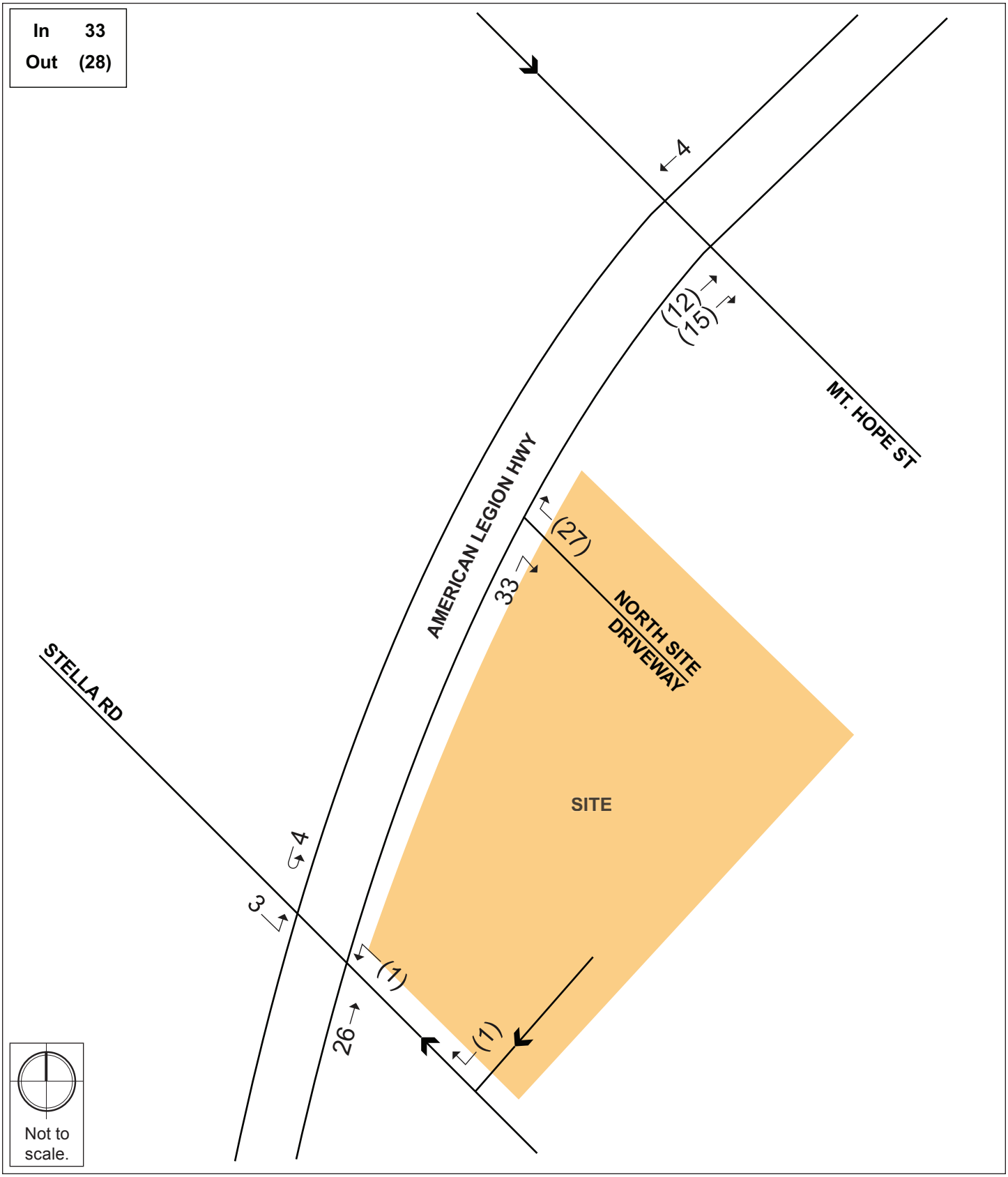


Figure 7-15.
Option 2 Project-Generated Vehicle Trips, Weekday p.m. Peak Hour

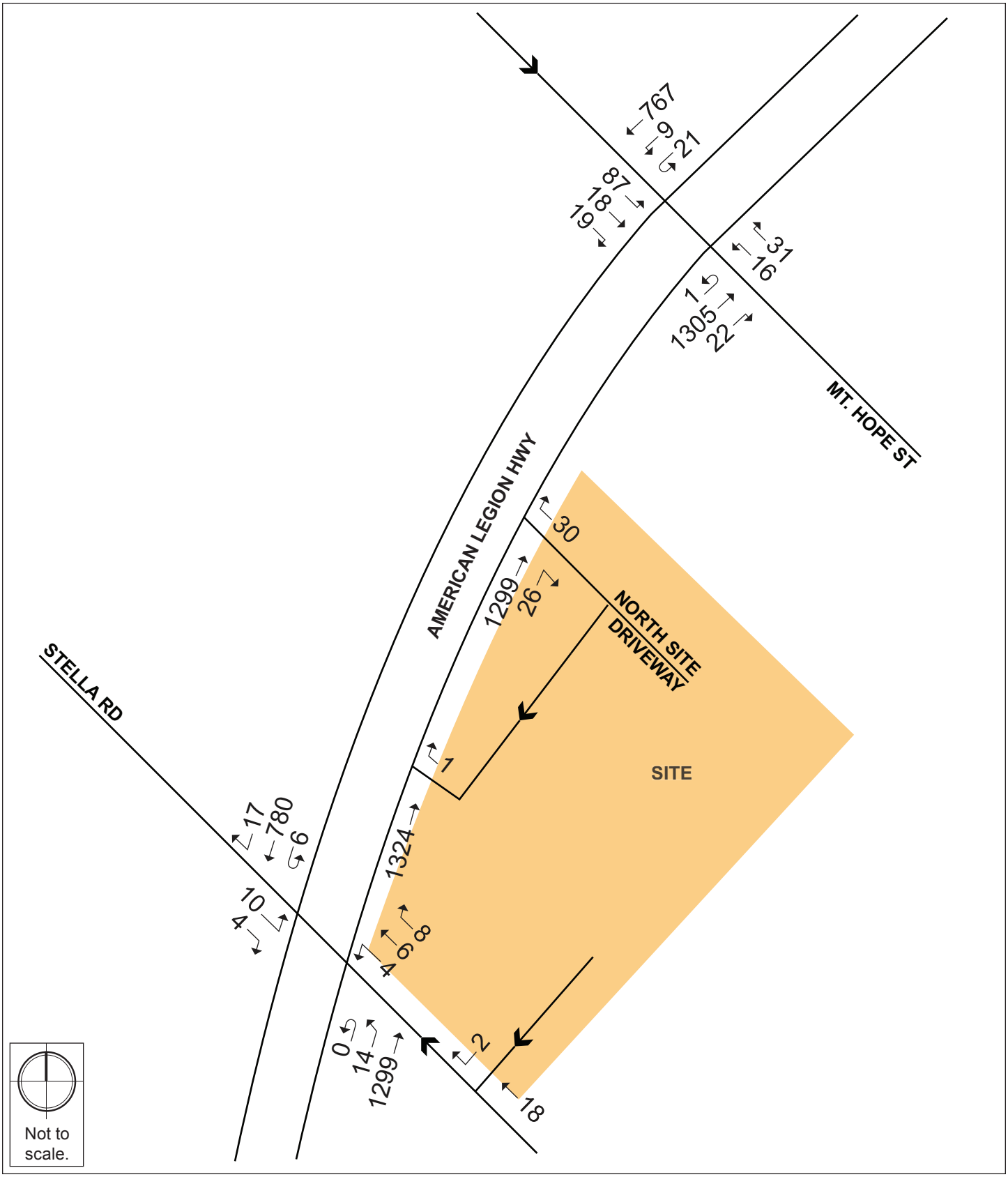


Figure 7-16.
Option 1 Build (2026) Condition Traffic Volumes, Weekday a.m. Peak Hour

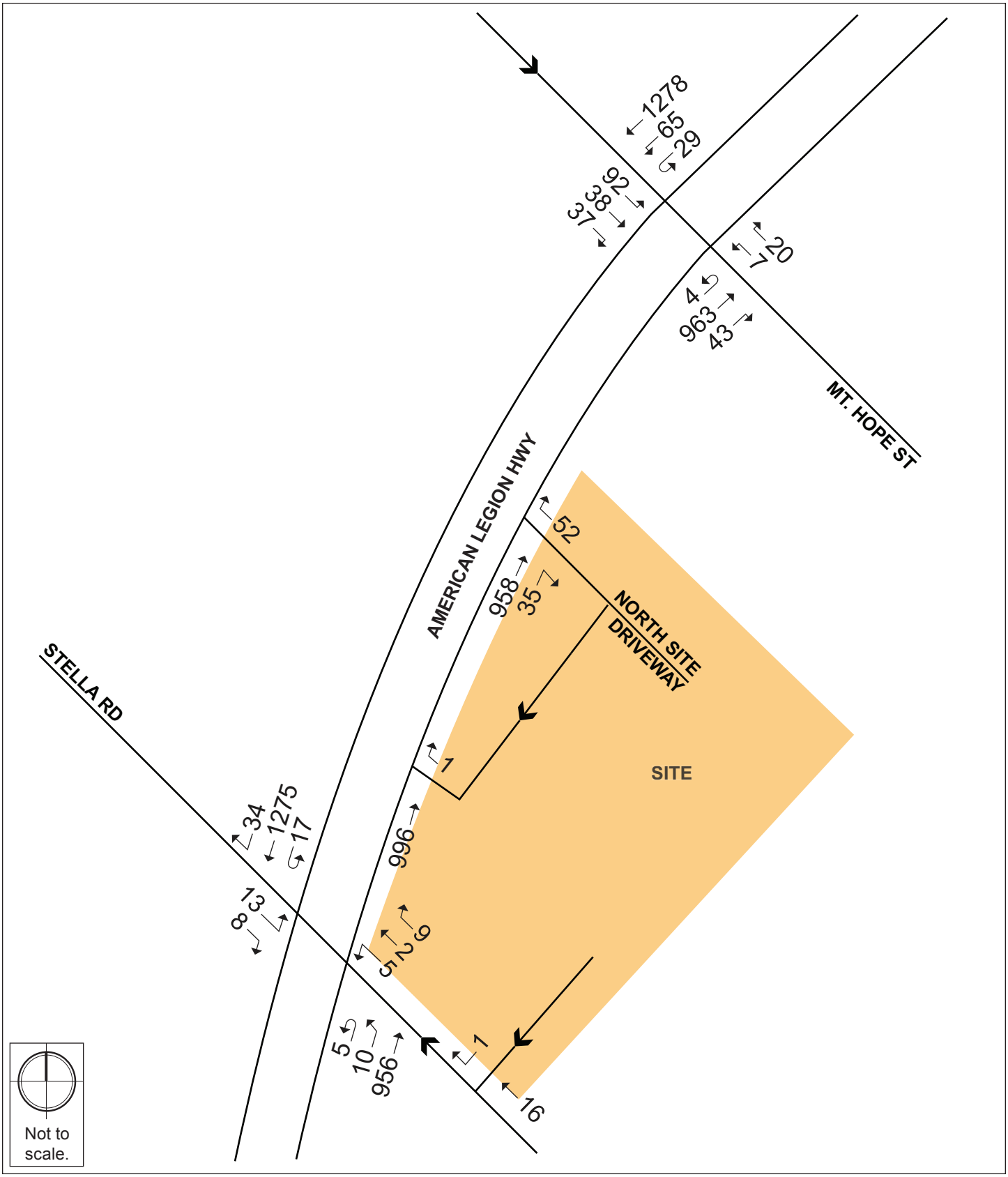


Figure 7-17.
Option 1 Build (2026) Condition Traffic Volumes, Weekday p.m. Peak Hour

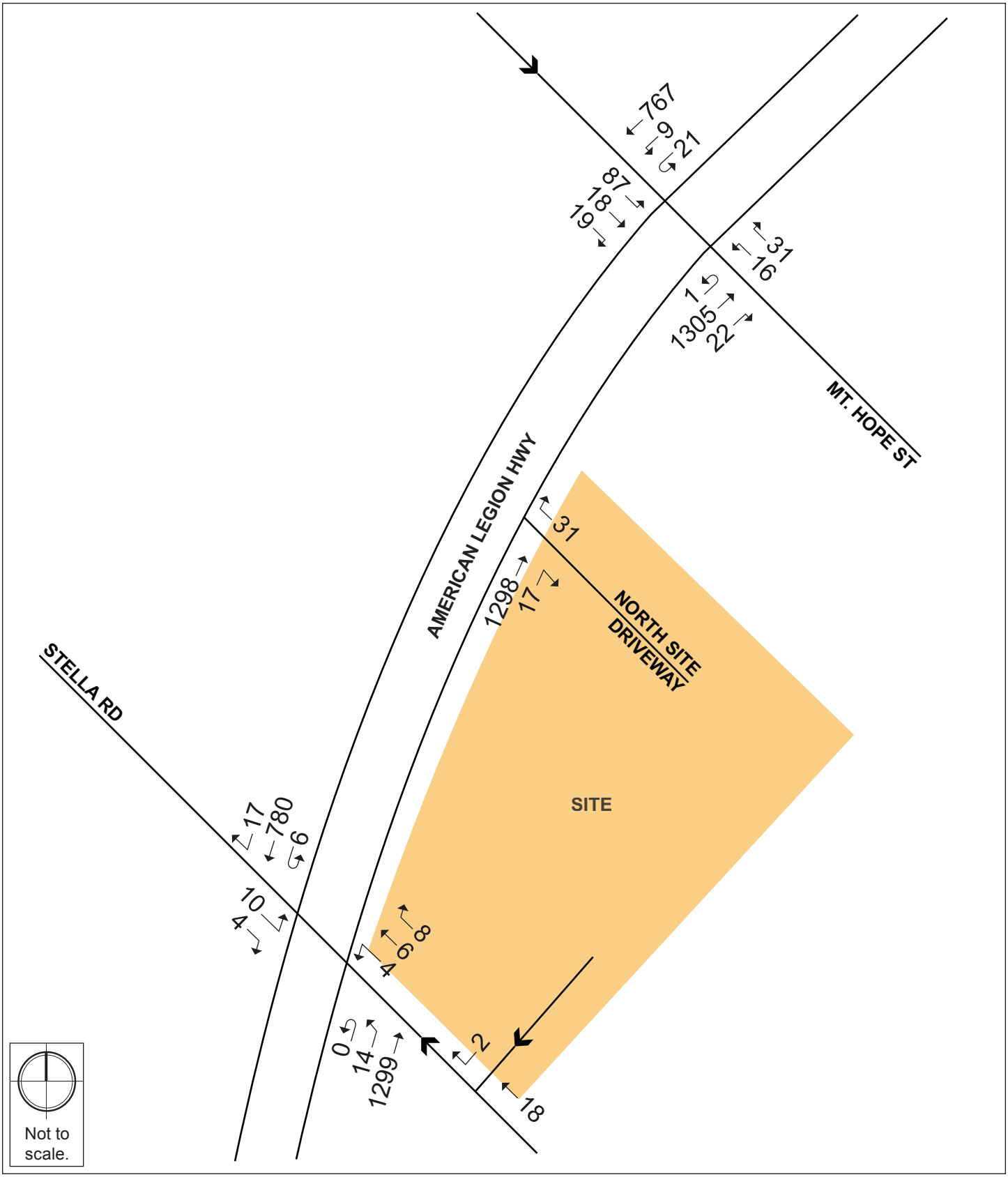


Figure 7-18.
Option 2 Build (2026) Condition Traffic Volumes, Weekday a.m. Peak Hour

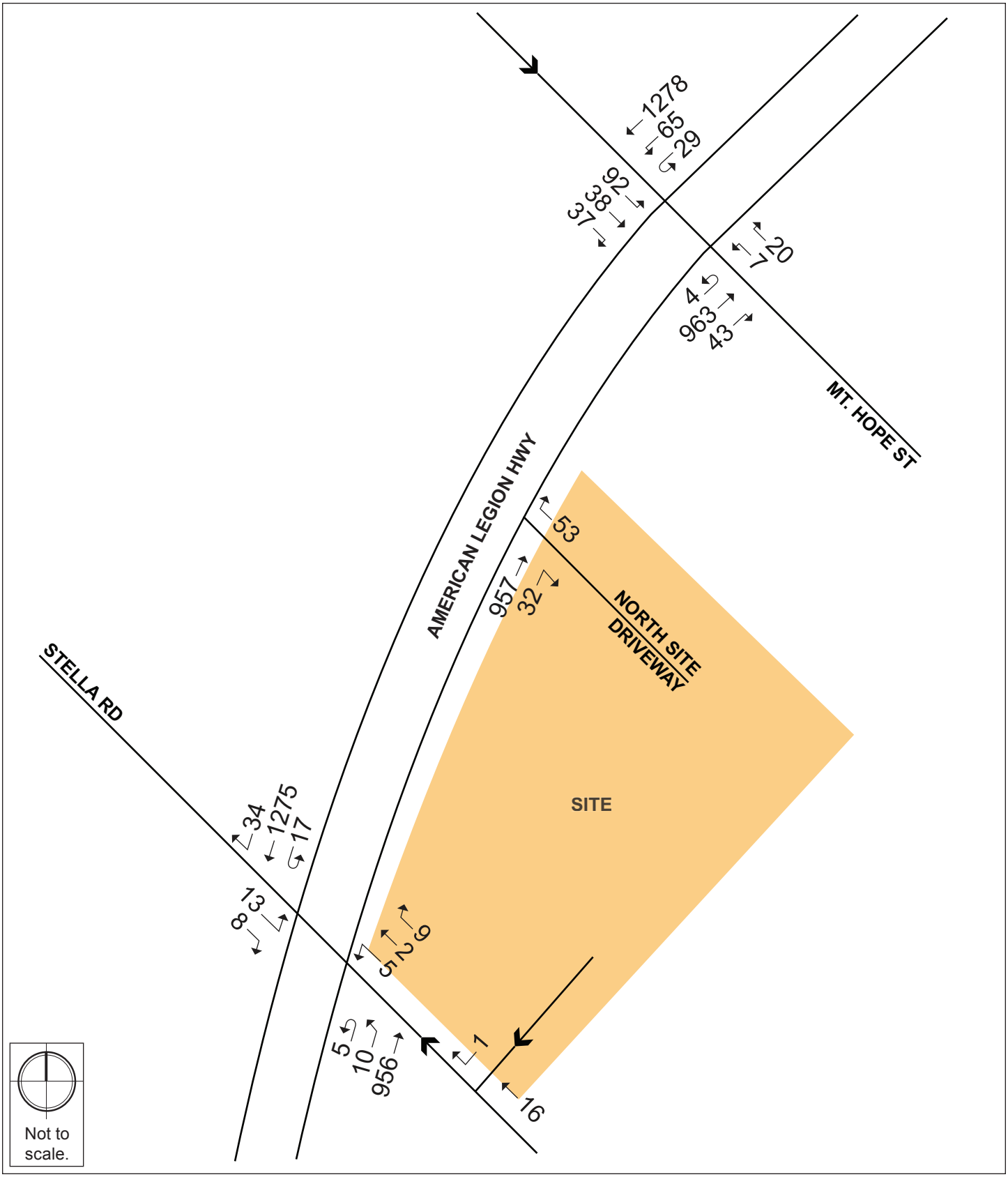


Figure 7-19.
Option 2 Build (2026) Condition Traffic Volumes, Weekday p.m. Peak Hour

7.5 Traffic Capacity Analysis

Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 7-5** displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

Table 7-5. Vehicle 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: 2010 Highway Capacity Manual, Transportation Research Board.

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 50th percentile queue length, measured in feet, represents the maximum queue length during a cycle of the traffic signal with typical (or median) entering traffic volumes. The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously. Note that 50th percentile queues are not reported for unsignalized, all-way stop locations.

Table 7-6 and **Table 7-7** present, respectively, the a.m. and p.m. peak hour capacity analysis for the study area intersections under each analysis condition: Existing (2019) Condition, No-Build (2026) Condition,

and the Build (2026) Condition. The detailed analysis sheets are provided in **Appendix D**. The sections below present results for each condition.

7.5.1 Existing (2019) Condition Traffic Operations Analysis

As shown in **Table 7-6** and **Table 7-7**, in the Existing Condition, all the study area intersections and a majority of the approaches operate at acceptable levels of service (LOS D or better) during the weekday a.m. and p.m. peak hours, with the exception of the following movements:

- The Stella Road eastbound approach at the unsignalized intersection of American Legion Highway/Stella Road operates at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour. The Stella Road westbound approach operates at LOS F during the a.m. peak hour and at LOS E during the p.m. peak hours. The longest queues at the intersection occur at the Stella Road westbound approach during the a.m. peak hour and at the Stella Road eastbound approach during the p.m. peak hour.

- The signalized intersection of American Legion Highway/Mt. Hope Street operates at LOS B during both the a.m. and p.m. peak hours. The Mt. Hope Street eastbound approaches operates at LOS E during both the a.m. and the p.m. peak hours. The longest queues at the intersection occur at the American Legion Highway northbound approach during the a.m. peak hour and at the American Legion Highway southbound through approach during the p.m. peak hour.

7.5.2 No-Build (2026) Condition Traffic Operations Analysis

As shown in the No-Build (2026) Condition, the study area intersections and approaches continue to operate at the same levels of service during the weekday a.m. and p.m. peak hours, with the exception of the following movement:

- The Stella Road eastbound approach at the intersection American Legion Highway/Stella Road deteriorates from LOS E to LOS F during the a.m. peak hour and continues to operate at LOS F during the p.m. peak hour. The Stella Road westbound approach continues to operate at LOS F during the a.m. peak hour and deteriorates from LOS E to LOS F during the p.m. peak hour. The longest queues at the intersection occur at the Stella Road westbound approach during the a.m. peak hour and at the Stella Road eastbound approach during the p.m. peak hour.

7.5.3 Build (2026) Condition Traffic Operations Analysis

Under the Build Condition, the Project's egress-only driveway onto Stella Road was incorporated into the traffic model. With the projected increase in intersection volumes due to the Project, the study area intersections and approaches would continue to operate at the same level of service and similar capacity under the No-Build (2026) Condition, indicating that not one of the Projects three Build Options will adversely affect traffic operations in the area.

Table 7-6. Capacity Analysis Summary, a.m. Peak Hour

Intersection/Approach	Existing Condition					No-Build (2026) Condition					Build Option 1 (2026) Condition					Build Option 2 (2026) Condition[1]				
	LOS	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	Delay (s)	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	LOS	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	LOS	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th
Unsignalized																				
American Legion Highway/Stella Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stella Rd EB left/thru/right	E	45.2	0.18	-	16	F	50.5	0.20	-	18	F	58.8	0.27	-	24	F	58.8	0.27	-	24
Stella Rd WB left/thru/right	F	58.1	0.26	-	24	F	66.1	0.29	-	27	F	76.2	0.35	-	34	F	76.2	0.35	-	34
ALH NB left/thru	A	0.5	0.02	-	1	A	0.5	0.02	-	1	A	0.5	0.02	-	1	A	0.5	0.02	-	1
ALH NB thru	A	0.0	0.50	-	0	A	0.0	0.52	-	0	A	0.0	0.53	-	0	A	0.0	0.53	-	0
ALH SB thru	A	0.0	0.32	-	0	A	0.0	0.33	-	0	A	0.0	0.33	-	0	A	0.0	0.33	-	0
ALH SB thru/right	A	0.0	0.17	-	0	A	0.0	0.18	-	0	A	0.0	0.18	-	0	A	0.0	0.18	-	0
American Legion Highway/ Site Driveway (south)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Driveway WB right	A	0.0	0.00	-	0	A	0.0	0.0	-	0	-	-	-	-	-	-	-	-	-	-
ALH NB thru	A	0.0	0.51	-	0	A	0.53	0.0	-	0	A	0.0	0.53	-	0	-	-	-	-	-
ALH NB thru/right	A	0.0	0.26	-	0	A	0.27	0.0	-	0	A	0.0	0.27	-	0	-	-	-	-	-
ALH SB thru | thru	A	0.0	0.25	-	**0**	A	0.26	0.0	-	0	A	0.0	0.26	-	0	-	-	-	-	-
American Legion Highway /Site Driveway (north)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Driveway WB right	B	13.8	0.01	-	1	B	14.1	0.01	-	1	C	15.9	0.16	-	14	C	15.9	0.15	-	13
ALH NB thru	A	0.0	0.51	-	0	A	0.0	0.52	-	0	A	0.0	0.52	-	0	A	0.0	0.53	-	0
ALH NB thru/right	A	0.0	0.25	-	0	A	0.0	0.26	-	0	A	0.0	0.27	-	0	A	0.0	0.28	-	0
ALH SB thru | thru	A	0.0	0.25	-	0	A	0.0	0.26	-	0	A	0.0	0.26	-	0	A	0.0	0.26	-	0
Stella Road/Site Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stella Road WB thru	-	-	-	-	-	-	-	-	-	-	A	0.0	0.02	-	0	A	0.0	0.02	-	0
Site Exit right	-	-	-	-	-	-	-	-	-	-	A	8.4	0.00	-	0	A	8.4	0.00	-	0
Signalized																				
American Legion Highway/ Mt. Hope Street	**B**	**10.2**	-	-	-	**B**	**10.5**	-	-	-	**B**	**10.5**	-	-	-	**B**	**10.5**	-	-	-
Mt. Hope St EB left/thru/right	E	69.0	0.73	96	151	E	67.6	0.73	101	157	E	67.6	0.73	101	157	E	67.6	0.73	101	157
Mt. Hope St WB left/thru/right	C	22.9	0.26	13	41	C	22.5	0.26	14	42	C	22.5	0.26	14	42	C	22.5	0.26	14	42
ALH NB thru | thru/right	A	6.7	0.52	170	277	A	7.2	0.55	186	301	A	7.4	0.56	193	313	A	7.4	0.56	193	313
ALH SB U-turn/left	A	6.0	0.13	5	19	A	6.5	0.14	6	21	A	6.7	0.15	6	21	A	6.7	0.15	6	21
ALH SB thru | thru	A	5.0	0.32	83	138	A	5.3	0.33	89	148	A	5.3	0.34	89	149	A	5.3	0.34	89	149

1 LOS from Build Option 2 will remain the same in Build Option 3

Table 7-7. Capacity Analysis Summary, p.m. Peak Hour

Intersection/Approach	Existing Condition					No-Build (2026) Condition					Build Option 1 (2026) Condition					Build Option 2 (2026) Condition[1]				
	LOS	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	Delay (s)	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	LOS	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th	LOS	Delay (s)	V/C Ratio	Queue (ft) 50th	Queue (ft) 95th
Unsignalized																				
American Legion Highway/ Stella Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stella Rd EB left/thru/right	F	65.9	0.39	-	39	F	79.0	0.44	-	45	F	107.5	0.58	-	62	F	107.5	0.58	-	62
Stella Rd WB left/thru/right	E	36.0	0.15	-	13	F	50.5	0.22	-	19	F	56.1	0.25	-	22	F	56.1	0.25	-	22
ALH NB left/thru	A	0.6	0.02	-	1	A	0.6	0.02	-	1	A	0.6	0.02	-	1	A	0.6	0.02	-	1
ALH NB thru	A	0.0	0.37	-	0	A	0.0	0.39	-	0	A	0.0	0.40	-	0	A	0.0	0.40	-	0
ALH SB thru	A	0.0	0.49	-	0	A	0.0	0.51	-	0	A	0.0	0.51	-	0	A	0.0	0.51	-	0
ALH SB thru/right	A	0.0	0.27	-	0	A	0.0	0.28	-	0	A	0.0	0.28	-	0	A	0.0	0.28	-	0
American Legion Highway/ Site Driveway (south)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Driveway WB right	B	12.2	0.03	-	2	B	12.5	0.04	-	3	-	-	-	-	-	-	-	-	-	-
ALH NB thru	A	0.0	0.39	-	0	A	0.0	0.38	-	0	A	0.0	0.39	-	0	-	-	-	-	-
ALH NB thru/right	A	0.0	0.20	-	0	A	0.0	0.20	-	0	A	0.0	0.21	-	0	-	-	-	-	-
ALH SB thru | thru	A	0.0	0.41	-	0	A	0.0	0.40	-	0	A	0.0	0.40	-	0	-	-	-	-	-
American Legion Highway/ Site Driveway (north)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Driveway WB right	B	12.6	0.08	-	6	B	12.8	0.08	-	7	B	13.8	0.17	-	15	B	14.0	0.17	-	15
ALH NB thru	A	0.0	0.37	-	0	A	0.0	0.39	-	0	A	0.0	0.39	-	0	A	0.0	0.39	-	0
ALH NB thru/right	A	0.0	0.19	-	0	A	0.0	0.19	-	0	A	0.0	0.21	-	0	A	0.0	0.23	-	0
ALH SB thru | thru	A	0.0	0.38	-	0	A	0.0	0.40	-	0	A	0.0	0.40	-	0	A	0.0	0.40	-	0
Stella Road/Site Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stella Road WB thru	-	-	-	-	-	-	-	-	-	-	A	0.0	0.01	-	0	A	0.0	0.01	-	0
Site Exit right	-	-	-	-	-	-	-	-	-	-	A	8.4	0.00	-	0	A	8.4	0.00	-	0
Signalized																				
American Legion Highway/Mt. Hope Street	**B**	**10.6**	-	-	-	**B**	**10.9**	-	-	-	**B**	**10.9**	-	-	-	**B**	**10.9**	-	-	-
Mt. Hope St EB left/thru/right	E	60.8	0.74	103	165	E	60.8	0.75	107	169	E	60.8	0.75	107	169	E	60.8	0.75	107	169
Mt. Hope St WB left/thru/right	B	19.4	0.15	6	23	B	18.7	0.15	6	24	B	18.7	0.15	6	24	B	18.7	0.15	6	24
ALH NB thru | thru/right	A	6.2	0.41	112	186	A	6.5	0.42	120	199	A	6.6	0.43	124	206	A	6.6	0.43	124	206
ALH SB U-turn/left	A	7.3	0.25	18	50	A	7.9	0.27	19	54	A	8.2	0.28	19	55	A	8.2	0.28	19	55
ALH SB thru | thru	A	7.4	0.52	167	277	A	7.9	0.55	181	297	A	7.9	0.55	182	300	A	7.9	0.55	182	300

2 LOS from Build Option 2 will remain the same in Build Option 3

7.6 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project-traffic impacts. TDM will be facilitated by the nature of the development, which does not generate a significant number of peak hour vehicle trips. The Proponent will work with the City to develop a TDM program appropriate to the Project and consistent with its level of impact.

The TDM measures for the Project may include but are not limited to the following:

7.6.1 Alternative Mode Benefits/Tactics

The primary alternative transportation modes to be encouraged will be public transportation, bicycling, and walking, which will be facilitated by the following:

- The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries;
- On-site management will work with tenants/residents as they move in to help facilitate transportation for new arrivals;
- The Proponent will provide orientation packets to new tenants/residents containing information on available transportation choices, including public transportation routes/schedules, nearby vehicle sharing and bicycle sharing locations, and walking opportunities; and
- Provide information on travel alternatives for employees/residents and visitors via the Internet and in the building lobby.

7.6.2 Bicycle/Pedestrian Trips

Promotions and incentives to encourage bicycle and pedestrian trips include:

- Providing bike and pedestrian access information on the Project website;
- Providing covered, secure bicycle storage for building occupants;
- Providing on-site external bike racks for visitors;
- Installation of a BLUEbike sharing station on site;
- Providing employees with shower/changing room facilities; and
- Encouraging tenants to provide a “Guaranteed Ride Home” for those commuting on foot or by bike.

7.6.3 Public Transportation

The goal of the following promotion and incentive measures are to increase public transit use to and from the site:

- Posting information about public transportation; and
- Providing transit access information on the Project website including information on bus and subway routes and schedules.

7.6.4 Electric Vehicle

The goal of the following promotion and incentive measure is to accommodate tenants/residents/guests traveling to the site in an electric vehicle:

- Provide electric vehicle charging stations to accommodate 25% of the total parking and sufficient infrastructure capacity for future accommodation for 100% total parking spaces.

7.7 Transportation Mitigation Measures

While the traffic impacts associated with the new trips are minimal, the Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use. As part of the Project, the Proponent will bring all abutting sidewalks and pedestrian ramps to the City of Boston standards in accordance with the Boston Complete Streets design guidelines. This will include the reconstruction of the adjacent sidewalks, installation of new, accessible ramps, and providing a BlueBikes bike share station on-site.

Currently, at the intersection of American Legion Highway/Stella Road, crosswalks are only provided across Stella Road and not across American Legion Highway. The Proponent has been working with the City to assess the potential for a new crosswalk across American Legion Highway, on the northern side of Stella Road, including a pedestrian refuge area in the median. While pedestrian volumes crossing American Legion Highway are low (two or fewer during the peak hours), bus stops for the Route 14 are located on the northern side of Stella Road. Improving the pedestrian environment at this location may encourage more pedestrian to use this crossing and possibly use the bus stop. The Proponent will continue to support the City's efforts to improve pedestrian safety at this location.

The Proponent is responsible for preparation of the voluntary Transportation Access Plan Agreement (TAPA), a formal legal agreement between the Proponent and the BTD. The TAPA formalizes the findings of the transportation study, mitigation commitments, elements of access and physical design, travel demand management measures, and any other responsibilities that are agreed to by both the Proponent and the BTD. Because the TAPA must incorporate the results of the technical analysis, it must be executed after these other processes have been completed. The proposed measures listed above and any additional transportation improvements to be undertaken as part of this Project will be defined and documented in the TAPA.

7.8 Evaluation of Short-Term Construction Impacts

Most construction activities will be accommodated within the current site boundaries. 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.

To minimize transportation impacts during the construction period, the following measures will be considered for the Construction Management Plan:

- Limit construction worker parking on-site;
- Encourage worker carpooling;
- Consider a subsidy for MBTA passes for full-time employees; and
- Provide secure spaces on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The Construction Management Plan is intended to be executed with the City prior to commencement of construction will document all committed measures.

8.0 COORDINATION WITH GOVERNMENTAL AGENCIES

8.1 Architectural Access Board Requirements

This Proposed Project will comply with the requirements of the Architectural Access Board. The Proposed Project will also be designed to comply with the Standards of the Americans with Disabilities Act.

8.2 Massachusetts Environmental Policy Act

Based on information currently available, the Proponent anticipates that the Proposed Project will not require review by the Massachusetts Environmental Policy Act Office of the Massachusetts Office of Energy and Environmental Affairs.

8.3 Boston Civic Design Commission

The Proposed Project will exceed the 100,000 gross square feet size threshold requirement for review by the Boston Civic Design Commission.

8.4 Boston Parks Commission Review

The Project is within 100 feet of a Park (American Legion Highway GPOD) which is Subject to City Ordinance 7.4-11 and review by the Boston Parks Commission.

9.0 PROJECT CERTIFICATION

This form has been circulated to the Boston Planning and Development Agency as required by Article 80 of the Boston Zoning Code.

ALINEA CAPITAL PARTNERS, LLC

Signature of Developer's Representative
L. Duane Jackson, Managing Member

9/6/19
Date

MITCHELL L. FISCHMAN CONSULTING ("MLF Consulting") LLC

Signature of Preparer
Mitchell L. Fischman, Principal

09/06/19
Date

APPENDIX A – LETTER OF INTENT TO FILE PNF, FEBRUARY 8, 2018

ALINEA CAPITAL PARTNERS, LLC

February 8, 2018

Mr. Brian Golden
Director
Boston Planning and Development Agency
Boston City Hall
One City Hall Plaza
Ninth Floor
Boston, MA 02201

RE: Four Oaks; Letter of Intent to File Project Notification Form

Dear Mr. Golden,

On behalf of Four Oaks Ventures, LLC, an affiliate of Alinea Capital Partners, LLC, I am pleased to submit this Letter of Intent to file a Project Notification Form for the redevelopment of two parcels, comprising 2.58 acres, located at 780 American Legion Highway. This Letter of Intent is submitted in accordance with the Executive Order dated October 10, 2000, as amended April 3, 2001, relative to the provision of mitigation by development projects in Boston subject to Large Project Review under the Boston Zoning Code.

The proposed mixed-use development consists of a sequentially phased, single project, which includes constructing a behavioral and clinical health facility and twenty-two (22) units of supported housing for youth who are aging out of the Commonwealth's foster care system. At completion the existing, 32,308 square foot building will be demolished and ninety-eight (98) units of market rate and workforce rental units and owner occupied town house condominium units will be constructed. At completion the development will provide replacement offices for the Home for Little Wanderers, provide new clinical facilities for the Dimock Street Neighborhood Health Center and add one hundred twenty (120) units of family and affordable housing.

The total project will include 229,859 square feet of gross floor area on 2.58 acres with an FAR of 1.785. Total building area is distributed between 71,000 square feet for the mixed-use building and 158,859 for the residential structure. Parking will consist of 154 covered and surface space units on the building site. Four Oaks Ventures, LLC, is also exploring arrangements for an additional parking capacity for the the project on adjacent parcels. The project will require Large Project Review and certain relief from the Boston Zoning Code.

