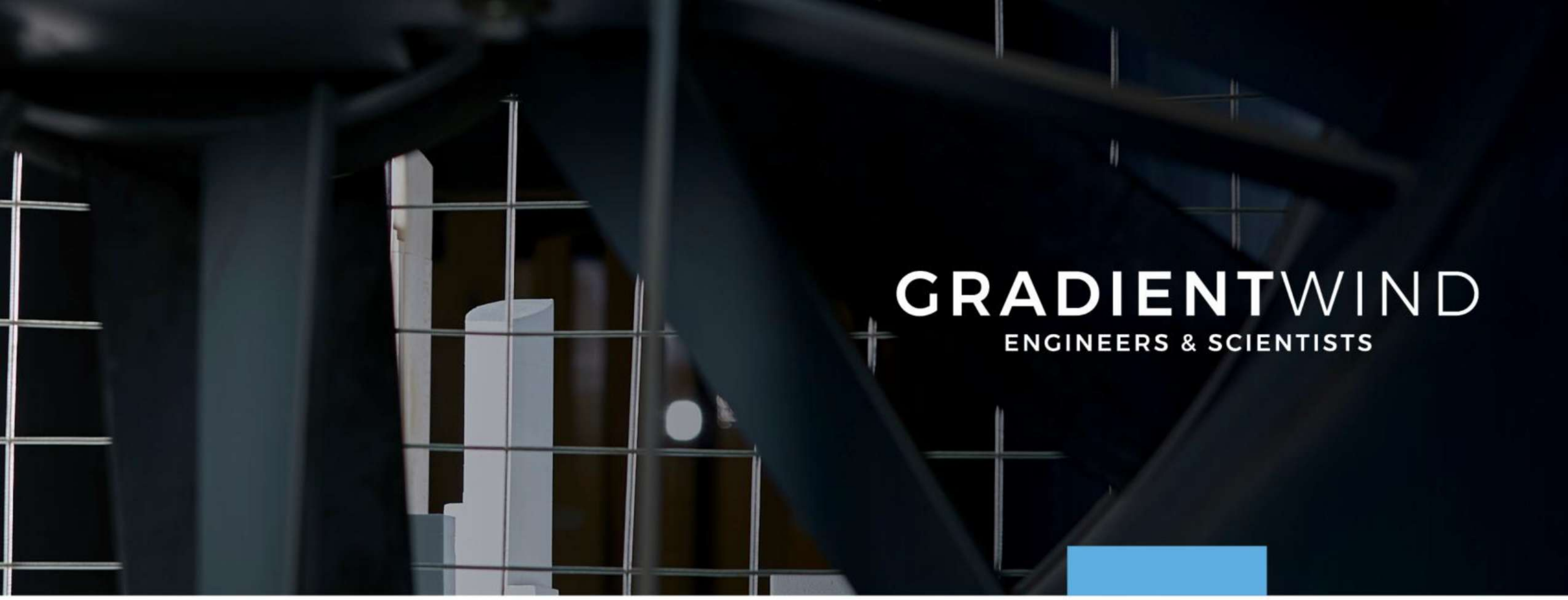
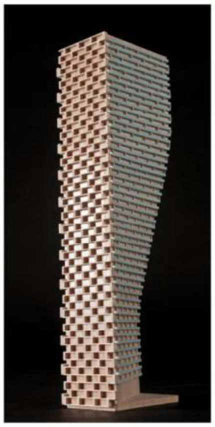


GRADIENTWIND
ENGINEERS & SCIENTISTS

# PEDESTRIAN LEVEL WIND STUDY

1200 Baseline Road
Ottawa, Ontario

Report: 24-249-PLW



June 3, 2026

PREPARED FOR
Myers Automotive Group
1200 Baseline Road
Ottawa, ON K2C 0A6

PREPARED BY
Sunny Kang, B.A.S., Project Coordinator
Omar Rioseco, B.Eng., Junior Wind Scientist
David Huitema, M.Eng., P.Eng., CFD Lead Engineer

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
GRADIENTWIND.COM

# EXECUTIVE SUMMARY

This report describes a pedestrian level wind (PLW) study undertaken to satisfy Zoning By-Law Amendment application submission requirements for Phases 1 and 2 of the proposed mixed-use residential development located at 1200 Baseline Road in Ottawa, Ontario (hereinafter referred to as “subject site” or “proposed development”). Our mandate within this study is to investigate pedestrian wind conditions within and surrounding the subject site, and to identify areas where wind conditions may interfere with certain pedestrian activities so that mitigation measures may be considered, where required.

The study involves simulation of wind speeds for selected wind directions in a three-dimensional (3D) computer model using the computational fluid dynamics (CFD) technique, combined with meteorological data integration, to assess pedestrian wind comfort and safety within and surrounding the subject site according to City of Ottawa wind comfort and safety criteria. The results and recommendations derived from these considerations are detailed in the main body of the report (Section 5), illustrated in Figures 3A-9, and summarized as follows:

1) Most grade-level areas within and surrounding the subject site are predicted to experience conditions that are considered acceptable for the intended pedestrian uses throughout the year. Specifically, conditions over surrounding sidewalks, transit stops, neighbouring surface parking lots, proposed streets, drop-off areas, surface parking, the pedestrian pass-through, and walkways, and in the vicinity of building access points, are considered acceptable.

    a. While the walking comfort threshold is exceeded during the spring season between Buildings B and C and to the northeast of Building D, the exceedances of the criteria are located over the roadway surface of Street C and over a landscaped area along the northeast elevation of the subject site; as such, and combined with the marginal exceedance of the walking threshold, the noted conditions may be considered satisfactory.

2) During the typical use period (May to October, inclusive), conditions over the proposed parkland are predicted to be suitable for a mix of sitting and standing, while conditions over the shared terrace between Buildings A and B are predicted to be suitable for strolling, or better.

    a. As required by programming, recommendations regarding mitigation are provided in Section 5.1, comprising landscaping elements, canopies along the north elevations of Buildings A and B that wrap around the corners fronting the terrace, and targeted mitigation within the terrace and parkland around and above seating areas.

3) The podia rooftop levels were assessed as potential amenity terraces. Wind comfort conditions over the podia rooftops during the typical use period are predicted to be suitable for a mix of mostly sitting and standing.

    a. If required by programming, recommendations regarding mitigation are provided in Section 5.2, comprising perimeter wind screens and mitigation inboard of the terrace perimeters in the form of wind screens and/or other landscaping features.

4) The foregoing statements and conclusions apply to common weather systems, during which no dangerous wind conditions, as defined in Section 4.4, are expected anywhere over the subject site. During extreme weather events, (for example, thunderstorms, tornadoes, and downbursts), pedestrian safety is the main concern. However, these events are generally short-lived and infrequent and there is often sufficient warning for pedestrians to take appropriate cover.

# TABLE OF CONTENTS

## 1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Myers Automotive Group to undertake a pedestrian level wind (PLW) study to satisfy Zoning By-Law Amendment application submission requirements for Phases 1 and 2 of the proposed mixed-use residential development located at 1200 Baseline Road Ottawa, Ontario (hereinafter referred to as “subject site” or “proposed development”). Our mandate within the current study is to investigate pedestrian wind conditions within and surrounding the subject site for the revised architectural massing design, and to identify areas where wind conditions may interfere with certain pedestrian activities so that mitigation measures may be considered, where required.

Our work is based on industry standard computer simulations using the computational fluid dynamics (CFD) technique and data analysis procedures, City of Ottawa wind comfort and safety criteria, architectural drawings prepared by Hobin Architecture in December 2025, surrounding street layouts and existing and approved future building massing information obtained from the City of Ottawa, as well as recent satellite imagery.

## 2. TERMS OF REFERENCE

The subject site is located at 1200 Baseline Road in Ottawa, situated to the south of the intersection of Baseline Road and Merivale Road on a parcel of land bordered by Merivale Road to the northwest, Baseline Road to the north, Eleanor Drive and existing low-rise residential buildings to the south, a low-rise church to the east, and a low-rise commercial building to the southwest. Phase 1 and Phase 2 are located on the western and eastern portion of the parcel, respectively.

Phase 1 comprises two buildings: Building A (20 storeys) at the west corner and Building B (25 storeys) centrally to the north of the subject site. Phase 2 comprises five buildings: Building C (40 storeys), Building D (25 storeys), Building E (18 storeys), Building F (6 storeys), and Building G (6 storeys), situated from the north clockwise to the south within the eastern parcel. Buildings C and D include a shared 4-storey podium. All buildings are topped with a mechanical penthouse (MPH), and each phase is served by underground parking levels. Access to the underground parking levels is provided by parking ramps to the south of Buildings A and B and at the southeast corners of Buildings C and E via internal streets. Street A extends northwest-southeast along the southwest side of the subject site, connecting Merivale Road with Eleanor

Drive, Street B extends northeast-southwest through Phase 1 connecting Street A and Street C, and Street C extends through Phase 2 from Merivale Road. Drop-off areas are located at the rear of Buildings A and B and between Buildings D and E, and surface parking and drop-off areas are provided along Street C. A parkland is proposed to the southwest of the subject site and a shared terrace is located between Buildings A and B.

Level P1 of Phase 1 is approximately one storey below Merivale Road, and includes lobby and amenity spaces to the southeast, and indoor parking space to the northwest. At Level 1, Building A includes retail space to the north, a lobby to the east, and an indoor amenity to the southwest, while Building B includes retail space to the west, a lobby to the southwest, and an indoor amenity to the east. Building C includes an indoor amenity to the east, a lobby at the south corner, and retail spaces to the northwest, and Building D includes a retail space to the north, a lobby at the southeast corner, and an indoor amenity at the southwest corner. A north-south pedestrian pass-through is located between Buildings C and D. Building E comprises a lobby at the northeast corner, an indoor amenity to the south, and residential units at the northwest corner, and Buildings F and G comprise residential units to the southwest and southeast and lobby and amenity spaces along the northeastern elevations. The remaining levels are reserved for residential occupancy. At Level 5, setbacks are located from the west, southwest, and northeast elevations of Building A, from the southwest elevation of Building B, and from all elevations of Buildings C, D, and E. These podia rooftops were considered as potential common amenity terraces in the present study.

The near-field surroundings (defined as an area within 200 metres (m) of the subject site) include low-rise commercial buildings to the southwest and west, low- and mid-rise buildings to the northwest, the Central Experimental Farm to the northeast, a low-rise church to the east, and mostly low-rise residential dwellings to the south. The far-field surroundings (defined as an area beyond the near-field but within a 2-kilometre (km) radius of the subject site) are characterized by low-rise suburban massing in all directions with the open fields of the Central Experimental Farm to the northeast, Carlington Park to the northwest, and isolated mid- and high-rise buildings in all directions, particularly clustered near the intersection of Clyde Avenue and Baseline Road.

Site plans for the proposed and existing massing scenarios are illustrated in Figures 1A and 1B, while Figures 2A-2H illustrate the computational models used to conduct the study. The existing massing scenario includes the existing massing and any developments approved by the City of Ottawa.

## 3. OBJECTIVES

The principal objectives of this study are to (i) determine pedestrian level wind conditions at key areas within and surrounding the development site; (ii) identify areas where wind conditions may interfere with the intended uses of outdoor spaces; and (iii) recommend suitable mitigation measures, where required.

## 4. METHODOLOGY

The approach followed to quantify pedestrian wind conditions over the site is based on CFD simulations of wind speeds across the subject site within a virtual environment, meteorological analysis of the Ottawa area wind climate, and synthesis of computational data with City of Ottawa wind comfort and safety criteria[1]. The following sections describe the analysis procedures, including a discussion of the noted pedestrian wind criteria.

### 4.1 Computer-Based Context Modelling

A computer based PLW study was performed to determine the influence of the wind environment on pedestrian comfort over the proposed development site. Pedestrian comfort predictions, based on the mechanical effects of wind, were determined by combining measured wind speed data from CFD simulations with statistical weather data obtained from Ottawa Macdonald-Cartier International Airport. The general concept and approach to CFD modelling is to represent building and topographic details in the immediate vicinity of the subject site on the surrounding model, and to create suitable atmospheric wind profiles at the model boundary. The wind profiles are designed to have similar mean and turbulent wind properties consistent with actual site exposures.

An industry standard practice is to omit trees, vegetation, and other existing and planned landscape elements from the model due to the difficulty of providing accurate seasonal representation of vegetation. The omission of trees and other landscaping elements produces slightly stronger wind speeds.

[1] City of Ottawa Terms of References: Wind Analysis
https://documents.ottawa.ca/sites/documents/files/wind_analysis_tor_en.pdf

## 4.2 Wind Speed Measurements

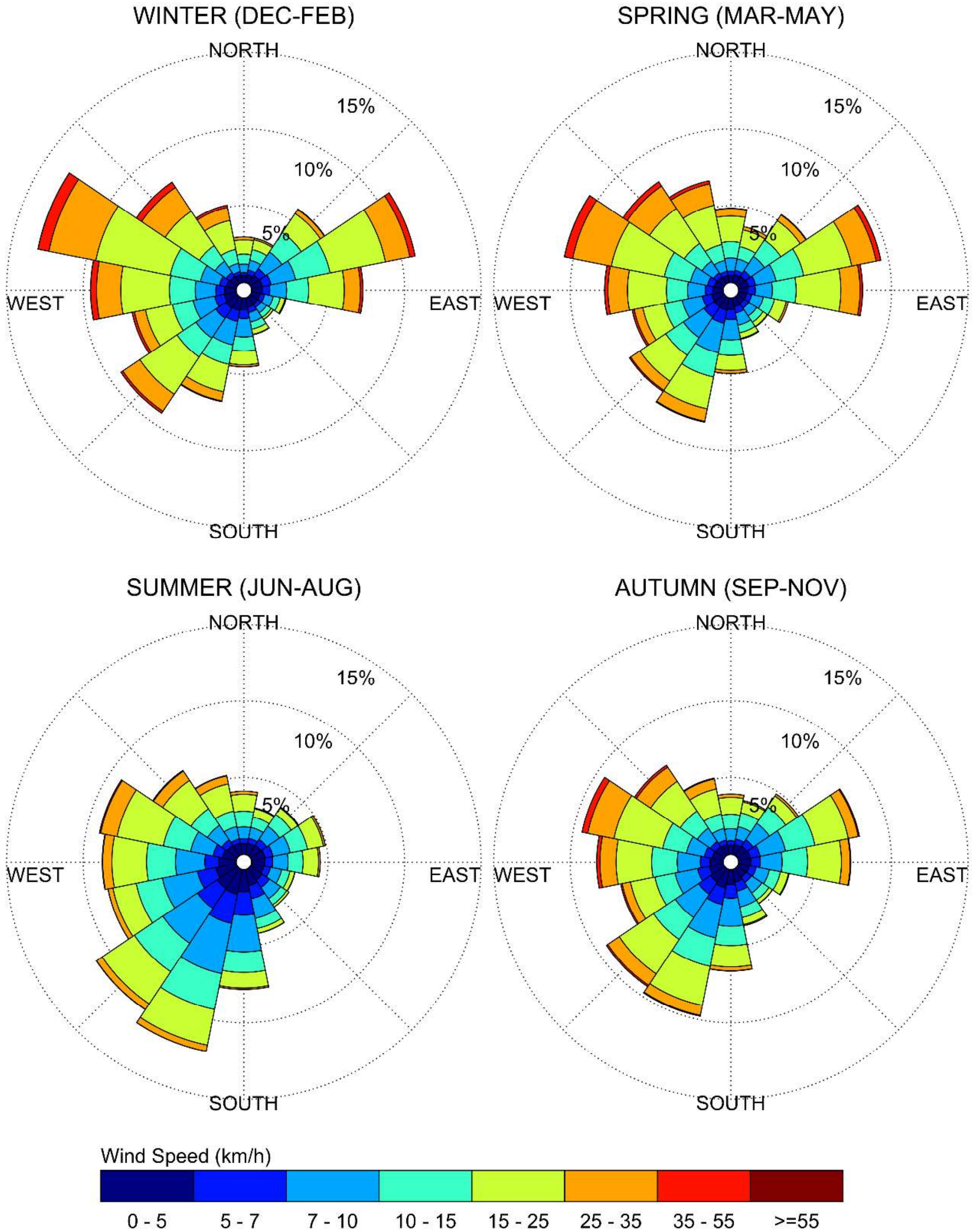
The PLW analysis was performed by simulating wind flows and gathering velocity data over a CFD model of the site for 16 wind directions. The CFD simulation model was centered on the proposed development, complete with surrounding massing within a radius of 480 m. The process was performed for two context massing scenarios, as noted in Section 2.