Under the Mayor's Executive Order, the Authority is to submit to the Mayor a recommendation for the appointment of an Impact Advisory Group to advise the Authority with respect to mitigation, to be appointed by the Mayor prior to the submission of the Project Notification Form.

We are ready to move forward with the Article 80 review process by filing a Project Notification Form, and look forward to working with the Authority, IAG and the community in the review of this project would be helpful, please do not hesitate to contact me.

Sincerely,

Four Oaks Development Partners, LLC
By Alinea Capital Partners, LLC

By: _____
L. Duane Jackson

Cc: Mr. Jonathan Greeley, BRA
Mr. Michael Sinatra
Mr. Michael Cannizzo

APPENDIX B – AIR QUALITY

APPENDIX B
AIR QUALITY

780 AMERICAN LEGION HIGHWAY
PROJECT NOTIFICATION FORM

 *** MODELOPTs: NonDFAULT CONC FLAT FLGPOL NOCHKD SCREEN NODRYDPLT NOWETDPLT URBAN

                                          ***   MODEL SETUP OPTIONS SUMMARY   ***
 -
 **Model Is Setup For Calculation of Average CONCentration Values.

   -- DEPOSITION LOGIC --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION. DRYDPLT = F
 **Model Uses NO WET DEPLETION. WETDPLT = F

 **Model Uses URBAN Dispersion Algorithm for the SBL for   2 Source(s),
   for Total of   1 Urban Area(s):
   Urban Population =   109754.0 ; Urban Roughness Length = 1.000 m

 **Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Model Assumes Receptors on FLAT Terrain.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Full Conversion Assumed for NO2.
         6. Urban Roughness Length of 1.0 Meter Used.
         7. Option for Capped & Horiz Stacks Selected With:
                 0 Capped Stack(s); and   2 Horizontal Stack(s)

 **Other Options Specified:
         NOCHKD   - Suppresses checking of date sequence in meteorology files
         SCREEN   - Use screening option
 which forces calculation of centerline values

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of: CO

 **Model Calculates 1 Short Term Average(s) of: 1-HR

 **This Run Includes: 2 Source(s);   1 Source Group(s); and   1180 Receptor(s)

                with: 2 POINT(s), including
                           0 POINTCAP(s) and   2 POINTHOR(s)
                 and: 0 VOLUME source(s)
                 and: 0 AREA type source(s)
                 and: 0 LINE source(s)
                 and: 0 OPENPIT source(s)
                 and: 0 BUOYANT LINE source(s) with   0 line(s)

   **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 18081

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

```
**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                              ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          CO_5yrs_CO.DTA
**Output Print File:             CO_5yrs_CO.LST

**File for Summary of Results:   W:\Apps\aermod\4259\CO_5yrs_CO.SUM
*** AERMOD - VERSION  18081 ***   *** 780 American Legion Highway                                                ***        07/03/19
*** AERMET - VERSION  18081 ***   *** Garage CO Emissions. Traffic data not parsed out between garages. So ***        11:58:32
                                                                                                                      PAGE   2
*** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                       *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                  (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

              NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                  (METERS/SEC)

                                                1.54,   3.09,   5.14,   8.23,  10.80,
*** AERMOD - VERSION  18081 ***   *** 780 American Legion Highway                                                ***        07/03/19
*** AERMET - VERSION  18081 ***   *** Garage CO Emissions. Traffic data not parsed out between garages. So ***        11:58:32
                                                                                                                      PAGE   3
*** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                     *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   Urban.sfc                                                                  Met Version:  18081
  Profile file:   Urban.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    11111                 Upper air station no.:    22222
                 Name: UNKNOWN                                 Name: UNKNOWN
                 Year:   2010                                  Year:   2010

First 24 hours of scalar data
YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
10 01 01   1 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   10.   10.0  255.2    2.0
10 01 02   2 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   20.   10.0  255.2    2.0
10 01 03   3 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   30.   10.0  255.2    2.0
10 01 04   4 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   40.   10.0  255.2    2.0
10 01 05   5 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   50.   10.0  255.2    2.0
10 01 06   6 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   60.   10.0  255.2    2.0
10 01 07   7 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   70.   10.0  255.2    2.0
10 01 08   8 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   80.   10.0  255.2    2.0
10 01 09   9 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50   90.   10.0  255.2    2.0
10 01 10  10 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  100.   10.0  255.2    2.0
10 01 11  11 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  110.   10.0  255.2    2.0
```

```
 10 01 12  12 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  120.   10.0  255.2    2.0
 10 01 13  13 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  130.   10.0  255.2    2.0
 10 01 14  14 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  140.   10.0  255.2    2.0
 10 01 15  15 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  150.   10.0  255.2    2.0
 10 01 16  16 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  160.   10.0  255.2    2.0
 10 01 17  17 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  170.   10.0  255.2    2.0
 10 01 18  18 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  180.   10.0  255.2    2.0
 10 01 19  19 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  190.   10.0  255.2    2.0
 10 01 20  20 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  200.   10.0  255.2    2.0
 10 01 21  21 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  210.   10.0  255.2    2.0
 10 01 22  22 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  220.   10.0  255.2    2.0
 10 01 23  23 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  230.   10.0  255.2    2.0
 10 01 24  24 01   -1.2  0.043 -9.000  0.020 -999.   21.      5.5  1.00   1.62   0.21    0.50  240.   10.0  255.2    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 10 01 01 01   10.0 1   10.    0.50   255.3   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  18081 ***   *** 780 American Legion Highway                                        ***        07/03/19
 *** AERMET - VERSION  18081 ***   *** Garage CO Emissions. Traffic data not parsed out between garages. So ***        11:58:32
                                                                                                                    PAGE   4
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

                                          *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                    ** CONC OF CO       IN MICROGRAMS/M**3                        **

                                                    DATE                                                                NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS    6207.29659  ON 10083102: AT (  325615.60,  4683144.13,     0.00,     0.00,    1.52)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  18081 ***   *** 780 American Legion Highway                                        ***        07/03/19
 *** AERMET - VERSION  18081 ***   *** Garage CO Emissions. Traffic data not parsed out between garages. So ***        11:58:32
                                                                                                                    PAGE   5
 *** MODELOPTs:    NonDFAULT  CONC  FLAT  FLGPOL  NOCHKD  SCREEN  NODRYDPLT  NOWETDPLT  URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)

 A Total of        18504 Hours Were Processed

 A Total of            0 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***
```

INDOOR GARAGE ANALYSIS PROGRAM

PROJECT: 780 AMERICAN LEGION HIGHWAY RESIDENTIAL GARAGE PEAK PM HOUR
YEAR: 2026

DISTANCE IN: 180 METERS
DISTANCE OUT: 180 METERS

NUMBER OF EXIT LANES: 1 LANE(S)
PEAK VOLUME: 118 VEH/HOUR

CO RATE: 3.045 GRAMS CO/MILE

SPEED IN GARAGE: 5.0 M.P.H.

VENT CFM: 30,000 CFM

TOTAL CO EMISSIONS = 0.68 GRAMS/MIN = 0.011 GRAMS/SEC
TOTAL VENTILATION = 850 CU. M/MIN

PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES: 0.70 PPM

PROJECT: 780 AMERICAN LEGION HIGHWAY MIXED-USE GARAGE PEAK PM HOUR
YEAR: 2026

DISTANCE IN: 45 METERS
DISTANCE OUT: 45 METERS

NUMBER OF EXIT LANES: 1 LANE(S)
PEAK VOLUME: 15 VEH/HOUR

CO RATE: 3.045 GRAMS CO/MILE

SPEED IN GARAGE: 5.0 M.P.H.

VENT CFM: 6,000 CFM

TOTAL CO EMISSIONS = 0.020 GRAMS/MIN = 0.00034 GRAMS/SEC
TOTAL VENTILATION = 170 CU. M/MIN

PEAK 1-HOUR CO CONCENTRATION FROM VEHICLES: 0.10 PPM

MOVES2014B OUTPUT

Residential Garage
(motorcycles, passenger cars, passenger trucks, and light commercial trucks)

Zone ID	Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
250250	5	0.113636364	59	5	CO	3.04536
250250	5	0.113636364	118	5	CO	3.04536

Mixed-Use Garage
(motorcycles, passenger cars, passenger trucks, and light commercial trucks)

Zone ID	Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
250250	5	0.026515152	15	5	CO	3.04536
250250	5	0.026515152	15	5	CO	3.04536

American Legion Highway & Stella Road Intersection - 2019
(all vehicle types)

Zone ID	Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
250250	5	1	100	5	CO	6.1591164
250250	5	1	100	25	CO	2.88760899
250250	5	1	100	30	CO	2.74640875

American Legion Highway & Stella Road Intersection - 2026
(all vehicle types)

Zone ID	Road Type ID	Link Length (miles)	Link Volume (Vehicles/Hr)	Link Avg Speed (Miles/Hr)	Pollutant	Emission Factor (Grams/veh-mi)
250250	5	1	100	5	CO	4.31143105
250250	5	1	100	25	CO	2.06589171
250250	5	1	100	30	CO	1.98636517

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0
(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 7/08/2019 at 13:43:35

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD PM PEAK

DATE : 07/08/ 0
TIME : 13:43:35

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M)			*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(M)	(DEG)		(G/MI)	(M)	(M)		(VEH)
1. UNSIG EB STELLA	*	325496.0	********	325480.9	********	*	19.	307.	AG	21.	4.3	0.0	3.5	
2. UNSIG WB STELLA	*	325523.8	********	325528.9	********	*	7.	132.	AG	16.	4.3	0.0	6.7	
3. E STELLA FREE FLOW	*	325520.1	********	325594.2	********	*	95.	129.	AG	16.	2.1	0.0	7.0	
4. W STELLA FREE FLOW	*	325503.9	********	325465.8	********	*	47.	305.	AG	67.	2.1	0.0	7.0	
5. W STELLA FREE FLOW	*	325465.8	********	325431.9	********	*	42.	306.	AG	67.	2.1	0.0	7.0	
6. W STELLA FREE FLOW	*	325431.9	********	325418.6	********	*	15.	298.	AG	67.	2.1	0.0	7.0	
7. W STELLA FREE FLOW	*	325418.6	********	325400.4	********	*	19.	288.	AG	67.	2.1	0.0	7.0	
8. W STELLA FREE FLOW	*	325400.4	********	325374.4	********	*	26.	270.	AG	67.	2.1	0.0	7.0	
9. N SB ALH FREE FLOW	*	325506.7	********	325511.0	********	*	15.	17.	AG	1326.	2.0	0.0	10.0	
10. N SB ALH FREE FLOW	*	325511.0	********	325521.4	********	*	30.	20.	AG	1326.	2.0	0.0	10.0	
11. N SB ALH FREE FLOW	*	325521.4	********	325532.3	********	*	28.	23.	AG	1326.	2.0	0.0	10.0	
12. N SB ALH FREE FLOW	*	325532.3	********	325550.1	********	*	39.	27.	AG	1326.	2.0	0.0	10.0	
13. N SB ALH FREE FLOW	*	325550.1	********	325575.2	********	*	45.	34.	AG	1326.	2.0	0.0	10.0	
14. N SB ALH FREE FLOW	*	325575.2	********	325596.2	********	*	33.	39.	AG	1326.	2.0	0.0	10.0	
15. N SB ALH FREE FLOW	*	325596.2	********	325610.1	********	*	21.	42.	AG	1326.	2.0	0.0	10.0	
16. N NB ALH FREE FLOW	*	325621.3	********	325606.6	********	*	21.	224.	AG	996.	2.0	0.0	10.0	
17. N NB ALH FREE FLOW	*	325606.6	********	325579.1	********	*	46.	217.	AG	996.	2.0	0.0	10.0	
18. N NB ALH FREE FLOW	*	325579.1	********	325551.6	********	*	54.	211.	AG	996.	2.0	0.0	10.0	
19. N NB ALH FREE FLOW	*	325551.6	********	325536.1	********	*	35.	206.	AG	996.	2.0	0.0	10.0	
20. N NB ALH FREE FLOW	*	325536.1	********	325517.5	********	*	49.	202.	AG	996.	2.0	0.0	10.0	
21. N NB ALH FREE FLOW	*	325517.5	********	325514.8	********	*	10.	195.	AG	996.	2.0	0.0	10.0	
22. S NB ALH FREE FLOW	*	325515.2	********	325466.6	********	*	169.	197.	AG	971.	2.0	0.0	10.0	
23. S SB ALH FREE FLOW	*	325456.2	********	325471.9	********	*	56.	16.	AG	1293.	2.0	0.0	10.0	
24. S SB ALH FREE FLOW	*	325471.9	********	325505.2	********	*	116.	17.	AG	1293.	2.0	0.0	10.0	

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE	RED	CLEARANCE	APPROACH	SATURATION	IDLE	SIGNAL	ARRIVAL
	*	LENGTH	TIME	LOST TIME	VOL	FLOW RATE	EM FAC	TYPE	RATE

	*	(SEC)	(SEC)	(SEC)	(VPH)	(VPH)	(gm/hr)

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	325503.2	********	1.8	*
2.	*	325511.8	********	1.8	*
3.	*	325513.8	********	1.8	*
4.	*	325523.6	********	1.8	*
5.	*	325524.9	********	1.8	*
6.	*	325536.2	********	1.8	*
7.	*	325543.2	********	1.8	*
8.	*	325557.3	********	1.8	*
9.	*	325568.8	********	1.8	*
10.	*	325584.5	********	1.8	*
11.	*	325455.2	********	1.8	*
12.	*	325462.1	********	1.8	*
13.	*	325464.0	********	1.8	*
14.	*	325471.2	********	1.8	*
15.	*	325478.3	********	1.8	*
16.	*	325485.5	********	1.8	*
17.	*	325492.7	********	1.8	*
18.	*	325515.9	********	1.8	*
19.	*	325508.8	********	1.8	*
20.	*	325501.5	********	1.8	*
21.	*	325494.3	********	1.8	*
22.	*	325487.2	********	1.8	*
23.	*	325479.9	********	1.8	*
24.	*	325612.9	********	1.8	*
25.	*	325597.9	********	1.8	*
26.	*	325586.0	********	1.8	*
27.	*	325573.2	********	1.8	*
28.	*	325560.4	********	1.8	*
29.	*	325558.9	********	1.8	*
30.	*	325547.8	********	1.8	*
31.	*	325543.7	********	1.8	*
32.	*	325534.2	********	1.8	*
33.	*	325496.6	********	1.8	*
34.	*	325519.6	********	1.8	*
35.	*	325523.9	********	1.8	*
36.	*	325500.0	********	1.8	*
37.	*	325555.4	********	1.8	*
38.	*	325524.3	********	1.8	*
39.	*	325543.9	********	1.8	*
40.	*	325563.4	********	1.8	*
41.	*	325582.9	********	1.8	*
42.	*	325570.4	********	1.8	*
43.	*	325550.9	********	1.8	*
44.	*	325531.4	********	1.8	*
45.	*	325479.6	********	1.8	*

DATE : 07/08/ 0
TIME : 13:43:35

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
46.	*	325461.9	********	1.8
47.	*	325441.5	********	1.8
48.	*	325374.4	********	1.8
49.	*	325399.4	********	1.8
50.	*	325435.8	********	1.8
51.	*	325456.2	********	1.8
52.	*	325469.7	********	1.8
53.	*	325490.1	********	1.8
54.	*	325426.8	********	1.8
55.	*	325406.3	********	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) *	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
10.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
20.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
30.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
40.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
50.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
60.	*	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	0.1	0.1	0.0	0.0	0.0
70.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
80.	*	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
90.	*	0.1	0.1	0.1	0.0	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	0.0	0.0	0.0
100.	*	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
110.	*	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
120.	*	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
130.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
140.	*	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	0.1	0.1	0.0	0.0	0.0
150.	*	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	0.1	0.1	0.0	0.0	0.0
160.	*	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	0.1	0.1	0.0	0.0	0.0
170.	*	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	0.1	0.1	0.0	0.0	0.0
180.	*	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	0.1	0.1	0.0	0.0	0.0

190. * 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.1 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
------*----------

MAX * 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 0.1 0.1 0.1 0.1 0.1
DEGR. * 30 40 40 40 40 40 40 60 50 60 30 20 20 20 20 30 40 200 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
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0. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
10. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
20. * 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

210. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

220. * 0.1 0.1 0.0 0.0 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.2 0.2 0.0 0.1 0.2 0.0 0.0

230. * 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.2 0.1 0.0 0.1 0.2 0.0 0.0

240. * 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.2 0.0 0.0 0.1 0.0 0.0 0.0

250. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

260. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

270. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

280. * 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.0

290. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

300. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

310. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

320. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

340. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.0 0.0

350. * 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0

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MAX * 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.1 0.2 0.0 0.0

DEGR. * 350 0 0 0 0 0 0 0 0 0 0 0 50 220 220 30 0 220 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

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0. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

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MAX * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

DEGR. * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC34.

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD PM PEAK

DATE : 07/08/ 0

TIME : 13:43:35

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

* REC1 REC2 REC3 REC4 REC5 REC6 REC7 REC8 REC9 REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20

LINK # * 30 40 40 40 40 40 40 60 50 60 30 20 20 20 20 30 40 200 0 0

-------*----------

1 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD PM PEAK

DATE : 07/08/ 0

TIME : 13:43:35

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

LINK # *	350	0	0	0	0	0	0	0	0	0	0	0	50	220	220	30	0	220	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
11 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
14 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 *	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 *	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 *	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
23 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD PM PEAK

DATE : 07/08/ 0

TIME : 13:43:35

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

LINK # *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

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Run Began on 7/08/2019 at 13:46:17

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD AM PEAK

DATE : 07/08/ 0

TIME : 13:46:17

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM

U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M)			*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(M)	(DEG)		(G/MI)	(M)	(M)		(VEH)
1. UNSIG EB STELLA	*	325496.0	********	325490.2	********	*	7.	308.	AG	14.	4.3	0.0	3.5	
2. UNSIG WB STELLA	*	325523.8	********	325531.7	********	*	11.	132.	AG	18.	4.3	0.0	6.7	
3. E STELLA FREE FLOW	*	325520.1	********	325594.2	********	*	95.	129.	AG	18.	2.1	0.0	7.0	
4. W STELLA FREE FLOW	*	325503.9	********	325465.8	********	*	47.	305.	AG	51.	2.1	0.0	7.0	
5. W STELLA FREE FLOW	*	325465.8	********	325431.9	********	*	42.	306.	AG	51.	2.1	0.0	7.0	
6. W STELLA FREE FLOW	*	325431.9	********	325418.6	********	*	15.	298.	AG	51.	2.1	0.0	7.0	
7. W STELLA FREE FLOW	*	325418.6	********	325400.4	********	*	19.	288.	AG	51.	2.1	0.0	7.0	
8. W STELLA FREE FLOW	*	325400.4	********	325374.4	********	*	26.	270.	AG	51.	2.1	0.0	7.0	
9. N SB ALH FREE FLOW	*	325506.7	********	325511.0	********	*	15.	17.	AG	803.	2.0	0.0	10.0	
10. N SB ALH FREE FLOW	*	325511.0	********	325521.4	********	*	30.	20.	AG	803.	2.0	0.0	10.0	
11. N SB ALH FREE FLOW	*	325521.4	********	325532.3	********	*	28.	23.	AG	803.	2.0	0.0	10.0	
12. N SB ALH FREE FLOW	*	325532.3	********	325550.1	********	*	39.	27.	AG	803.	2.0	0.0	10.0	
13. N SB ALH FREE FLOW	*	325550.1	********	325575.2	********	*	45.	34.	AG	803.	2.0	0.0	10.0	
14. N SB ALH FREE FLOW	*	325575.2	********	325596.2	********	*	33.	39.	AG	803.	2.0	0.0	10.0	
15. N SB ALH FREE FLOW	*	325596.2	********	325610.1	********	*	21.	42.	AG	803.	2.0	0.0	10.0	
16. N NB ALH FREE FLOW	*	325621.3	********	325606.6	********	*	21.	224.	AG	1324.	2.0	0.0	10.0	
17. N NB ALH FREE FLOW	*	325606.6	********	325579.1	********	*	46.	217.	AG	1324.	2.0	0.0	10.0	
18. N NB ALH FREE FLOW	*	325579.1	********	325551.6	********	*	54.	211.	AG	1324.	2.0	0.0	10.0	
19. N NB ALH FREE FLOW	*	325551.6	********	325536.1	********	*	35.	206.	AG	1324.	2.0	0.0	10.0	
20. N NB ALH FREE FLOW	*	325536.1	********	325517.5	********	*	49.	202.	AG	1324.	2.0	0.0	10.0	
21. N NB ALH FREE FLOW	*	325517.5	********	325514.8	********	*	10.	195.	AG	1324.	2.0	0.0	10.0	
22. S NB ALH FREE FLOW	*	325515.2	********	325466.6	********	*	169.	197.	AG	1313.	2.0	0.0	10.0	
23. S SB ALH FREE FLOW	*	325456.2	********	325471.9	********	*	56.	16.	AG	788.	2.0	0.0	10.0	
24. S SB ALH FREE FLOW	*	325471.9	********	325505.2	********	*	116.	17.	AG	788.	2.0	0.0	10.0	

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JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD AM PEAK

DATE : 07/08/ 0

TIME : 13:46:17

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE	RED	CLEARANCE	APPROACH	SATURATION	IDLE	SIGNAL	ARRIVAL
	*	LENGTH	TIME	LOST TIME	VOL	FLOW RATE	EM FAC	TYPE	RATE

	*	(SEC)	(SEC)	(SEC)	(VPH)	(VPH)	(gm/hr)

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	325503.2	********	1.8	*
2.	*	325511.8	********	1.8	*
3.	*	325513.8	********	1.8	*
4.	*	325523.6	********	1.8	*
5.	*	325524.9	********	1.8	*
6.	*	325536.2	********	1.8	*
7.	*	325543.2	********	1.8	*
8.	*	325557.3	********	1.8	*
9.	*	325568.8	********	1.8	*
10.	*	325584.5	********	1.8	*
11.	*	325455.2	********	1.8	*
12.	*	325462.1	********	1.8	*
13.	*	325464.0	********	1.8	*
14.	*	325471.2	********	1.8	*
15.	*	325478.3	********	1.8	*
16.	*	325485.5	********	1.8	*
17.	*	325492.7	********	1.8	*
18.	*	325515.9	********	1.8	*
19.	*	325508.8	********	1.8	*
20.	*	325501.5	********	1.8	*
21.	*	325494.3	********	1.8	*
22.	*	325487.2	********	1.8	*
23.	*	325479.9	********	1.8	*
24.	*	325612.9	********	1.8	*
25.	*	325597.9	********	1.8	*
26.	*	325586.0	********	1.8	*
27.	*	325573.2	********	1.8	*
28.	*	325560.4	********	1.8	*
29.	*	325558.9	********	1.8	*
30.	*	325547.8	********	1.8	*
31.	*	325543.7	********	1.8	*
32.	*	325534.2	********	1.8	*
33.	*	325496.6	********	1.8	*
34.	*	325519.6	********	1.8	*
35.	*	325523.9	********	1.8	*
36.	*	325500.0	********	1.8	*
37.	*	325555.4	********	1.8	*
38.	*	325524.3	********	1.8	*
39.	*	325543.9	********	1.8	*
40.	*	325563.4	********	1.8	*
41.	*	325582.9	********	1.8	*
42.	*	325570.4	********	1.8	*
43.	*	325550.9	********	1.8	*
44.	*	325531.4	********	1.8	*
45.	*	325479.6	********	1.8	*

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
46.	325461.9	********	1.8
47.	325441.5	********	1.8
48.	325374.4	********	1.8
49.	325399.4	********	1.8
50.	325435.8	********	1.8
51.	325456.2	********	1.8
52.	325469.7	********	1.8
53.	325490.1	********	1.8
54.	325426.8	********	1.8
55.	325406.3	********	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
20.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	
40.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
50.	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
60.	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
70.	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
160.	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.0	0.0	0.0
170.	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.0	0.0	0.0
180.	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.0
190.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
200.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
210.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
220.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
230.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1

240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

------*----------

MAX * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.1 0.2 0.2 0.2 0.1 0.1 0.1

DEGR. * 50 160 50 50 50 160 60 170 60 170 40 40 40 30 160 160 160 0 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

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0. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0

10. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

20. * 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

30. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0

160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.1 0.0 0.0 0.0

170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.1 0.1 0.0 0.0 0.0

180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.2 0.1 0.0 0.0 0.0

190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0

200. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

210. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

220. * 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

230. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

240. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0

250. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

260. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0
270. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
280. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
290. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
300. * 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
310. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
320. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0
330. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0
340. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.0 0.1 0.0 0.0
350. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
------*----------
MAX * 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 0.2 0.1 0.1 0.2 0.1 0.1 0.0 0.0
DEGR. * 0 0 0 0 0 0 0 0 0 0 0 0 160 10 0 180 0 0 0 0

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD AM PEAK

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55
------*----------
0. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
10. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
20. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
220. * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
230. * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

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MAX * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

DEGR. * 0 0 0 220 0 0 0 0 0 0 0 0 0 0 0 0

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC11.

JOB: J4259 780 ALH #1 INTERS RUN: 2026 BUILD AM PEAK

DATE : 07/08/ 0

TIME : 13:46:17

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

* REC1 REC2 REC3 REC4 REC5 REC6 REC7 REC8 REC9 REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20

LINK # * 50 160 50 50 50 160 60 170 60 170 40 40 40 30 160 160 160 0 0 0

-------*----------

1 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0

DATE : 07/08/ 0
TIME : 13:46:17

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

LINK # *	0	0	0	0	0	0	0	0	0	0	0	0	160	10	0	180	0	0	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
14 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 *	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 *	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
21 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 *	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
23 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0

DATE : 07/08/ 0
TIME : 13:46:17

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

LINK # *	0	0	0	220	0	0	0	0	0	0	0	0	0	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0

(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 7/08/2019 at 13:49:16

JOB: J4259 780 ALH #1 INTERS RUN: 2026 NO-BUILD PM PEAK

DATE : 07/08/ 0

TIME : 13:49:16

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM

U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M)			*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(M)	(DEG)		(G/MI)	(M)	(M)		(VEH)
1. UNSIG EB STELLA	*	325496.0	********	325485.0	********	*	14.	308.	AG	26.	4.3	0.0	3.5	
2. UNSIG WB STELLA	*	325523.8	********	325528.9	********	*	7.	132.	AG	15.	4.3	0.0	6.7	
3. E STELLA FREE FLOW	*	325520.1	********	325594.2	********	*	95.	129.	AG	15.	2.1	0.0	7.0	
4. W STELLA FREE FLOW	*	325503.9	********	325465.8	********	*	47.	305.	AG	72.	2.1	0.0	7.0	
5. W STELLA FREE FLOW	*	325465.8	********	325431.9	********	*	42.	306.	AG	72.	2.1	0.0	7.0	
6. W STELLA FREE FLOW	*	325431.9	********	325418.6	********	*	15.	298.	AG	72.	2.1	0.0	7.0	
7. W STELLA FREE FLOW	*	325418.6	********	325400.4	********	*	19.	288.	AG	72.	2.1	0.0	7.0	
8. W STELLA FREE FLOW	*	325400.4	********	325374.4	********	*	26.	270.	AG	72.	2.1	0.0	7.0	
9. N SB ALH FREE FLOW	*	325506.7	********	325511.0	********	*	15.	17.	AG	1322.	2.0	0.0	10.0	
10. N SB ALH FREE FLOW	*	325511.0	********	325521.4	********	*	30.	20.	AG	1322.	2.0	0.0	10.0	
11. N SB ALH FREE FLOW	*	325521.4	********	325532.3	********	*	28.	23.	AG	1322.	2.0	0.0	10.0	
12. N SB ALH FREE FLOW	*	325532.3	********	325550.1	********	*	39.	27.	AG	1322.	2.0	0.0	10.0	
13. N SB ALH FREE FLOW	*	325550.1	********	325575.2	********	*	45.	34.	AG	1322.	2.0	0.0	10.0	
14. N SB ALH FREE FLOW	*	325575.2	********	325596.2	********	*	33.	39.	AG	1322.	2.0	0.0	10.0	
15. N SB ALH FREE FLOW	*	325596.2	********	325610.1	********	*	21.	42.	AG	1322.	2.0	0.0	10.0	
16. N NB ALH FREE FLOW	*	325621.3	********	325606.6	********	*	21.	224.	AG	970.	2.0	0.0	10.0	
17. N NB ALH FREE FLOW	*	325606.6	********	325579.1	********	*	46.	217.	AG	970.	2.0	0.0	10.0	
18. N NB ALH FREE FLOW	*	325579.1	********	325551.6	********	*	54.	211.	AG	970.	2.0	0.0	10.0	
19. N NB ALH FREE FLOW	*	325551.6	********	325536.1	********	*	35.	206.	AG	970.	2.0	0.0	10.0	
20. N NB ALH FREE FLOW	*	325536.1	********	325517.5	********	*	49.	202.	AG	970.	2.0	0.0	10.0	
21. N NB ALH FREE FLOW	*	325517.5	********	325514.8	********	*	10.	195.	AG	970.	2.0	0.0	10.0	
22. S NB ALH FREE FLOW	*	325515.2	********	325466.6	********	*	169.	197.	AG	945.	2.0	0.0	10.0	
23. S SB ALH FREE FLOW	*	325456.2	********	325471.9	********	*	56.	16.	AG	1292.	2.0	0.0	10.0	
24. S SB ALH FREE FLOW	*	325471.9	********	325505.2	********	*	116.	17.	AG	1292.	2.0	0.0	10.0	

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE	RED	CLEARANCE	APPROACH	SATURATION	IDLE	SIGNAL	ARRIVAL
	*	LENGTH	TIME	LOST TIME	VOL	FLOW RATE	EM FAC	TYPE	RATE

	*	(SEC)	(SEC)	(SEC)	(VPH)	(VPH)	(gm/hr)

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	325503.2	********	1.8	*
2.	*	325511.8	********	1.8	*
3.	*	325513.8	********	1.8	*
4.	*	325523.6	********	1.8	*
5.	*	325524.9	********	1.8	*
6.	*	325536.2	********	1.8	*
7.	*	325543.2	********	1.8	*
8.	*	325557.3	********	1.8	*
9.	*	325568.8	********	1.8	*
10.	*	325584.5	********	1.8	*
11.	*	325455.2	********	1.8	*
12.	*	325462.1	********	1.8	*
13.	*	325464.0	********	1.8	*
14.	*	325471.2	********	1.8	*
15.	*	325478.3	********	1.8	*
16.	*	325485.5	********	1.8	*
17.	*	325492.7	********	1.8	*
18.	*	325515.9	********	1.8	*
19.	*	325508.8	********	1.8	*
20.	*	325501.5	********	1.8	*
21.	*	325494.3	********	1.8	*
22.	*	325487.2	********	1.8	*
23.	*	325479.9	********	1.8	*
24.	*	325612.9	********	1.8	*
25.	*	325597.9	********	1.8	*
26.	*	325586.0	********	1.8	*
27.	*	325573.2	********	1.8	*
28.	*	325560.4	********	1.8	*
29.	*	325558.9	********	1.8	*
30.	*	325547.8	********	1.8	*
31.	*	325543.7	********	1.8	*
32.	*	325534.2	********	1.8	*
33.	*	325496.6	********	1.8	*
34.	*	325519.6	********	1.8	*
35.	*	325523.9	********	1.8	*
36.	*	325500.0	********	1.8	*
37.	*	325555.4	********	1.8	*
38.	*	325524.3	********	1.8	*
39.	*	325543.9	********	1.8	*
40.	*	325563.4	********	1.8	*
41.	*	325582.9	********	1.8	*
42.	*	325570.4	********	1.8	*
43.	*	325550.9	********	1.8	*
44.	*	325531.4	********	1.8	*
45.	*	325479.6	********	1.8	*

DATE : 07/08/ 0
TIME : 13:49:16

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
46.	*	325461.9	********	1.8
47.	*	325441.5	********	1.8
48.	*	325374.4	********	1.8
49.	*	325399.4	********	1.8
50.	*	325435.8	********	1.8
51.	*	325456.2	********	1.8
52.	*	325469.7	********	1.8
53.	*	325490.1	********	1.8
54.	*	325426.8	********	1.8
55.	*	325406.3	********	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) *	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
10.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
20.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	
30.	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
40.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
50.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
60.	*	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	0.1	0.1	0.0	0.0	0.0
70.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
80.	*	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
90.	*	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
100.	*	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
110.	*	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
120.	*	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
130.	*	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
140.	*	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	0.1	0.1	0.0	0.0	0.0
150.	*	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	0.1	0.1	0.0	0.0	0.0
160.	*	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	0.1	0.1	0.0	0.0	0.0
170.	*	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	0.1	0.1	0.0	0.0	0.0
180.	*	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	0.1	0.1	0.0	0.0	0.0

190. * 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.1 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
------*----------

MAX * 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 0.1 0.1 0.1 0.1 0.1
DEGR. * 30 40 40 40 40 40 40 60 50 60 30 20 20 20 20 30 40 200 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
------*----------

0. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
10. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.0 0.0
20. * 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

210. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

220. * 0.1 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.2 0.2 0.0 0.1 0.2 0.0 0.0

230. * 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.2 0.1 0.0 0.1 0.2 0.0 0.0

240. * 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.2 0.0 0.0 0.1 0.0 0.0 0.0

250. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

260. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

270. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

280. * 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.0

290. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.0

300. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

310. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

320. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

340. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0

350. * 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0

------*----------

MAX * 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.1 0.2 0.0 0.0

DEGR. * 350 0 0 0 0 0 0 0 0 0 0 0 50 220 220 30 0 220 0 0

JOB: J4259 780 ALH #1 INTERS RUN: 2026 NO-BUILD PM PEAK

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

------*----------

0. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

------*----------

MAX * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

DEGR. * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC34.

JOB: J4259 780 ALH #1 INTERS RUN: 2026 NO-BUILD PM PEAK

DATE : 07/08/ 0

TIME : 13:49:16

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

* REC1 REC2 REC3 REC4 REC5 REC6 REC7 REC8 REC9 REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20

LINK # * 30 40 40 40 40 40 40 60 50 60 30 20 20 20 30 40 200 0 0

-------*----------

1 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0

DATE : 07/08/ 0
TIME : 13:49:16

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

LINK # *	350	0	0	0	0	0	0	0	0	0	0	0	50	220	220	30	0	220	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
11 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
14 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 *	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 *	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 *	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
23 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 *	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0

DATE : 07/08/ 0
TIME : 13:49:16

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

LINK # *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0
(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 7/08/2019 at 13:53:09

JOB: J4259 780 ALH #1 INTERS RUN: 2026 NO-BUILD AM PEAK

DATE : 07/08/ 0
TIME : 13:53:09

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M)			*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(M)	(DEG)		(G/MI)	(M)	(M)		(VEH)
1. UNSIG EB STELLA	*	325496.0	********	325491.6	********	*	6.	309.	AG	12.	4.3	0.0	3.5	
2. UNSIG WB STELLA	*	325523.8	********	325530.1	********	*	8.	131.	AG	16.	4.3	0.0	6.7	
3. E STELLA FREE FLOW	*	325520.1	********	325594.2	********	*	95.	129.	AG	16.	2.1	0.0	7.0	
4. W STELLA FREE FLOW	*	325503.9	********	325465.8	********	*	47.	305.	AG	49.	2.1	0.0	7.0	
5. W STELLA FREE FLOW	*	325465.8	********	325431.9	********	*	42.	306.	AG	49.	2.1	0.0	7.0	
6. W STELLA FREE FLOW	*	325431.9	********	325418.6	********	*	15.	298.	AG	49.	2.1	0.0	7.0	
7. W STELLA FREE FLOW	*	325418.6	********	325400.4	********	*	19.	288.	AG	49.	2.1	0.0	7.0	
8. W STELLA FREE FLOW	*	325400.4	********	325374.4	********	*	26.	270.	AG	49.	2.1	0.0	7.0	
9. N SB ALH FREE FLOW	*	325506.7	********	325511.0	********	*	15.	17.	AG	801.	2.0	0.0	10.0	
10. N SB ALH FREE FLOW	*	325511.0	********	325521.4	********	*	30.	20.	AG	801.	2.0	0.0	10.0	
11. N SB ALH FREE FLOW	*	325521.4	********	325532.3	********	*	28.	23.	AG	801.	2.0	0.0	10.0	
12. N SB ALH FREE FLOW	*	325532.3	********	325550.1	********	*	39.	27.	AG	801.	2.0	0.0	10.0	
13. N SB ALH FREE FLOW	*	325550.1	********	325575.2	********	*	45.	34.	AG	801.	2.0	0.0	10.0	
14. N SB ALH FREE FLOW	*	325575.2	********	325596.2	********	*	33.	39.	AG	801.	2.0	0.0	10.0	
15. N SB ALH FREE FLOW	*	325596.2	********	325610.1	********	*	21.	42.	AG	801.	2.0	0.0	10.0	
16. N NB ALH FREE FLOW	*	325621.3	********	325606.6	********	*	21.	224.	AG	1306.	2.0	0.0	10.0	
17. N NB ALH FREE FLOW	*	325606.6	********	325579.1	********	*	46.	217.	AG	1306.	2.0	0.0	10.0	
18. N NB ALH FREE FLOW	*	325579.1	********	325551.6	********	*	54.	211.	AG	1306.	2.0	0.0	10.0	
19. N NB ALH FREE FLOW	*	325551.6	********	325536.1	********	*	35.	206.	AG	1306.	2.0	0.0	10.0	
20. N NB ALH FREE FLOW	*	325536.1	********	325517.5	********	*	49.	202.	AG	1306.	2.0	0.0	10.0	
21. N NB ALH FREE FLOW	*	325517.5	********	325514.8	********	*	10.	195.	AG	1306.	2.0	0.0	10.0	
22. S NB ALH FREE FLOW	*	325515.2	********	325466.6	********	*	169.	197.	AG	1299.	2.0	0.0	10.0	
23. S SB ALH FREE FLOW	*	325456.2	********	325471.9	********	*	56.	16.	AG	786.	2.0	0.0	10.0	
24. S SB ALH FREE FLOW	*	325471.9	********	325505.2	********	*	116.	17.	AG	786.	2.0	0.0	10.0	

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JOB: J4259 780 ALH #1 INTERS RUN: 2026 NO-BUILD AM PEAK

DATE : 07/08/ 0
TIME : 13:53:09

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE	RED	CLEARANCE	APPROACH	SATURATION	IDLE	SIGNAL	ARRIVAL
	*	LENGTH	TIME	LOST TIME	VOL	FLOW RATE	EM FAC	TYPE	RATE

	*	(SEC)	(SEC)	(SEC)	(VPH)	(VPH)	(gm/hr)

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	325503.2	********	1.8	*
2.	*	325511.8	********	1.8	*
3.	*	325513.8	********	1.8	*
4.	*	325523.6	********	1.8	*
5.	*	325524.9	********	1.8	*
6.	*	325536.2	********	1.8	*
7.	*	325543.2	********	1.8	*
8.	*	325557.3	********	1.8	*
9.	*	325568.8	********	1.8	*
10.	*	325584.5	********	1.8	*
11.	*	325455.2	********	1.8	*
12.	*	325462.1	********	1.8	*
13.	*	325464.0	********	1.8	*
14.	*	325471.2	********	1.8	*
15.	*	325478.3	********	1.8	*
16.	*	325485.5	********	1.8	*
17.	*	325492.7	********	1.8	*
18.	*	325515.9	********	1.8	*
19.	*	325508.8	********	1.8	*
20.	*	325501.5	********	1.8	*
21.	*	325494.3	********	1.8	*
22.	*	325487.2	********	1.8	*
23.	*	325479.9	********	1.8	*
24.	*	325612.9	********	1.8	*
25.	*	325597.9	********	1.8	*
26.	*	325586.0	********	1.8	*
27.	*	325573.2	********	1.8	*
28.	*	325560.4	********	1.8	*
29.	*	325558.9	********	1.8	*
30.	*	325547.8	********	1.8	*
31.	*	325543.7	********	1.8	*
32.	*	325534.2	********	1.8	*
33.	*	325496.6	********	1.8	*
34.	*	325519.6	********	1.8	*
35.	*	325523.9	********	1.8	*
36.	*	325500.0	********	1.8	*
37.	*	325555.4	********	1.8	*
38.	*	325524.3	********	1.8	*
39.	*	325543.9	********	1.8	*
40.	*	325563.4	********	1.8	*
41.	*	325582.9	********	1.8	*
42.	*	325570.4	********	1.8	*
43.	*	325550.9	********	1.8	*
44.	*	325531.4	********	1.8	*
45.	*	325479.6	********	1.8	*

DATE : 07/08/ 0
TIME : 13:53:09

RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
46.	325461.9	********	1.8
47.	325441.5	********	1.8
48.	325374.4	********	1.8
49.	325399.4	********	1.8
50.	325435.8	********	1.8
51.	325456.2	********	1.8
52.	325469.7	********	1.8
53.	325490.1	********	1.8
54.	325426.8	********	1.8
55.	325406.3	********	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	
10.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
20.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
30.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	
40.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
50.	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
60.	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
70.	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
80.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
90.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
110.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
120.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
130.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
140.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
150.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	
160.	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.2	0.0	0.0	
170.	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.0	0.0	
180.	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.0	

190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
------*----------

MAX * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.1 0.2 0.2 0.2 0.1 0.1 0.1
DEGR. * 50 160 50 50 50 160 60 170 60 170 40 40 50 30 170 160 160 0 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
------*----------

0. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
10. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
20. * 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.1 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.1 0.0 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.2 0.1 0.0 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0
200. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

210. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

220. * 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

230. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0

240. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0

250. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

260. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0

270. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

280. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

290. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

300. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

310. * 0.1 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0

320. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0

340. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.0 0.1 0.0 0.0

350. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0

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MAX * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.0 0.0

DEGR. * 0 0 0 0 0 0 0 0 0 0 0 0 160 10 0 180 0 0 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION

ANGLE * (PPM)

(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

------*----------

0. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

220. * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

------*----------

MAX * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

DEGR. * 0 0 0 220 0 0 0 0 0 0 0 0 0 0 0 0

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC11.

JOB: J4259 780 ALH #1 INTERS RUN: 2026 NO-BUILD AM PEAK

DATE : 07/08/ 0

TIME : 13:53:09

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

* REC1 REC2 REC3 REC4 REC5 REC6 REC7 REC8 REC9 REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20

LINK # * 50 160 50 50 50 160 60 170 60 170 40 40 50 30 170 160 160 0 0 0

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1 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0

DATE : 07/08/ 0
TIME : 13:53:09

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

LINK # *	0	0	0	0	0	0	0	0	0	0	0	0	160	10	0	180	0	0	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
14 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 *	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 *	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
21 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 *	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
23 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0

DATE : 07/08/ 0
TIME : 13:53:09

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

LINK # *	0	0	0	220	0	0	0	0	0	0	0	0	0	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0
(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 7/08/2019 at 13:54:45

JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING PM PEAK

DATE : 07/08/ 0
TIME : 13:54:45

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M)			*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(M)	(DEG)		(G/MI)	(M)	(M)		(VEH)
1. UNSIG EB STELLA	*	325496.0	********	325486.5	********	*	12.	308.	AG	18.	6.2	0.0	3.5	
2. UNSIG WB STELLA	*	325523.8	********	325528.9	********	*	7.	132.	AG	14.	6.2	0.0	6.7	
3. E STELLA FREE FLOW	*	325520.1	********	325594.2	********	*	95.	129.	AG	14.	2.9	0.0	7.0	
4. W STELLA FREE FLOW	*	325503.9	********	325465.8	********	*	47.	305.	AG	62.	2.9	0.0	7.0	
5. W STELLA FREE FLOW	*	325465.8	********	325431.9	********	*	42.	306.	AG	62.	2.9	0.0	7.0	
6. W STELLA FREE FLOW	*	325431.9	********	325418.6	********	*	15.	298.	AG	62.	2.9	0.0	7.0	
7. W STELLA FREE FLOW	*	325418.6	********	325400.4	********	*	19.	288.	AG	62.	2.9	0.0	7.0	
8. W STELLA FREE FLOW	*	325400.4	********	325374.4	********	*	26.	270.	AG	62.	2.9	0.0	7.0	
9. N SB ALH FREE FLOW	*	325506.7	********	325511.0	********	*	15.	17.	AG	1277.	2.7	0.0	10.0	
10. N SB ALH FREE FLOW	*	325511.0	********	325521.4	********	*	30.	20.	AG	1277.	2.7	0.0	10.0	
11. N SB ALH FREE FLOW	*	325521.4	********	325532.3	********	*	28.	23.	AG	1277.	2.7	0.0	10.0	
12. N SB ALH FREE FLOW	*	325532.3	********	325550.1	********	*	39.	27.	AG	1277.	2.7	0.0	10.0	
13. N SB ALH FREE FLOW	*	325550.1	********	325575.2	********	*	45.	34.	AG	1277.	2.7	0.0	10.0	
14. N SB ALH FREE FLOW	*	325575.2	********	325596.2	********	*	33.	39.	AG	1277.	2.7	0.0	10.0	
15. N SB ALH FREE FLOW	*	325596.2	********	325610.1	********	*	21.	42.	AG	1277.	2.7	0.0	10.0	
16. N NB ALH FREE FLOW	*	325621.3	********	325606.6	********	*	21.	224.	AG	920.	2.7	0.0	10.0	
17. N NB ALH FREE FLOW	*	325606.6	********	325579.1	********	*	46.	217.	AG	920.	2.7	0.0	10.0	
18. N NB ALH FREE FLOW	*	325579.1	********	325551.6	********	*	54.	211.	AG	920.	2.7	0.0	10.0	
19. N NB ALH FREE FLOW	*	325551.6	********	325536.1	********	*	35.	206.	AG	920.	2.7	0.0	10.0	
20. N NB ALH FREE FLOW	*	325536.1	********	325517.5	********	*	49.	202.	AG	920.	2.7	0.0	10.0	
21. N NB ALH FREE FLOW	*	325517.5	********	325514.8	********	*	10.	195.	AG	920.	2.7	0.0	10.0	
22. S NB ALH FREE FLOW	*	325515.2	********	325466.6	********	*	169.	197.	AG	913.	2.7	0.0	10.0	
23. S SB ALH FREE FLOW	*	325456.2	********	325471.9	********	*	56.	16.	AG	1248.	2.7	0.0	10.0	
24. S SB ALH FREE FLOW	*	325471.9	********	325505.2	********	*	116.	17.	AG	1248.	2.7	0.0	10.0	

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE	RED	CLEARANCE	APPROACH	SATURATION	IDLE	SIGNAL	ARRIVAL
	*	LENGTH	TIME	LOST TIME	VOL	FLOW RATE	EM FAC	TYPE	RATE

	*	(SEC)	(SEC)	(SEC)	(VPH)	(VPH)	(gm/hr)

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	325503.2	********	1.8	*
2.	*	325511.8	********	1.8	*
3.	*	325513.8	********	1.8	*
4.	*	325523.6	********	1.8	*
5.	*	325524.9	********	1.8	*
6.	*	325536.2	********	1.8	*
7.	*	325543.2	********	1.8	*
8.	*	325557.3	********	1.8	*
9.	*	325568.8	********	1.8	*
10.	*	325584.5	********	1.8	*
11.	*	325455.2	********	1.8	*
12.	*	325462.1	********	1.8	*
13.	*	325464.0	********	1.8	*
14.	*	325471.2	********	1.8	*
15.	*	325478.3	********	1.8	*
16.	*	325485.5	********	1.8	*
17.	*	325492.7	********	1.8	*
18.	*	325515.9	********	1.8	*
19.	*	325508.8	********	1.8	*
20.	*	325501.5	********	1.8	*
21.	*	325494.3	********	1.8	*
22.	*	325487.2	********	1.8	*
23.	*	325479.9	********	1.8	*
24.	*	325612.9	********	1.8	*
25.	*	325597.9	********	1.8	*
26.	*	325586.0	********	1.8	*
27.	*	325573.2	********	1.8	*
28.	*	325560.4	********	1.8	*
29.	*	325558.9	********	1.8	*
30.	*	325547.8	********	1.8	*
31.	*	325543.7	********	1.8	*
32.	*	325534.2	********	1.8	*
33.	*	325496.6	********	1.8	*
34.	*	325519.6	********	1.8	*
35.	*	325523.9	********	1.8	*
36.	*	325500.0	********	1.8	*
37.	*	325555.4	********	1.8	*
38.	*	325524.3	********	1.8	*
39.	*	325543.9	********	1.8	*
40.	*	325563.4	********	1.8	*
41.	*	325582.9	********	1.8	*
42.	*	325570.4	********	1.8	*
43.	*	325550.9	********	1.8	*
44.	*	325531.4	********	1.8	*
45.	*	325479.6	********	1.8	*

DATE : 07/08/ 0
TIME : 13:54:45

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
46.	*	325461.9	********	1.8
47.	*	325441.5	********	1.8
48.	*	325374.4	********	1.8
49.	*	325399.4	********	1.8
50.	*	325435.8	********	1.8
51.	*	325456.2	********	1.8
52.	*	325469.7	********	1.8
53.	*	325490.1	********	1.8
54.	*	325426.8	********	1.8
55.	*	325406.3	********	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
10.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
20.	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
30.	* 0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
40.	* 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
50.	* 0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
60.	* 0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
70.	* 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	0.1	0.1	0.0	0.0	0.0
80.	* 0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
90.	* 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	0.1	0.1	0.0	0.0	0.0
100.	* 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	0.1	0.1	0.0	0.0	0.0
110.	* 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	0.1	0.1	0.0	0.0	0.0
120.	* 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	0.1	0.1	0.0	0.0	0.0
130.	* 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	0.1	0.1	0.0	0.0	0.0
140.	* 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	0.1	0.1	0.0	0.0	0.0
150.	* 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	0.1	0.1	0.0	0.0	0.0
160.	* 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	0.1	0.1	0.0	0.0	0.0
170.	* 0.2	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	0.2	0.2	0.0	0.0	0.0
180.	* 0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0

190. * 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0
200. * 0.1 0.0 0.0 0.0 0.0 0.0 0.1 0.2 0.1 0.2 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.1 0.1
230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.1
240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.2 0.2
340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.2 0.2
350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.2 0.2
------*----------

MAX * 0.2 0.2 0.1 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.2 0.1 0.1 0.2 0.1 0.2 0.2 0.2 0.2 0.2
DEGR. * 170 80 30 30 30 50 40 50 50 80 30 10 10 180 20 170 170 220 230 240

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
------*----------

0. * 0.2 0.2 0.2 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
10. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
20. * 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.1 0.1 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.1 0.1 0.0 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.2 0.1 0.0 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0
200. * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0

210. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.2 0.2 0.0 0.1 0.2 0.0 0.0
220. * 0.2 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.2 0.0 0.2 0.2 0.0 0.1 0.2 0.0 0.0
230. * 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.2 0.2 0.0 0.1 0.2 0.0 0.0
240. * 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.2 0.1 0.0 0.2 0.1 0.0 0.1 0.2 0.0 0.0
250. * 0.1 0.2 0.1 0.1 0.2 0.1 0.2 0.1 0.1 0.1 0.2 0.1 0.0 0.2 0.1 0.0 0.1 0.1 0.0 0.0
260. * 0.1 0.2 0.1 0.2 0.2 0.2 0.2 0.1 0.1 0.1 0.1 0.1 0.0 0.2 0.1 0.0 0.1 0.1 0.0 0.0
270. * 0.1 0.2 0.2 0.2 0.1 0.2 0.1 0.1 0.1 0.2 0.1 0.1 0.0 0.2 0.1 0.0 0.1 0.1 0.0 0.0
280. * 0.2 0.2 0.2 0.2 0.1 0.2 0.1 0.1 0.2 0.2 0.1 0.2 0.0 0.2 0.1 0.0 0.1 0.1 0.0 0.0
290. * 0.2 0.2 0.2 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.0 0.2 0.1 0.0 0.1 0.1 0.0 0.0
300. * 0.2 0.2 0.2 0.0 0.1 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.0 0.2 0.1 0.0 0.1 0.1 0.0 0.0
310. * 0.2 0.1 0.2 0.0 0.2 0.1 0.2 0.2 0.2 0.1 0.2 0.2 0.0 0.1 0.2 0.0 0.1 0.1 0.0 0.0
320. * 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.2 0.2 0.1 0.2 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0
330. * 0.2 0.1 0.2 0.2 0.2 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.0
340. * 0.2 0.2 0.2 0.2 0.2 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
350. * 0.2 0.2 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
------*----------

MAX * 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.1 0.2 0.0 0.0
DEGR. * 0 0 0 260 250 0 250 290 280 270 240 220 40 210 210 180 0 210 0 0

JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING PM PEAK

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55
------*----------

0. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
10. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
20. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
220. * 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

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MAX * 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0

DEGR. * 0 0 0 220 150 0 0 0 0 0 0 0 70 0 0

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC21.

DATE : 07/08/ 0

TIME : 13:54:45

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

* REC1 REC2 REC3 REC4 REC5 REC6 REC7 REC8 REC9 REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20

LINK # * 170 80 30 30 30 50 40 50 50 80 30 10 10 180 20 170 170 220 230 240

-------*----------

1 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

DATE : 07/08/ 0
TIME : 13:54:45

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

LINK # *	0	0	0	260	250	0	250	290	280	270	240	220	40	210	210	180	0	210	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 *	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
14 *	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 *	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 *	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22 *	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0
23 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 *	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0

DATE : 07/08/ 0
TIME : 13:54:45

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55

LINK # *	0	0	0	220	150	0	0	0	0	0	0	70	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
11	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	*	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL3QHC - (DATED 95221)

CAL3QHC PC (32 BIT) VERSION 3.0.0
(C) COPYRIGHT 1993-2000, TRINITY CONSULTANTS

Run Began on 7/08/2019 at 13:56:20

JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING AM PEAK

DATE : 07/08/ 0
TIME : 13:56:20

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M)			*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(M)	(DEG)		(G/MI)	(M)	(M)		(VEH)
1. UNSIG EB STELLA	*	325496.0	********	325492.2	********	*	5.	308.	AG	12.	6.2	0.0	3.5	
2. UNSIG WB STELLA	*	325523.8	********	325529.2	********	*	7.	133.	AG	16.	6.2	0.0	6.7	
3. E STELLA FREE FLOW	*	325520.1	********	325594.2	********	*	95.	129.	AG	16.	2.9	0.0	7.0	
4. W STELLA FREE FLOW	*	325503.9	********	325465.8	********	*	47.	305.	AG	48.	2.9	0.0	7.0	
5. W STELLA FREE FLOW	*	325465.8	********	325431.9	********	*	42.	306.	AG	48.	2.9	0.0	7.0	
6. W STELLA FREE FLOW	*	325431.9	********	325418.6	********	*	15.	298.	AG	48.	2.9	0.0	7.0	
7. W STELLA FREE FLOW	*	325418.6	********	325400.4	********	*	19.	288.	AG	48.	2.9	0.0	7.0	
8. W STELLA FREE FLOW	*	325400.4	********	325374.4	********	*	26.	270.	AG	48.	2.9	0.0	7.0	
9. N SB ALH FREE FLOW	*	325506.7	********	325511.0	********	*	15.	17.	AG	773.	2.7	0.0	10.0	
10. N SB ALH FREE FLOW	*	325511.0	********	325521.4	********	*	30.	20.	AG	773.	2.7	0.0	10.0	
11. N SB ALH FREE FLOW	*	325521.4	********	325532.3	********	*	28.	23.	AG	773.	2.7	0.0	10.0	
12. N SB ALH FREE FLOW	*	325532.3	********	325550.1	********	*	39.	27.	AG	773.	2.7	0.0	10.0	
13. N SB ALH FREE FLOW	*	325550.1	********	325575.2	********	*	45.	34.	AG	773.	2.7	0.0	10.0	
14. N SB ALH FREE FLOW	*	325575.2	********	325596.2	********	*	33.	39.	AG	773.	2.7	0.0	10.0	
15. N SB ALH FREE FLOW	*	325596.2	********	325610.1	********	*	21.	42.	AG	773.	2.7	0.0	10.0	
16. N NB ALH FREE FLOW	*	325621.3	********	325606.6	********	*	21.	224.	AG	1261.	2.7	0.0	10.0	
17. N NB ALH FREE FLOW	*	325606.6	********	325579.1	********	*	46.	217.	AG	1261.	2.7	0.0	10.0	
18. N NB ALH FREE FLOW	*	325579.1	********	325551.6	********	*	54.	211.	AG	1261.	2.7	0.0	10.0	
19. N NB ALH FREE FLOW	*	325551.6	********	325536.1	********	*	35.	206.	AG	1261.	2.7	0.0	10.0	
20. N NB ALH FREE FLOW	*	325536.1	********	325517.5	********	*	49.	202.	AG	1261.	2.7	0.0	10.0	
21. N NB ALH FREE FLOW	*	325517.5	********	325514.8	********	*	10.	195.	AG	1261.	2.7	0.0	10.0	
22. S NB ALH FREE FLOW	*	325515.2	********	325466.6	********	*	169.	197.	AG	1255.	2.7	0.0	10.0	
23. S SB ALH FREE FLOW	*	325456.2	********	325471.9	********	*	56.	16.	AG	759.	2.7	0.0	10.0	
24. S SB ALH FREE FLOW	*	325471.9	********	325505.2	********	*	116.	17.	AG	759.	2.7	0.0	10.0	

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JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING AM PEAK

DATE : 07/08/ 0
TIME : 13:56:20

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE	RED	CLEARANCE	APPROACH	SATURATION	IDLE	SIGNAL	ARRIVAL
	*	LENGTH	TIME	LOST TIME	VOL	FLOW RATE	EM FAC	TYPE	RATE

	*	(SEC)	(SEC)	(SEC)	(VPH)	(VPH)	(gm/hr)

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z	*
1.	*	325503.2	********	1.8	*
2.	*	325511.8	********	1.8	*
3.	*	325513.8	********	1.8	*
4.	*	325523.6	********	1.8	*
5.	*	325524.9	********	1.8	*
6.	*	325536.2	********	1.8	*
7.	*	325543.2	********	1.8	*
8.	*	325557.3	********	1.8	*
9.	*	325568.8	********	1.8	*
10.	*	325584.5	********	1.8	*
11.	*	325455.2	********	1.8	*
12.	*	325462.1	********	1.8	*
13.	*	325464.0	********	1.8	*
14.	*	325471.2	********	1.8	*
15.	*	325478.3	********	1.8	*
16.	*	325485.5	********	1.8	*
17.	*	325492.7	********	1.8	*
18.	*	325515.9	********	1.8	*
19.	*	325508.8	********	1.8	*
20.	*	325501.5	********	1.8	*
21.	*	325494.3	********	1.8	*
22.	*	325487.2	********	1.8	*
23.	*	325479.9	********	1.8	*
24.	*	325612.9	********	1.8	*
25.	*	325597.9	********	1.8	*
26.	*	325586.0	********	1.8	*
27.	*	325573.2	********	1.8	*
28.	*	325560.4	********	1.8	*
29.	*	325558.9	********	1.8	*
30.	*	325547.8	********	1.8	*
31.	*	325543.7	********	1.8	*
32.	*	325534.2	********	1.8	*
33.	*	325496.6	********	1.8	*
34.	*	325519.6	********	1.8	*
35.	*	325523.9	********	1.8	*
36.	*	325500.0	********	1.8	*
37.	*	325555.4	********	1.8	*
38.	*	325524.3	********	1.8	*
39.	*	325543.9	********	1.8	*
40.	*	325563.4	********	1.8	*
41.	*	325582.9	********	1.8	*
42.	*	325590.0	********	1.8	*
43.	*	325570.4	********	1.8	*
44.	*	325550.9	********	1.8	*
45.	*	325531.4	********	1.8	*

DATE : 07/08/ 0
TIME : 13:56:20

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
46.	*	325500.0	********	1.8
47.	*	325479.6	********	1.8
48.	*	325461.9	********	1.8
49.	*	325441.5	********	1.8
50.	*	325374.4	********	1.8
51.	*	325399.4	********	1.8
52.	*	325435.8	********	1.8
53.	*	325456.2	********	1.8
54.	*	325469.7	********	1.8
55.	*	325490.1	********	1.8
56.	*	325426.8	********	1.8
57.	*	325406.3	********	1.8

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) *	REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10	REC11	REC12	REC13	REC14	REC15	REC16	REC17	REC18	REC19	REC20
0.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	
10.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
20.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
30.	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
40.	*	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0
50.	*	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0
60.	*	0.2	0.2	0.2	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0
70.	*	0.2	0.0	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.0	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0
80.	*	0.2	0.0	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.0	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0
90.	*	0.2	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0
100.	*	0.1	0.2	0.0	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.0
110.	*	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.0
120.	*	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.0
130.	*	0.0	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0
140.	*	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0
150.	*	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0
160.	*	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0

170. * 0.1 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.2 0.2 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.0 0.0 0.0
180. * 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.0 0.1 0.1 0.0 0.2 0.2 0.2 0.0 0.0 0.0
190. * 0.2 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.2 0.1 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
210. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
220. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
230. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
240. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
250. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
260. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
270. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
280. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
290. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
300. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1
------*----------

MAX * 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.1 0.1 0.1
DEGR. * 60 60 60 60 60 70 90 70 80 120 30 30 30 40 50 60 100 0 0 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40
------*----------

0. * 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
10. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
20. * 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.1 0.0 0.1 0.1 0.0 0.0
30. * 0.0 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.1 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.1 0.1 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.1 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.1 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.1 0.1 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.2 0.1 0.0 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.2 0.1 0.0 0.0 0.0

190. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.2 0.2 0.1 0.0 0.0
200. * 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.2 0.1 0.0 0.2 0.1 0.0 0.0
210. * 0.1 0.1 0.1 0.0 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.0 0.2 0.1 0.0 0.0 0.1 0.0 0.0
220. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.2 0.1 0.0 0.1 0.1 0.1 0.0
230. * 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.1 0.0
240. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
250. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.0 0.0
260. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.0 0.0
270. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
280. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
290. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
300. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
310. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
320. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.2 0.0 0.0 0.1 0.0 0.0
330. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.0 0.1 0.0 0.0
340. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
350. * 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1 0.1 0.0 0.0
------*----------

MAX * 0.1 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.1 0.2 0.1 0.1 0.2 0.2 0.2 0.2 0.2 0.1 0.1 0.0
DEGR. * 0 0 0 0 230 0 20 0 0 10 0 0 140 200 320 100 190 0 220 0

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-350.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57
------*----------

0. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
10. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
20. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
30. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
40. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
50. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
60. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
70. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
80. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
90. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
100. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
110. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
120. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
130. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
140. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
150. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
160. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
170. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0
180. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
190. * 0.0 0.0 0.0 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
200. * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

210. * 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

220. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

230. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

240. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

250. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

260. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

270. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

280. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

290. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

300. * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

310. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

320. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

330. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

340. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350. * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

------*----------

MAX * 0.0 0.0 0.0 0.0 0.1 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0

DEGR. * 0 0 0 0 210 60 0 0 0 0 0 0 0 170 0 0

THE HIGHEST CONCENTRATION OF 0.20 PPM OCCURRED AT RECEPTOR REC23.

PAGE 7

JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING AM PEAK

DATE : 07/08/ 0

TIME : 13:56:20

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING

THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

* ANGLE (DEGREES)

* REC1 REC2 REC3 REC4 REC5 REC6 REC7 REC8 REC9 REC10 REC11 REC12 REC13 REC14 REC15 REC16 REC17 REC18 REC19 REC20

LINK # * 60 60 60 60 60 70 90 70 80 120 30 30 30 40 50 60 100 0 0 0

-------*----------

1 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0

JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING AM PEAK

DATE : 07/08/ 0

TIME : 13:56:20

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC21 REC22 REC23 REC24 REC25 REC26 REC27 REC28 REC29 REC30 REC31 REC32 REC33 REC34 REC35 REC36 REC37 REC38 REC39 REC40

LINK # *	0	0	0	0	230	0	20	0	0	10	0	0	140	200	320	100	190	0	220	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
10 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 *	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 *	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 *	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
19 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
20 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0
21 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
22 *	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0
23 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

JOB: J4259 780 ALH #1 INTERS RUN: 2019 EXISTING AM PEAK

DATE : 07/08/ 0

TIME : 13:56:20

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)
* ANGLE (DEGREES)
* REC41 REC42 REC43 REC44 REC45 REC46 REC47 REC48 REC49 REC50 REC51 REC52 REC53 REC54 REC55 REC56 REC57

LINK # *	0	0	0	0	210	60	0	0	0	0	0	0	0	0	170	0	0
1 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

4 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

5 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

6 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

7 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

8 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

10 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

11 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

12 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

13 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

14 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

15 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

16 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

17 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

18 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

19 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

20 * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

21 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

22 * 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0

23 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

24 * 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

APPENDIX C – NOISE

APPENDIX 5-C
NOISE

780 AMERICAN LEGION HIGHWAY
PROJECT NOTIFICATION FORM

Pages **Contents**

Figure 1
Sound Monitoring & Modeling Locations
780 American Legion Highway Roslindale, MA

TECH environmental
FOCUSED KNOWLEDGE. REAL SOLUTIONS.

Figure 2
Sound Modeling Receptor Locations
780 American Legion Highway, Roslindale MA

Summary of Modeling Results											
780 American Legion Highway, Roslindale, MA											
	31.5	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**A-Wtd**	
Local Nighttime Limit	68	67	61	52	46	40	33	28	26	**50**	
NIGHTTIME RESULTS & CITY OF BOSTON ANALYSIS	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**A-Wtd**	**Complies Night?**
806 American Legion Highway	51	44	39	39	37	34	29	21	8	39	**YES**
763 American Legion Highway	48	42	36	36	34	32	27	17	0	36	**YES**
131 Mount Hope Street	46	40	35	36	34	32	28	20	5	36	**YES**
863 Canterbury Street	51	44	38	38	36	34	28	18	2	38	**YES**

NIGHTTIME RESULTS & MASSDEP ANALYSIS (< +10 dBA)	**Impact Level (dBA)**	**Background Level (dBA)**	***Total Level (dBA)***	***Increase (dBA)***	**Complies Night?**
806 American Legion Highway	38.7	42.4	44.0	**+1.6**	**YES**
763 American Legion Highway	36.4	49.8	50.0	**+0.2**	**YES**
131 Mount Hope Street	36.5	40.0	41.6	**+1.6**	**YES**
863 Canterbury Street	37.9	36.6	40.3	**+3.7**	**YES**

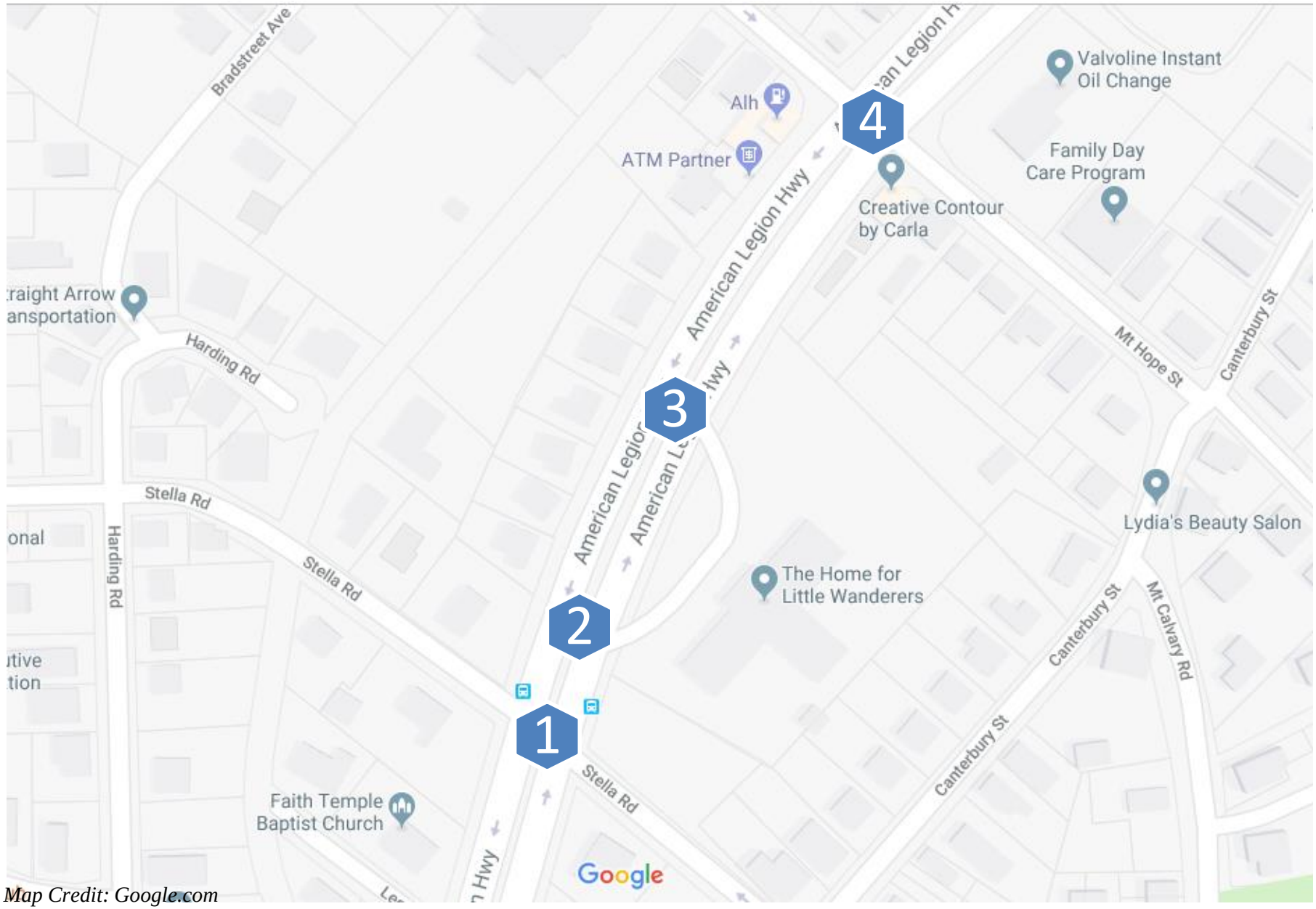
APPENDIX D – TRANSPORTATION

Appendix D – Transportation

Vehicle, Pedestrian, and Bicycle Counts
Seasonal Adjustment Factors
Trip Generation
Synchro Intersection Level of Service Reports

- Existing (2019) Condition
- No-Build (2026) Condition
- Build (2026) Condition
  - Option 1
  - Option 2

Vehicle, Pedestrian, and Bicycle Counts



Map Credit: Google.com

BOSTON TRAFFIC DATA	BTD ID: 362_C22_HSH	Roslindale, Boston, MA	# of TMC's: 04	Client: Howard Stein Hudson
		Collected on April 9, 2019	# of ATR's: 00	Contact: Michael White

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 1
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Stella Road
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	3	269	0	2	0	164	2	0	1	0	3	0	1	1	0
7:15 AM	0	2	297	0	1	0	169	4	0	1	0	0	0	0	2	2
7:30 AM	0	4	320	0	0	0	189	5	0	1	0	1	0	0	2	4
7:45 AM	0	7	317	0	1	0	204	4	0	3	0	1	0	1	1	2
8:00 AM	0	1	307	0	2	0	191	3	0	3	0	2	0	1	1	0
8:15 AM	0	1	275	0	3	0	171	3	0	1	0	3	0	2	0	1
8:30 AM	1	0	245	0	1	0	169	2	0	2	0	2	0	1	0	3
8:45 AM	0	1	241	0	0	0	165	3	0	2	0	2	0	1	0	1

	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	2	1	197	0	2	0	324	3	0	3	0	2	0	1	0	0
4:15 PM	2	2	216	0	3	0	319	5	0	5	0	4	0	1	0	1
4:30 PM	2	4	236	0	2	0	315	4	0	2	0	2	0	2	0	3
4:45 PM	0	3	228	0	7	0	294	17	0	1	0	1	0	1	1	2
5:00 PM	1	1	218	0	1	0	303	7	0	2	0	1	0	0	0	3
5:15 PM	0	2	228	0	4	0	290	2	0	4	0	0	0	1	0	2
5:30 PM	1	2	240	0	3	0	283	3	0	2	0	1	0	1	0	0
5:45 PM	0	1	232	0	3	0	273	7	0	2	0	0	0	0	0	1

AM PEAK HOUR 7:15 AM to 8:15 AM	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**14**	**1241**	**0**	**4**	**0**	**753**	**16**	**0**	**8**	**0**	**4**	**0**	**2**	**6**	**8**
PHF	**0.97**				**0.92**				**0.60**				**0.67**			
HV %	**0.0%**	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**0.0%**	**3.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**12.5%**

PM PEAK HOUR 4:15 PM to 5:15 PM	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	5	**10**	**898**	**0**	**13**	**0**	**1231**	**33**	**0**	**10**	**0**	**8**	**0**	**4**	**1**	**9**
PHF	**0.94**				**0.98**				**0.50**				**0.70**			
HV %	**0.0%**	**0.0%**	**2.0%**	**0.0%**	**7.7%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**12.5%**	**0.0%**	**25.0%**	**0.0%**	**0.0%**

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 1
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Stella Road
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	10	0	0	0	4	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	12	0	0	0	5	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	11	0	0	0	6	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	10	0	0	0	8	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	9	0	0	0	10	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	7	0	0	0	6	1	0	0	0	0	0	0	0	0
8:45 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0