Mean and peak wind speed data obtained over the subject site for each wind direction were interpolated to 36 wind directions at 10° intervals, representing the full compass azimuth. Measured wind speeds approximately 1.5 m above local grade and the common amenity terraces serving the proposed development were referenced to the wind speed at gradient height to generate mean and peak velocity ratios, which were used to calculate full-scale values. Gradient height represents the theoretical depth of the boundary layer of the earth's atmosphere, above which the mean wind speed remains constant. Further details of the wind flow simulation technique are presented in Appendix A.

## 4.3 Historical Wind Speed and Direction Data

A statistical model for winds in Ottawa was developed from approximately 40 years of hourly meteorological wind data recorded at Ottawa Macdonald-Cartier International Airport and obtained from Environment and Climate Change Canada. Wind speed and direction data were analyzed during the appropriate hours of pedestrian usage (that is, between 06:00 and 23:00) and divided into four distinct seasons, as stipulated in the wind criteria. Specifically, the spring season is defined as March through May, the summer season is defined as June through August, the autumn season is defined as September through November, and the winter season is defined as December through February, inclusive. The statistical model of the Ottawa area wind climate, which indicates the directional character of local winds on a seasonal basis, is illustrated on the following page. The plots illustrate seasonal distribution of measured wind speeds and directions in kilometers per hour (km/h). Probabilities of occurrence of different wind speeds are represented as stacked polar bars in sixteen azimuth divisions. The radial direction represents the percentage of time for various wind speed ranges per wind direction during the measurement period. The prominent wind speeds and directions can be identified by the longer length of the bars. For Ottawa, the most common winds occur for westerly wind directions, followed by those from the east, while the most common wind speeds are below 36 km/h. The directional prominence and relative magnitude of wind speed changes somewhat from season to season.

**SEASONAL DISTRIBUTION OF WIND**
**OTTAWA MACDONALD-CARTIER INTERNATIONAL AIRPORT**




**Notes:**

1. Radial distances indicate percentage of time of wind events.
2. Wind speeds are mean hourly in km/h, measured at 10 m above the ground.

### 4.4 Pedestrian Wind Comfort and Safety Criteria – City of Ottawa

Pedestrian wind comfort and safety criteria are based on the mechanical effects of wind without consideration of other meteorological conditions (that is, temperature and relative humidity). The comfort criteria assume that pedestrians are appropriately dressed for a specified outdoor activity during any given season. Five pedestrian comfort classes based on 20% non-exceedance mean wind speed ranges are used to assess pedestrian comfort: (1) Sitting; (2) Standing; (3) Strolling; (4) Walking; and (5) Uncomfortable. The gust speeds, and equivalent mean speeds, are selected based on the Beaufort scale, which describes the effects of forces produced by varying wind speed levels on objects. Wind conditions suitable for sitting are represented by the colour blue, standing by green, strolling by yellow, and walking by orange; uncomfortable conditions are represented by the colour magenta. Specifically, the comfort classes, associated wind speed ranges, and limiting criteria are summarized as follows:

**PEDESTRIAN WIND COMFORT CLASS DEFINITIONS**

| Wind Comfort Class | Mean Speed (km/h) | Description |
|---|---|---|
| SITTING | ≤ 10 | Mean wind speeds no greater than 10 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 16 km/h. |
| STANDING | ≤ 14 | Mean wind speeds no greater than 14 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 22 km/h. |
| STROLLING | ≤ 17 | Mean wind speeds no greater than 17 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 27 km/h. |
| WALKING | ≤ 20 | Mean wind speeds no greater than 20 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 32 km/h. |
| UNCOMFORTABLE | > 20 | Uncomfortable conditions are characterized by predicted values that fall below the 80% target for walking. Brisk walking and exercise, such as jogging, would be acceptable for moderate excesses of this criterion. |

Regarding wind safety, the pedestrian safety wind speed criterion is based on the approximate threshold that would cause a vulnerable member of the population to fall. A 0.1% exceedance gust wind speed of 90 km/h is classified as dangerous. From calculations of stability, it can be shown that gust wind speeds of 90 km/h would be the approximate threshold wind speed that would cause an average elderly person in good health to fall. Notably, pedestrians tend to be more sensitive to wind gusts than to steady winds for lower wind speed ranges. For strong winds approaching dangerous levels, this effect is less important because the mean wind can also create problems for pedestrians.

Experience and research on people's perception of mechanical wind effects has shown that if the wind speed levels are exceeded for more than 20% of the time, the activity level would be judged to be uncomfortable by most people. For instance, if a mean wind speed of 10 km/h (equivalent gust wind speed of approximately 16 km/h) were exceeded for more than 20% of the time most pedestrians would judge that location to be too windy for sitting. Similarly, if mean wind speed of 20 km/h (equivalent gust wind speed of approximately 32 km/h) at a location were exceeded for more than 20% of the time, walking or less vigorous activities would be considered uncomfortable. As these criteria are based on subjective reactions of a population to wind forces, their application is partly based on experience and judgment.

Once the pedestrian wind speed predictions have been established throughout the subject site, the assessment of pedestrian comfort involves determining the suitability of the predicted wind conditions for discrete regions within and surrounding the subject site. This step involves comparing the predicted comfort classes to the target comfort classes, which are dictated by the location type for each region (that is, a sidewalk, building entrance, amenity space, or other). An overview of common pedestrian location types and their typical windiest target comfort classes are summarized on the following page. Depending on the programming of a space, the desired comfort class may differ from this table.

**TARGET PEDESTRIAN WIND COMFORT CLASSES FOR VARIOUS LOCATION TYPES**

| Location Types | Target Comfort Classes |
|---|---|
| Primary Building Entrance | Standing |
| Secondary Building Access Point | Walking |
| Public Sidewalk / Bicycle Path | Walking |
| Outdoor Amenity Space | Sitting / Standing |
| Café / Patio / Bench / Garden | Sitting / Standing |
| Transit Stop (Without Shelter) | Standing |
| Transit Stop (With Shelter) | Walking |
| Public Park / Plaza | Sitting / Standing |
| Garage / Service Entrance | Walking |
| Parking Lot | Walking |
| Vehicular Drop-Off Zone | Walking |

## 5. RESULTS AND DISCUSSION

The following discussion of the predicted pedestrian wind conditions for the subject site is accompanied by Figures 3A-6B, which illustrate wind conditions at grade level for the proposed and existing massing scenarios, and by Figures 8A-D, which illustrate wind conditions over the potential common amenity terraces serving Buildings A, B, C, D, and E at Level 5. Conditions are presented as continuous contours of wind comfort throughout the subject site and correspond to the comfort classes presented in Section 4.4.