	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	4	0	0	0	7	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	6	0	1	0	8	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	6	0	0	0	8	0	0	0	0	1	0	1	0	0
4:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**42**	**0**	**0**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.88**				**0.73**				**0.00**				**0.25**			

PM PEAK HOUR 4:00 PM to 5:00 PM	American Legion Highway Northbound				American Legion Highway Southbound				Stella Road Eastbound				Stella Road Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**20**	**0**	**1**	**0**	**28**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**
PHF	**0.83**				**0.81**				**0.25**				**0.25**			

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 1
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Stella Road
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PEDESTRIANS & BICYCLES

	American Legion Highway Northbound					American Legion Highway Southbound					Stella Road Eastbound					Stella Road Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	1		0	0	0	0		0	0	0	1		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
7:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
8:00 AM	0	1	0	0		0	0	0	0		0	0	0	2		0	0	0	1	
8:15 AM	0	0	0	1		0	0	0	1		0	0	0	0		0	0	0	2	
8:30 AM	0	0	0	2		0	0	0	2		0	0	0	0		0	0	0	2	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	4	

	American Legion Highway Northbound					American Legion Highway Southbound					Stella Road Eastbound					Stella Road Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	1		0	0	0	0		0	0	0	2		0	0	0	2	
4:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	12	
4:30 PM	0	0	0	1		0	0	0	0		0	0	0	1		0	0	0	1	
4:45 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	3	
5:00 PM	0	0	0	0		0	0	0	1		0	0	0	2		0	0	0	2	
5:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
5:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
5:45 PM	0	0	0	0		0	1	0	0		0	0	0	2		0	0	0	1	

AM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Stella Road Eastbound					Stella Road Westbound				
7:15 AM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
8:15 AM	0	1	0	0		0	0	0	0		0	0	0	2		0	0	0	3	

PM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Stella Road Eastbound					Stella Road Westbound				
4:15 PM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
5:15 PM	0	0	0	2		0	0	0	1		0	0	0	3		0	0	0	18	

[1] *Peak hours corresponds to vehicular peak hours.*

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 2
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Home for Little Wanderers S. Drive
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	272	0	0	0	168	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	298	3	0	0	174	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	324	1	0	0	194	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	322	1	0	0	209	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	310	2	0	0	196	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	279	1	0	0	177	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	245	6	0	0	172	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	242	2	0	0	168	0	0	0	0	0	0	0	0	0

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	198	4	0	0	329	0	0	0	0	0	0	0	0	4
4:15 PM	0	0	222	3	0	0	327	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	237	6	0	0	321	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	234	4	0	0	318	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	221	3	0	0	311	0	0	0	0	0	0	0	0	5
5:15 PM	0	0	236	2	0	0	296	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	242	3	0	0	289	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	236	2	0	0	283	0	0	0	0	0	0	0	0	1

AM PEAK HOUR	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
7:15 AM to 8:15 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1254**	**7**	**0**	**0**	**773**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.97**				**0.92**				**0.00**				**0.00**			
HV %	**0.0%**	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**0.0%**	**3.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
4:15 PM to 5:15 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**914**	**16**	**0**	**0**	**1277**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**
PHF	**0.96**				**0.98**				**0.00**				**0.60**			
HV %	**0.0%**	**0.0%**	**2.0%**	**6.3%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 2
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Home for Little Wanderers S. Drive
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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HEAVY VEHICLES

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	10	0	0	0	4	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	13	0	0	0	5	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	11	0	0	0	6	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	10	0	0	0	8	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	9	0	0	0	10	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	4	0	0	0	7	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	6	1	0	0	9	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**43**	**0**	**0**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.83**				**0.73**				**0.00**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers South Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**20**	**1**	**0**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.75**				**0.81**				**0.00**				**0.00**			

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 2
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Home for Little Wanderers S. Drive
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PEDESTRIANS & BICYCLES

	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers South Driveway Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	1	
7:45 AM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	1	
8:00 AM	0	1	0	1		0	0	0	0		0	0	0	0		0	0	0	3	
8:15 AM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
8:30 AM	0	0	0	2		0	0	0	0		0	0	0	0		0	0	0	1	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	4	

	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers South Driveway Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
4:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
4:30 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	2	
4:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
5:00 PM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
5:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
5:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
5:45 PM	0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	1	

AM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers South Driveway Westbound				
7:15 AM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
8:15 AM	0	1	0	1		0	1	0	1		0	0	0	0		0	0	0	5	

PM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers South Driveway Westbound				
4:15 PM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
5:15 PM	0	1	0	1		0	0	0	0		0	0	0	0		0	0	0	10	

[1] *Peak hours corresponds to vehicular peak hours.*

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 3
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Home for Little Wanderers N. Drive
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	272	0	0	0	168	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	298	0	0	0	174	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	324	0	0	0	194	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	321	1	0	0	209	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	310	0	0	0	196	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	279	0	0	0	177	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	245	0	0	0	172	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	242	0	0	0	168	0	0	0	0	0	0	0	0	0

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	202	0	0	0	329	0	0	0	0	0	0	0	0	8
4:15 PM	0	0	223	1	0	0	327	0	0	0	0	0	0	0	0	6
4:30 PM	0	0	239	0	0	0	321	0	0	0	0	0	0	0	0	5
4:45 PM	0	0	236	1	0	0	318	0	0	0	0	0	0	0	0	4
5:00 PM	0	0	226	0	0	0	311	0	0	0	0	0	0	0	0	10
5:15 PM	0	0	238	0	0	0	296	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	244	0	0	0	289	0	0	0	0	0	0	0	0	8
5:45 PM	0	0	237	0	0	0	283	0	0	0	0	0	0	0	0	7

AM PEAK HOUR 7:15 AM to 8:15 AM	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**1253**	**1**	**0**	**0**	**773**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
PHF	**0.97**				**0.92**				**0.00**				**0.50**			
HV %	**0.0%**	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**0.0%**	**3.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:15 PM to 5:15 PM	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**924**	**2**	**0**	**0**	**1277**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25**
PHF	**0.97**				**0.98**				**0.00**				**0.63**			
HV %	**0.0%**	**0.0%**	**1.8%**	**0.0%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.0%**

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 3
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Home for Little Wanderers N. Drive
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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HEAVY VEHICLES

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	10	0	0	0	4	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	13	0	0	0	5	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	11	0	0	0	6	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	10	0	0	0	8	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	9	0	0	0	10	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0

	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	5	0	0	0	9	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**43**	**0**	**0**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.83**				**0.73**				**0.00**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	American Legion Highway Northbound				American Legion Highway Southbound				Eastbound				Home for Little Wanderers North Driveway Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**20**	**0**	**0**	**0**	**29**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
PHF	**0.83**				**0.81**				**0.00**				**0.25**			

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 3
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Home for Little Wanderers N. Drive
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PEDESTRIANS & BICYCLES

	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers North Driveway Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	1	
7:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
8:00 AM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
8:15 AM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
8:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	4	

	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers North Driveway Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
4:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
4:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
4:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	3	
5:00 PM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
5:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
5:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
5:45 PM	0	0	0	0		0	1	0	0		0	0	0	0		0	0	0	1	

AM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers North Driveway Westbound				
7:15 AM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
8:15 AM	0	1	0	0		0	1	0	0		0	0	0	0		0	0	0	6	

PM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Eastbound					Home for Little Wanderers North Driveway Westbound				
4:15 PM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
5:15 PM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	10	

[1] *Peak hours corresponds to vehicular peak hours.*

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 4
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Mt. Hope Street
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	272	0	2	1	162	0	0	13	4	2	0	4	0	8
7:15 AM	0	0	298	1	6	2	166	0	0	18	5	3	0	5	0	9
7:30 AM	0	0	323	1	3	3	185	0	0	23	6	5	0	4	0	8
7:45 AM	1	0	319	2	4	2	201	0	0	22	4	4	0	3	0	7
8:00 AM	0	0	308	2	7	2	187	0	0	21	2	6	0	3	0	6
8:15 AM	0	0	279	1	6	3	170	0	0	19	3	3	0	4	0	4
8:30 AM	1	0	244	0	6	4	168	0	0	16	4	1	0	2	0	5
8:45 AM	0	0	241	1	4	5	165	0	0	15	2	2	0	1	0	4

	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	1	0	205	4	10	11	314	0	0	18	13	13	0	1	0	2
4:15 PM	0	0	223	6	9	13	319	0	0	21	11	8	0	0	0	4
4:30 PM	1	0	238	5	8	15	312	0	0	25	10	6	0	2	0	5
4:45 PM	1	0	232	7	6	19	305	0	0	23	9	9	0	3	0	6
5:00 PM	2	0	225	9	5	16	294	0	0	20	7	13	0	2	0	4
5:15 PM	1	0	236	5	7	11	282	0	0	24	10	10	0	3	0	3
5:30 PM	2	0	247	3	9	10	279	0	0	27	14	7	0	1	0	5
5:45 PM	0	0	242	2	6	9	275	0	0	25	11	6	0	2	0	8

AM PEAK HOUR 7:15 AM to 8:15 AM	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**0**	**1248**	**6**	**20**	**9**	**739**	**0**	**0**	**84**	**17**	**18**	**0**	**15**	**0**	**30**
PHF	**0.97**				**0.93**				**0.88**				**0.80**			
HV %	**0.0%**	**0.0%**	**3.5%**	**0.0%**	**0.0%**	**22.2%**	**3.1%**	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**3.3%**

PM PEAK HOUR 4:15 PM to 5:15 PM	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	4	**0**	**918**	**27**	**28**	**63**	**1230**	**0**	**0**	**89**	**37**	**36**	**0**	**7**	**0**	**19**
PHF	**0.97**				**0.97**				**0.99**				**0.72**			
HV %	**0.0%**	**0.0%**	**1.9%**	**3.7%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**2.2%**	**2.7%**	**2.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 4
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Mt. Hope Street
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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HEAVY VEHICLES

	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	11	0	0	0	3	0	0	0	0	1	0	0	0	0
7:15 AM	0	0	10	0	0	1	4	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	13	0	0	1	5	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	11	0	0	0	6	0	0	1	0	0	0	0	0	0
8:00 AM	0	0	10	0	0	0	8	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	9	0	0	0	10	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	7	0	0	0	7	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0

	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	5	0	0	0	5	0	0	1	1	2	0	0	0	0
4:15 PM	0	0	5	1	0	0	9	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	6	0	0	0	7	0	0	2	1	1	0	0	0	0
4:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**43**	**0**	**0**	**1**	**29**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.83**				**0.75**				**0.25**				**0.00**			

PM PEAK HOUR 4:00 PM to 5:00 PM	American Legion Highway Northbound				American Legion Highway Southbound				Mt. Hope Street Eastbound				Mt. Hope Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**20**	**1**	**0**	**0**	**26**	**0**	**0**	**3**	**2**	**3**	**0**	**0**	**0**	**0**
PHF	**0.88**				**0.72**				**0.50**				**0.00**			

Client:	Michael White
Project #:	362_C22_HSH
BTD #:	Location 4
Location:	Roslindale, Boston, MA
Street 1:	American Legion Highway
Street 2:	Mt. Hope Street
Count Date:	4/9/2019
Day of Week:	Tuesday
Weather:	Mostly Cloudy, 40°F

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PEDESTRIANS & BICYCLES

	American Legion Highway Northbound					American Legion Highway Southbound					Mt. Hope Street Eastbound					Mt. Hope Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
7:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
7:30 AM	0	0	0	0		0	1	0	2		0	0	0	0		0	0	0	1	
7:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
8:00 AM	0	0	0	1		0	0	0	3		0	0	0	1		0	0	0	2	
8:15 AM	0	2	0	0		0	0	0	1		0	0	0	0		0	0	0	2	
8:30 AM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	1	
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	4	

	American Legion Highway Northbound					American Legion Highway Southbound					Mt. Hope Street Eastbound					Mt. Hope Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
4:00 PM	0	0	0	0		0	0	0	2		0	0	0	0		0	0	0	3	
4:15 PM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	3	
4:30 PM	0	0	0	0		0	0	0	2		0	0	0	0		0	0	0	2	
4:45 PM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	2	
5:00 PM	0	1	0	2		0	0	0	0		0	0	0	1		0	0	0	2	
5:15 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	2	
5:30 PM	0	0	0	0		0	0	0	0		0	0	0	1		0	0	0	3	
5:45 PM	0	0	0	0		0	1	0	3		0	0	0	1		0	0	0	2	

AM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Mt. Hope Street Eastbound					Mt. Hope Street Westbound				
7:15 AM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
8:15 AM	0	0	0	1		0	1	0	5		0	0	0	1		0	0	0	5	

PM PEAK HOUR[1]	American Legion Highway Northbound					American Legion Highway Southbound					Mt. Hope Street Eastbound					Mt. Hope Street Westbound				
4:15 PM																				
to	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
5:15 PM	0	1	0	2		0	0	0	4		0	0	0	1		0	0	0	9	

[1] *Peak hours corresponds to vehicular peak hours.*

Seasonal Adjustment Factors

Massachusetts Highway Department
Statewide Traffic Data Collection
2016 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.21	1.17	1.10	1.04	0.97	0.92	0.90	0.88	0.97	0.93	0.97	1.05	0.88
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.03	1.02	0.99	0.92	0.91	0.91	0.90	0.94	0.93	0.99	1.02	0.97
R4-R7	1.09	1.13	1.06	1.05	0.95	0.90	0.88	0.91	0.95	0.95	1.04	1.07	0.95
U1-Boston	1.03	1.04	0.99	0.96	0.94	0.91	0.93	0.91	0.95	0.93	0.98	0.98	0.93
U1-Essex	1.06	1.08	1.04	1.01	0.95	0.89	0.88	0.86	0.94	0.94	1.01	1.05	0.91
U1-Southeast	1.07	1.12	1.05	1.01	0.95	0.89	0.87	0.86	0.94	0.95	0.99	1.01	0.94
U1-West	0.97	0.97	0.91	0.95	0.92	0.90	0.94	0.92	0.92	0.90	0.93	0.94	0.94
U1-Worcester	1.10	1.14	1.03	1.00	0.94	0.91	0.92	0.90	0.94	0.93	0.97	1.04	0.92
U2	1.02	1.00	0.97	0.96	0.93	0.90	0.93	0.91	0.94	0.93	0.96	0.99	0.95
U3	1.00	1.00	0.96	0.95	0.92	0.89	0.94	0.92	0.94	0.93	0.96	0.97	0.96
U4-U7	1.02	1.03	0.97	0.96	0.92	0.89	0.93	0.92	0.94	0.95	0.98	0.96	0.93
Rec - East	1.18	1.17	1.13	1.05	0.93	0.84	0.79	0.80	0.93	1.00	1.09	1.13	0.99
Rec - West	1.20	1.24	1.29	1.18	1.03	0.85	0.70	0.81	0.92	0.95	1.11	1.15	0.98

Round off:
0-999 = 10
>1000 = 100

U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.

2/22/2019

Trip Generation - Proposed Program

780 American Legion Highway
Trip Generation Assessment

HOWARD STEIN HUDSON
11-Jun-2019

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Transit Share[3]	Transit Person-Trips	Walk/Bike/ Other Share[3]	Walk/ Bike/ Other Trips	Auto Share[3]	Auto Person-Trips	% Taxi[4]	Private Auto Person-Trips	Taxi Person-Trips	Assumed Local Auto Occupancy Rate[5]	Assumed Local Auto Occupancy Rate for Taxis[6]	Total Adjusted Private Auto Trips	Total Adjusted Taxi Trips	Total Adjusted Auto (Private + Taxi) Trips
Daily Peak Hour																					
Multifamily Housing (Low Rise)[7]	93	Total		7.320	680	1.18	**802**	30%	**240**	3%	**24**	67%	**538**	5%	512	26	1.18	1.20	**434**	**44**	**478**
	units	In	50%	3.660	340	1.18	**401**	30%	**120**	3%	**12**	67%	**269**	5%	256	13	1.18	1.20	**217**	**22**	**239**
		Out	50%	3.660	340	1.18	**401**	30%	**120**	3%	**12**	67%	**269**	5%	256	13	1.18	1.20	**217**	**22**	**239**
Multifamily Housing (Low Rise)[7]	22	Total		7.320	162	1.18	**192**	30%	**58**	3%	**6**	67%	**128**	5%	122	6	1.18	1.20	**104**	**12**	**116**
	units	In	50%	3.660	81	1.18	**96**	30%	**29**	3%	**3**	67%	**64**	5%	61	3	1.18	1.20	**52**	**6**	**58**
		Out	50%	3.660	81	1.18	**96**	30%	**29**	3%	**3**	67%	**64**	5%	61	3	1.18	1.20	**52**	**6**	**58**
Medical-Dental Office Building	4	Total		34.800	140	1.82	**254**	4%	**10**	17%	**44**	79%	**200**	5%	190	10	1.82	1.20	**104**	**16**	**120**
	KSF	In	50%	17.400	70	1.82	**127**	4%	**5**	17%	**22**	79%	**100**	5%	95	5	1.82	1.20	**52**	**8**	**60**
		Out	50%	17.400	70	1.82	**127**	4%	**5**	17%	**22**	79%	**100**	5%	95	5	1.82	1.20	**52**	**8**	**60**
Total		Total			**680**		**802**		**308**		**74**		**866**		**824**	**42**			**642**	**72**	**714**
		In			**340**		**401**		**154**		**37**		**433**		**412**	**21**			**321**	**36**	**357**
		Out			**340**		**401**		**154**		**37**		**433**		**412**	**21**			**321**	**36**	**357**
AM Peak Hour																					
Multifamily Housing (Low Rise)[7]	93	Total		0.460	43	1.18	**51**		**16**		**1**		**34**	5%	33	1	1.18	1.20	**28**	**1**	**29**
	units	In	23%	0.106	10	1.18	**12**	30%	**4**	3%	**0**	67%	**8**	5%	8	0	1.18	1.20	**7**	**0**	**7**
		Out	77%	0.354	33	1.18	**39**	30%	**12**	3%	**1**	67%	**26**	5%	25	1	1.18	1.20	**21**	**1**	**22**
Multifamily Housing (Low Rise)[7]	22	Total		0.460	10	1.18	**11**		**4**		**0**		**7**	5%	7	0	1.18	1.20	**6**	**0**	**6**
	units	In	23%	0.106	2	1.18	**2**	30%	**1**	3%	**0**	67%	**1**	5%	1	0	1.18	1.20	**1**	**0**	**1**
		Out	77%	0.354	8	1.18	**9**	30%	**3**	3%	**0**	67%	**6**	5%	6	0	1.18	1.20	**5**	**0**	**5**
Medical-Dental Office Building	4	Total		2.780	11	1.82	**20**		**1**		**4**		**15**	5%	14	1	1.82	1.20	**8**	**2**	**10**
	KSF	In	78%	2.168	9	1.82	**16**	5%	**1**	21%	**3**	74%	**12**	5%	11	1	1.82	1.20	**6**	**2**	**8**
		Out	22%	0.612	2	1.82	**4**	10%	**0**	18%	**1**	72%	**3**	5%	3	0	1.82	1.20	**2**	**0**	**2**
Home for Little Wanderers		Total		1.16	0	1.18	**6**		**2**		**0**		**4**	0%	4	0	1.18	1.20	**4**	**0**	**4**
		In	86%	0.998	0	1.18	**3**	30%	**1**	3%	**0**	67%	**2**	0%	2	0	1.18	1.20	**2**	**0**	**2**
		Out	14%	0.162	0	1.18	**3**	30%	**1**	3%	**0**	67%	**2**	0%	2	0	1.18	1.20	**2**	**0**	**2**
Total		Total			**43**		**57**		**23**		**5**		**60**		**58**	**2**			**46**	**3**	**49**
		In			**10**		**15**		**7**		**3**		**23**		**22**	**1**			**16**	**2**	**18**
		Out			**33**		**42**		**16**		**2**		**37**		**36**	**1**			**30**	**1**	**31**
PM Peak Hour																					
Multifamily Housing (Low Rise)[7]	93	Total		0.560	52	1.18	**61**		**19**		**2**		**40**	5%	38	2	1.18	1.20	**32**	**2**	**34**
	units	In	63%	0.353	33	1.18	**39**	30%	**12**	3%	**1**	67%	**26**	5%	25	1	1.18	1.20	**21**	**1**	**22**
		Out	37%	0.207	19	1.18	**22**	30%	**7**	3%	**1**	67%	**14**	5%	13	1	1.18	1.20	**11**	**1**	**12**
Multifamily Housing (Low Rise)[7]	22	Total		0.560	13	1.18	**15**		**5**		**0**		**10**	5%	10	0	1.18	1.20	**8**	**0**	**8**
	units	In	63%	0.353	8	1.18	**9**	30%	**3**	3%	**0**	67%	**6**	5%	6	0	1.18	1.20	**5**	**0**	**5**
		Out	37%	0.207	5	1.18	**6**	30%	**2**	3%	**0**	67%	**4**	5%	4	0	1.18	1.20	**3**	**0**	**3**
Medical-Dental Office Building	4	Total		3.460	14	1.82	**25**		**2**		**5**		**18**	5%	17	1	1.82	1.20	**10**	**2**	**12**
	KSF	In	28%	0.969	4	1.82	**7**	10%	**1**	18%	**1**	72%	**5**	5%	5	0	1.82	1.20	**3**	**0**	**3**
		Out	72%	2.491	10	1.82	**18**	5%	**1**	21%	**4**	74%	**13**	5%	12	1	1.82	1.20	**7**	**2**	**9**
Home for Little Wanderers		Total		1.15	0	1.18	**13**		**5**		**0**		**8**	0%	8	0	1.18	1.20	**7**	**0**	**7**
		In	16%	0.184	0	1.18	**5**	30%	**2**	3%	**0**	67%	**3**	0%	3	0	1.18	1.20	**3**	**0**	**3**
		Out	84%	0.966	0	1.18	**8**	30%	**3**	3%	**0**	67%	**5**	0%	5	0	1.18	1.20	**4**	**0**	**4**
Total		Total			**52**		**74**		**31**		**7**		**76**		**73**	**3**			**57**	**4**	**61**
		In			**33**		**44**		**18**		**2**		**40**		**39**	**1**			**32**	**1**	**33**
		Out			**19**		**30**		**13**		**5**		**36**		**34**	**2**			**25**	**3**	**28**

1. 2017 National vehicle occupancy rates - 1.18:home to work; 1.82: family/personal business; 1.82: shopping; 2.1 social/recreational
2. Mode shares based on "Journey to Work" American Census Data (2017)
6. ITE Trip Generation Manual, 10th Edition, LUC 220 (Multifamily Housing Low-Rise (1-2 floors), average rate
7. ITE Trip Generation Manual, 10th Edition, LUC 720 (Medical-Dental Office Building), average rate
8. ITE Trip Generation Manual, 10th Edition, LUC 710 (General Office Building), average rate

Home for Little Wanderer peak hour trip generation based on field observations and known travel mode shares.

Synchro Intersection Level of Service Reports

- Existing (2019) Condition

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	8	0	4	2	6	8	14	1241	0	4	0	753	16
Future Volume (Veh/h)	8	0	4	2	6	8	14	1241	0	4	0	753	16
Sign Control		Stop			Stop			Free				Free	
Grade		0%			0%			0%				0%	
Peak Hour Factor	0.60	0.60	0.60	0.67	0.67	0.67	0.97	0.97	0.97	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	0	7	3	9	12	14	1279	0	0	0	818	17
Pedestrians		3											
Lane Width (ft)		12.0											
Walking Speed (ft/s)		3.5											
Percent Blockage		0											
Right turn flare (veh)													
Median type								None				None	
Median storage veh)													
Upstream signal (ft)												732	
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95			0.00			
vC, conflicting volume	1514	2136	420	1723	2145	640	838			0	1279		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1428	2087	271	1649	2096	640	713			0	1279		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.2	4.1			0.0	4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			0.0	2.2		
p0 queue free %	83	100	99	95	82	97	98			0	100		
cM capacity (veh/h)	75	50	690	61	49	393	845			0	550		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	24	440	853	545	290
Volume Left	13	3	14	0	0	0
Volume Right	7	12	0	0	0	17
cSH	109	91	845	1700	1700	1700
Volume to Capacity	0.18	0.26	0.02	0.50	0.32	0.17
Queue Length 95th (ft)	16	24	1	0	0	0
Control Delay (s)	45.2	58.1	0.5	0.0	0.0	0.0
Lane LOS	E	F	A			
Approach Delay (s)	45.2	58.1	0.2		0.0	
Approach LOS	E	F				

Intersection Summary					
Average Delay	1.2				
Intersection Capacity Utilization	54.2%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1254	7	0	773
Future Volume (Veh/h)	0	0	1254	7	0	773
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.25	0.25	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	0	1293	7	0	840
Pedestrians	5					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						595
pX, platoon unblocked	0.94					
vC, conflicting volume	1722	656			1305	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1639	656			1305	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	87	410			535	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	862	438	420	420
Volume Left	0	0	0	0	0
Volume Right	0	0	7	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.51	0.26	0.25	0.25
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		45.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	1253	1	0	773
Future Volume (Veh/h)	0	2	1253	1	0	773
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	4	1292	1	0	840
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						355
pX, platoon unblocked	0.93					
vC, conflicting volume	1718	652			1299	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1625	652			1299	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	88	413			537	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	4	861	432	420	420
Volume Left	0	0	0	0	0
Volume Right	4	0	1	0	0
cSH	413	1700	1700	1700	1700
Volume to Capacity	0.01	0.51	0.25	0.25	0.25
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	13.8	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	13.8	0.0		0.0	
Approach LOS	B				

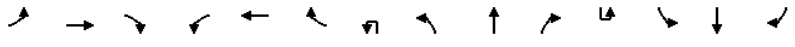
Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		44.7%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	84	17	18	15	0	30	1	0	1248	6	20	9	739	0
Future Volume (vph)	84	17	18	15	0	30	1	0	1248	6	20	9	739	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	11	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.980			0.910				0.999					
Flt Protected		0.966			0.984							0.950		
Satd. Flow (prot)	0	1782	0	0	1643	0	0	0	3352	0	0	1633	3210	0
Flt Permitted		0.753			0.868				0.955			0.187		
Satd. Flow (perm)	0	1380	0	0	1449	0	0	0	3201	0	0	321	3210	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		7			38				1					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				355				413	
Travel Time (s)		6.0			7.3				8.1				9.4	
Confl. Peds. (#/hr)	5		1	1		5				5		5		
Confl. Bikes (#/hr)														1
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.97	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	0%	0%	4%	0%	0%	22%	3%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	95	19	20	19	0	38	1	0	1287	6	22	10	795	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	134	0	0	57	0	0	0	1294	0	0	32	795	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	31.0	31.0		31.0	31.0		89.0		89.0		89.0	89.0	89.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%		74.2%		74.2%		74.2%	74.2%	74.2%	
Maximum Green (s)	24.0	24.0		24.0	24.0		84.0		84.0		84.0	84.0	84.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		15.4			15.4				92.6			92.6	92.6	
Actuated g/C Ratio		0.13			0.13				0.77			0.77	0.77	
v/c Ratio		0.73			0.26				0.52			0.13	0.32	
Control Delay		69.0			22.9				6.7			6.0	5.0	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		69.0			22.9				6.7			6.0	5.0	
LOS		E			C				A			A	A	
Approach Delay		69.0			22.9				6.7				5.1	
Approach LOS		E			C				A				A	
90th %ile Green (s)	22.4	22.4		22.4	22.4		85.6		85.6		85.6	85.6	85.6	
90th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
70th %ile Green (s)	18.3	18.3		18.3	18.3		89.7		89.7		89.7	89.7	89.7	
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
50th %ile Green (s)	15.5	15.5		15.5	15.5		92.5		92.5		92.5	92.5	92.5	
50th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
30th %ile Green (s)	12.6	12.6		12.6	12.6		95.4		95.4		95.4	95.4	95.4	
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
10th %ile Green (s)	8.4	8.4		8.4	8.4		99.6		99.6		99.6	99.6	99.6	
10th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
Queue Length 50th (ft)		96			13				170			5	83	
Queue Length 95th (ft)		151			41				277			19	138	
Internal Link Dist (ft)		184			240				275				333	
Turn Bay Length (ft)												100		
Base Capacity (vph)		281			320				2469			247	2475	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.48			0.18				0.52			0.13	0.32	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 10.2 — Intersection LOS: B
Intersection Capacity Utilization 58.4% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: American Legion Highway & Mt Hope Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	10	0	8	4	1	9	5	10	898	0	13	0	1231	33
Future Volume (Veh/h)	10	0	8	4	1	9	5	10	898	0	13	0	1231	33
Sign Control		Stop			Stop				Free				Free	
Grade		0%			0%				0%				0%	
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.94	0.94	0.94	0.94	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	20	0	16	6	1	13	0	11	955	0	0	0	1256	34
Pedestrians		18			18				2				1	
Lane Width (ft)		12.0			12.0				12.0				12.0	
Walking Speed (ft/s)		3.5			3.5				3.5				3.5	
Percent Blockage		2			2				0				0	
Right turn flare (veh)														
Median type									None				None	
Median storage veh)														
Upstream signal (ft)													741	
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.00	0.85			0.00			
vC, conflicting volume	1805	2286	665	1641	2303	496	0	1308			0	973		
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	1596	2161	257	1404	2181	496	0	1012			0	973		
tC, single (s)	7.5	6.5	7.2	8.0	6.5	6.9	0.0	4.1			0.0	4.1		
tC, 2 stage (s)														
tF (s)	3.5	4.0	3.4	3.8	4.0	3.3	0.0	2.2			0.0	2.2		
p0 queue free %	64	100	97	90	97	97	0	98			0	100		
cM capacity (veh/h)	56	39	593	63	38	515	0	580			0	704		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	36	20	329	637	837	453
Volume Left	20	6	11	0	0	0
Volume Right	16	13	0	0	0	34
cSH	93	136	580	1700	1700	1700
Volume to Capacity	0.39	0.15	0.02	0.37	0.49	0.27
Queue Length 95th (ft)	39	13	1	0	0	0
Control Delay (s)	65.9	36.0	0.6	0.0	0.0	0.0
Lane LOS	F	E	A			
Approach Delay (s)	65.9	36.0	0.2		0.0	
Approach LOS	F	E				

Intersection Summary					
Average Delay	1.4				
Intersection Capacity Utilization	54.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	12	914	16	0	1277
Future Volume (Veh/h)	0	12	914	16	0	1277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	13	993	17	0	1388
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						598
pX, platoon unblocked	0.84					
vC, conflicting volume	1696	505			1010	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1443	505			1010	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	103	512			682	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	13	662	348	694	694
Volume Left	0	0	0	0	0
Volume Right	13	0	17	0	0
cSH	512	1700	1700	1700	1700
Volume to Capacity	0.03	0.39	0.20	0.41	0.41
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.2	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	25	924	2	0	1277
Future Volume (Veh/h)	0	25	924	2	0	1277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.97	0.97	0.98	0.98
Hourly flow rate (vph)	0	40	953	2	0	1303
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						381
pX, platoon unblocked	0.84					
vC, conflicting volume	1616	488			965	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1346	488			965	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			100	
cM capacity (veh/h)	120	516			715	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	635	320	652	652
Volume Left	0	0	0	0	0
Volume Right	40	0	2	0	0
cSH	516	1700	1700	1700	1700
Volume to Capacity	0.08	0.37	0.19	0.38	0.38
Queue Length 95th (ft)	6	0	0	0	0
Control Delay (s)	12.6	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.6	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		38.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	89	37	36	7	0	19	4	0	918	27	28	63	1230	0
Future Volume (vph)	89	37	36	7	0	19	4	0	918	27	28	63	1230	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	12	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.99				1.00			1.00		
Frt		0.970			0.902				0.996					
Flt Protected		0.973			0.986							0.950		
Satd. Flow (prot)	0	1744	0	0	1666	0	0	0	3402	0	0	1805	3242	0
Flt Permitted		0.808			0.896				0.951			0.271		
Satd. Flow (perm)	0	1443	0	0	1513	0	0	0	3235	0	0	513	3242	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		12			26				5					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				381				550	
Travel Time (s)		6.0			7.3				8.7				12.5	
Confl. Peds. (#/hr)	4		2	2		4				9		9		
Confl. Bikes (#/hr)										1				
Peak Hour Factor	0.99	0.99	0.99	0.72	0.72	0.72	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	2%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	90	37	36	10	0	26	4	0	946	28	29	65	1268	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	163	0	0	36	0	0	0	978	0	0	94	1268	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	34.0	34.0		34.0	34.0		76.0		76.0		76.0	76.0	76.0	
Total Split (%)	30.9%	30.9%		30.9%	30.9%		69.1%		69.1%		69.1%	69.1%	69.1%	
Maximum Green (s)	27.0	27.0		27.0	27.0		71.0		71.0		71.0	71.0	71.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.0			16.0				82.0			82.0	82.0	
Actuated g/C Ratio		0.15			0.15				0.75			0.75	0.75	
v/c Ratio		0.74			0.15				0.41			0.25	0.52	
Control Delay		60.8			19.4				6.2			7.3	7.4	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		60.8			19.4				6.2			7.3	7.4	
LOS		E			B				A			A	A	
Approach Delay		60.8			19.4				6.2				7.4	
Approach LOS		E			B				A				A	
90th %ile Green (s)	23.1	23.1		23.1	23.1		74.9		74.9		74.9	74.9	74.9	
90th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
70th %ile Green (s)	18.9	18.9		18.9	18.9		79.1		79.1		79.1	79.1	79.1	
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
50th %ile Green (s)	16.0	16.0		16.0	16.0		82.0		82.0		82.0	82.0	82.0	
50th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
30th %ile Green (s)	13.1	13.1		13.1	13.1		84.9		84.9		84.9	84.9	84.9	
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
10th %ile Green (s)	8.8	8.8		8.8	8.8		89.2		89.2		89.2	89.2	89.2	
10th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
Queue Length 50th (ft)		103			6				112			18	167	
Queue Length 95th (ft)		165			23				186			50	277	
Internal Link Dist (ft)		184			240				301				470	
Turn Bay Length (ft)												100		
Base Capacity (vph)		363			390				2413			382	2417	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.45			0.09				0.41			0.25	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 20 (18%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 10.6 — Intersection LOS: B
Intersection Capacity Utilization 90.3% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 4: American Legion Highway & Mt Hope Street

- No-Build (2026) Condition

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	8	0	4	2	6	8	14	1285	0	4	0	780	17
Future Volume (Veh/h)	8	0	4	2	6	8	14	1285	0	4	0	780	17
Sign Control		Stop			Stop			Free				Free	
Grade		0%			0%			0%				0%	
Peak Hour Factor	0.60	0.60	0.60	0.67	0.67	0.67	0.97	0.97	0.97	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	0	7	3	9	12	14	1325	0	0	0	848	18
Pedestrians		3											
Lane Width (ft)		12.0											
Walking Speed (ft/s)		3.5											
Percent Blockage		0											
Right turn flare (veh)													
Median type								None				None	
Median storage veh)													
Upstream signal (ft)												732	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94			0.00			
vC, conflicting volume	1567	2213	436	1784	2222	662	869			0	1325		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1473	2161	267	1704	2171	662	729			0	1325		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.2	4.1			0.0	4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			0.0	2.2		
p0 queue free %	81	100	99	95	79	97	98			0	100		
cM capacity (veh/h)	68	44	689	55	44	379	827			0	528		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	24	456	883	565	301
Volume Left	13	3	14	0	0	0
Volume Right	7	12	0	0	0	18
cSH	99	82	827	1700	1700	1700
Volume to Capacity	0.20	0.29	0.02	0.52	0.33	0.18
Queue Length 95th (ft)	18	27	1	0	0	0
Control Delay (s)	50.5	66.1	0.5	0.0	0.0	0.0
Lane LOS	F	F	A			
Approach Delay (s)	50.5	66.1	0.2		0.0	
Approach LOS	F	F				

Intersection Summary					
Average Delay	1.3				
Intersection Capacity Utilization	55.4%	ICU Level of Service		B	
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1299	7	0	800
Future Volume (Veh/h)	0	0	1299	7	0	800
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.25	0.25	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	0	1339	7	0	870
Pedestrians	5					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						595
pX, platoon unblocked	0.93					
vC, conflicting volume	1782	679			1351	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1695	679			1351	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	79	397			514	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	893	453	435	435
Volume Left	0	0	0	0	0
Volume Right	0	0	7	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.53	0.27	0.26	0.26
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	46.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	1298	1	0	800
Future Volume (Veh/h)	0	2	1298	1	0	800
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	4	1338	1	0	870
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						355
pX, platoon unblocked	0.93					
vC, conflicting volume	1780	676			1345	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1682	676			1345	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	80	399			516	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	4	892	447	435	435
Volume Left	0	0	0	0	0
Volume Right	4	0	1	0	0
cSH	399	1700	1700	1700	1700
Volume to Capacity	0.01	0.52	0.26	0.26	0.26
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	14.1	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.1	0.0		0.0	
Approach LOS	B				

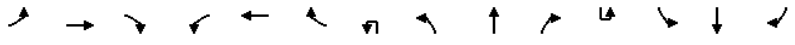
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	87	18	19	16	0	31	1	0	1292	6	21	9	765	0
Future Volume (vph)	87	18	19	16	0	31	1	0	1292	6	21	9	765	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	11	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.979			0.911				0.999					
Flt Protected		0.966			0.983							0.950		
Satd. Flow (prot)	0	1780	0	0	1644	0	0	0	3352	0	0	1636	3210	0
Flt Permitted		0.769			0.864				0.955			0.175		
Satd. Flow (perm)	0	1408	0	0	1444	0	0	0	3201	0	0	301	3210	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		7			39				1					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				355				413	
Travel Time (s)		6.0			7.3				8.1				9.4	
Confl. Peds. (#/hr)	5		1	1		5				5		5		
Confl. Bikes (#/hr)														1
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.97	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	0%	0%	4%	0%	0%	22%	3%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	99	20	22	20	0	39	1	0	1332	6	23	10	823	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	141	0	0	59	0	0	0	1339	0	0	33	823	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	31.0	31.0		31.0	31.0		89.0		89.0		89.0	89.0	89.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%		74.2%		74.2%		74.2%	74.2%	74.2%	
Maximum Green (s)	24.0	24.0		24.0	24.0		84.0		84.0		84.0	84.0	84.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.0			16.0				92.0			92.0	92.0	
Actuated g/C Ratio		0.13			0.13				0.77			0.77	0.77	
v/c Ratio		0.73			0.26				0.55			0.14	0.33	
Control Delay		67.6			22.5				7.2			6.5	5.3	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		67.6			22.5				7.2			6.5	5.3	
LOS		E			C				A			A	A	
Approach Delay		67.6			22.5				7.2				5.4	
Approach LOS		E			C				A				A	
90th %ile Green (s)	23.1	23.1		23.1	23.1		84.9		84.9		84.9	84.9	84.9	
90th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
70th %ile Green (s)	19.0	19.0		19.0	19.0		89.0		89.0		89.0	89.0	89.0	
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
50th %ile Green (s)	16.1	16.1		16.1	16.1		91.9		91.9		91.9	91.9	91.9	
50th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
30th %ile Green (s)	13.1	13.1		13.1	13.1		94.9		94.9		94.9	94.9	94.9	
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
10th %ile Green (s)	8.9	8.9		8.9	8.9		99.1		99.1		99.1	99.1	99.1	
10th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
Queue Length 50th (ft)		101			14				186			6	89	
Queue Length 95th (ft)		157			42				301			21	148	
Internal Link Dist (ft)		184			240				275				333	
Turn Bay Length (ft)												100		
Base Capacity (vph)		287			320				2453			230	2459	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.49			0.18				0.55			0.14	0.33	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 10.5 — Intersection LOS: B
Intersection Capacity Utilization 59.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 4: American Legion Highway & Mt Hope Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	10	0	8	4	2	9	5	10	930	0	13	0	1275	34
Future Volume (Veh/h)	10	0	8	4	2	9	5	10	930	0	13	0	1275	34
Sign Control		Stop			Stop				Free				Free	
Grade		0%			0%				0%				0%	
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.94	0.94	0.94	0.94	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	20	0	16	6	3	13	0	11	989	0	0	0	1301	35
Pedestrians		18			18				2				1	
Lane Width (ft)		12.0			12.0				12.0				12.0	
Walking Speed (ft/s)		3.5			3.5				3.5				3.5	
Percent Blockage		2			2				0				0	
Right turn flare (veh)														
Median type									None				None	
Median storage veh)														
Upstream signal (ft)													741	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.00	0.82			0.00			
vC, conflicting volume	1868	2366	688	1698	2383	514	0	1354			0	1007		
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	1628	2231	196	1421	2252	514	0	1004			0	1007		
tC, single (s)	7.5	6.5	7.2	8.0	6.5	6.9	0.0	4.1			0.0	4.1		
tC, 2 stage (s)														
tF (s)	3.5	4.0	3.4	3.8	4.0	3.3	0.0	2.2			0.0	2.2		
p0 queue free %	59	100	97	90	91	97	0	98			0	100		
cM capacity (veh/h)	49	34	630	59	33	502	0	566			0	684		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	36	22	341	659	867	469
Volume Left	20	6	11	0	0	0
Volume Right	16	13	0	0	0	35
cSH	82	101	566	1700	1700	1700
Volume to Capacity	0.44	0.22	0.02	0.39	0.51	0.28
Queue Length 95th (ft)	45	19	1	0	0	0
Control Delay (s)	79.0	50.5	0.6	0.0	0.0	0.0
Lane LOS	F	F	A			
Approach Delay (s)	79.0	50.5	0.2		0.0	
Approach LOS	F	F				

Intersection Summary					
Average Delay	1.7				
Intersection Capacity Utilization	56.2%	ICU Level of Service		B	
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	12	946	17	0	1322
Future Volume (Veh/h)	0	12	946	17	0	1322
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.97	0.97	0.98	0.98
Hourly flow rate (vph)	0	19	975	18	0	1349
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						598
pX, platoon unblocked	0.82					
vC, conflicting volume	1668	506			1003	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1384	506			1003	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	112	501			692	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	19	650	343	674	674
Volume Left	0	0	0	0	0
Volume Right	19	0	18	0	0
cSH	501	1700	1700	1700	1700
Volume to Capacity	0.04	0.38	0.20	0.40	0.40
Queue Length 95th (ft)	3	0	0	0	0
Control Delay (s)	12.5	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.5	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	39.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	26	957	2	0	1322
Future Volume (Veh/h)	0	26	957	2	0	1322
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.97	0.97	0.98	0.98
Hourly flow rate (vph)	0	41	987	2	0	1349
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						381
pX, platoon unblocked	0.82					
vC, conflicting volume	1672	504			999	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1388	504			999	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			100	
cM capacity (veh/h)	111	503			694	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	41	658	331	674	674
Volume Left	0	0	0	0	0
Volume Right	41	0	2	0	0
cSH	503	1700	1700	1700	1700
Volume to Capacity	0.08	0.39	0.19	0.40	0.40
Queue Length 95th (ft)	7	0	0	0	0
Control Delay (s)	12.8	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.8	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		39.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	92	38	37	7	0	20	4	0	951	28	29	65	1274	0
Future Volume (vph)	92	38	37	7	0	20	4	0	951	28	29	65	1274	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	12	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.970			0.901				0.996					
Flt Protected		0.973			0.987							0.950		
Satd. Flow (prot)	0	1744	0	0	1665	0	0	0	3402	0	0	1805	3242	0
Flt Permitted		0.807			0.902				0.951			0.259		
Satd. Flow (perm)	0	1441	0	0	1521	0	0	0	3235	0	0	490	3242	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		12			28				5					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				381				550	
Travel Time (s)		6.0			7.3				8.7				12.5	
Confl. Peds. (#/hr)	4		2	2		4				9		9		
Confl. Bikes (#/hr)										1				
Peak Hour Factor	0.99	0.99	0.99	0.72	0.72	0.72	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	2%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	93	38	37	10	0	28	4	0	980	29	30	67	1313	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	168	0	0	38	0	0	0	1013	0	0	97	1313	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	34.0	34.0		34.0	34.0		76.0		76.0		76.0	76.0	76.0	
Total Split (%)	30.9%	30.9%		30.9%	30.9%		69.1%		69.1%		69.1%	69.1%	69.1%	
Maximum Green (s)	27.0	27.0		27.0	27.0		71.0		71.0		71.0	71.0	71.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.4			16.4				81.6			81.6	81.6	
Actuated g/C Ratio		0.15			0.15				0.74			0.74	0.74	
v/c Ratio		0.75			0.15				0.42			0.27	0.55	
Control Delay		60.8			18.7				6.5			7.9	7.9	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		60.8			18.7				6.5			7.9	7.9	
LOS		E			B				A			A	A	
Approach Delay		60.8			18.7				6.5				7.9	
Approach LOS		E			B				A				A	
90th %ile Green (s)	23.6	23.6		23.6	23.6		74.4		74.4		74.4	74.4	74.4	
90th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
70th %ile Green (s)	19.4	19.4		19.4	19.4		78.6		78.6		78.6	78.6	78.6	
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
50th %ile Green (s)	16.4	16.4		16.4	16.4		81.6		81.6		81.6	81.6	81.6	
50th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
30th %ile Green (s)	13.4	13.4		13.4	13.4		84.6		84.6		84.6	84.6	84.6	
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
10th %ile Green (s)	9.1	9.1		9.1	9.1		88.9		88.9		88.9	88.9	88.9	
10th %ile Term Code	Gap	Gap		Gap	Gap		Coord		Coord		Coord	Coord	Coord	
Queue Length 50th (ft)		107			6				120			19	181	
Queue Length 95th (ft)		169			24				199			54	297	
Internal Link Dist (ft)		184			240				301				470	
Turn Bay Length (ft)												100		
Base Capacity (vph)		362			394				2401			363	2405	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.46			0.10				0.42			0.27	0.55	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 20 (18%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 10.9 Intersection LOS: B
Intersection Capacity Utilization 92.8% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 4: American Legion Highway & Mt Hope Street

- Build (2026) Condition

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	10	0	4	4	6	8	14	1299	0	6	0	780	17
Future Volume (Veh/h)	10	0	4	4	6	8	14	1299	0	6	0	780	17
Sign Control		Stop			Stop			Free				Free	
Grade		0%			0%			0%				0%	
Peak Hour Factor	0.60	0.60	0.60	0.67	0.67	0.67	0.97	0.97	0.97	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	7	6	9	12	14	1339	0	0	0	848	18
Pedestrians		3											
Lane Width (ft)		12.0											
Walking Speed (ft/s)		3.5											
Percent Blockage		0											
Right turn flare (veh)													
Median type								None				None	
Median storage veh)													
Upstream signal (ft)												732	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94			0.00			
vC, conflicting volume	1574	2227	436	1798	2236	670	869			0	1339		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1480	2176	266	1719	2185	670	728			0	1339		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.2	4.1			0.0	4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			0.0	2.2		
p0 queue free %	74	100	99	89	79	97	98			0	100		
cM capacity (veh/h)	66	43	690	54	43	375	827			0	521		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	24	27	460	893	565	301
Volume Left	17	6	14	0	0	0
Volume Right	7	12	0	0	0	18
cSH	90	76	827	1700	1700	1700
Volume to Capacity	0.27	0.35	0.02	0.53	0.33	0.18
Queue Length 95th (ft)	24	34	1	0	0	0
Control Delay (s)	58.8	76.2	0.5	0.0	0.0	0.0
Lane LOS	F	F	A			
Approach Delay (s)	58.8	76.2	0.2		0.0	
Approach LOS	F	F				

Intersection Summary					
Average Delay	1.6				
Intersection Capacity Utilization	55.8%	ICU Level of Service		B	
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	1324	0	0	802
Future Volume (Veh/h)	0	1	1324	0	0	802
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.25	0.25	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	4	1365	0	0	872
Pedestrians	5					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						595
pX, platoon unblocked	0.93					
vC, conflicting volume	1806	688			1370	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1720	688			1370	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	76	391			505	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	4	682	682	436	436
Volume Left	0	0	0	0	0
Volume Right	4	0	0	0	0
cSH	391	1700	1700	1700	1700
Volume to Capacity	0.01	0.40	0.40	0.26	0.26
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	14.3	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.3	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		46.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	30	1299	26	0	802
Future Volume (Veh/h)	0	30	1299	26	0	802
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	60	1339	27	0	872
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						355
pX, platoon unblocked	0.93					
vC, conflicting volume	1794	689			1372	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1698	689			1372	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	85			100	
cM capacity (veh/h)	78	391			504	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	60	893	473	436	436
Volume Left	0	0	0	0	0
Volume Right	60	0	27	0	0
cSH	391	1700	1700	1700	1700
Volume to Capacity	0.15	0.53	0.28	0.26	0.26
Queue Length 95th (ft)	13	0	0	0	0
Control Delay (s)	15.9	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.9	0.0		0.0	
Approach LOS	C				

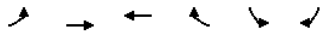
Intersection Summary				
Average Delay		0.4		
Intersection Capacity Utilization		46.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	87	18	19	16	0	31	1	0	1305	22	21	9	767	0
Future Volume (vph)	87	18	19	16	0	31	1	0	1305	22	21	9	767	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	11	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.979			0.911				0.997					
Flt Protected		0.966			0.983							0.950		
Satd. Flow (prot)	0	1780	0	0	1644	0	0	0	3346	0	0	1636	3210	0
Flt Permitted		0.769			0.864				0.955			0.169		
Satd. Flow (perm)	0	1408	0	0	1444	0	0	0	3195	0	0	291	3210	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		7			39				3					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				355				413	
Travel Time (s)		6.0			7.3				8.1				9.4	
Confl. Peds. (#/hr)	5		1	1		5				5		5		
Confl. Bikes (#/hr)														1
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.97	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	0%	0%	4%	0%	0%	22%	3%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	99	20	22	20	0	39	1	0	1345	23	23	10	825	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	141	0	0	59	0	0	0	1369	0	0	33	825	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	31.0	31.0		31.0	31.0		89.0		89.0		89.0	89.0	89.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%		74.2%		74.2%		74.2%	74.2%	74.2%	
Maximum Green (s)	24.0	24.0		24.0	24.0		84.0		84.0		84.0	84.0	84.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.0			16.0				92.0			92.0	92.0	
Actuated g/C Ratio		0.13			0.13				0.77			0.77	0.77	
v/c Ratio		0.73			0.26				0.56			0.15	0.34	
Control Delay		67.6			22.5				7.4			6.7	5.3	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		67.6			22.5				7.4			6.7	5.3	
LOS		E			C				A			A	A	
Approach Delay		67.6			22.5				7.4				5.4	
Approach LOS		E			C				A				A	
Queue Length 50th (ft)		101			14				193			6	89	
Queue Length 95th (ft)		157			42				313			21	149	
Internal Link Dist (ft)		184			240				275				333	
Turn Bay Length (ft)												100		
Base Capacity (vph)		287			320				2449			222	2459	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.49			0.18				0.56			0.15	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15

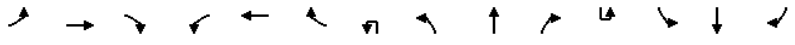
Splits and Phases: 4: American Legion Highway & Mt Hope Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↱
Traffic Volume (veh/h)	0	0	18	0	0	2
Future Volume (Veh/h)	0	0	18	0	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.67	0.67	0.92	0.92
Hourly flow rate (vph)	0	0	27	0	0	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	27				27	27
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27				27	27
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1600				993	1054

Direction, Lane #	WB 1	SB 1
Volume Total	27	2
Volume Left	0	0
Volume Right	0	2
cSH	1700	1054
Volume to Capacity	0.02	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	8.4
Lane LOS		A
Approach Delay (s)	0.0	8.4
Approach LOS		A

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	13.3%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	13	0	8	5	2	9	5	10	956	0	17	0	1275	34
Future Volume (Veh/h)	13	0	8	5	2	9	5	10	956	0	17	0	1275	34
Sign Control		Stop			Stop				Free				Free	
Grade		0%			0%				0%				0%	
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.94	0.94	0.94	0.94	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	26	0	16	7	3	13	0	11	1017	0	0	0	1301	35
Pedestrians		18			18				2				1	
Lane Width (ft)		12.0			12.0				12.0				12.0	
Walking Speed (ft/s)		3.5			3.5				3.5				3.5	
Percent Blockage		2			2				0				0	
Right turn flare (veh)														
Median type									None				None	
Median storage veh)														
Upstream signal (ft)													741	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.00	0.82			0.00			
vC, conflicting volume	1882	2394	688	1726	2411	528	0	1354			0	1035		
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	1643	2263	192	1452	2285	528	0	1001			0	1035		
tC, single (s)	7.5	6.5	7.2	8.0	6.5	6.9	0.0	4.1			0.0	4.1		
tC, 2 stage (s)														
tF (s)	3.5	4.0	3.4	3.8	4.0	3.3	0.0	2.2			0.0	2.2		
p0 queue free %	45	100	97	87	90	97	0	98			0	100		
cM capacity (veh/h)	47	32	633	56	31	492	0	566			0	668		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	42	23	350	678	867	469
Volume Left	26	7	11	0	0	0
Volume Right	16	13	0	0	0	35
cSH	73	93	566	1700	1700	1700
Volume to Capacity	0.58	0.25	0.02	0.40	0.51	0.28
Queue Length 95th (ft)	62	22	1	0	0	0
Control Delay (s)	107.5	56.1	0.6	0.0	0.0	0.0
Lane LOS	F	F	A			
Approach Delay (s)	107.5	56.1	0.2		0.0	
Approach LOS	F	F				

Intersection Summary					
Average Delay	2.5				
Intersection Capacity Utilization	59.1%	ICU Level of Service	B		
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	996	0	0	1326
Future Volume (Veh/h)	0	1	996	0	0	1326
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.97	0.97	0.98	0.98
Hourly flow rate (vph)	0	2	1027	0	0	1353
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						598
pX, platoon unblocked	0.82					
vC, conflicting volume	1714	524			1037	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1436	524			1037	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	103	488			672	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	2	514	514	676	676
Volume Left	0	0	0	0	0
Volume Right	2	0	0	0	0
cSH	488	1700	1700	1700	1700
Volume to Capacity	0.00	0.30	0.30	0.40	0.40
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	12.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.4	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		40.0%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	52	958	52	0	1326
Future Volume (Veh/h)	0	52	958	52	0	1326
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.97	0.97	0.98	0.98
Hourly flow rate (vph)	0	83	988	54	0	1353
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						381
pX, platoon unblocked	0.82					
vC, conflicting volume	1702	531			1052	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1421	531			1052	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	83			100	
cM capacity (veh/h)	106	483			663	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	83	659	383	676	676
Volume Left	0	0	0	0	0
Volume Right	83	0	54	0	0
cSH	483	1700	1700	1700	1700
Volume to Capacity	0.17	0.39	0.23	0.40	0.40
Queue Length 95th (ft)	15	0	0	0	0
Control Delay (s)	14.0	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.0	0.0		0.0	
Approach LOS	B				

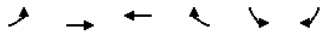
Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	40.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	92	38	37	7	0	20	4	0	963	43	29	65	1278	0
Future Volume (vph)	92	38	37	7	0	20	4	0	963	43	29	65	1278	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	12	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.970			0.901				0.994					
Flt Protected		0.973			0.987							0.950		
Satd. Flow (prot)	0	1744	0	0	1665	0	0	0	3392	0	0	1805	3242	0
Flt Permitted		0.807			0.902				0.951			0.250		
Satd. Flow (perm)	0	1441	0	0	1521	0	0	0	3226	0	0	473	3242	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		12			28				8					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				381				550	
Travel Time (s)		6.0			7.3				8.7				12.5	
Confl. Peds. (#/hr)	4		2	2		4				9		9		
Confl. Bikes (#/hr)										1				
Peak Hour Factor	0.99	0.99	0.99	0.72	0.72	0.72	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	2%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	93	38	37	10	0	28	4	0	993	44	30	67	1318	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	168	0	0	38	0	0	0	1041	0	0	97	1318	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	34.0	34.0		34.0	34.0		76.0		76.0		76.0	76.0	76.0	
Total Split (%)	30.9%	30.9%		30.9%	30.9%		69.1%		69.1%		69.1%	69.1%	69.1%	
Maximum Green (s)	27.0	27.0		27.0	27.0		71.0		71.0		71.0	71.0	71.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.4			16.4				81.6			81.6	81.6	
Actuated g/C Ratio		0.15			0.15				0.74			0.74	0.74	
v/c Ratio		0.75			0.15				0.43			0.28	0.55	
Control Delay		60.8			18.7				6.6			8.2	7.9	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		60.8			18.7				6.6			8.2	7.9	
LOS		E			B				A			A	A	
Approach Delay		60.8			18.7				6.6				7.9	
Approach LOS		E			B				A				A	
Queue Length 50th (ft)		107			6				124			19	182	
Queue Length 95th (ft)		169			24				206			55	300	
Internal Link Dist (ft)		184			240				301				470	
Turn Bay Length (ft)												100		
Base Capacity (vph)		362			394				2395			350	2405	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.46			0.10				0.43			0.28	0.55	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 20 (18%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 10.9 Intersection LOS: B
Intersection Capacity Utilization 93.7% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 4: American Legion Highway & Mt Hope Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↱
Traffic Volume (veh/h)	0	0	16	0	0	2
Future Volume (Veh/h)	0	0	16	0	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.70	0.70	0.92	0.92
Hourly flow rate (vph)	0	0	23	0	0	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	23				23	23
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23				23	23
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1605				998	1060

Direction, Lane #	WB 1	SB 1
Volume Total	23	2
Volume Left	0	0
Volume Right	0	2
cSH	1700	1060
Volume to Capacity	0.01	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	8.4
Lane LOS		A
Approach Delay (s)	0.0	8.4
Approach LOS		A

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	13.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	10	0	4	4	6	8	14	1299	0	6	0	780	17
Future Volume (Veh/h)	10	0	4	4	6	8	14	1299	0	6	0	780	17
Sign Control		Stop			Stop			Free				Free	
Grade		0%			0%			0%				0%	
Peak Hour Factor	0.60	0.60	0.60	0.67	0.67	0.67	0.97	0.97	0.97	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	7	6	9	12	14	1339	0	0	0	848	18
Pedestrians		3											
Lane Width (ft)		12.0											
Walking Speed (ft/s)		3.5											
Percent Blockage		0											
Right turn flare (veh)													
Median type								None				None	
Median storage veh)													
Upstream signal (ft)												732	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94			0.00			
vC, conflicting volume	1574	2227	436	1798	2236	670	869			0	1339		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1480	2176	266	1719	2185	670	728			0	1339		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	7.2	4.1			0.0	4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			0.0	2.2		
p0 queue free %	74	100	99	89	79	97	98			0	100		
cM capacity (veh/h)	66	43	690	54	43	375	827			0	521		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	24	27	460	893	565	301
Volume Left	17	6	14	0	0	0
Volume Right	7	12	0	0	0	18
cSH	90	76	827	1700	1700	1700
Volume to Capacity	0.27	0.35	0.02	0.53	0.33	0.18
Queue Length 95th (ft)	24	34	1	0	0	0
Control Delay (s)	58.8	76.2	0.5	0.0	0.0	0.0
Lane LOS	F	F	A			
Approach Delay (s)	58.8	76.2	0.2		0.0	
Approach LOS	F	F				

Intersection Summary					
Average Delay	1.6				
Intersection Capacity Utilization	55.8%	ICU Level of Service		B	
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	31	1299	26	0	802
Future Volume (Veh/h)	0	31	1299	26	0	802
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.97	0.97	0.92	0.92
Hourly flow rate (vph)	0	62	1339	27	0	872
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						355
pX, platoon unblocked	0.93					
vC, conflicting volume	1794	689			1372	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1698	689			1372	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	84			100	
cM capacity (veh/h)	78	391			504	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	62	893	473	436	436
Volume Left	0	0	0	0	0
Volume Right	62	0	27	0	0
cSH	391	1700	1700	1700	1700
Volume to Capacity	0.16	0.53	0.28	0.26	0.26
Queue Length 95th (ft)	14	0	0	0	0
Control Delay (s)	15.9	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.9	0.0		0.0	
Approach LOS	C				

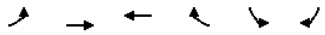
Intersection Summary				
Average Delay		0.4		
Intersection Capacity Utilization		46.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	87	18	19	16	0	31	1	0	1305	22	21	9	767	0
Future Volume (vph)	87	18	19	16	0	31	1	0	1305	22	21	9	767	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	11	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.979			0.911				0.997					
Flt Protected		0.966			0.983							0.950		
Satd. Flow (prot)	0	1780	0	0	1644	0	0	0	3346	0	0	1636	3210	0
Flt Permitted		0.769			0.864				0.955			0.169		
Satd. Flow (perm)	0	1408	0	0	1444	0	0	0	3195	0	0	291	3210	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		7			39				3					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				355				413	
Travel Time (s)		6.0			7.3				8.1				9.4	
Confl. Peds. (#/hr)	5		1	1		5				5		5		
Confl. Bikes (#/hr)														1
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.97	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	0%	0%	4%	0%	0%	22%	3%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	99	20	22	20	0	39	1	0	1345	23	23	10	825	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	141	0	0	59	0	0	0	1369	0	0	33	825	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	31.0	31.0		31.0	31.0		89.0		89.0		89.0	89.0	89.0	
Total Split (%)	25.8%	25.8%		25.8%	25.8%		74.2%		74.2%		74.2%	74.2%	74.2%	
Maximum Green (s)	24.0	24.0		24.0	24.0		84.0		84.0		84.0	84.0	84.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.0			16.0				92.0			92.0	92.0	
Actuated g/C Ratio		0.13			0.13				0.77			0.77	0.77	
v/c Ratio		0.73			0.26				0.56			0.15	0.34	
Control Delay		67.6			22.5				7.4			6.7	5.3	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		67.6			22.5				7.4			6.7	5.3	
LOS		E			C				A			A	A	
Approach Delay		67.6			22.5				7.4				5.4	
Approach LOS		E			C				A				A	
Queue Length 50th (ft)		101			14				193			6	89	
Queue Length 95th (ft)		157			42				313			21	149	
Internal Link Dist (ft)		184			240				275				333	
Turn Bay Length (ft)												100		
Base Capacity (vph)		287			320				2449			222	2459	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.49			0.18				0.56			0.15	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 60.8% ICU Level of Service B
Analysis Period (min) 15

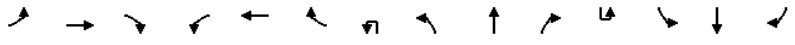
Splits and Phases: 4: American Legion Highway & Mt Hope Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↱
Traffic Volume (veh/h)	0	0	18	0	0	2
Future Volume (Veh/h)	0	0	18	0	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.67	0.67	0.92	0.92
Hourly flow rate (vph)	0	0	27	0	0	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	27				27	27
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27				27	27
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1600				993	1054

Direction, Lane #	WB 1	SB 1
Volume Total	27	2
Volume Left	0	0
Volume Right	0	2
cSH	1700	1054
Volume to Capacity	0.02	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	8.4
Lane LOS		A
Approach Delay (s)	0.0	8.4
Approach LOS		A

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	13.3%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	13	0	8	5	2	9	5	10	956	0	17	0	1275	34
Future Volume (Veh/h)	13	0	8	5	2	9	5	10	956	0	17	0	1275	34
Sign Control		Stop			Stop				Free				Free	
Grade		0%			0%				0%				0%	
Peak Hour Factor	0.50	0.50	0.50	0.70	0.70	0.70	0.94	0.94	0.94	0.94	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	26	0	16	7	3	13	0	11	1017	0	0	0	1301	35
Pedestrians		18			18				2				1	
Lane Width (ft)		12.0			12.0				12.0				12.0	
Walking Speed (ft/s)		3.5			3.5				3.5				3.5	
Percent Blockage		2			2				0				0	
Right turn flare (veh)														
Median type									None				None	
Median storage veh)														
Upstream signal (ft)													741	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.00	0.82			0.00			
vC, conflicting volume	1882	2394	688	1726	2411	528	0	1354			0	1035		
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	1643	2263	192	1452	2285	528	0	1001			0	1035		
tC, single (s)	7.5	6.5	7.2	8.0	6.5	6.9	0.0	4.1			0.0	4.1		
tC, 2 stage (s)														
tF (s)	3.5	4.0	3.4	3.8	4.0	3.3	0.0	2.2			0.0	2.2		
p0 queue free %	45	100	97	87	90	97	0	98			0	100		
cM capacity (veh/h)	47	32	633	56	31	492	0	566			0	668		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	42	23	350	678	867	469
Volume Left	26	7	11	0	0	0
Volume Right	16	13	0	0	0	35
cSH	73	93	566	1700	1700	1700
Volume to Capacity	0.58	0.25	0.02	0.40	0.51	0.28
Queue Length 95th (ft)	62	22	1	0	0	0
Control Delay (s)	107.5	56.1	0.6	0.0	0.0	0.0
Lane LOS	F	F	A			
Approach Delay (s)	107.5	56.1	0.2		0.0	
Approach LOS	F	F				

Intersection Summary					
Average Delay	2.5				
Intersection Capacity Utilization	59.1%	ICU Level of Service	B		
Analysis Period (min)	15				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	53	958	52	0	1326
Future Volume (Veh/h)	0	53	958	52	0	1326
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.63	0.63	0.97	0.97	0.98	0.98
Hourly flow rate (vph)	0	84	988	54	0	1353
Pedestrians	10					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						381
pX, platoon unblocked	0.82					
vC, conflicting volume	1702	531			1052	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1421	531			1052	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	83			100	
cM capacity (veh/h)	106	483			663	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	84	659	383	676	676
Volume Left	0	0	0	0	0
Volume Right	84	0	54	0	0
cSH	483	1700	1700	1700	1700
Volume to Capacity	0.17	0.39	0.23	0.40	0.40
Queue Length 95th (ft)	16	0	0	0	0
Control Delay (s)	14.0	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.0	0.0		0.0	
Approach LOS	B				

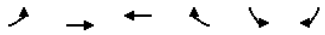
Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	40.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (vph)	92	38	37	7	0	20	4	0	963	43	29	65	1278	0
Future Volume (vph)	92	38	37	7	0	20	4	0	963	43	29	65	1278	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	11	11	12	12	11	11
Storage Length (ft)	0		0	0		0		0		0		100		0
Storage Lanes	0		0	0		0		0		0		1		0
Taper Length (ft)	25			25				25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.98				1.00			1.00		
Frt		0.970			0.901				0.994					
Flt Protected		0.973			0.987							0.950		
Satd. Flow (prot)	0	1744	0	0	1665	0	0	0	3392	0	0	1805	3242	0
Flt Permitted		0.807			0.902				0.951			0.250		
Satd. Flow (perm)	0	1441	0	0	1521	0	0	0	3226	0	0	473	3242	0
Right Turn on Red			Yes			Yes				Yes				No
Satd. Flow (RTOR)		12			28				8					
Link Speed (mph)		30			30				30				30	
Link Distance (ft)		264			320				381				550	
Travel Time (s)		6.0			7.3				8.7				12.5	
Confl. Peds. (#/hr)	4		2	2		4				9		9		
Confl. Bikes (#/hr)										1				
Peak Hour Factor	0.99	0.99	0.99	0.72	0.72	0.72	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	2%	0%
Parking (#/hr)													1	
Adj. Flow (vph)	93	38	37	10	0	28	4	0	993	44	30	67	1318	0
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	168	0	0	38	0	0	0	1041	0	0	97	1318	0
Turn Type	Perm	NA		Perm	NA		Perm		NA		Perm	Perm	NA	
Protected Phases		2			2				1				1	
Permitted Phases	2			2			1				1	1		
Detector Phase	2	2		2	2		1		1		1	1	1	
Switch Phase														
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		28.0		28.0		28.0	28.0	28.0	
Total Split (s)	34.0	34.0		34.0	34.0		76.0		76.0		76.0	76.0	76.0	
Total Split (%)	30.9%	30.9%		30.9%	30.9%		69.1%		69.1%		69.1%	69.1%	69.1%	
Maximum Green (s)	27.0	27.0		27.0	27.0		71.0		71.0		71.0	71.0	71.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0		3.0		3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.0		2.0		2.0	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0				0.0			0.0	0.0	
Total Lost Time (s)		7.0			7.0				5.0			5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead		Lead		Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes		Yes		Yes	Yes	Yes	
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		C-Max		C-Max		C-Max	C-Max	C-Max	
Walk Time (s)	8.0	8.0		8.0	8.0		7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		16.0		16.0		16.0	16.0	16.0	
Pedestrian Calls (#/hr)	10	10		10	10		0		0		0	0	0	
Act Effct Green (s)		16.4			16.4				81.6			81.6	81.6	
Actuated g/C Ratio		0.15			0.15				0.74			0.74	0.74	
v/c Ratio		0.75			0.15				0.43			0.28	0.55	
Control Delay		60.8			18.7				6.6			8.2	7.9	
Queue Delay		0.0			0.0				0.0			0.0	0.0	
Total Delay		60.8			18.7				6.6			8.2	7.9	
LOS		E			B				A			A	A	
Approach Delay		60.8			18.7				6.6				7.9	
Approach LOS		E			B				A				A	
Queue Length 50th (ft)		107			6				124			19	182	
Queue Length 95th (ft)		169			24				206			55	300	
Internal Link Dist (ft)		184			240				301				470	
Turn Bay Length (ft)												100		
Base Capacity (vph)		362			394				2395			350	2405	
Starvation Cap Reductn		0			0				0			0	0	
Spillback Cap Reductn		0			0				0			0	0	
Storage Cap Reductn		0			0				0			0	0	
Reduced v/c Ratio		0.46			0.10				0.43			0.28	0.55	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 20 (18%), Referenced to phase 1:NBSB, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 10.9 Intersection LOS: B
Intersection Capacity Utilization 93.7% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 4: American Legion Highway & Mt Hope Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↱
Traffic Volume (veh/h)	0	0	16	0	0	2
Future Volume (Veh/h)	0	0	16	0	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.70	0.70	0.92	0.92
Hourly flow rate (vph)	0	0	23	0	0	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	23				23	23
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23				23	23
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1605				998	1060

Direction, Lane #	WB 1	SB 1
Volume Total	23	2
Volume Left	0	0
Volume Right	0	2
cSH	1700	1060
Volume to Capacity	0.01	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	8.4
Lane LOS		A
Approach Delay (s)	0.0	8.4
Approach LOS		A

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	13.3%	ICU Level of Service		A
Analysis Period (min)	15			

APPENDIX E – RESPONSES TO CLIMATE CHANGE QUESTIONNAIRE

boston planning & development agency

Appendix E1 - Climate Resiliency Checklist- HFLW- Office/Residential - 780 American Legion Highway

A.1 - Project Information

Project Name:	Home for Little Wanderers Office/Residential East Building 1			
Project Address:	780 American Legion Highway, Roslindale			
Project Address Additional:				
Filing Type (*select*)	*Initial (PNF, EPNF)*			
Filing Contact	*Colleen Soden*	*Soden Sustainability Consulting*	*colleen@sodensustainability.com*	*617-372-7857*
Is MEPA approval required	*Yes/**no***		*Date*	

A.3 - Project Team

Owner / Developer:	The Home for Little Wanderers ("HFLW") (the "Proponent") as represented by Alinea Capital Partners, LLC (the "Developer's Representative")
Architect:	DHK Architects
Engineer:	TBD
Sustainability / LEED:	Soden Sustainability Consulting
Permitting:	MLF Consulting LLC
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Social service offices/medical clinic/residential
List the First Floor Uses:	Social service offices/medical clinic/community space
List any Critical Site Infrastructure and or Building Uses:	

Site and Building:

Site Area combined:	*93,435 SF*	Building Area:	*62,953 SF*
Building Height:	*64.6Ft*	Building Height:	*5-Stories*
Existing Site Elevation – Low:	*45.5 Ft BCB*	Existing Site Elevation – High:	*63 Ft BCB*
Proposed Site Elevation – Low:	*45.5 Ft BCB*	Proposed Site Elevation – High:	*63 BCB*
Proposed First Floor Elevation:	*47 Ft BCB*	Below grade levels:	*1 -Story*

Appendix E1 - Climate Resiliency Checklist- HFLW- Office/Residential
780 American Legion Highway (Continued)

Article 37 Green Building:

LEED Version - Rating System:	LEED BDC v 4	LEED Certification:	*Yes / **No***
Proposed LEED rating:	*Certified/**Silver** Gold/Platinum*	Proposed LEED point score:	*52 Pts.*

Building Envelope

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	*30ci (R)*	Exposed Floor:	*30ci (R)*
Foundation Wall:	*7.5ci (R)*	Slab Edge (at or below grade):	*R15 for 24" (R)*

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:	*0 (%)*	Wall & Spandrel Assembly Value:	*NA (U)*
Area of Framed & Insulated / Standard Wall:	*72 (%)*	Wall Value	*R20ci*
Area of Vision Window:	*28.5 %*	Window Glazing Assembly Value:	*0.45 (U)*
		Window Glazing SHGC:	*0.4 (SHGC)*
Area of Doors:	*5 %*	Door Assembly Value:	*0.45 (U)*

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	*Energy loads and performance were estimated using an eQuest 3.65 energy model based on the June 6, 2019 schematic drawings*		
Annual Electric:	*420,654 (kWh)*	Peak Electric:	*151.8 (kW)*
Annual Heating:	*530 (MMbtu)*	Peak Heating:	*0.8 (MMbtu/hr)*
Annual Cooling:	*16,582 (Tons-hr)*	Peak Cooling:	*16.8 (Tons)*
Energy Use - Below ASHRAE 90.1 - 2013:	*23.6 %*	Have the local utilities reviewed the building energy performance?	*Yes / no*
Energy Use - Below Mass. Code:	*23.0 %*	Energy Use Intensity:	*34 (kBtu/SF)*

Back-up / Emergency Power System

Electrical Generation Output:	*125 (kW)*	Number of Power Units:	1
System Type:	*Ground*	Fuel Source:	Natural Gas

Emergency and Critical System Loads (in the event of a service interruption)

Electric:	*45 (kW)*	Heating:	*0.5 (MMbtu/hr)*
		Cooling:	*10 /(Tons)*

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing GHG emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon neutrality by 2050 new buildings performance will need to progressively improve to net carbon zero and positive.