Wind comfort conditions are also reported for the typical use period, which is defined as May to October, inclusive. Figures 7 and 9 illustrate wind comfort conditions at grade and over the noted potential amenity terraces serving the proposed development, respectively, during this period, consistent with the comfort classes in Section 4.4.

The details of these conditions are summarized in the following pages for each area of interest.

## 5.1 Wind Comfort Conditions – Grade Level

**Sidewalks and Transit Stops along Baseline Road:** Following the introduction of the proposed development, wind comfort conditions over the nearby public sidewalks along Baseline Road are predicted to be suitable for standing, or better, during the summer and autumn, with an isolated region suitable for strolling during the autumn, becoming suitable for strolling, or better, during the winter and spring, with an isolated region suitable for walking. Conditions in the vicinity of the nearby westbound transit stop to the north of Baseline Road are predicted to be suitable for standing, or better, throughout the year. Conditions in the vicinity of the nearby eastbound transit stop to the south of Baseline Road, which is served by a typical shelter, are predicted to be suitable for standing during the summer, becoming suitable for strolling during the autumn, and suitable for walking during the winter and spring. The noted conditions are considered acceptable.

Conditions over the sidewalks along Baseline Road under the existing massing are predicted to be suitable for standing, or better, throughout the year, with regions suitable for strolling during the spring. Under the existing massing, conditions in the vicinity of the nearby transit stops along Baseline Road are predicted to be suitable for standing, or better, throughout the year. While the introduction of the proposed development produces moderately windier conditions in comparison to existing conditions, wind comfort conditions are nevertheless considered acceptable over the noted sidewalks and transit stops.

**Sidewalks and Transit Stop along Merivale Road:** Prior to and following the introduction of the proposed development, wind comfort conditions in the vicinity of the nearby transit stop along Merivale Road are predicted to be suitable for sitting during the summer, becoming suitable for standing throughout the remainder of the year. The noted conditions are considered acceptable.

Following the introduction of the proposed development, wind comfort conditions over the nearby public sidewalks along Merivale Road are predicted to be suitable for standing, or better, during the summer and autumn, with isolated regions suitable for strolling during the autumn, becoming suitable for a mix of standing and strolling during the winter and spring with isolated walking conditions. The noted conditions are considered acceptable.

Under the existing massing, conditions over the sidewalks along Merivale Road are predicted to be suitable for standing, or better, throughout the year. While the introduction of the proposed development produces windier conditions in comparison to existing conditions, wind comfort conditions are nevertheless considered acceptable.

**Sidewalks along Eleanor Drive:** Prior to and following the introduction of the proposed development, wind conditions over the public sidewalks along Eleanor Drive are predicted to be suitable for standing, or better, throughout the year, with an isolated region suitable for strolling during the winter and spring. The noted conditions are considered acceptable.

**Sidewalks along Briardale Crescent:** Prior to and following the introduction of the proposed development, wind conditions over the public sidewalks along Briardale Crescent are predicted to be suitable for sitting throughout the year, which is considered acceptable.

**Neighbouring Existing Surface Parking Lots:** Following the introduction of the proposed development, conditions over the neighbouring existing surface parking lot located to the east of the proposed development are predicted to be suitable for standing, or better, during the summer and autumn, becoming suitable for strolling, or better, during the winter and spring, while conditions over the existing neighbouring existing surface parking lots from the southwest clockwise to the northwest are predicted to be suitable for standing, or better, during the summer, autumn, and winter, becoming suitable for strolling, or better, during the spring. The noted conditions are considered acceptable.

Conditions over the noted neighbouring surface parking lots under the existing massing are predicted to be suitable for mostly sitting during the summer and autumn, becoming suitable for standing, or better, during the winter and spring. While the introduction of the proposed development produces slightly windier conditions over these areas in comparison to existing conditions, wind comfort conditions with the proposed development are nevertheless considered acceptable.

**Proposed Parkland:** During the typical use period, conditions over the proposed parkland located to the southwest of the subject site are predicted to be suitable for a mix of sitting and standing. Specifically, standing conditions are located centrally and to the east and southwest, and sitting conditions are predicted elsewhere throughout the parkland.

Depending on programming, the noted conditions may be considered acceptable. Specifically, if the areas suitable for standing during the typical use period will not accommodate designated seating or lounging areas, the noted conditions may be considered acceptable. If required by programming, mitigation may be implemented at designated seating areas in the form of landscaping elements such as dense arrangements of tree plantings, raised wind barriers or a landscape berm, or other similar typical landscape elements for wind mitigation.

**Shared Terrace:** Wind conditions over the shared terrace between Buildings A and B are predicted to be suitable for a mix of strolling and standing during the typical use period, with sitting conditions predicted to the west and strolling conditions located centrally over the terrace.

Comfort levels within the shared terrace may be improved by implementing canopies along the north elevations of Buildings A and B that wrap around the corners fronting the shared terrace, in combination with targeted landscaping elements adjacent to sensitive-use areas such as tall wind screens, raised planters and planting beds, in combination with strategically placed seating with high-back benches or other local wind mitigation.

**Proposed Streets A, B, and C, Drop-Off Areas, Surface Parking, Pedestrian Pass-Through, and Walkways:** Wind conditions over Streets A, B, and C, the pedestrian pass-through between Buildings C and D, and the drop-off areas, surface parking, and walkways within the subject site are predicted to be suitable for standing, or better, during the summer, with isolated regions suitable for strolling, becoming suitable for strolling, or better, during the autumn, and suitable for walking, or better, during the winter and spring.

Conditions that may be considered occasionally uncomfortable for walking during the spring are predicted between Buildings B and C and to the northeast of Building D. Where conditions may be considered uncomfortable, they are predicted to be suitable for walking at least 78% between Buildings B and C and 77% to the northeast of Building D of the spring, representing 2% and 3% exceedances of the walking criterion threshold. Given the marginal exceedance and that the noted conditions are located over the road surface of Street C and over a landscaped area at the northeast corner of the subject site, respectively, where pedestrian access and usage is limited, the noted conditions may be considered satisfactory.

**Building Access Points:** Wind conditions in the vicinity of the primary building access points serving the proposed development are predicted to be suitable for standing, or better, throughout the year, while conditions in the vicinity of the secondary building access points serving the proposed development are predicted to be suitable for walking, or better, throughout the year. The noted conditions are considered acceptable.

## 5.2 Wind Comfort Conditions – Common Amenity Terraces

The podia rooftop levels were considered as potential amenity terraces. Conditions during the typical use period within these spaces is described as follows:

**Building A, East Level 5 Terrace:** Wind conditions over the terrace serving Building A to the east at Level 5 are predicted to be suitable for sitting during the typical use period, which is considered acceptable.

B**uilding A, West Level 5 Terrace; Buildings B, C, D, and E, Level 5 Terraces:** Conditions over the remaining podia roofs are predicted to be suitable for mostly standing, or better, during the typical use period. Specifically, sitting conditions are predicted closer to the tower façades while standing conditions are predicted elsewhere throughout the remainder of the terraces. Conditions within the podia rooftop terrace serving Building E are calmer and mostly suitable for sitting.

If required by programming, conditions within these areas may be improved by implementing a wind screen, typically glazed and preferably solid, along the perimeter of the terraces that extends at least 1.8 m above the walking surface of the terrace. For the shared podia roof level serving Buildings C and D, mitigation inboard of the perimeter may also be required and could take the form of wind screens, raised planters with dense plantings, overhead canopies above seating areas and/or other landscaping features that are targeted around and above designated seating areas.