B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions: *386 (Tons)*

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

High energy performance of the building has been incorporated in the project via condensing boilers, condensing DHW heaters, improved envelope, low flow hot water fixtures, and energy star appliances.

Describe building specific passive energy efficiency measures including orientation, massing, envelop, and systems:

There is passive energy savings in the orientation and shading of the glazing with recessed windows as well as operable windows.

Describe building specific active energy efficiency measures including equipment, controls, fixtures, and systems:

The high efficiency equipment includes: low flow plumbing fixtures, high efficiency condensing boilers, high efficiency condensing domestic hot water heaters, as well as variable speed hot water pumps.

Describe building specific load reduction strategies including on-site renewable, clean, and energy storage systems:

The variable speed hot water loop, condensing boilers (reduced hot water temp) and low flow hot water plumbing fixtures will reduce the loads on both the boiler and the domestic hot water heaters. LED light fixtures will reduce the cooling load in the building as well as reduce the lighting energy.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

There are not any district scale emission reduction strategies incorporated at this time. Project will consider strategies where feasible as they arise.

Describe any energy efficiency assistance or support provided or to be provided to the project:

There will not be any energy efficiency assistance offered except that tenants will pay for their own utilities which will encourage individuals to be energy efficient.

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The building has space on the roof that could house both a solar PV array to offset electrical use as well as solar hot water heaters to reduce natural gas use in the building.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low:	*3 Deg.*	Temperature Range - High:	*103 Deg.*
Annual Heating Degree Days:	5,596	Annual Cooling Degree Days	900

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90°:	*25 #*	Days – Above 100°:	*10 #*
Number of Heatwaves / Year:	*5 #*	Average Duration of Heatwave (Days):	*4 #*

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

Heat island effect is reduced by incorporating reflective building materials as well as covered parking.

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The building is cooled by many individual heat pumps that can operate independently to maintain indoor conditions at higher outdoor average temperatures.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

Interruptions of power can be mitigated in the short term by the emergency generator. Longer power outages could require operable windows to provide ventilation and natural cooling.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm:	*5.25 In.*

Describe all building and site measures for reducing storm water run-off:

The Project includes subsurface infiltration systems designed to detain the first 1.25 inches of stormwater runoff over the total impervious area of the site and provide opportunity for groundwater recharge. To further reduce the stormwater runoff volume on-site, green roofs and permeable pavers will be implemented where practical

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

The Project includes green roofs and stormwater infiltration systems. Rooftop runoff will be captured and discharge directly to the infiltration systems on-site.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, sea levels in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA SFHA?	*Yes / (No)*	What Zone:	A, AE, AH, AO, AR, A99, V, VE
		Current FEMA SFHA Zone Base Flood Elevation:	*Ft BCB*

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online BPDA SLR-FHA Mapping Tool to assess the susceptibility of the project site.	*Yes / (No)*

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented on the BPDA Sea Level Rise - Flood Hazard Area (SLR-FHA) map, which depicts a modeled 1% annual chance coastal flood event with 40 inches of sea level rise (SLR). Use the online BPDA SLR-FHA Mapping Tool to identify the highest Sea Level Rise - Base Flood Elevation for the site. The Sea Level Rise - Design Flood Elevation is determined by adding either 24" of freeboard for critical facilities and infrastructure and any ground floor residential units OR 12" of freeboard for other buildings and uses.

Sea Level Rise - Base Flood Elevation:	*Ft BCB*		
Sea Level Rise - Design Flood Elevation:	*Ft BCB*	First Floor Elevation:	*Ft BCB*
Site Elevations at Building:	*Ft BCB*	Accessible Route Elevation:	*Ft BCB*

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

A pdf and word version of the Climate Resiliency Checklist is provided for informational use and off-line preparation of a project submission. NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

For questions or comments about this checklist or Climate Change best practices, please contact: John.Dalzell@boston.gov

Home For Little Wanderers East Building
PNF Application Preliminary Energy Model Analysis

Summary

For the Home For Little Wanderers Office/Residential Project PNF application, an energy analysis was performed based on the geometry and orientation described in the June 6, 2019 schematic building drawings. Analysis was performed by Allison Gaiko, PE, LEED AP for Soden Sustainability Consulting using eQuest3.65 to compare the proposed design case to two baseline scenarios:

- Energy cost comparison to ASHRAE 90.1-2010 Appendix G in accordance with LEED v4 requirements
- Energy use comparison to ASHRAE 90.1-2013 in accordance with MA Energy Code requirements

Model Input Assumptions

Below is a table summarizing the input of the proposed design and two baseline energy models

		ASHRAE 90.1-2010	ASHRAE 90.1-2013		Proposed
Opaque Assemblies	Roof	R20ci insulation – U-0.048	R30ci insulation – U-0.032		R30ci insulation - U-0.032
	Above Grade Walls	R13 + R7.5ci – U-0.064	R13 + R10ci – U-0.055		R20ci – U-0.044
	Exposed Floor	R30 – U-0.038	R30 – U-0.038		R30 – U-0.038
	Slab on Grade (unheated)	F-0.730	F-0.520		F-0.730
Glazing	Metal Framing U-Factor (other)	Assembly U-0.55	Assembly U-0.50 (operable) U-0.42 (fixed)		Assembly U-0.45
	SHGC	Assembly SHGC - 0.4	Assembly SHGC - 0.4		Assembly SHGC - 0.4
Lighting	Residential Dwelling[3]	0.90 W/SF	0.81 W/SF		0.68 W/SF
	Office[3]	0.98 W/SF	0.88 W/SF		0.74 W/SF
	Corridor/Transition[3]	0.66 W/SF	0.59 W/SF		0.50 W/SF
	Parking Garage[3]	0.19 W/SF	0.17 W/SF		0.14 W/SF
Process Loads	Residential Dwelling[1]	1.61 W/SF	1.61 W/SF		1.52 W/SF
	Office	0.75 W/SF	0.75 W/SF		0.75 W/SF
	Elevator	30 kW/car	30 kW/car		30 kW/car

		ASHRAE 90.1-2010	ASHRAE 90.1-2013		Proposed
DHW	Hot Water Heater Efficiency	80%	80%		95%
	Lavatory Sink Flow[2]	2.2 GPM	2.2 GPM		0.5 GPM
	Kitchen Sink Flow[2]	2.2 GPM	2.2 GPM		1.5 GPM
	Shower Flow[2]	2.5 GPM	2.5 GPM		1.5 GPM
HVAC	Boiler[3]	80%	88%		95%
	HW temperature	180 °F	180 °F		150 °F
	PTAC EER[3]	9.3 EER	10.45 EER		11 SEER
	PVAV SEER DX < 65[3]	13 SEER	14.3 SEER		15 SEER

Please note that the energy model is not created to predict actual energy use for the proposed building but rather to compare energy consumption between the design case and baseline cases. Inputs such as occupancy, weather data and individual occupants' habits affect the proposed model's ability to predict energy use. For this reason, the baseline and design models were created with identical weather data as well as identical schedules for parameters such as occupancy, lighting EFLH (electrical full load hours), and temperature set points. Schedules were based on the EFLH Tab of the v4 Minimum Energy Performance Calculator created for LEED v4 and are summarized in the attached Appendix.

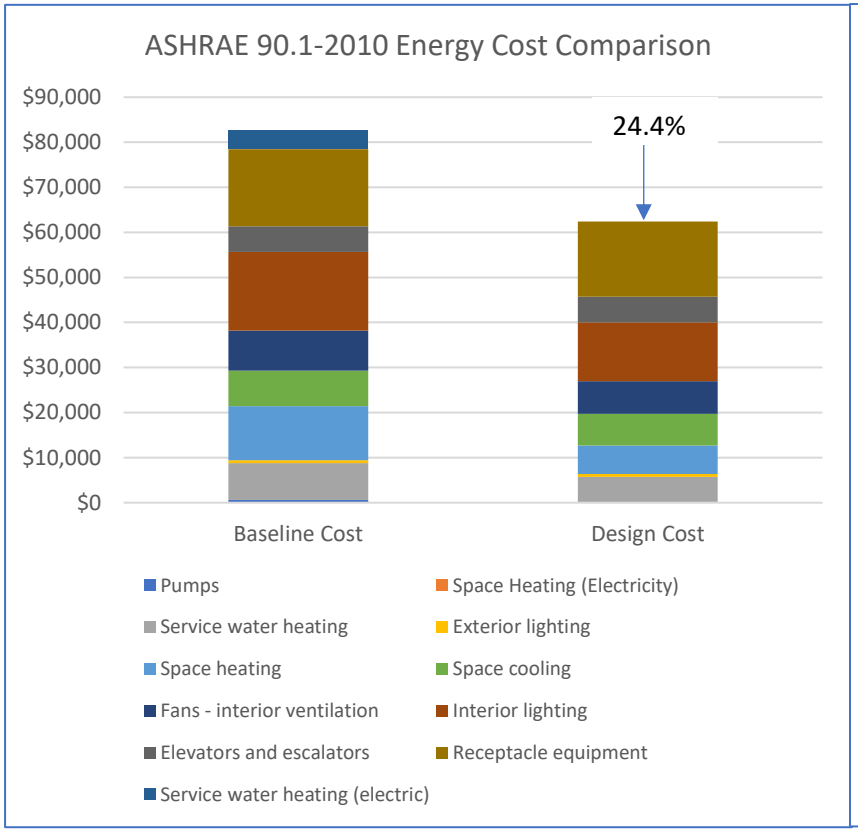
Table notes:

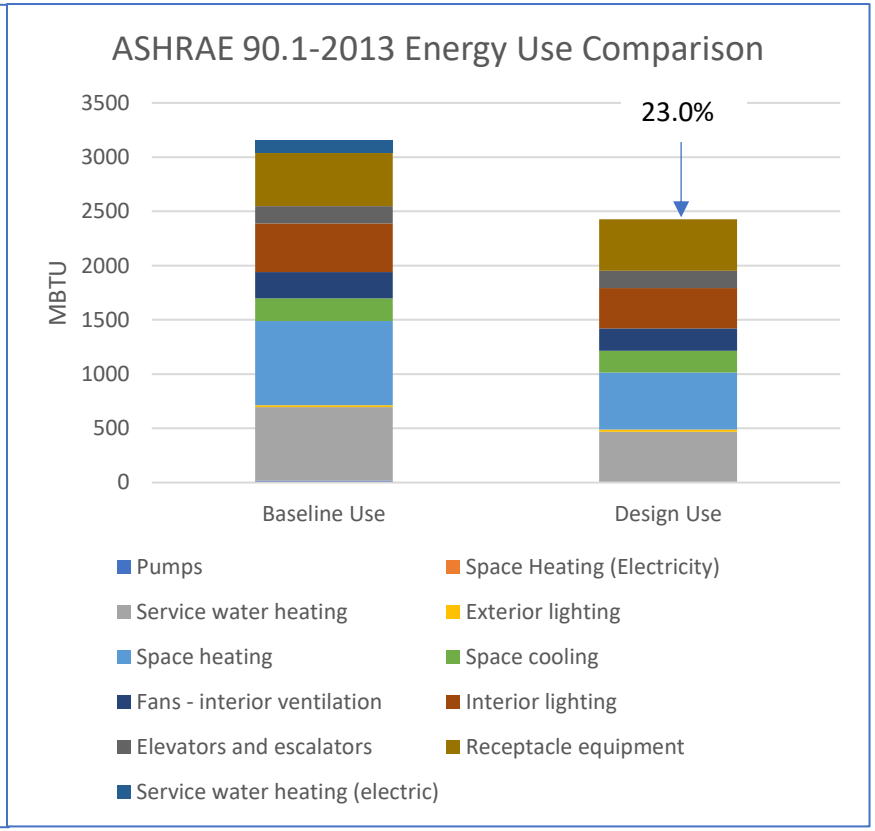
1. Reduction in plug load in the residential units is based on Energy Star appliances that have been incorporated in the project and has been calculated based on the Multi-Family Tab of the v4 Minimum Energy Performance Calculator created for LEED v4 and are summarized in the attached Appendix.
2. Reduction in domestic hot water flow in the residential units is based on the reduced flow fixtures and Energy Star appliances that have been incorporated in the project and has been calculated based on the Multi-Family Tab of the v4 Minimum Energy Performance Calculator created for LEED v4 and are summarized in the attached Appendix.
3. In accordance with Massachusetts Code requirements section C406, two additional efficiency package options were included in the ASHARAE 90.1-2013 baseline case. The two options selected were (1) More efficient HVAC performance – Exceed energy efficiency provisions by 10% and (2) Reduced lighting power density by 10%.

Model Results

The results of the Home for Little Wanderers East building preliminary energy model analysis show:

- 24.4% annual energy cost reduction vs ASHRAE 90.1-2010 (10 LEEDv4 points)
- 23.0% annual energy use reduction vs ASHRAE 90.1-2013 (MA Energy Code)





Most of the energy savings in the Home for Little Wanderers East building project are the result of reduced lighting, efficient domestic hot water heaters and efficient boilers, and are represented in the above graphs by reductions in space heating, interior lighting and service water heating energy use and cost.

Appendix

(OPTIONAL) Equivalent Full Load Hours Calculator

Default Schedules

Residential Dwelling Unit Default Schedules

Schedule Name: Dwelling Unit Thermostat setpoint schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	Hours/day	Hours/year
Daily Heating Setpoint	70.0	70.0	70.0	70.0	70.0	70.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	70.0	24.00	8,760
Daily Cooling Setpoint	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	80.0	80.0	80.0	80.0	80.0	80.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	24.00	8,760

Schedule Name: Dwelling Unit Lighting Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	7.7%	14.0%	14.0%	10.8%	10.8%	10.8%	7.7%	7.7%	7.7%	7.7%	7.7%	10.8%	21.7%	21.7%	21.7%	21.7%	18.6%	1.6%	2.34	585
Weekend	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	7.7%	14.0%	14.0%	10.8%	10.8%	10.8%	7.7%	7.7%	7.7%	7.7%	7.7%	10.8%	21.7%	21.7%	21.7%	21.7%	18.6%	1.6%	2.34	243
Holiday	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	7.7%	14.0%	14.0%	10.8%	10.8%	10.8%	7.7%	7.7%	7.7%	7.7%	7.7%	10.8%	21.7%	21.7%	21.7%	21.7%	18.6%	1.6%	2.34	26
Total Equivalent Full Load Hours of Operation per Year																										854

Schedule Name: Dwelling Unit Miscellaneous Equipment Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	5%	5%	5%	5%	5%	5%	5%	5%	50%	50%	50%	50%	30%	50%	50%	50%	50%	50%	35%	5%	5%	5%	5%	5%	5.80	1,450
Weekend	5%	5%	5%	5%	5%	5%	5%	5%	50%	50%	50%	50%	30%	50%	50%	50%	50%	50%	35%	5%	5%	5%	5%	5%	5.80	603
Holiday	5%	5%	5%	5%	5%	5%	5%	5%	50%	50%	50%	50%	30%	50%	50%	50%	50%	50%	35%	5%	5%	5%	5%	5%	5.80	64
Total Equivalent Full Load Hours of Operation per Year																										2,117

Schedule Name: Residential Common Area Miscellaneous Equipment Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	10%	10%	10%	10%	10%	30%	45%	45%	45%	45%	30%	30%	30%	30%	30%	30%	30%	30%	60%	80%	90%	80%	60%	30%	9.00	2,250
Weekend	10%	10%	10%	10%	10%	30%	45%	45%	45%	45%	30%	30%	30%	30%	30%	30%	30%	30%	60%	80%	90%	80%	60%	30%	9.00	936
Holiday	10%	10%	10%	10%	10%	30%	45%	45%	45%	45%	30%	30%	30%	30%	30%	30%	30%	30%	60%	80%	90%	80%	60%	30%	9.00	99
Total Equivalent Full Load Hours of Operation per Year																										3,285

Schedule Name: Residential DHW Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	5%	5%	5%	5%	5%	5%	30%	50%	40%	30%	30%	35%	40%	35%	35%	30%	30%	50%	50%	40%	35%	45%	30%	5%	6.70	1,675
Weekend	5%	5%	5%	5%	5%	5%	30%	50%	40%	30%	30%	35%	40%	35%	35%	30%	30%	50%	50%	40%	35%	45%	30%	5%	6.70	697
Holiday	5%	5%	5%	5%	5%	5%	30%	50%	40%	30%	30%	35%	40%	35%	35%	30%	30%	50%	50%	40%	35%	45%	30%	5%	6.70	74
Total Equivalent Full Load Hours of Operation per Year																										2,446

Schedule Name: Garage Exhaust

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	7%	7%	7%	7%	7%	7%	17%	20%	50%	50%	15%	15%	35%	15%	15%	15%	25%	50%	50%	25%	7%	7%	7%	7%	4.64	1,159
Weekend	7%	7%	7%	7%	7%	7%	17%	20%	50%	50%	15%	15%	35%	15%	15%	15%	25%	50%	50%	25%	7%	7%	7%	7%	4.64	482
Holiday	7%	7%	7%	7%	7%	7%	17%	20%	50%	50%	15%	15%	35%	15%	15%	15%	25%	50%	50%	25%	7%	7%	7%	7%	4.64	51
Total Equivalent Full Load Hours of Operation per Year																										1,693

Copy & Paste Schedule Above

Schedule Name: Apt Elev

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	5%	5%	5%	5%	5%	5%	20%	40%	50%	40%	40%	35%	35%	30%	30%	30%	40%	45%	50%	40%	35%	30%	10%	5%	6.35	1,588
Weekend	5%	5%	5%	5%	5%	5%	10%	25%	50%	50%	50%	40%	45%	45%	40%	40%	50%	45%	45%	45%	30%	30%	25%	15%	7.10	738
Holiday	5%	5%	5%	5%	5%	5%	10%	25%	50%	50%	50%	40%	45%	45%	40%	40%	50%	45%	45%	45%	30%	30%	25%	15%	7.10	78
Total Equivalent Full Load Hours of Operation per Year																										2,404

Multifamily Home Details

Complete the table for each building in the project. Input the number of units and the average floor area for units with the corresponding bedroom number.

Building Unit summary

Building ID	Studio		1 Bedroom		2 Bedrooms		3 Bedrooms		4 Bedrooms		5 Bedrooms		6 Bedrooms		7 Bedrooms		8 Bedrooms	
	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq
HFLW Office/Apt East Building			6	650	16	1,000												
Total number of units																		22
Total number of bedrooms																		38
Total Area of Dwelling Units (square feet)																		19,900

Building ID	Total Number of Units	Total Number of Bedrroms	Total Area of Dwelling Units (square feet)	Average Number of Bedrooms Per Unit	Average Floor Area per Unit (square feet)	Average Floor Area Per Unit for Reference Building (square feet)
HFLW Office/Apt East Building	22	38	19,900	1.73	905	1,436

Homes Dwelling Unit Equipment Calculator

Enter the appliances and equipment that is present in the residential dwelling units for the project. For clothes washers and dryers, enter the quantity of each unit installed within the project scope of work. For fans, enter the total supply volume for all fans installed for the project.

Building ID	Load Source	Quantity (or sum total fan volume [cfm] for fans)	Energy Star Eqp?	Average bedrooms per dwelling unit		Electric Loads					Natural Gas Loads					Annual Service Hot Water Load (gallons/year)			
						Annual Consumption (kWh/year)		Sensible Ratio	Latent Ratio		Annual Consumption (therms/year)		Sensible Ratio	Latent Ratio		Baseline Per Equipment	Proposed Per Equipment	Baseline Total	Proposed Total
						Baseline	Proposed				Baseline	Proposed							
HFLW Office/Ap	Cooking (electric stove/range)	22	Yes	1.727273		13288	13288	0.4	0.3		0	0	0.00	0.00		0.00	0.00	0.00	0
HFLW Office/Ap	Clothes Dryer (In-unit electric)	22	Yes	1.727273		14478	14478	0.15	0.05		0	0	0.00	0.00		0.00	0.00	0.00	0
HFLW Office/Ap	Bath / Utility Fan, 10 to 89 cfm	1650	Yes	1.727273		1003.75	860.3571	0	0		0	0	0.00	0.00		0.00	0.00	0.00	0
HFLW Office/Apt	Refrigerator	22	Yes	1.727273		11,638	3,306	1	0		0	0	0.00	0.00		0.00	0.00	0.0	0.0
HFLW Office/Apt	Dishwasher	22	Yes	1.727273		4,532	3,608	0.6	0.15		0	0	0.00	0.00		1,290.00	860.00	28,380.0	18,920.0
HFLW Office/Apt	Clothes Washer (In-unit)	22	Yes	1.727273		1,782	1,254	0.8	0		0	0	0.00	0.00		2,435.80	1,127.40	53,587.6	24,802.8

Homes Dwelling Unit Equipment Modeling Summary

Report the modeled Receptacle Equipment and Appliances Equivalent Full Load Hours of Operation in the Schedules tab before referring to the table below. The Equivalent Full Load Hours of Operation is used to calculate the equipment power density for resdential dwelling units that must be modeled based on the building equipment reported for the building. After confirming the Equivalent Full Load Hours of Operation in the schedules tab, use the values below for the Baseline and Proposed Miscellaneous Equipment Loads ir the Dwelling Units. These loads include 0.5 Watts per square foot of electric miscellaneous equipment load with a 0.9 sensible ratio and 0.1 latent ratio in addition to the equipment load sources selected above.

Building ID	Equivalent Full Load Hours of Dwelling Unit Miscellaneous Equipment Operation Per Year	Total Area of Dwelling Units (square feet)		Electric Miscellaneous Loads in Dwelling Unit (including appliances and equipment listed above)							Natural Gas Miscellaneous Loads in Dwelling Unit (including appliances and equipment listed above)							Dwelling Unit Equipment Hot Water Loads	
				Baseline			Proposed				Baseline			Proposed					
				Equipment Power Density (Watts/ sq ft)	Sensible Ratio	Latent Ratio	Equipment Power Density (Watts/ sq ft)	Sensible Ratio	Latent Ratio		Equipment Power Density (Btu/ sq ft)	Sensible Ratio	Latent Ratio	Equipment Power Density (Btu/ sq ft)	Sensible Ratio	Latent Ratio		Base	Proposed
HFLW Office/Apt	2,117	19900		1.61	0.62	0.11	1.52	0.61	0.12		0.00			0.00				81967.60	43722.80

Homes Service Water Heating Load Summary

Residential Usage Profile Dependent on Project Demographics		Baseline Residential Usage per person Excluding Clothes / Dish Washers	
Low	Demographics such as all occupants working, seniors, middle income, and higher population density.	12	gallons/day
Medium	Demographics such as mixture of working / non-working occupants, mixture of age groups, medium population densities.	25	gallons/day
High	Demographics such high percentages of children, low income, public assistance, or no occupants working.	44	gallons/day

Report the modeled Service Water Heating Full Load Hours of Operation in the Schedules tab before referring to the table below. The Equivalent Full Load Hours of Operation is used to calculate the DHW modeled peak residential flow a the DHW Heater that must be modeled to be consistent with the annual hot water consumption calculated here. After confirming the Equivalent Full Load Hours of Operation in the schedules tab,Identify the residential service water heating usage profile, and the average fixture flows for sink and shower fixtures. Supply temperature at fixture point of use shall be 120 degrees F. If the modeled supply DHW temperature from the DHW heater is higher than this, indicate the supply DHW temperature from the DHW heater and the average cold water input temperature below.

This information along with the appliance information entered above and the schedule data from the schedules tab is used to determine the DHW modeled Peak Flow at DHW heater,which should be input into the energy model.

Building ID	Residential Usage Profile	Average Fixture Flows (gallons/minute)		DHW Temperature Settings (degrees F)			DHW Sink and Shower Fixture Loads at Point of Use (gallons / year)		DHW In-Unit Appliance Loads at Point of Use (gallons / year)		DHW Laundry Room Equipment Loads at Point of Use (gallons / year)		DHW Total Residential Loads at Point of Use (gallons / year)		DHW Total Residential Loads at DHW Heater (gallons / year)		DHW Equivalent Full Load Hours of Operation	DHW Modeled Peak Residential Flow at DHW Heater (gallons / minute)	
		Showers	Sinks	DHW Supply Temp	Average Cold Water Temp	DHW Temp at Fixture Point of Use	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed		Baseline	Proposed
HFLW Office/Apt	High	1.50	0.35	120.0	55.0	120.0	610,280	427,141	81,968	43,723	0	0	692,248	470,863	692,248	470,863	2,446	4.717	3.208

Note: Flow rates are based on Energy Star Multifamily Simulation Guidance. One person is assumed per bedroom.

boston planning & development agency

Appendix E2 - Climate Resiliency Checklist- HFLW- Residential Building - 780 American Legion Highway

A.1 - Project Information

Project Name:	Home for Little Wanderers Residential Building			
Project Address:	780 American Legion Highway, Roslindale			
Project Address Additional:				
Filing Type (*select*)	*Initial (**PNF**, **EPNF**,)*			
Filing Contact	*Colleen Soden*	*Soden Sustainability Consulting*	*colleen@sodensustainability.com*	*617-372-7857*
Is MEPA approval required	*Yes/**no***		*Date*	

A.3 - Project Team

Owner / Developer:	The Home for Little Wanderers ("HFLW") (the "Proponent") as represented by Alinea Capital Partners, LLC (the "Developer's Representative")
Architect:	DHK Architects
Engineer:	TBD
Sustainability / LEED:	Soden Sustainability
Permitting:	MLF Consulting LLC
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential
List the First Floor Uses:	Residential/Parking
List any Critical Site Infrastructure and or Building Uses:	

Site and Building:

Site Area:	*93,435 SF*	Building Area:	*126,606 SF*
Building Height:	*63.3Ft*	Building Height:	*6 & 3 Stories*
Existing Site Elevation – Low:	*45.5 Ft BCB*	Existing Site Elevation – High:	*63 Ft BCB*
Proposed Site Elevation – Low:	*45.5 Ft BCB*	Proposed Site Elevation – High:	*63 Ft BCB*
Proposed First Floor Elevation:	*47-51 Ft BCB*	Below grade levels:	*0 -Stories*

Appendix E2 - Climate Resiliency Checklist - HFLW- Residential Building
780 American Legion Highway

Article 37 Green Building:

LEED Version - Rating System:	LEED BDC v4	LEED Certification:	*Yes / **No***
Proposed LEED rating:	*Certified/Silver/ Gold/Platinum*	Proposed LEED point score:	*54 Pts.*

Building Envelope

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	*30ci (R)*	Exposed Floor:	*30ci (R)*
Foundation Wall:	*7.5ci (R)*	Slab Edge (at or below grade):	*R15 for 24" (R)*

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:	*0 (%)*	Wall & Spandrel Assembly Value:	*NA (U)*
Area of Framed & Insulated / Standard Wall:	*72 (%)*	Wall Value	*R20ci*
Area of Vision Window:	*23 %*	Window Glazing Assembly Value:	*0.45 (U)*
		Window Glazing SHGC:	*0.4 (SHGC)*
Area of Doors:	*5 %*	Door Assembly Value:	*0.45 (U)*

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	*Energy loads and performance were estimated using an eQuest 3.65 energy model based on the June 6, 2019 schematic drawings*		
Annual Electric:	*852,852 (kWh)*	Peak Electric:	*330.8 (kW)*
Annual Heating:	*1,265 (MMbtu)*	Peak Heating:	*1.68 (MMbtu/hr)*
Annual Cooling:	*48,057 (Tons-hr)*	Peak Cooling:	*59.7 (Tons)*
Energy Use - Below ASHRAE 90.1 - 2013:	*25.5 %*	Have the local utilities reviewed the building energy performance?	*Yes / no*
Energy Use - Below Mass. Code:	*25.0 %*	Energy Use Intensity:	*43 (kBtu/SF)*

Back-up / Emergency Power System

Electrical Generation Output:	*150 (kW)*	Number of Power Units:	1
System Type:	*Ground*	Fuel Source:	Natural Gas

Emergency and Critical System Loads (in the event of a service interruption)

Electric:	*60 (kW)*	Heating:	*0.75 (MMbtu/hr)*
		Cooling:	*12/(Tons)*

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing GHG emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon neutrality by 2050 new buildings performance will need to progressively improve to net carbon zero and positive.

B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions: *809 (Tons)*

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

High energy performance of the building has been incorporated in the project via condensing boilers, condensing DHW heaters, improved envelope, low flow hot water fixtures, and energy star appliances.

Describe building specific passive energy efficiency measures including orientation, massing, envelop, and systems:

There is passive energy savings in the orientation and shading of the glazing with recessed windows as well as operable windows.

Describe building specific active energy efficiency measures including equipment, controls, fixtures, and systems:

The high efficiency equipment includes: low flow plumbing fixtures, high efficiency condensing boilers, high efficiency condensing domestic hot water heaters, as well as variable speed hot water pumps.

Describe building specific load reduction strategies including on-site renewable, clean, and energy storage systems:

The variable speed hot water loop, condensing boilers (reduced hot water temp) and low flow hot water plumbing fixtures will reduce the loads on both the boiler and the domestic hot water heaters. LED light fixtures will reduce the cooling load in the building as well as reduce the lighting energy.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

There are not any district scale emission reduction strategies incorporated at this time. Project will consider strategies where feasible as they arise.

Describe any energy efficiency assistance or support provided or to be provided to the project:

There will not be any energy efficiency assistance offered except that tenants will pay for their own utilities which will encourage individuals to be energy efficient.

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The building has space on the roof that could house both a solar PV array to offset electrical use as well as solar hot water heaters to reduce natural gas use in the building.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low:	*3 Deg.*	Temperature Range - High:	*103 Deg.*
Annual Heating Degree Days:	5,596	Annual Cooling Degree Days	900

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90°:	*25 #*	Days – Above 100°:	*10 #*
Number of Heatwaves / Year:	*5 #*	Average Duration of Heatwave (Days):	*4 #*

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

Heat island effect is reduced by incorporating reflective building materials as well as covered parking.

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The building is cooled by many individual heat pumps that can operate independently to maintain indoor conditions at higher outdoor average temperatures.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

Interruptions of power can be mitigated in the short term by the emergency generator. Longer power outages could require operable windows to provide ventilation and natural cooling.

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25”. There is a significant probability that this will increase to at least 6” by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm:	*5.25 In.*

Describe all building and site measures for reducing storm water run-off:

The Project includes subsurface infiltration systems designed to detain the first 1.25 inches of stormwater runoff over the total impervious area of the site and provide opportunity for groundwater recharge. To further reduce the stormwater runoff volume on-site, green roofs and permeable pavers will be implemented where practical.

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

The Project includes green roofs and stormwater infiltration systems. Rooftop runoff will be captured and discharge directly to the infiltration systems on-site. Subsurface infiltration is anticipated to be sized to infiltrate at least the equivalent of 1.25 inches times the impervious area of the site as prescribed in BPDA's Smart Utilities Policy for projects at or above 100,000 square feet of floor area

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E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, sea levels in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA SFHA?	*Yes* / (*No*)	What Zone:	A, AE, AH, AO, AR, A99, V, VE
		Current FEMA SFHA Zone Base Flood Elevation:	*Ft BCB*

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online BPDA SLR-FHA Mapping Tool to assess the susceptibility of the project site.	*Yes* / (*No*)

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented on the BPDA Sea Level Rise - Flood Hazard Area (SLR-FHA) map, which depicts a modeled 1% annual chance coastal flood event with 40 inches of sea level rise (SLR). Use the online BPDA SLR-FHA Mapping Tool to identify the highest Sea Level Rise - Base Flood Elevation for the site. The Sea Level Rise - Design Flood Elevation is determined by adding either 24" of freeboard for critical facilities and infrastructure and any ground floor residential units OR 12" of freeboard for other buildings and uses.

Sea Level Rise - Base Flood Elevation:	*Ft BCB*		
Sea Level Rise - Design Flood Elevation:	*Ft BCB*	First Floor Elevation:	*Ft BCB*
Site Elevations at Building:	*Ft BCB*	Accessible Route Elevation:	*Ft BCB*

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

A pdf and word version of the Climate Resiliency Checklist is provided for informational use and off-line preparation of a project submission. NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

For questions or comments about this checklist or Climate Change best practices, please contact: John.Dalzell@boston.gov

Home For Little Wanderers Residential Building
PNF Application Preliminary Energy Model Analysis

Summary

For the Home For Little Wanderers Residential Project PNF application, an energy analysis was performed based on the geometry and orientation described in the June 6, 2019 schematic building drawings. Analysis was performed by Allison Gaiko, PE, LEED AP for Soden Sustainability Consulting using eQuest3.65 to compare the proposed design case to two baseline scenarios:

- Energy cost comparison to ASHRAE 90.1-2010 Appendix G in accordance with LEED v4 requirements
- Energy use comparison to ASHRAE 90.1-2013 in accordance with MA Energy Code requirements

Model Input Assumptions

Below is a table summarizing the input of the proposed design and two baseline energy models

		ASHRAE 90.1-2010	ASHRAE 90.1-2013		Proposed
Opaque Assemblies	Roof	R20ci insulation – U-0.048	R30ci insulation – U-0.032		R30ci insulation - U-0.032
	Above Grade Walls	R13 + R7.5ci – U-0.064	R13 + R10ci – U-0.055		R20ci – U-0.044
	Exposed Floor	R30 – U-0.038	R30 – U-0.038		R30 – U-0.038
	Slab on Grade (unheated)	F-0.730	F-0.520		F-0.730
Glazing	Metal Framing U-Factor (other)	Assembly U-0.55	Assembly U-0.50 (operable) U-0.42 (fixed)		Assembly U-0.45
	SHGC	Assembly SHGC - 0.4	Assembly SHGC - 0.4		Assembly SHGC - 0.4
Lighting	Residential Dwelling[3]	0.90 W/SF	0.81 W/SF		0.81 W/SF
	Corridor/Transition[3]	0.66 W/SF	0.59 W/SF		0.59 W/SF
	Parking Garage[3]	0.19 W/SF	0.17 W/SF		0.17 W/SF
Process Loads	Residential Dwelling[1]	1.31 W/SF	1.31 W/SF		1.24 W/SF
	Corridor	0.2 W/SF	0.2 W/SF		0.2 W/SF
	Elevator	30 kW/car	30 kW/car		30 kW/car

		ASHRAE 90.1-2010	ASHRAE 90.1-2013		Proposed
DHW	Hot Water Heater Efficiency	80%	80%		95%
	Lavatory Sink Flow[2]	2.2 GPM	2.2 GPM		0.35 GPM
	Kitchen Sink Flow[2]	2.2 GPM	2.2 GPM		1.5 GPM
	Shower Flow[2]	2.5 GPM	2.5 GPM		1.5 GPM
HVAC	Boiler[3]	80%	88%		95%
	HW temperature	180 °F	180 °F		150 °F
	PTAC EER[3]	9.3 EER	10.23 EER		11 EER
	PVAV SEER DX < 65[3]	13 SEER	14.3 SEER		15 SEER

Please note that the energy model is not created to predict actual energy use for the proposed building but rather to compare energy consumption between the design case and baseline cases. Inputs such as occupancy, weather data and individual occupants' habits affect the proposed model's ability to predict energy use. For this reason, the baseline and design models were created with identical weather data as well as identical schedules for parameters such as occupancy, lighting EFLH (electrical full load hours), and temperature set points. Schedules were based on the EFLH Tab of the v4 Minimum Energy Performance Calculator created for LEED v4 and are summarized in the attached Appendix.