## 5.3 Wind Safety

Within the context of typical weather patterns, which exclude anomalous localized storm events such as tornadoes and downbursts, no pedestrian areas within or surrounding the subject site are expected to experience conditions that could be considered dangerous, as defined in Section 4.4.

## 5.4 Applicability of Results

Pedestrian wind comfort and safety have been quantified for the specific configuration of existing and foreseeable construction around the subject site. Future changes (that is, construction or demolition) of these surroundings may cause changes to the wind effects in two ways, namely: (i) changes beyond the immediate vicinity of the subject site would alter the wind profile approaching the subject site; and (ii) development in proximity to the subject site would cause changes to local flow patterns.

# 6. CONCLUSIONS AND RECOMMENDATIONS

A complete summary of the predicted wind conditions is provided in Section 5 and illustrated in Figures 3A-9. Based on computer simulations using the CFD technique, meteorological data analysis of the Ottawa wind climate, City of Ottawa wind comfort and safety criteria, and experience with numerous similar developments, the study concludes the following:

1) Most grade-level areas within and surrounding the subject site are predicted to experience conditions that are considered acceptable for the intended pedestrian uses throughout the year. Specifically, conditions over surrounding sidewalks, transit stops, neighbouring surface parking lots, proposed streets, drop-off areas, surface parking, the pedestrian pass-through, and walkways, and in the vicinity of building access points, are considered acceptable.

    a. While the walking comfort threshold is exceeded during the spring season between Buildings B and C and to the northeast of Building D, the exceedances of the criteria are located over the roadway surface of Street C and over a landscaped area along the northeast elevation of the subject site; as such, and combined with the marginal exceedance of the walking threshold, the noted conditions may be considered satisfactory.

2) During the typical use period (May to October, inclusive), conditions over the proposed parkland are predicted to be suitable for a mix of sitting and standing, while conditions over the shared terrace between Buildings A and B are predicted to be suitable for strolling, or better.

a. As required by programming, recommendations regarding mitigation are provided in Section 5.1, comprising landscaping elements, canopies along the north elevations of Buildings A and B that wrap around the corners fronting the terrace, and targeted mitigation within the terrace and parkland around and above seating areas.

3) The podia rooftop levels were assessed as potential amenity terraces. Wind comfort conditions over the podia rooftops during the typical use period are predicted to be suitable for a mix of mostly sitting and standing.

   a. If required by programming, recommendations regarding mitigation are provided in Section 5.2, comprising perimeter wind screens and mitigation inboard of the terrace perimeters in the form of wind screens and/or other landscaping features.

4) The foregoing statements and conclusions apply to common weather systems, during which no dangerous wind conditions, as defined in Section 4.4, are expected anywhere over the subject site. During extreme weather events, (for example, thunderstorms, tornadoes, and downbursts), pedestrian safety is the main concern. However, these events are generally short-lived and infrequent and there is often sufficient warning for pedestrians to take appropriate cover.

Sincerely,

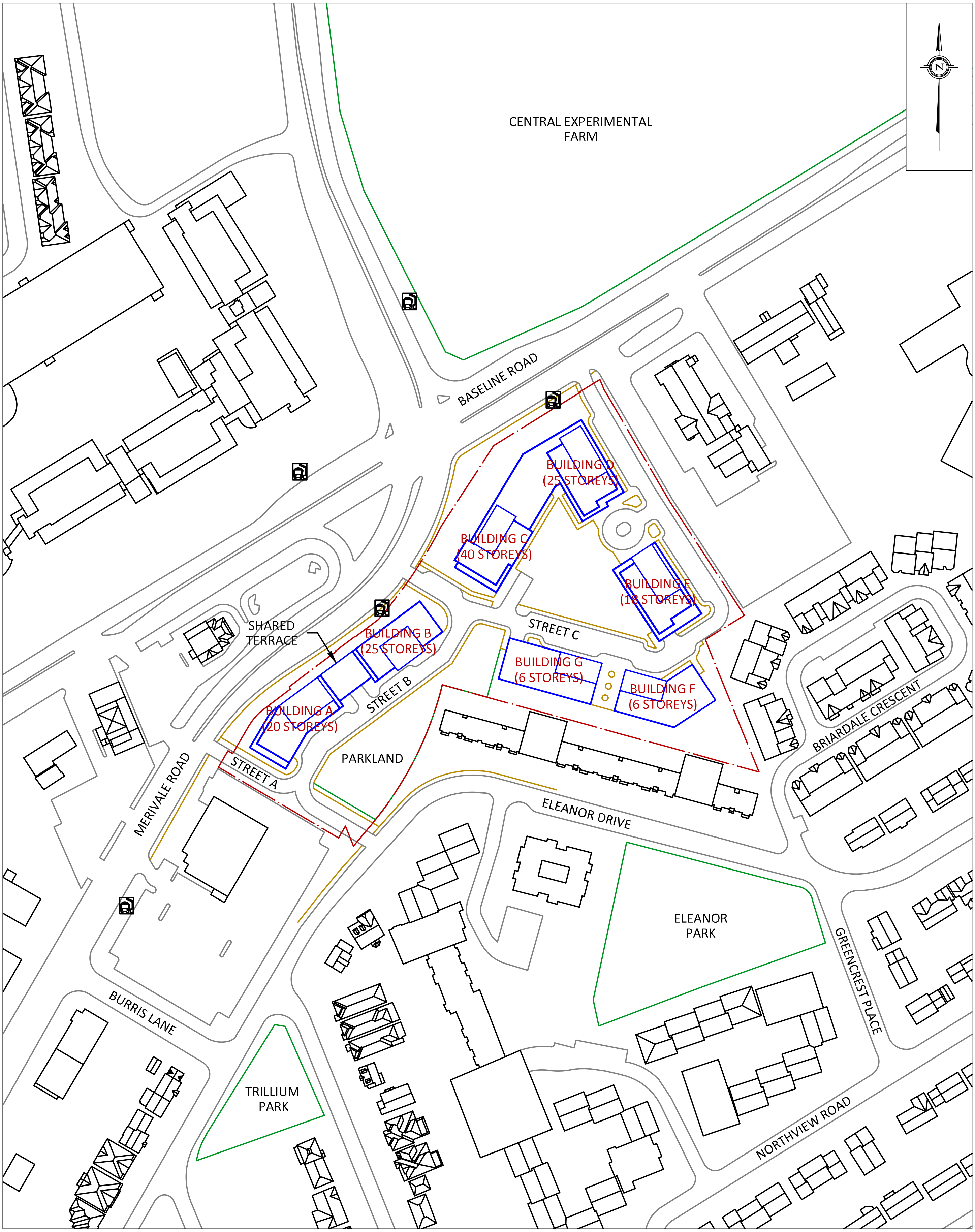
***Gradient Wind Engineering Inc.***

LICENSED PROFESSIONAL ENGINEER
D. T. HUITEMA
100561777
June 03, 2026
PROVINCE OF ONTARIO

Omar Rioseco, B.Eng.
Junior Wind Scientist

David Huitema, M.Eng., P.Eng.
CFD Lead Engineer

Sunny Kang, B.A.S.
Project Coordinator

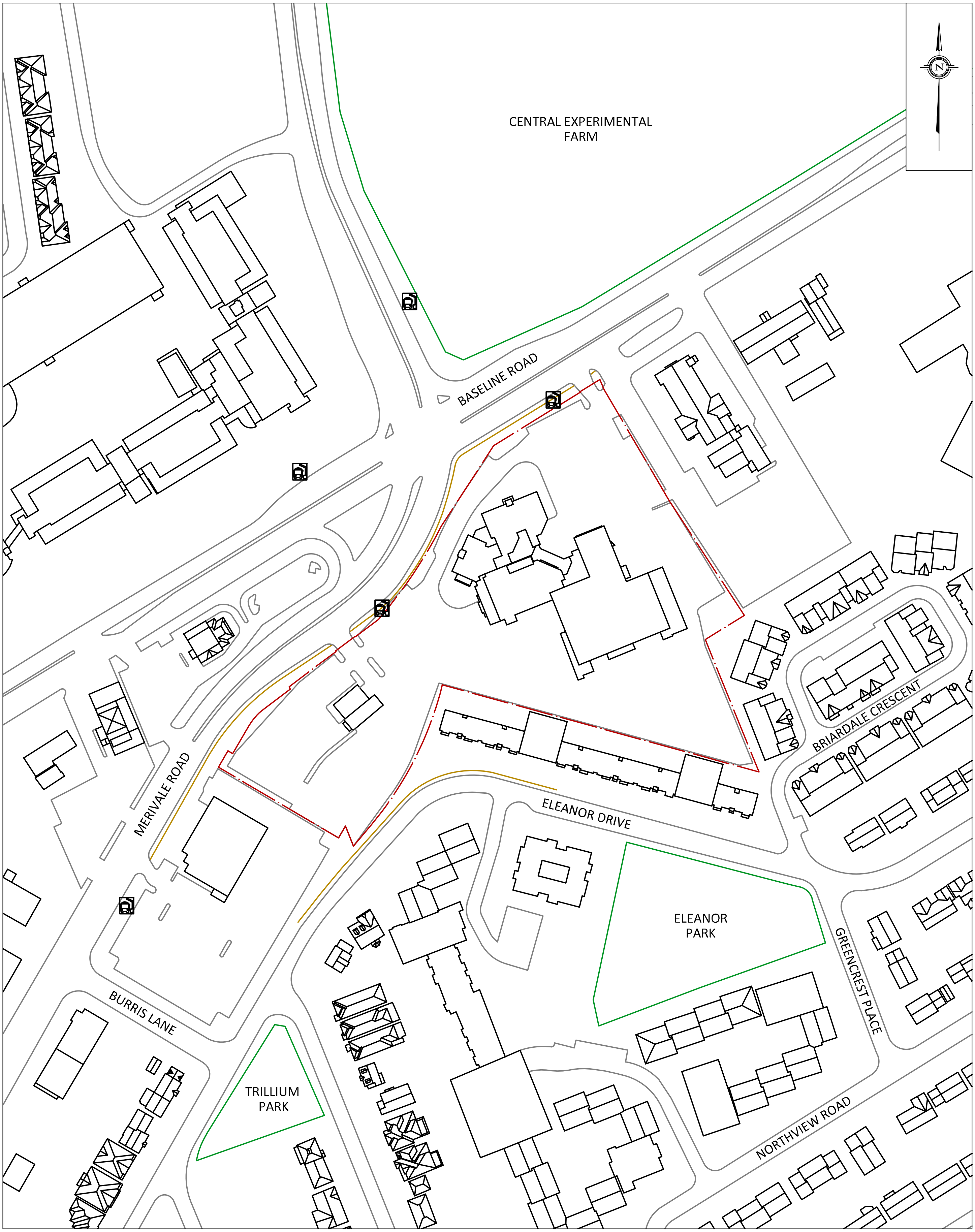



GRADIENTWIND
ENGINEERS & SCIENTISTS
127 WALGREEN ROAD, OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

| | | | |
|---|---|---|---|
| PROJECT | 1200 BASELINE ROAD, OTTAWA<br>PEDESTRIAN LEVEL WIND STUDY | | |
| SCALE | 1:2500 | DRAWING NO. | 24-249-PLW-1A |
| DATE | JUNE 3, 2026 | DRAWN BY | S.K. |

DESCRIPTION

FIGURE 1A:
PROPOSED SITE PLAN AND SURROUNDING CONTEXT




GRADIENTWIND
ENGINEERS & SCIENTISTS
127 WALGREEN ROAD, OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

| | |
|---|---|
| PROJECT | 1200 BASELINE ROAD, OTTAWA<br>PEDESTRIAN LEVEL WIND STUDY |
| SCALE | 1:2500 |
| DRAWING NO. | 24-249-PLW-1B |
| DATE | JUNE 3, 2026 |
| DRAWN BY | S.K. |
| DESCRIPTION | FIGURE 1B:<br>EXISTING SITE PLAN AND SURROUNDING CONTEXT |