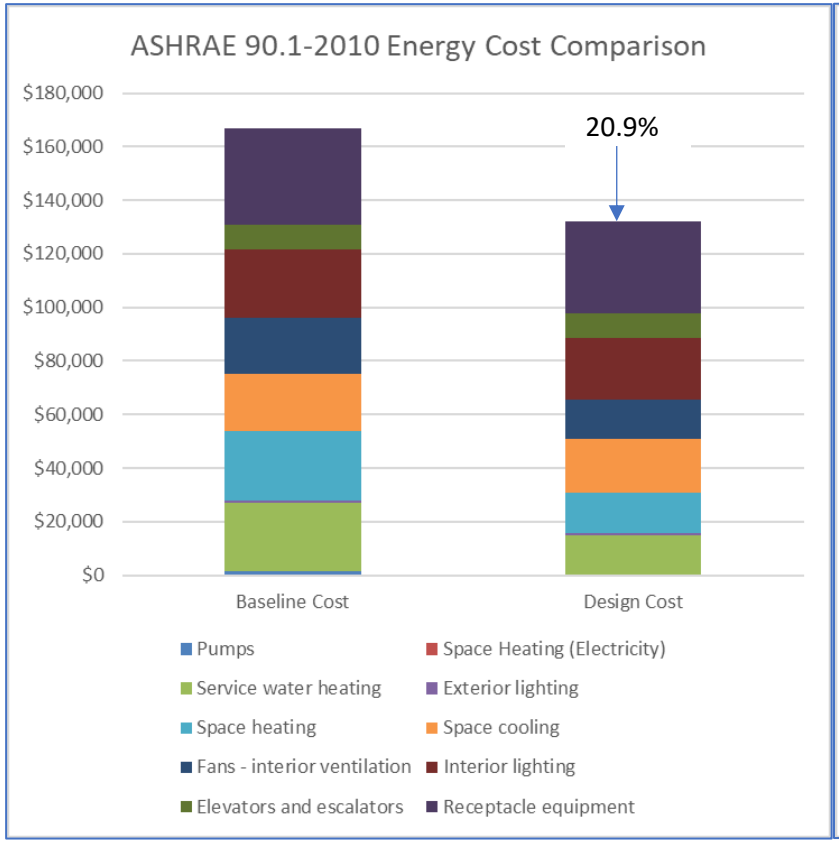
Table notes:

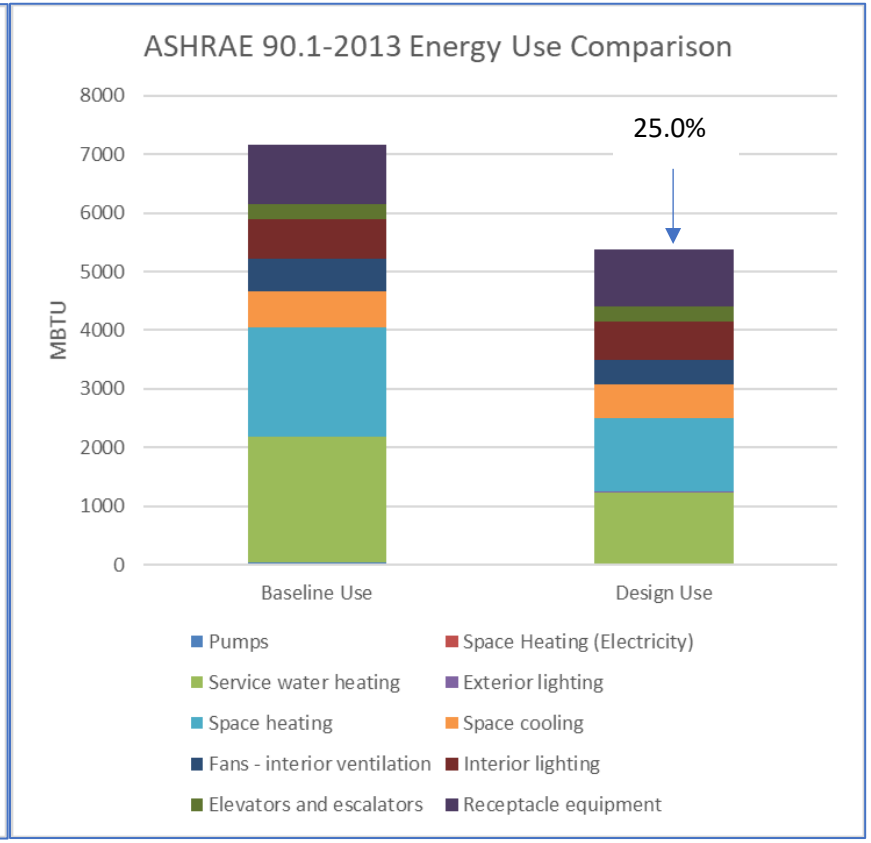
1. Reduction in plug load in the residential units is based on Energy Star appliances that have been incorporated in the project and has been calculated based on the Multi-Family Tab of the v4 Minimum Energy Performance Calculator created for LEED v4 and are summarized in the attached Appendix.
2. Reduction in domestic hot water flow in the residential units is based on the reduced flow fixtures and Energy Star appliances that have been incorporated in the project and has been calculated based on the Multi-Family Tab of the v4 Minimum Energy Performance Calculator created for LEED v4 and are summarized in the attached Appendix.
3. In accordance with Massachusetts Code requirements section C406, two additional efficiency package options were included in the ASHARAE 90.1-2013 baseline case. The two options selected were (1) More efficient HVAC performance – Exceed energy efficiency provisions by 10% and (2) Reduced lighting power density by 10%.

Model Results

The results of the Home for Little Wanderers Residential building preliminary energy model analysis show:

- 20.9% annual energy cost reduction vs ASHRAE 90.1-2010 (8 LEEDv4 points)
- 25.0% annual energy use reduction vs ASHRAE 90.1-2013 (MA Energy Code)





Most of the energy savings in the Home for Little Wanderers Residential building project are the result of reduced lighting, reduced hot water flow plumbing fixtures, efficient domestic hot water heaters and efficient boilers, and are represented in the above graphs by reductions in space heating, interior lighting and service water heating energy use and cost.

Appendix

(OPTIONAL) Equivalent Full Load Hours Calculator

Default Schedules

Residential Dwelling Unit Default Schedules

Schedule Name: Dwelling Unit Thermostat setpoint schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	Hours/day	Hours/year
Daily Heating Setpoint	70.0	70.0	70.0	70.0	70.0	70.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	70.0	24.00	8,760
Daily Cooling Setpoint	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	80.0	80.0	80.0	80.0	80.0	80.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	78.0	24.00	8,760

Schedule Name: Dwelling Unit Lighting Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	7.7%	14.0%	14.0%	10.8%	10.8%	10.8%	7.7%	7.7%	7.7%	7.7%	7.7%	10.8%	21.7%	21.7%	21.7%	21.7%	18.6%	1.6%	2.34	585
Weekend	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	7.7%	14.0%	14.0%	10.8%	10.8%	10.8%	7.7%	7.7%	7.7%	7.7%	7.7%	10.8%	21.7%	21.7%	21.7%	21.7%	18.6%	1.6%	2.34	243
Holiday	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	7.7%	14.0%	14.0%	10.8%	10.8%	10.8%	7.7%	7.7%	7.7%	7.7%	7.7%	10.8%	21.7%	21.7%	21.7%	21.7%	18.6%	1.6%	2.34	26
Total Equivalent Full Load Hours of Operation per Year																										854

Schedule Name: Dwelling Unit Miscellaneous Equipment Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	5%	5%	5%	5%	5%	5%	5%	5%	50%	50%	50%	50%	30%	50%	50%	50%	50%	50%	35%	5%	5%	5%	5%	5%	5.80	1,450
Weekend	5%	5%	5%	5%	5%	5%	5%	5%	50%	50%	50%	50%	30%	50%	50%	50%	50%	50%	35%	5%	5%	5%	5%	5%	5.80	603
Holiday	5%	5%	5%	5%	5%	5%	5%	5%	50%	50%	50%	50%	30%	50%	50%	50%	50%	50%	35%	5%	5%	5%	5%	5%	5.80	64
Total Equivalent Full Load Hours of Operation per Year																										2,117

Schedule Name: Residential Common Area Miscellaneous Equipment Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	10%	10%	10%	10%	10%	30%	45%	45%	45%	45%	30%	30%	30%	30%	30%	30%	30%	30%	60%	80%	90%	80%	60%	30%	9.00	2,250
Weekend	10%	10%	10%	10%	10%	30%	45%	45%	45%	45%	30%	30%	30%	30%	30%	30%	30%	30%	60%	80%	90%	80%	60%	30%	9.00	936
Holiday	10%	10%	10%	10%	10%	30%	45%	45%	45%	45%	30%	30%	30%	30%	30%	30%	30%	30%	60%	80%	90%	80%	60%	30%	9.00	99
Total Equivalent Full Load Hours of Operation per Year																										3,285

Schedule Name: Residential DHW Schedule

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	5%	5%	5%	5%	5%	5%	30%	50%	40%	30%	30%	35%	40%	35%	35%	30%	30%	50%	50%	40%	35%	45%	30%	5%	6.70	1,675
Weekend	5%	5%	5%	5%	5%	5%	30%	50%	40%	30%	30%	35%	40%	35%	35%	30%	30%	50%	50%	40%	35%	45%	30%	5%	6.70	697
Holiday	5%	5%	5%	5%	5%	5%	30%	50%	40%	30%	30%	35%	40%	35%	35%	30%	30%	50%	50%	40%	35%	45%	30%	5%	6.70	74
Total Equivalent Full Load Hours of Operation per Year																										2,446

Schedule Name: Garage Exhaust

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	7%	7%	7%	7%	7%	7%	17%	20%	50%	50%	15%	15%	35%	15%	15%	15%	25%	50%	50%	25%	7%	7%	7%	7%	4.64	1,159
Weekend	7%	7%	7%	7%	7%	7%	17%	20%	50%	50%	15%	15%	35%	15%	15%	15%	25%	50%	50%	25%	7%	7%	7%	7%	4.64	482
Holiday	7%	7%	7%	7%	7%	7%	17%	20%	50%	50%	15%	15%	35%	15%	15%	15%	25%	50%	50%	25%	7%	7%	7%	7%	4.64	51
Total Equivalent Full Load Hours of Operation per Year																										1,693

Copy & Paste Schedule Above

Schedule Name: Apt Elev

	12-1AM	1-2AM	2-3AM	3-4AM	4-5AM	5-6AM	6-7AM	7-8AM	8-9 AM	9-10AM	10-11AM	1AM-12PM	12-1PM	1-2PM	2-3PM	3-4PM	4-5PM	5-6PM	6-7PM	7-8PM	8-9PM	9-10PM	10-11PM	11-12PM	EFLH/day	EFLH/year
Weekday	5%	5%	5%	5%	5%	5%	20%	40%	50%	40%	40%	35%	35%	30%	30%	30%	40%	45%	50%	40%	35%	30%	10%	5%	6.35	1,588
Weekend	5%	5%	5%	5%	5%	5%	10%	25%	50%	50%	50%	40%	45%	45%	40%	40%	50%	45%	45%	45%	30%	30%	25%	15%	7.10	738
Holiday	5%	5%	5%	5%	5%	5%	10%	25%	50%	50%	50%	40%	45%	45%	40%	40%	50%	45%	45%	45%	30%	30%	25%	15%	7.10	78
Total Equivalent Full Load Hours of Operation per Year																										2,404

Multifamily Home Details

Complete the table for each building in the project. Input the number of units and the average floor area for units with the corresponding bedroom number.

Building Unit summary

Building ID	Studio		1 Bedroom		2 Bedrooms		3 Bedrooms		4 Bedrooms		5 Bedrooms		6 Bedrooms		7 Bedrooms		8 Bedrooms	
	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq	Qty	Average Floor Area (sq
HFLW Residentail			27	800	56	1,400	15	1,500										
Total number of units																		98
Total number of bedrooms																		184
Total Area of Dwelling Units (square feet)																		122,500

Building ID	Total Number of Units	Total Number of Bedrroms	Total Area of Dwelling Units (square feet)	Average Number of Bedrooms Per Unit	Average Floor Area per Unit (square feet)	Average Floor Area Per Unit for Reference Building (square feet)
HFLW Residentail	98	184	122,500	1.88	1,250	1,526

Homes Dwelling Unit Equipment Calculator

Enter the appliances and equipment that is present in the residential dwelling units for the project. For clothes washers and dryers, enter the quantity of each unit installed within the project scope of work. For fans, enter the total supply volume for all fans installed for the project.

Building ID	Load Source	Quantity (or sum total fan volume [cfm] for fans)	Energy Star Eqp?	Average bedrooms per dwelling unit		Electric Loads					Natural Gas Loads					Annual Service Hot Water Load (gallons/year)			
						Annual Consumption (kWh/year)		Sensible Ratio	Latent Ratio		Annual Consumption (therms/year)		Sensible Ratio	Latent Ratio		Baseline Per Equipment	Proposed Per Equipment	Baseline Total	Proposed Total
						Baseline	Proposed				Baseline	Proposed							
HFLW Resident	Cooking (electric stove/range)	98	Yes	1.87755		59192	59192	0.4	0.3		0	0	0.00	0.00		0.00	0.00	0.00	0
HFLW Resident	Clothes Dryer (In-unit electric)	98	Yes	1.87755		66540	66540	0.15	0.05		0	0	0.00	0.00		0.00	0.00	0.00	0
HFLW Resident	Bath / Utility Fan, 10 to 89 cfm	7350	Yes	1.87755		4471.25	3832.5	0	0		0	0	0.00	0.00		0.00	0.00	0.00	0
HFLW Residentai	Refrigerator	98	Yes	1.877551		51,842	41,454	1	0		0	0	0.00	0.00		0.00	0.00	0.0	0.0
HFLW Residentai	Dishwasher	98	Yes	1.877551		20,188	16,072	0.6	0.15		0	0	0.00	0.00		1,290.00	860.00	126,420.0	84,280.0
HFLW Residentai	Clother Washer (In-unit)	98	Yes	1.877551		7,938	5,586	0.8	0		0	0	0.00	0.00		2,435.80	1,127.40	238,708.4	110,485.2

Add Row | Delete Row

Homes Dwelling Unit Equipment Modeling Summary

Report the modeled Receptacle Equipment and Appliances Equivalent Full Load Hours of Operation in the Schedules tab before referring to the table below. The Equivalent Full Load Hours of Operation is used to calculate the equipment power density for residential dwelling units that must be modeled based on the building equipment reported for the building. After confirming the Equivalent Full Load Hours of Operation in the schedules tab, use the values below for the Baseline and Proposed Miscellaneous Equipment Loads in the Dwelling Units. These loads include 0.5 Watts per square foot of electric miscellaneous equipment load with a 0.9 sensible ratio and 0.1 latent ratio in addition to the equipment load sources selected above.

Building ID	Equivalent Full Load Hours of Dwelling Unit Miscellaneous Equipment Operation Per Year	Total Area of Dwelling Units (square feet)		Electric Miscellaneous Loads in Dwelling Unit (including appliances and equipment listed above)							Natural Gas Miscellaneous Loads in Dwelling Unit (including appliances and equipment listed above)							Dwelling Unit Equipment Hot Water Loads	
				Baseline			Proposed				Baseline			Proposed					
				Equipment Power Density (Watts/ sq ft)	Sensible Ratio	Latent Ratio	Equipment Power Density (Watts/ sq ft)	Sensible Ratio	Latent Ratio		Equipment Power Density (Btu/ sq ft)	Sensible Ratio	Latent Ratio	Equipment Power Density (Btu/ sq ft)	Sensible Ratio	Latent Ratio		Base	Proposed
HFLW Residentai	2,117	122500		1.31	0.65	0.11	1.24	0.64	0.11		0.00			0.00				365128.40	194765.20

Homes Service Water Heating Load Summary

Residential Usage Profile Dependent on Project Demographics		Baseline Residential Usage per person Excluding Clothes / Dish Washers	
Low	Demographics such as all occupants working, seniors, middle income, and higher population density.	12	gallons/day
Medium	Demographics such as mixture of working / non-working occupants, mixture of age groups, medium population densities.	25	gallons/day
High	Demographics such high percentages of children, low income, public assistance, or no occupants working.	44	gallons/day

Report the modeled Service Water Heating Full Load Hours of Operation in the Schedules tab before referring to the table below. The Equivalent Full Load Hours of Operation is used to calculate the DHW modeled peak residential flow a the DHW Heater that must be modeled to be consistent with the annual hot water consumption calculated here. After confirming the Equivalent Full Load Hours of Operation in the schedules tab,Identify the residential service water heating usage profile, and the average fixture flows for sink and shower fixtures. Supply temperature at fixture point of use shall be 120 degrees F. If the modeled supply DHW temperature from the DHW heater is higher than this, indicate the supply DHW temperature from the DHW heater and the average cold water input temperature below.

This information along with the appliance information entered above and the schedule data from the schedules tab is used to determine the DHW modeled Peak Flow at DHW heater,which should be input into the energy model.

Building ID	Residential Usage Profile	Average Fixture Flows (gallons/minute)		DHW Temperature Settings (degrees F)			DHW Sink and Shower Fixture Loads at Point of Use (gallons / year)		DHW In-Unit Appliance Loads at Point of Use (gallons / year)		DHW Laundry Room Equipment Loads at Point of Use (gallons / year)		DHW Total Residential Loads at Point of Use (gallons / year)		DHW Total Residential Loads at DHW Heater (gallons / year)		DHW Equivalent Full Load Hours of Operation	DHW Modeled Peak Residential Flow at DHW Heater (gallons / minute)	
		Showers	Sinks	DHW Supply Temp	Average Cold Water Temp	DHW Temp at Fixture Point of Use	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed		Baseline	Proposed
HFLW Residential	High	1.50	0.35	120.0	55.0	120.0	2,955,040	2,068,259	365,128	194,765	0	0	3,320,168	2,263,025	3,320,168	2,263,025	2,446	22.623	15.420

Note: Flow rates are based on Energy Star Multifamily Simulation Guidance. One person is assumed per bedroom.

APPENDIX F – RESPONSES TO COB ACCESSIBILITY GUIDELINES

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

A requirement of the Boston Planning & Development Agency (BPDA)
Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities strives to reduce architectural, procedural, attitudinal, and communication barriers that affect persons with disabilities in the City of Boston. In 2009, a Disability Advisory Board was appointed by the Mayor to work alongside the Commission in creating universal access throughout the city's built environment. The Disability Advisory Board is made up of 13 volunteer Boston residents with disabilities who have been tasked with representing the accessibility needs of their neighborhoods and increasing inclusion of people with disabilities.

In conformance with this directive, the BDPA has instituted this Accessibility Checklist as a tool to encourage developers to begin thinking about access and inclusion at the beginning of development projects, and strive to go beyond meeting only minimum MAAB / ADAAG compliance requirements. Instead, our goal is for developers to create ideal design for accessibility which will ensure that the built environment provides equitable experiences for all people, regardless of their abilities. As such, any project subject to Boston Zoning Article 80 Small or Large Project Review, including Institutional Master Plan modifications and updates, must complete this Accessibility Checklist thoroughly to provide specific detail about accessibility and inclusion, including descriptions, diagrams, and data.

For more information on compliance requirements, advancing best practices, and learning about progressive approaches to expand accessibility throughout Boston's built environment. Proponents are highly encouraged to meet with Commission staff, prior to filing.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
4. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
5. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
   www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
   http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

1. ***Accessible Route*** – A continuous and unobstructed path of travel that meets or exceeds the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 20
2. ***Accessible Group 2 Units*** – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
3. ***Accessible Guestrooms*** – Guestrooms with additional floor space, that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 8.4
4. ***Inclusionary Development Policy (IDP)*** – Program run by the BPDA that preserves access to affordable housing opportunities, in the City. For more information visit: http://www.bostonplans.org/housing/overview
5. ***Public Improvement Commission (PIC)*** – The regulatory body in charge of managing the public right of way. For more information visit: https://www.boston.gov/pic
6. ***Visitability*** – A place's ability to be accessed and visited by persons with disabilities that cause functional limitations; where architectural barriers do not inhibit access to entrances/doors and bathrooms.

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

1. Project Information:
If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.

Project Name:	**The Home for Little Wanderers (HFLW) Building**
Primary Project Address:	**780 American Legion Highway, Roslindale**
Total Number of Phases/Buildings:	**2**
Primary Contact (Name / Title / Company / Email / Phone):	**L. Duane Jackson** **Alinea Capital Partners** 1786 Washington St. Boston MA 02118 ldjackson@alineacapitalpartners.com (617) 708-1313
Owner / Developer:	**Home for Little Wanderers / Alinea Capital Partners**
Architect:	**DHK Architects** 54 Canal Street, Suite 200 Boston, MA 02114 617-267-6408 mkaufman@dhkinc.com
Civil Engineer:	**Howard Stein Hudson** 11 Beacon Street, Suite 1010 Boston, MA 02108 mlatini@hshassoc.com 617-482-7080
Landscape Architect:	**Verdant Landscape Architecture** 318 Harvard Street, Suite 25 Brookline, MA 02446 617-735-1180
Permitting:	**Mitchell L. Fischman Consulting ("MLF Consulting") LLC** 41 Brush Hill Road Newton, MA 02461 781-760-1726 mitchfischman@gmail.com
Construction Management:	TBD

At what stage is the project at time of this questionnaire? Select below:

PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BPDA Board Approved
BPDA Design Approved	Under Construction	Construction Completed:

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? ***If yes,*** identify and explain.	**No**

2. Building Classification and Description:

This section identifies preliminary construction information about the project including size and uses.

What are the dimensions of the project?

Site Area:	***2.5 acres*** **(107,129 SF)**	Building Area:	**Approx. *62,953 GSF***
Building Height:	**64.6 FT.**	Number of Stories:	**5-Flrs.**
First Floor Elevation:	**Approx.51.0 Ft. ASL**	Is there below grade space:	***Yes***

What is the Construction Type? (Select most appropriate type)

	Wood Frame	Masonry	**Steel Frame**	Concrete

What are the principal building uses? (IBC definitions are below – select all appropriate that apply)

	Residential – One - Three Unit	**Residential - Multi-unit, Four +**	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		

List street-level uses of the building:	**Residential, Business, Medical**

3. Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and institutions, such as (but not limited to) hospitals, elderly & disabled housing, and general neighborhood resources. Identify how the area surrounding the development is accessible for people with mobility impairments and analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The proposed site is a 2.5-acre site is occupied by the current HFLW building fronting on American Legion Highway, a wide parkway. The neighborhood is mainly residential with detached dwellings. Within a few blocks are commercial and large retail uses. The sidewalk along American Legion Highway is generally flat.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	The number 14 bus (Heath St. – Belgrade @ Roberts) stops in front of the building and directly across the street. The Orange Line at Forest Hills is 1.3 miles away; the Mattapan T stop is 1.5 miles away. The Needham Commuter Rail line stops at Roslindale Village, 1 mile away.

List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	Brook Charter School Mattahunt Elementary School
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	Engine 53 Fire Station
4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a historic district? ***If yes,*** identify which district:	No.
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	There is an existing sidewalk along American Legion Highway. There is currently no sidewalk at Stella Road (a private way).
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	Yes. The existing sidewalk along American Legion will be repaired as needed, and will be replaced where the new drives cross the sidewalk. A new sidewalk abutting the property along Stella Road will be constructed. They have not been verified. There are gray composite warning surfaces cast in concrete at American Legion Highway and Stella Road.

5. Surrounding Site Conditions – Proposed

This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.

Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	Yes (pending confirmation of cross-slopes and clearances).
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	Sidewalk width along American Legion Highway to match existing. Stella Road to receive 5-foot wide sidewalk. Slopes to confirm to existing slopes and grades.
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	The paving materials will be mostly poured-in-place concrete. The portions of the sidewalk on American Legion Highway that will be replaced will be in their current location in the public right-of-way. The Stella Road sidewalk will be built in the private right-of-way that abuts the HFLW property line.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	To be further reviewed.
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	Existing curb cut locations may need to be moved or adjusted.

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

6. Accessible Parking: *See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability – Disabled Parking Regulations.*	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	30 parking spaces will be in a covered garage.
What is the total number of accessible spaces provided at the development site? How many of these are "Van Accessible" spaces with an 8 foot access aisle.	2 van accessible spaces.
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	No
Where is the accessible visitor parking located?	At the exit drive and in the adjacent Residences garage.
Has a drop-off area been identified? ***If yes,*** will it be accessible?	Yes. And yes.
7. Circulation and Accessible Routes: *The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors.*	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	Flush conditions at most if not all entryway locations, Ramps to be included where and if needed. The clinic and offices are serviced by elevators. The apartment units are serviced by an elevator and flush conditions at the entryways. All common areas and apartments are accessible and on an accessible route.
Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	Yes.
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	See attached figures (**F1 through F-7**) at the end of **Appendix F2**

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

8. Accessible Units (Group 2) and Guestrooms: (If applicable)

In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.

What is the total number of proposed housing units or hotel rooms for the development?	22 dwelling units.
If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	22 for rent, part of the HFLW program.
If a residential development, how many accessible Group 2 units are being proposed?	2
If a residential development, how many accessible Group 2 units will also be IDP units? ***If none***, describe reason.	TBD
If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? ***If yes,*** provide amount and location of equipment.	N/A
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs / thresholds at entry, step to balcony, others. ***If yes***, provide reason.	No
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? ***If yes***, describe:	Yes, elevators are provided to access all floors and parking.

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.*	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	At a minimum, a new sidewalk at Stella Road will be provided.
What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	To be developed, early in the process; however, the intent and expectation is for all common areas, interior and exterior, to be fully accessible.
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Public restrooms will be provided in the HFLW building on the first floor. It is expected that there will be some Family restrooms, and all restrooms will be ADA compliant.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	No, it has not been reviewed.
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this project more accessible?	No, it has not been presented.

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.

Please refer to Figures F-1 through F-7 at the end of Appendix F2.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.

Provide a diagram of the accessible route connections through the site, including distances.

Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)

Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.

Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

Stella Road at American Legion Highway crosswalk

Appendix F1. 780 American Legion Highway- HFLW Building
Article 80 – Accessibility Checklist

Existing sidewalk at bus stop on American Legion Highway

This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open spaces are usable and welcoming to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions or comments about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or our office:

The Mayor's Commission for Persons with Disabilities
1 City Hall Square, Room 967,
Boston MA 02201.

Architectural Access staff can be reached at:

accessibility@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov | 617-635-3682

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

A requirement of the Boston Planning & Development Agency (BPDA)
Article 80 Development Review Process

The Mayor's Commission for Persons with Disabilities strives to reduce architectural, procedural, attitudinal, and communication barriers that affect persons with disabilities in the City of Boston. In 2009, a Disability Advisory Board was appointed by the Mayor to work alongside the Commission in creating universal access throughout the city's built environment. The Disability Advisory Board is made up of 13 volunteer Boston residents with disabilities who have been tasked with representing the accessibility needs of their neighborhoods and increasing inclusion of people with disabilities.

In conformance with this directive, the BDPA has instituted this Accessibility Checklist as a tool to encourage developers to begin thinking about access and inclusion at the beginning of development projects, and strive to go beyond meeting only minimum MAAB / ADAAG compliance requirements. Instead, our goal is for developers to create ideal design for accessibility which will ensure that the built environment provides equitable experiences for all people, regardless of their abilities. As such, any project subject to Boston Zoning Article 80 Small or Large Project Review, including Institutional Master Plan modifications and updates, must complete this Accessibility Checklist thoroughly to provide specific detail about accessibility and inclusion, including descriptions, diagrams, and data.

For more information on compliance requirements, advancing best practices, and learning about progressive approaches to expand accessibility throughout Boston's built environment. Proponents are highly encouraged to meet with Commission staff, prior to filing.

Accessibility Analysis Information Sources:

1. Americans with Disabilities Act – 2010 ADA Standards for Accessible Design
   http://www.ada.gov/2010ADAstandards_index.htm
2. Massachusetts Architectural Access Board 521 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/aab/aab-rules-and-regulations-pdf.html
3. Massachusetts State Building Code 780 CMR
   http://www.mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/building-codebbrs.html
4. Massachusetts Office of Disability – Disabled Parking Regulations
   http://www.mass.gov/anf/docs/mod/hp-parking-regulations-summary-mod.pdf
5. MBTA Fixed Route Accessible Transit Stations
   http://www.mbta.com/riding_the_t/accessible_services/
6. City of Boston – Complete Street Guidelines
   http://bostoncompletestreets.org/
7. City of Boston – Mayor's Commission for Persons with Disabilities Advisory Board
   www.boston.gov/disability
8. City of Boston – Public Works Sidewalk Reconstruction Policy
   http://www.cityofboston.gov/images_documents/sidewalk%20policy%200114_tcm3-41668.pdf
9. City of Boston – Public Improvement Commission Sidewalk Café Policy
   http://www.cityofboston.gov/images_documents/Sidewalk_cafes_tcm3-1845.pdf

Glossary of Terms:

1. ***Accessible Route*** – A continuous and unobstructed path of travel that meets or exceeds the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 20
2. ***Accessible Group 2 Units*** – Residential units with additional floor space that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 9.4
3. ***Accessible Guestrooms*** – Guestrooms with additional floor space, that meet or exceed the dimensional and inclusionary requirements set forth by MAAB 521 CMR: Section 8.4
4. ***Inclusionary Development Policy (IDP)*** – Program run by the BPDA that preserves access to affordable housing opportunities, in the City. For more information visit: http://www.bostonplans.org/housing/overview
5. ***Public Improvement Commission (PIC)*** – The regulatory body in charge of managing the public right of way. For more information visit: https://www.boston.gov/pic
6. ***Visitability*** – A place's ability to be accessed and visited by persons with disabilities that cause functional limitations; where architectural barriers do not inhibit access to entrances/doors and bathrooms.

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

1. Project Information:
If this is a multi-phased or multi-building project, fill out a separate Checklist for each phase/building.

Project Name:	**The Residences at 780 American Legion Highway**
Primary Project Address:	**780 American Legion Highway, Roslindale**
Total Number of Phases/Buildings:	**2**
Primary Contact (Name / Title / Company / Email / Phone):	**L. Duane Jackson** **Alinea Capital Partners** 1786 Washington St. Boston MA 02118 ldjackson@alineacapitalpartners.com (617) 708-1313
Owner / Developer:	**Home for Little Wanderers / Alinea Capital Partners**
Architect:	**DHK Architects** 54 Canal Street, Suite 200 Boston, MA 02114 mkaufman@dhkinc.com 617-267-6408
Civil Engineer:	**Howard Stein Hudson** 11 Beacon Street, Suite 1010 Boston, MA 02108 rlatini@hshassoc.com 617-482-7080
Landscape Architect:	**Verdant Landscape Architecture** 318 Harvard Street, Suite 25 Brookline, MA 02446 617-735-1180
Permitting:	**Mitchell L. Fischman Consulting ("MLF Consulting") LLC** 41 Brush Hill Road Newton, MA 02461 mitchfischman@gmail.com 781-760-1726
Construction Management:	TBD

At what stage is the project at time of this questionnaire? Select below:

PNF / Expanded PNF Submitted	Draft / Final Project Impact Report Submitted	BPDA Board Approved
BPDA Design Approved	Under Construction	Construction Completed:

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

Do you anticipate filing for any variances with the Massachusetts Architectural Access Board (MAAB)? ***If yes,*** identify and explain.	**No**

2. Building Classification and Description:

This section identifies preliminary construction information about the project including size and uses.

What are the dimensions of the project?

Site Area:	**2.5 acres (107,129 SF)**	Building Area:	**Approx. 123,606 *GSF***
Building Height:	**63.3 FT.**	Number of Stories:	**6-Flrs.**
First Floor Elevation:	**Approx. 49.9 Ft. ASL**	Is there below grade space:	**No**

What is the Construction Type? (Select most appropriate type)

	Wood Frame	Masonry	Steel Frame	**Concrete**

What are the principal building uses? (IBC definitions are below – select all appropriate that apply)

	Residential – One - Three Unit	**Residential - Multi-unit, Four +**	Institutional	Educational
	Business	Mercantile	Factory	Hospitality
	Laboratory / Medical	Storage, Utility and Other		

List street-level uses of the building:	**Residential**

3. Assessment of Existing Infrastructure for Accessibility:

This section explores the proximity to accessible transit lines and institutions, such as (but not limited to) hospitals, elderly & disabled housing, and general neighborhood resources. Identify how the area surrounding the development is accessible for people with mobility impairments and analyze the existing condition of the accessible routes through sidewalk and pedestrian ramp reports.

Provide a description of the neighborhood where this development is located and its identifying topographical characteristics:	The proposed site is a 2.5-acre site is occupied by the current HFLW building fronting on American Legion Highway, a wide parkway. The neighborhood is mainly residential with detached dwellings. Within a few blocks are commercial and large retail uses. The sidewalk along American Legion Highway is generally flat.
List the surrounding accessible MBTA transit lines and their proximity to development site: commuter rail / subway stations, bus stops:	The Number 14 Bus (Heath St. – Belgrade @ Roberts) stops in front of the building and directly across the street. The Orange Line at Forest Hills is 1.3 miles away; the Mattapan T stop is 1.5 miles away. The Needham Commuter Rail line stops at Roslindale Village, 1 mile away.

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

List the surrounding institutions: hospitals, public housing, elderly and disabled housing developments, educational facilities, others:	Brook Charter School Mattahunt Elementary School
List the surrounding government buildings: libraries, community centers, recreational facilities, and other related facilities:	Engine 53 Fire Station
4. Surrounding Site Conditions – Existing: *This section identifies current condition of the sidewalks and pedestrian ramps at the development site.*	
Is the development site within a historic district? ***If yes,*** identify which district:	No.
Are there sidewalks and pedestrian ramps existing at the development site? ***If yes***, list the existing sidewalk and pedestrian ramp dimensions, slopes, materials, and physical condition at the development site:	There is an existing sidewalk along American Legion Highway. There is currently no sidewalk at Stella Road (a private way).
Are the sidewalks and pedestrian ramps existing-to-remain? ***If yes,*** have they been verified as ADA / MAAB compliant (with yellow composite detectable warning surfaces, cast in concrete)? ***If yes,*** provide description and photos:	Yes. The existing sidewalk along American Legion will be repaired as needed, and will be replaced where the new drives cross the sidewalk. They have not been verified. A new sidewalk abutting the property along Stella Road will be constructed. There are gray composite warning surfaces cast in concrete at American Legion Highway and Stella Road.

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

5. Surrounding Site Conditions – Proposed *This section identifies the proposed condition of the walkways and pedestrian ramps around the development site. Sidewalk width contributes to the degree of comfort walking along a street. Narrow sidewalks do not support lively pedestrian activity, and may create dangerous conditions that force people to walk in the street. Wider sidewalks allow people to walk side by side and pass each other comfortably walking alone, walking in pairs, or using a wheelchair.*	
Are the proposed sidewalks consistent with the Boston Complete Street Guidelines? ***If yes***, choose which Street Type was applied: Downtown Commercial, Downtown Mixed-use, Neighborhood Main, Connector, Residential, Industrial, Shared Street, Parkway, or Boulevard.	Yes (pending confirmation of cross-slopes and clearances).
What are the total dimensions and slopes of the proposed sidewalks? List the widths of the proposed zones: Frontage, Pedestrian and Furnishing Zone:	Sidewalk width along American Legion Highway to match existing. Stella Road to receive 5-foot wide sidewalk. Slopes to confirm to existing slopes and grades.
List the proposed materials for each Zone. Will the proposed materials be on private property or will the proposed materials be on the City of Boston pedestrian right-of-way?	The paving materials will be mostly poured-in-place concrete. The portions of the sidewalk on American Legion Highway that will be replaced will be in their current location in the public right-of-way. The Stella Road sidewalk will be built in the private right-of-way that abuts the HFLW property line.
Will sidewalk cafes or other furnishings be programmed for the pedestrian right-of-way? ***If yes,*** what are the proposed dimensions of the sidewalk café or furnishings and what will the remaining right-of-way clearance be?	No.
If the pedestrian right-of-way is on private property, will the proponent seek a pedestrian easement with the Public Improvement Commission (PIC)?	To be further reviewed.
Will any portion of the Project be going through the PIC? ***If yes,*** identify PIC actions and provide details.	Existing curb cut locations may need to be adjusted or slightly moved.

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

6. Accessible Parking: *See Massachusetts Architectural Access Board Rules and Regulations 521 CMR Section 23.00 regarding accessible parking requirement counts and the Massachusetts Office of Disability – Disabled Parking Regulations*.	
What is the total number of parking spaces provided at the development site? Will these be in a parking lot or garage?	101 parking spaces; 100 will be in a covered garage.
What is the total number of accessible spaces provided at the development site? How many of these are "Van Accessible" spaces with an 8 foot access aisle.	5 accessible spaces; 4 will be van accessible.
Will any on-street accessible parking spaces be required? ***If yes,*** has the proponent contacted the Commission for Persons with Disabilities regarding this need?	No
Where is the accessible visitor parking located?	At the exit drive and in the Residences garage.
Has a drop-off area been identified? ***If yes,*** will it be accessible?	Yes, in front of the Residences entrance; it will be accessible.
7. Circulation and Accessible Routes: *The primary objective in designing smooth and continuous paths of travel is to create universal access to entryways and common spaces, which accommodates persons of all abilities and allows for visitability with neighbors*.	
Describe accessibility at each entryway: Example: Flush Condition, Stairs, Ramp, Lift or Elevator:	Flush conditions at most if not all entryway locations, Ramps to be included where and if needed. The apartment units are serviced by elevators and flush conditions at the entryways. All common areas and apartments are accessible and on an accessible route. The first floors of the townhouses will be made accessible for visitability where physically possible.
Are the accessible entrances and standard entrance integrated? ***If yes,*** *describe.* ***If no,*** what is the reason?	Yes.
If project is subject to Large Project Review/Institutional Master Plan, describe the accessible routes way-finding / signage package.	See attached figures (**F1 – F7**)

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

8. Accessible Units (Group 2) and Guestrooms: (If applicable)

In order to facilitate access to housing and hospitality, this section addresses the number of accessible units that are proposed for the development site that remove barriers to housing and hotel rooms.

What is the total number of proposed housing units or hotel rooms for the development?	93 dwelling units.
If a residential development, how many units are for sale? How many are for rent? What is the breakdown of market value units vs. IDP (Inclusionary Development Policy) units?	To date undermined.
If a residential development, how many accessible Group 2 units are being proposed?	5
If a residential development, how many accessible Group 2 units will also be IDP units? ***If none***, describe reason.	TBD
If a hospitality development, how many accessible units will feature a wheel-in shower? Will accessible equipment be provided as well? ***If yes,*** provide amount and location of equipment.	N/A
Do standard units have architectural barriers that would prevent entry or use of common space for persons with mobility impairments? Example: stairs / thresholds at entry, step to balcony, others. ***If yes***, provide reason.	No
Are there interior elevators, ramps or lifts located in the development for access around architectural barriers and/or to separate floors? ***If yes***, describe:	Yes, elevators are provided to access all floors and parking.

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

9. Community Impact: *Accessibility and inclusion extend past required compliance with building codes. Providing an overall scheme that allows full and equal participation of persons with disabilities makes the development an asset to the surrounding community.*	
Is this project providing any funding or improvements to the surrounding neighborhood? Examples: adding extra street trees, building or refurbishing a local park, or supporting other community-based initiatives?	At a minimum, a rebuilt sidewalk along American Legion Highway and new sidewalk at Stella Road will be provided.
What inclusion elements does this development provide for persons with disabilities in common social and open spaces? Example: Indoor seating and TVs in common rooms; outdoor seating and barbeque grills in yard. Will all of these spaces and features provide accessibility?	To be developed, early in the process; however, the intent and expectation is for all common areas, interior and exterior, to be fully accessible.
Are any restrooms planned in common public spaces? ***If yes,*** will any be single-stall, ADA compliant and designated as "Family"/ "Companion" restrooms? ***If no***, explain why not.	Not at this time.
Has the proponent reviewed the proposed plan with the City of Boston Disability Commissioner or with their Architectural Access staff? ***If yes,*** did they approve? ***If no,*** what were their comments?	No, it has not been reviewed.
Has the proponent presented the proposed plan to the Disability Advisory Board at one of their monthly meetings? Did the Advisory Board vote to support this project? ***If no,*** what recommendations did the Advisory Board give to make this project more accessible?	No, it has not been presented.

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

10. Attachments

Include a list of all documents you are submitting with this Checklist. This may include drawings, diagrams, photos, or any other material that describes the accessible and inclusive elements of this project.

Please refer to Figures F-1 through F-7.

Provide a diagram of the accessible routes to and from the accessible parking lot/garage and drop-off areas to the development entry locations, including route distances.

Provide a diagram of the accessible route connections through the site, including distances.

Provide a diagram the accessible route to any roof decks or outdoor courtyard space? (if applicable)

Provide a plan and diagram of the accessible Group 2 units, including locations and route from accessible entry.

Provide any additional drawings, diagrams, photos, or any other material that describes the inclusive and accessible elements of this project.

Stella Road at American Legion Highway crosswalk

Appendix F2. 780 American Legion Highway Residences
Accessibility Checklist

Existing sidewalk at bus stop on American Legion Highway

This completes the Article 80 Accessibility Checklist required for your project. Prior to and during the review process, Commission staff are able to provide technical assistance and design review, in order to help achieve ideal accessibility and to ensure that all buildings, sidewalks, parks, and open spaces are usable and welcoming to Boston's diverse residents and visitors, including those with physical, sensory, and other disabilities.

For questions or comments about this checklist, or for more information on best practices for improving accessibility and inclusion, visit www.boston.gov/disability, or our office:

The Mayor's Commission for Persons with Disabilities
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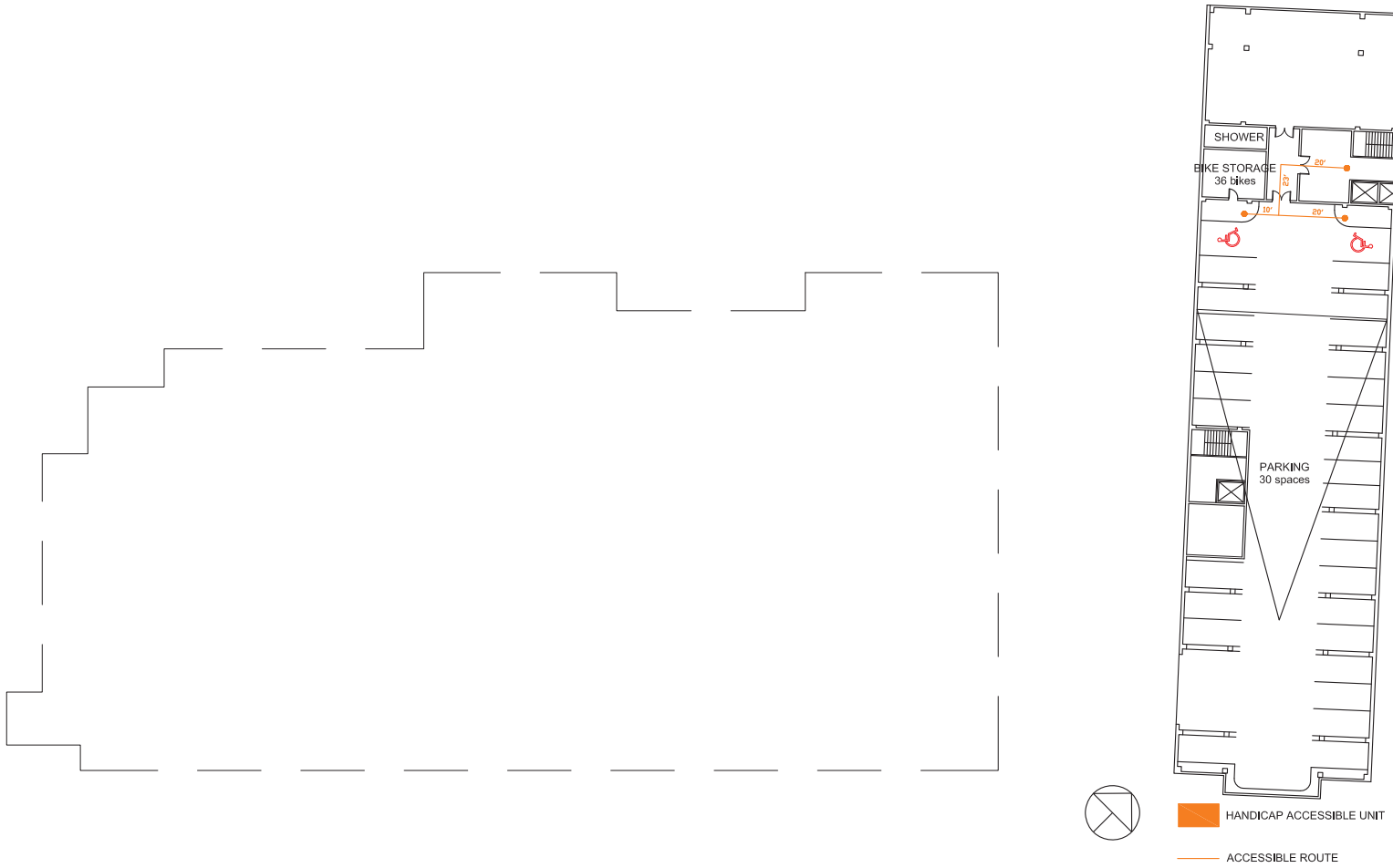
Boston MA 02201.

Architectural Access staff can be reached at:

accessibility@boston.gov | patricia.mendez@boston.gov | sarah.leung@boston.gov | 617-635-3682



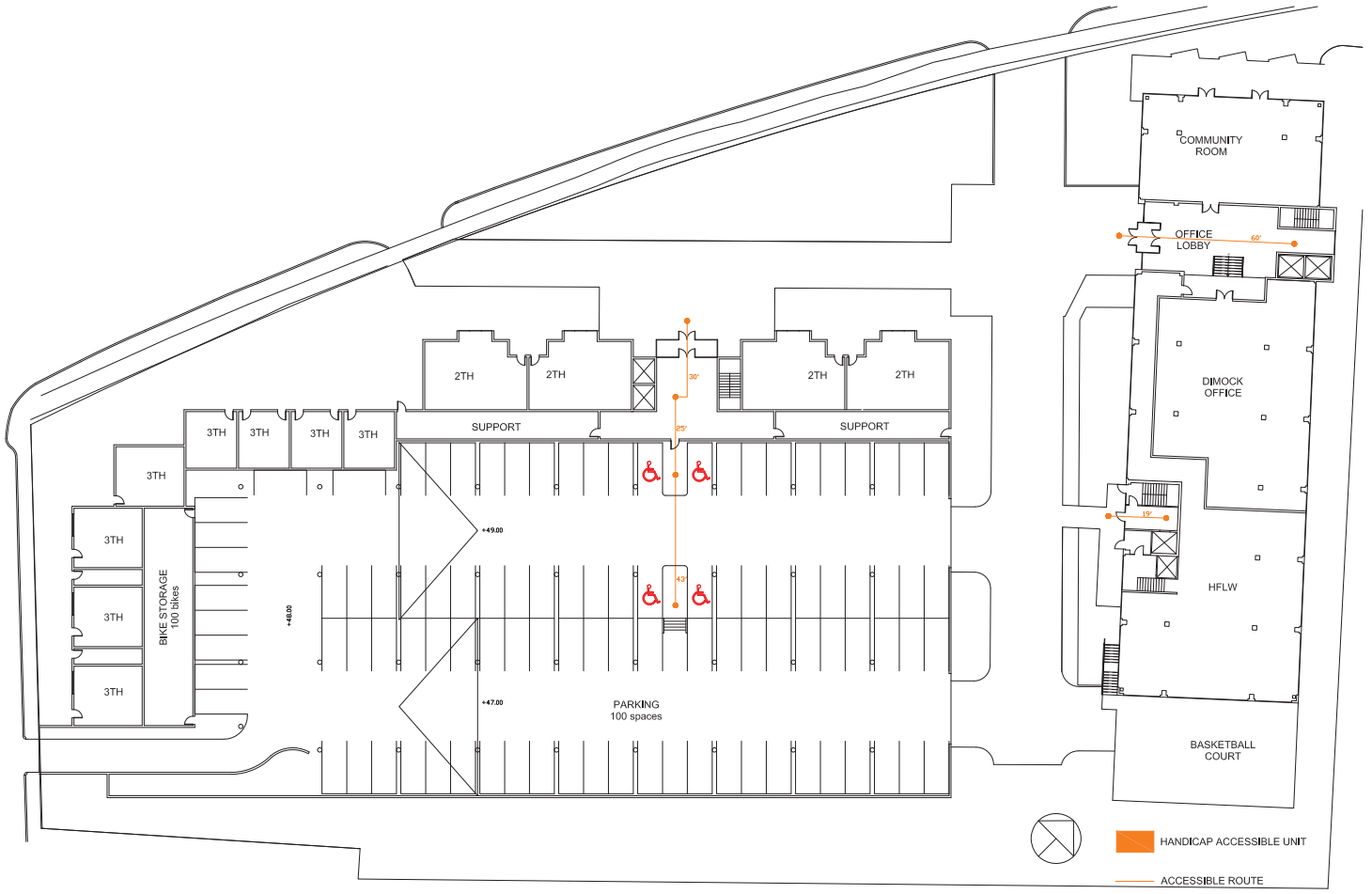
780 AMERICAN LEGION HWY
ROSLINDALE , MA

8/12/2019 DHK ARCHITECTS, INC

FIGURE F-1
ACCESSIBLE ROUTE AT
BASEMENT LEVEL

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS



780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE F-2
ACCESSIBLE ROUTE AT GROUND LEVEL

THE HOME FOR LITTLE WANDERERS

ALINEA DEVELOPMENT PARTNERS

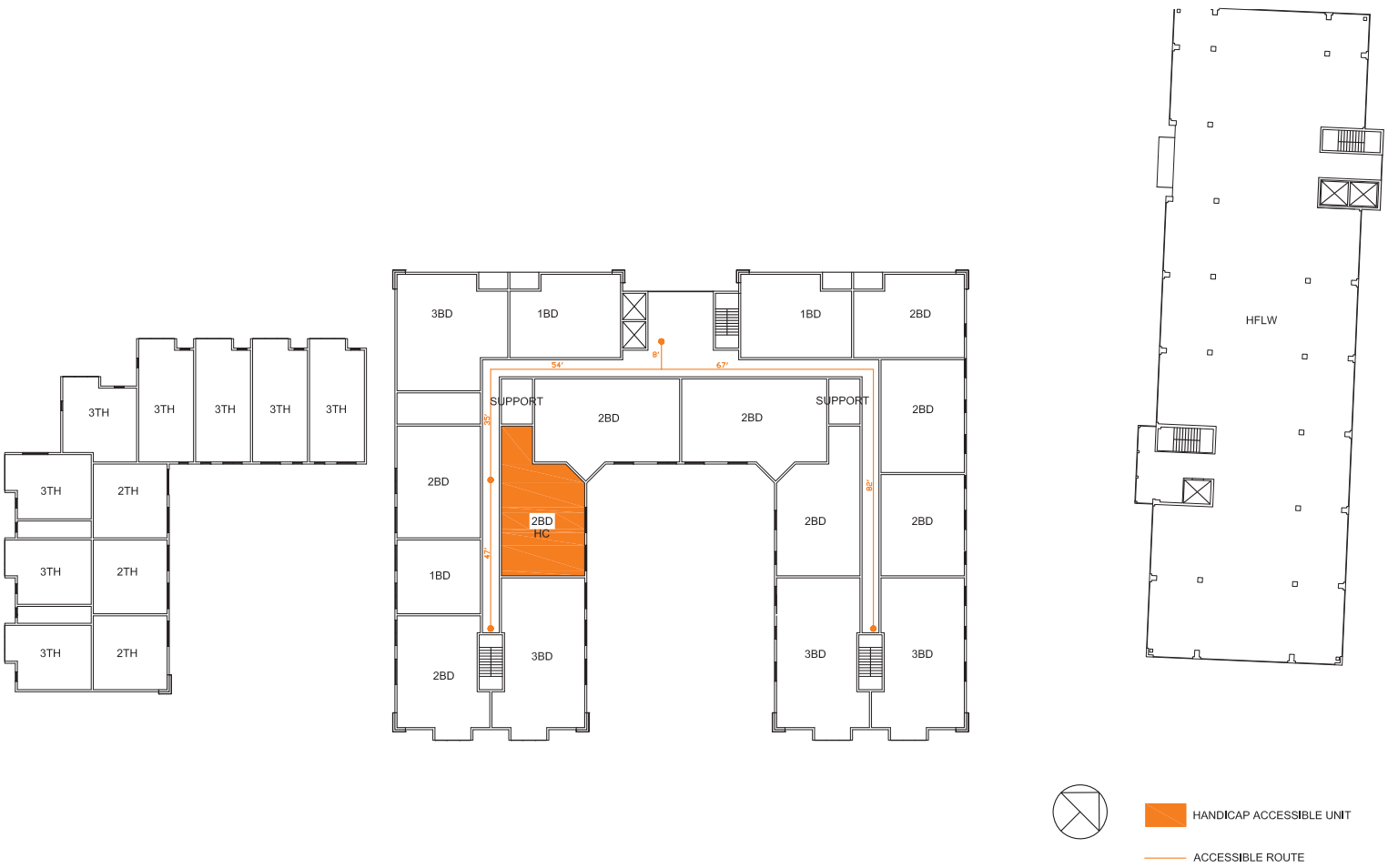
780 AMERICAN LEGION HWY
ROSLINDALE , MA

8/12/2019 DHK ARCHITECTS, INC

FIGURE F-3
ACCESSIBLE ROUTE AT
SECOND LEVEL

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

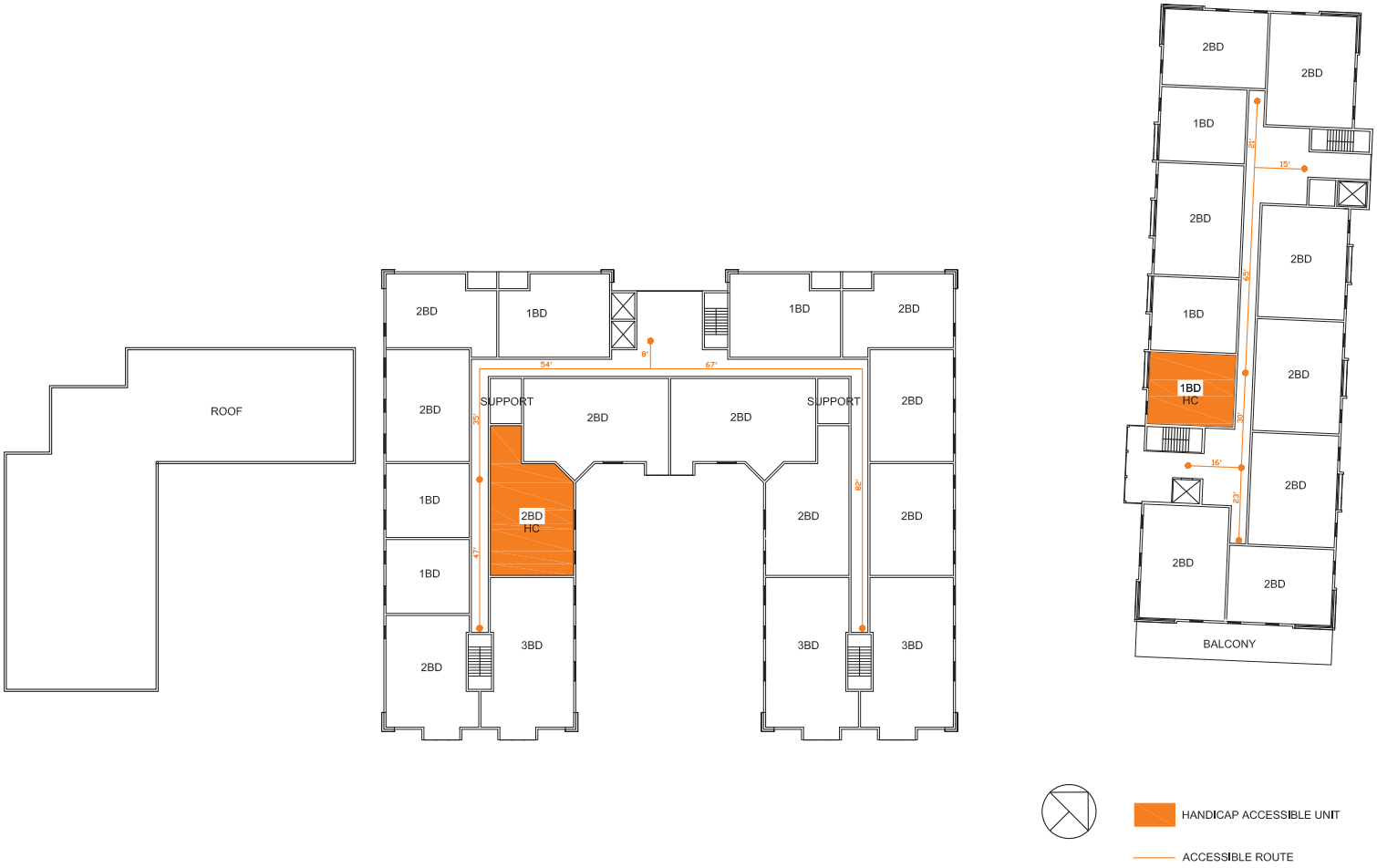


780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE F-4
ACCESSIBLE ROUTE AT
THIRD LEVEL

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS



780 AMERICAN LEGION HWY
ROSLINDALE , MA

8/12/2019 DHK ARCHITECTS, INC

FIGURE F-5
ACCESSIBLE ROUTE AT
FOURTH LEVEL

THE HOME FOR LITTLE
WANDERERS

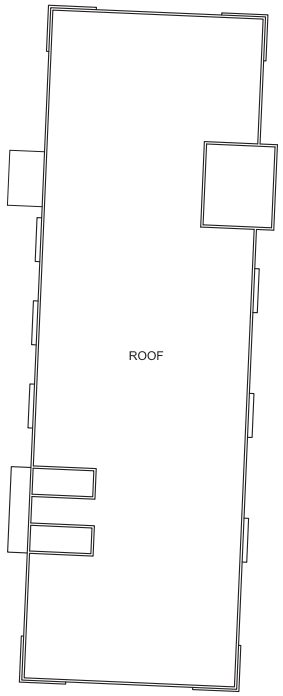
ALINEA DEVELOPMENT PARTNERS

780 AMERICAN LEGION HWY
ROSLINDALE , MA

FIGURE F-6
ACCESSIBLE ROUTE AT
FIFTH LEVEL

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS



HANDICAP ACCESSIBLE UNIT

ACCESSIBLE ROUTE

780 AMERICAN LEGION HWY
ROSLINDALE , MA

8/12/2019 DHK ARCHITECTS, INC

FIGURE F-7
ACCESSIBLE ROUTE AT
SIXTH LEVEL

THE HOME FOR LITTLE
WANDERERS

ALINEA DEVELOPMENT PARTNERS

APPENDIX G – RESPONSE TO BPDA BROADBAND QUESTIONNAIRE

Appendix G

Broadband Ready Buildings Questionnaire

780 American Legion Highway, Roslindale, MA

The City of Boston is working to cultivate a broadband ecosystem that serves the current and future connectivity needs of residents, businesses, and institutions. The real estate development process offers a unique opportunity to create a building stock in Boston that enables this vision. In partnership with the development community, the Boston Planning and Development Authority and the City of Boston will begin to leverage this opportunity by adding a broadband readiness component to the Article 80 Design Review. This component will take the form of a set of questions to be completed as part of the Project Notification Form. Thoughtful integration of future-looking broadband practices into this process will contribute to progress towards the following goals:

1. Enable an environment of competition and choice that results in all residents and businesses having a choice of 2 or more wireline or fixed wireless high-speed Internet providers
2. Create a built environment that is responsive to new and emerging connectivity technologies
3. Minimize disruption to the public right of way during and after construction of the building

The information that is shared through the Project Notification Form will help BPDA and the City understand how developers currently integrate telecommunications planning in their work and how this integration can be most responsive to a changing technological landscape.

Upon submission of this online form, a PDF of the responses provided will be sent to the email address of the individual entered as Project Contact. Please include this PDF in the Project Notification Form packet submitted to BPDA.

Section 1: General Questions

For consistency, general intake questions below are modeled after Boston Planning and Development Agency Climate Change Resiliency and Preparedness Checklist.

Project Information

- Project Name: **Four Oaks/A Behavioral Health & Clinical Residential Community**
- Project Address Primary: **780 American Legion Highway, Roslindale, MA**
- Project Address Additional: **N/A**
- Project Contact: **L. Duane Jackson, ldjackson@alineacapitalpartners.com, Tel: 617-763-7301**
- Expected completion date: **2021-2023**

Team Description

- Owner / Developer: **Four Oaks Ventures, LLC, c/o Alinea Capital Partners, LLC**
- Architect: **DHK Architects Inc.**
- Engineer (building systems): **TBD**
- Permitting: **Mitchell L. Fischman Consulting ("MLF Consulting") LLC**
- Construction Management: **TBD**

Section 2: Right of Way to Building

Point of Entry Planning Point of entry planning has important implications for the ease with which your building's telecommunications services can be installed, maintained, and expanded over time.

Appendix G

Broadband Ready Buildings Questionnaire

780 American Legion Highway, Roslindale, MA

#1: Please provide the following information for your building's point of entry planning (conduits from building to street for telecommunications). Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- Number of Points of Entry: **Unknown**
- Locations of Points of Entry: **American Legion Highway**
- Quantity and size of conduits: **Unknown**
- Location where conduits connect (e.g. building-owned manhole, carrier-specific manhole or stubbed at property line): **Unknown**
- Other information/comments: **Unknown**

#2: Do you plan to conduct a utility site assessment to identify where cabling is located within the street? This information can be helpful in determining the locations of POEs and telco rooms. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- **Yes**
- No
- Unknown

Section 3: Inside of the Building

Riser Planning

Riser capacity can enable multiple telecom providers to serve tenants in your building.

#3: Please provide the following information about the riser plans throughout the building. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- Number of risers: **Unknown**
- Distance between risers (if more than one): **Unknown**
- Dimensions of riser closets: **Unknown**
- Riser or conduit will reach to top floor: **Unknown**
- Number and size of conduits or sleeves within each riser: **Unknown**
- Proximity to other utilities (e.g. electrical, heating): **Unknown**
- Other information/comments: **Unknown**

Telecom Room

A well-designed telecom room with appropriate security and resiliency measures can be an enabler of tenant choice and reduce the risk of service disruption and costly damage to telecom equipment.

#4: Please provide the following information about the telecom room plans. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

- What is the size of the telecom room? **Unknown**
- Describe the electrical capacity of the telecom room (i.e. # and size of electrical circuits) **Unknown**

- Will the telecom room be located in an area of the building containing one or more load bearing walls? **Unknown**

- Will the telecom room be climate controlled?

  - **Yes**
  - No
  - Unknown

- If the building is within a flood-prone geographic area, will the telecom equipment will be located above the floodplain?
  - **Yes**
  - No
  - Unknown

- Will the telecom room be located on a floor where water or other liquid storage is present?
  - Yes
  - **No**
  - Unknown

- Will the telecom room contain a flood drain?
  - Yes
  - No
  - **Unknown**

- Will the telecom room be single use (telecom only) or shared with other utilities?
  - Telecom only
  - Shared with other utilities
- U**nknown**

Delivery of Service Within Building (Residential Only)

Please enter 'unknown' if these decisions have not yet been made or you are presently unsure. Questions 5 through 8 are for residential development only.

#5: Will building/developer supply common inside wiring to all floors of the building?

- Yes
- No
- **Unknown**

#6: If so, what transmission medium (e.g. coax, fiber)? Please enter 'unknown' if these decisions have not yet been made or you are presently unsure. **Unknown**

#7: Is the building/developer providing wiring within each unit?

- **Yes**
- No
- Unknown

#8: If so, what transmission medium (e.g. coax, fiber)? Please enter 'unknown' if these decisions have not yet been made or you are presently unsure. **Unknown**

Section 4: Accommodation of New and Emerging Technologies

Cellular Reception

The quality of cellular reception in your building can have major impacts on quality of life and business operations.

Please provide the following information on your plans to facilitate high quality cellular coverage in your building. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

#9: Will the building conduct any RF benchmark testing to assess cellular coverage?

- **Yes**
- No
- Unknown

#10: Will the building allocate any floor space for future in-building wireless solutions (DAS/small **cell/booster equipment)?**

- **Yes**
- No
- Unknown

#11: Will the building be providing an in-building solution (DAS/ Small cell/ booster)?

- **Yes**
- No
- Unknown

#12: If so, are you partnering with a carrier, neutral host provider, or self-installing?

- Carrier
- Neutral host provider
- **Self-installing**

Rooftop Access

Building rooftops are frequently used by telecommunications providers to install equipment critical to the provision of service to tenants.

Please provide the following information regarding your plans for roof access and usage. Please enter 'unknown' if these decisions have not yet been made or you are presently unsure.

#13: Will you allow cellular providers to place equipment on the roof?

- Yes
- No
- **Unknown**

#14: Will you allow broadband providers (fixed wireless) to install equipment on the roof?

- Yes
- No
- **Unknown**

Section 5: Telecom Provider Outreach

Supporting Competition and Choice

Having a choice of broadband providers is a value add for property owners looking to attract tenants and for tenants in Boston seeking fast, affordable, and reliable broadband service. In addition to enabling tenant choice in your building, early outreach to telecom providers can also reduce cost and disruption to the public right of way. The following questions focus on steps that property owners can take to ensure that multiple wireline or fixed wireless broadband providers can access your building and provide service to your tenants.

#15: (Residential Only) Please provide the date upon which each of the below providers were successfully contacted, whether or not they will serve the building, what transmission medium they will use (e.g. coax, fiber) and the reason they provided if the answer was 'no'.

TO BE COMPLETED DURING DESIGN DEVELOPMENT

- Comcast - enter contact info
- RCN - enter contact info
- Verizon - enter contact info
- Wicked Broadband - enter contact info
- WebPass
- Starry
- Level 3
- Cogent
- Lightower
- XO Communications
- AT&T
- Zayo
- Other(s) - please specify - enter contact info

#16: Do you plan to abstain from exclusivity agreements with broadband and cable providers?

- **Yes**
- No
- Unknown

Appendix G

Broadband Ready Buildings Questionnaire

780 American Legion Highway, Roslindale, MA

#17: Do you plan to make public to tenants and prospective tenants the list of broadband/cable providers who serve the building?

- Yes
- No
- **Unknown**

Section 6: Feedback for Boston Planning and Development Agency

The Boston Planning and Development Agency looks forward to supporting the developer community in enabling broadband choice for resident and businesses. Please provide feedback on your experience completing these questions. **Some of these questions are difficult to respond to at this point in the design process.**

APPENDIX H – RESPONSE TO BPDA SMART UTILITIES CHECKLIST

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

Date Submitted:	**08/30/19**
Submitted by:	**Mitchell Fischman, MLF Consulting, LLC**

Background

The Smart Utilities Checklist will facilitate the Boston Smart Utilities Steering Committee's review of:

a) compliance with the Smart Utilities Policy for Article 80 Development Review, which calls for the integration of five (5) Smart Utility Technologies (SUTs) into Article 80 developments

b) integration of the Smart Utility Standards

More information about the Boston Smart Utilities Vision project, including the Smart Utilities Policy and Smart Utility Standards, is available at: www.http://bostonplans.org/smart-utilities

Note: Any documents submitted via email to manuel.esquivel@boston.gov will not be attached to the pdf form generated after submission, but are available upon request.

Part 1 - General Project Information

1.1 Project Name	**Four Oaks/A Behavioral and Clinical Health Residential Community**
1.2 Project Address	**780 American Legion Highway, Roslindale**
1.3 Building Size (square feet) **For a multi-building development, enter total development size (square feet)*	**Approx. 186,559 gsf**
1.4 Filing Stage	**Project Notification Form**

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

1.5 Filing Contact Information

1.5a Name	**Mitchell Fischman**
1.5b Company	**MLF Consulting, LLC**
1.5c E-mail	mitchfischman@gmail.com
1.5d Phone Number	**781-760-1726**

1.6 Project Team

1.6a Project Owner/Developer	**Home for Little Wanderers c/o Four Oaks Ventures, LLC**
1.6b Architect	**DHK Architects, Inc.**
1.6c Permitting	**Mitchell L. Fischman ("MLF") Consulting LLC**
1.6d Construction Management	**TBD**

Part 2 - District Energy Microgrids

Fill out this section if the proposed project's total development size is equal to or greater than 1.5 million square feet.

Note on submission requirements timeline:

Feasibility Assessment Part A should be submitted with PNF or any other initial filing.

Feasibility Assessment Part B should be submitted with any major filing during the Development Review stage (i.e., DPIR)

District Energy Microgrid Master Plan Part A should be submitted before submission of the Draft Board Memorandum by the BPDA Project Manager (Note: Draft Board Memorandums are due one month ahead of the BPDA Board meetings)

District Energy Microgrid Master Plan Part B should be submitted before applying for a Building Permit

Please email submission to manuel.esquivel@boston.gov

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

2.1 Consultant Assessing/Designing District Energy Microgrid (if applicable)	
2.2 Latest document submitted	
2.3 Date of latest submission	
2.4 Which of the following have you had engagement/review meetings with regarding District Energy Microgrids? (select all that apply)	
2.5 What engagement meetings have you had with utilities and/or other agencies (i.e., MA DOER, MassCEC) regarding District Energy Microgrids? (Optional: include dates)	

Part 3 - Telecommunications Utilidor

Fill out this section if the proposed project's total development size is equal to or greater than 1.5 million square feet OR if the project will include the construction of roadways equal to or greater than 0.5 miles in length.

Please submit a map/diagram highlighting the sections of the roads on the development area where a Telecom Utilidor will be installed, including access points to the Telcom Utilidor (i.e., manholes)

Please email submission to manuel.esquivel@boston.gov

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

3.1 Consultant Assessing/Designing Telecom Utilidor (if applicable)	
3.2 Date Telecom Utilidor Map/Diagram was submitted	
3.3 Dimensions of Telecom Utilidor (include units)	
3.3a Cross-section (i.e., diameter, width X height)	
3.3b Length	
3.4 Capacity of Telecom Utilidor (i.e., number of interducts, 2 inch (ID) pipes, etc.)	
3.5 Which of the following have you had engagement/review meetings with regarding the Telecom Utilidor? (select all that apply)	
3.6 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding the Telecom Utilidor? (Optional: include dates)	

Part 4 - Green Infrastructure

Fill out this section if the proposed project's total development size is equal to or greater than 100,000 square feet.

Please submit a map/diagram highlighting where on the development Green Infrastructure will be installed.

Please email submission to manuel.esquivel@boston.gov

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

4.1 Consultant Assessing/Designing Green Infrastructure (if applicable)	**Soden Sustainability Consulting** **Howard Stein Hudson**
4.2 Date Green Infrastructure Map/Diagram was submitted	**To Be Submitted during the Design Development Phase**
4.3 Types of Green Infrastructure included in the project (select all that apply)	**Green Roofs, Permeable Pavers & Stormwatwer Infilitration Systems**
4.4 Total impervious area of the development (in square inches)	**Approx. 10,464,480 square inches**
4.5 Volume of stormwater that will be retained (in cubic inches)* **Note: Should equal to at least "Total impervious area (entered in section 4.3)" times "1.25 inches"*	**13,080,600 cubic inches**
4.6 Which of the following have you had engagement/review meetings with regarding Green Infrastructure? (select all that apply)	**No meetings to date.**
4.7 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding Green Infrastructure? (Optional: include dates)	**No meetings to date.**

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

Part 5 - Adaptive Signal Technology (AST)

Fill out this section if as part of your project BTD will require you to install new traffic signals or make significant improvements to the existing signal system.

Please submit a map/diagram highlighting the context of AST around the proposed development area, as well as any areas within the development where new traffic signals will be installed or where significant improvements to traffic signals will be made.

Please email submission to manuel.esquivel@boston.gov

5.1 Consultant Assessing/Designing Adaptive Signal Technology (if applicable)	**Howard Stein Hudson**
5.2 Date AST Map/Diagram was submitted	**N/A- The Project does not currently propose any new signals or modifications to the existing signals**
5.3 Describe how the AST system will benefit/impact the following transportation modes	
5.3a Pedestrians	**N/A**
5.3b Bicycles	**N/A**
5.3c Buses and other Public Transportation	**N/A**
5.3d Other Motorized Vehicles	**N/A**
5.4 Describe the components of the AST system (including system design and components)	**N/A**
5.5 Which of the following have you had engagement/review meetings with regarding AST? (select all that apply)	**N/A**

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

5.6 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding AST? (Optional: include dates)	**N/A**

Part 6 - Smart Street Lights

Fill out this section if as part of your project PWD and PIC will require you to install new street lights or make significant improvements to the existing street light system.

Please submit a map/diagram highlighting where new street lights will be installed or where improvements to street lights will be made.

Please email submission to manuel.esquivel@boston.gov

6.1 Consultant Assessing/Designing Smart Street Lights (if applicable)	**Howard Stein Hudson, DHK Architects, and MEP to be determined**
6.2 Date Smart Street Lights Map/Diagram was submitted	**Will be determined and provided at the time of the PIC review**
6.3 Which of the following have you had engagement/review meetings with regarding Smart Street Lights? (select all that apply)	**Will be determined and provided at the time of the PIC review**
6.4 What engagement meetings have you had with utilities and/or other agencies (i.e., State agencies) regarding Smart Street Lights? (Optional: include dates)	**Will include discussions with Boston Street Lighting at the time of PIC review**

APPENDIX H: Smart Utilities Checklist- 780 American Legion Highway

Part 7 - Smart Utility Standards

The Smart Utility Standards set forth guidelines for planning and integration of SUTs with existing utility infrastructure in existing or new streets, including cross-section, lateral, and intersection diagrams. The Smart Utility Standards are intended to serve as guidelines for developers, architects, engineers, and utility providers for planning, designing, and locating utilities. The Smart Utility Standards will serve as the baseline for discussions on any deviations from the standards needed/proposed for any given utility infrastructure.

Please submit typical below and above grade cross section diagrams of all utility infrastructure in the proposed development area (including infrastructure related to the applicable SUTs).

Please submit typical below and above grade lateral diagrams of all utility infrastructure in the proposed development area (including infrastructure related to the applicable SUTs).

Please email submission to manuel.esquivel@boston.gov

7.1 Date Cross Section Diagram(s) was submitted	
7.2 Date Lateral Diagram(s) was submitted	

780 American Legion Highway, Roslindale

MLF
CONSULTING LLC