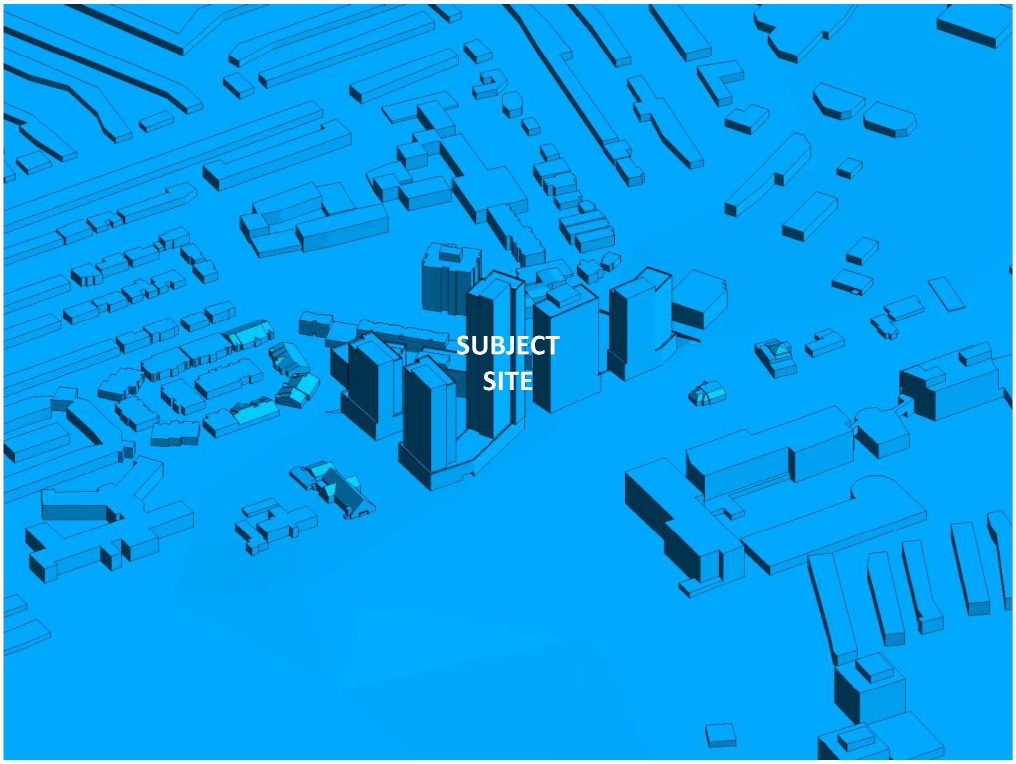



FIGURE 2A: COMPUTATIONAL MODEL, PROPOSED MASSING, NORTH PERSPECTIVE

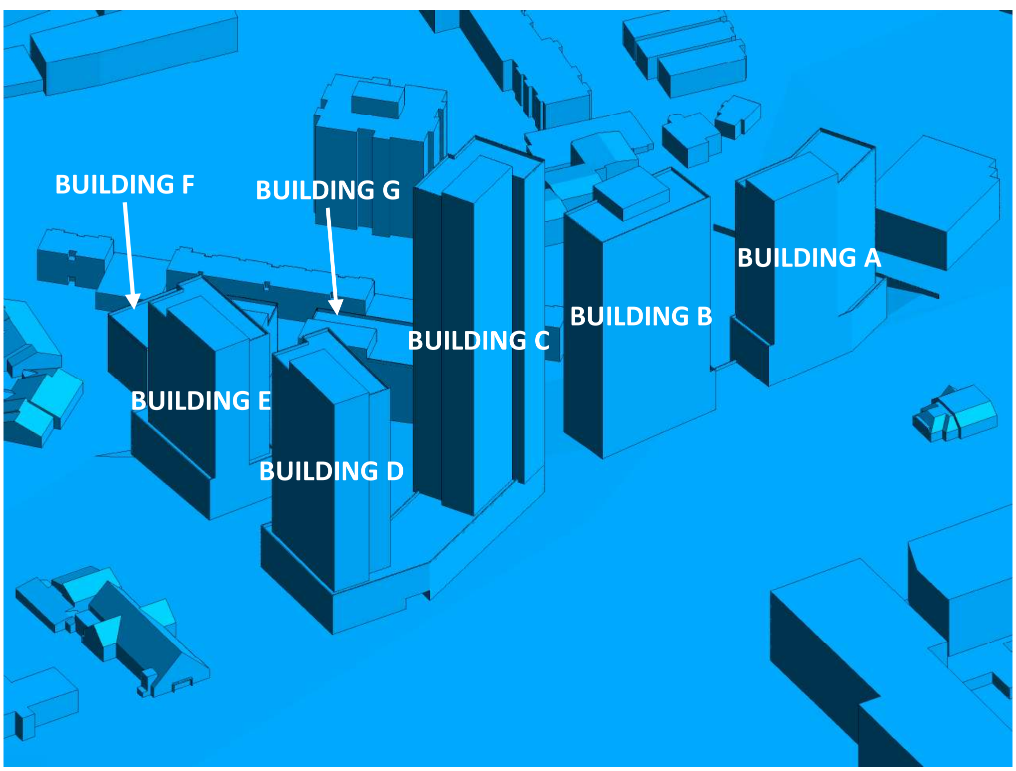



FIGURE 2B: CLOSE UP OF FIGURE 2A

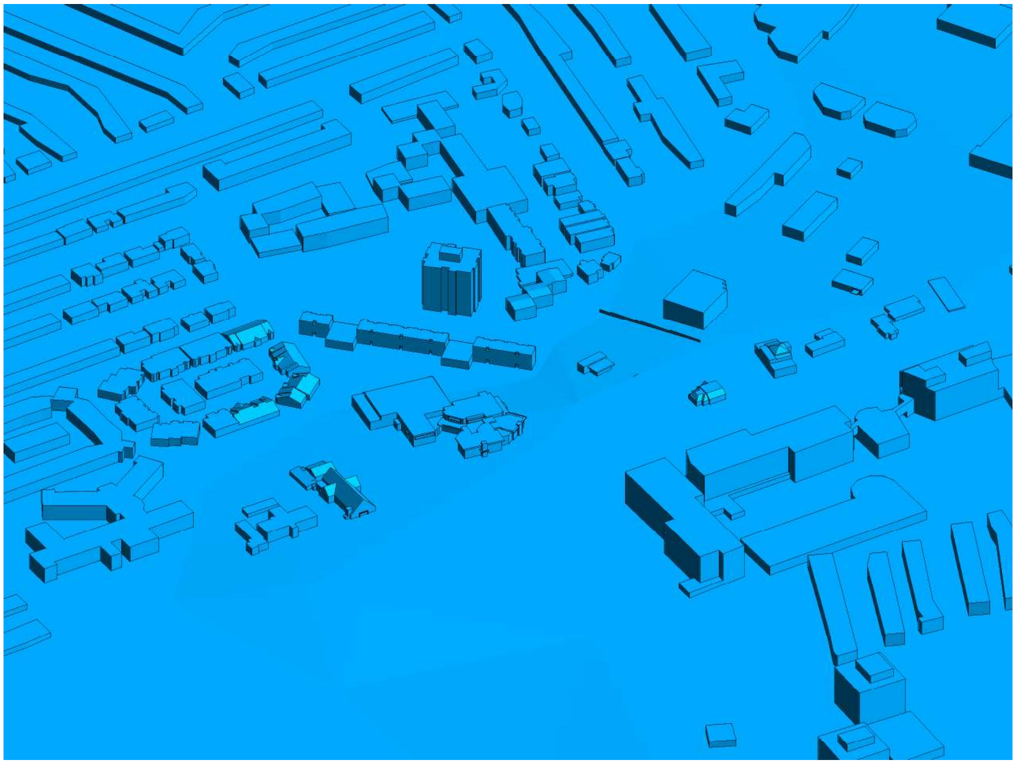


**FIGURE 2C: COMPUTATIONAL MODEL, EXISTING MASSING, NORTH PERSPECTIVE**

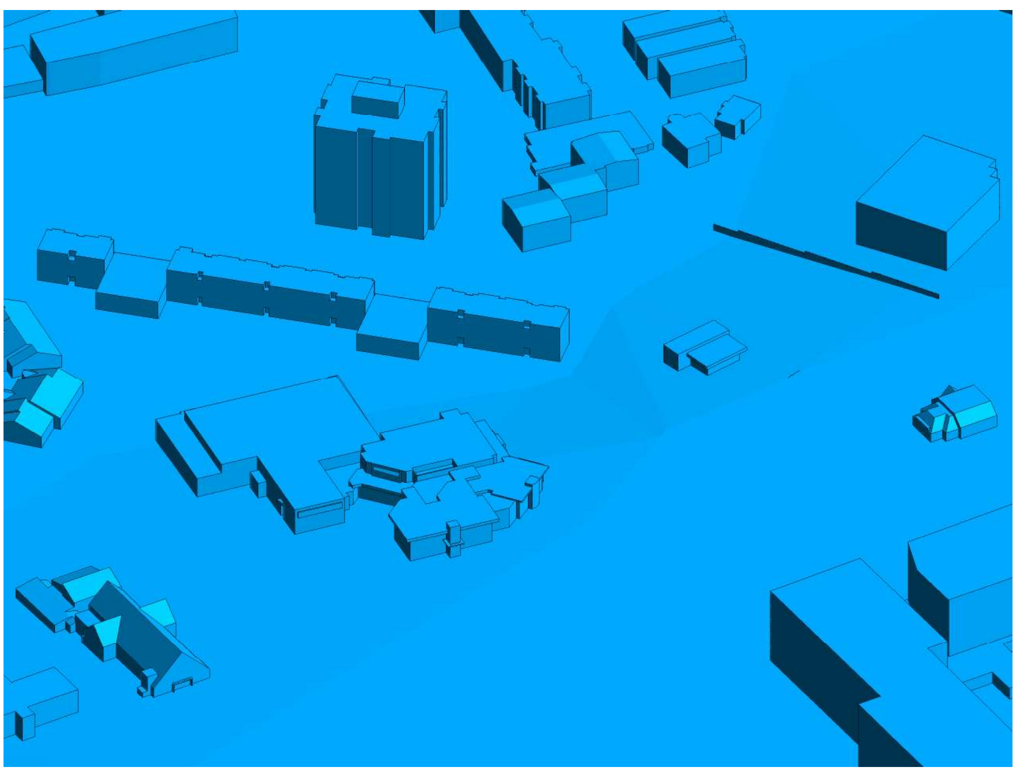


**FIGURE 2D: CLOSE UP OF FIGURE 2C**


FIGURE 2E: COMPUTATIONAL MODEL, PROPOSED MASSING, SOUTH PERSPECTIVE

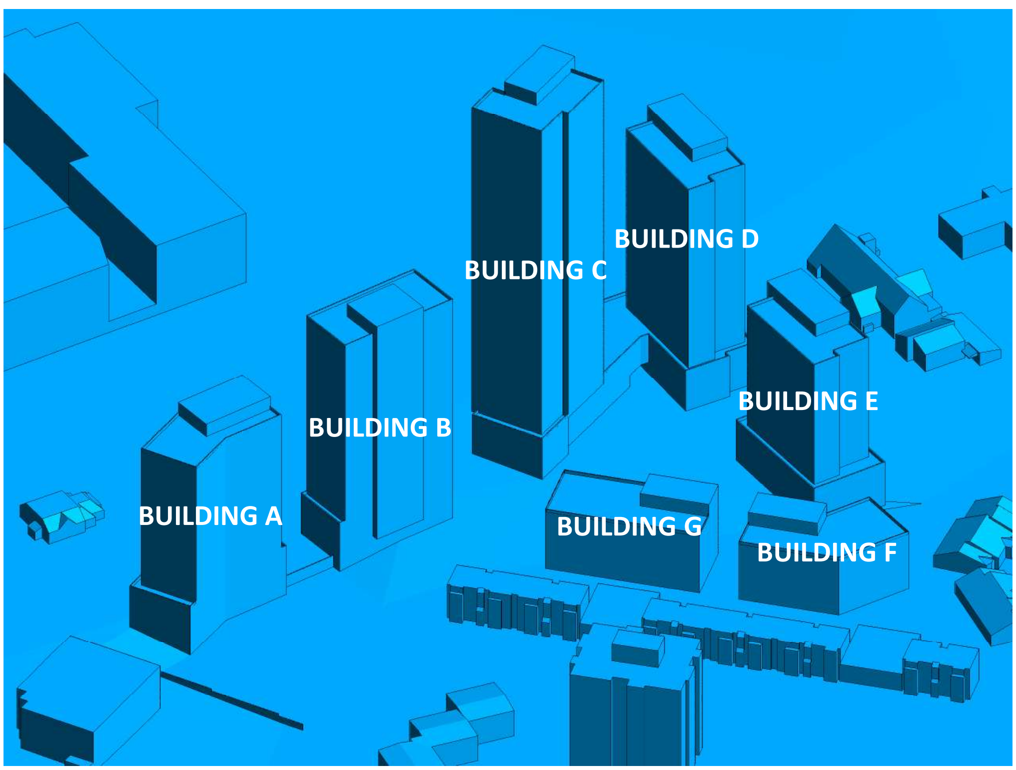



FIGURE 2F: CLOSE UP OF FIGURE 2E

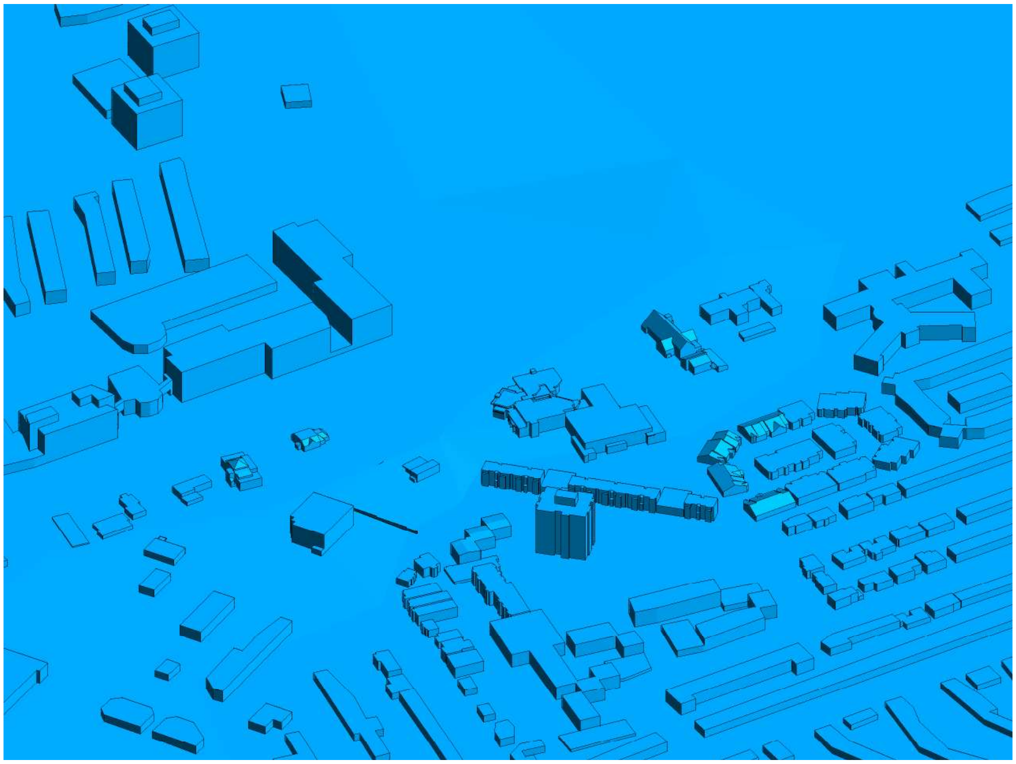


**FIGURE 2G: COMPUTATIONAL MODEL, EXISTING MASSING, SOUTH PERSPECTIVE**

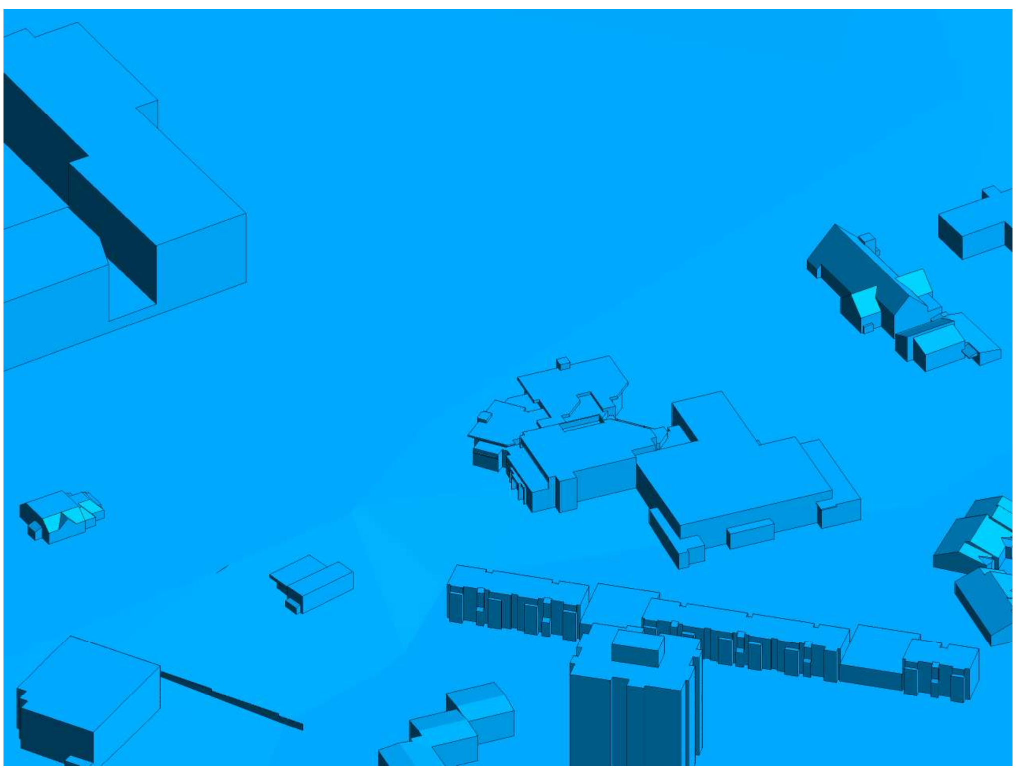


**FIGURE 2H: CLOSE UP OF FIGURE 2G**

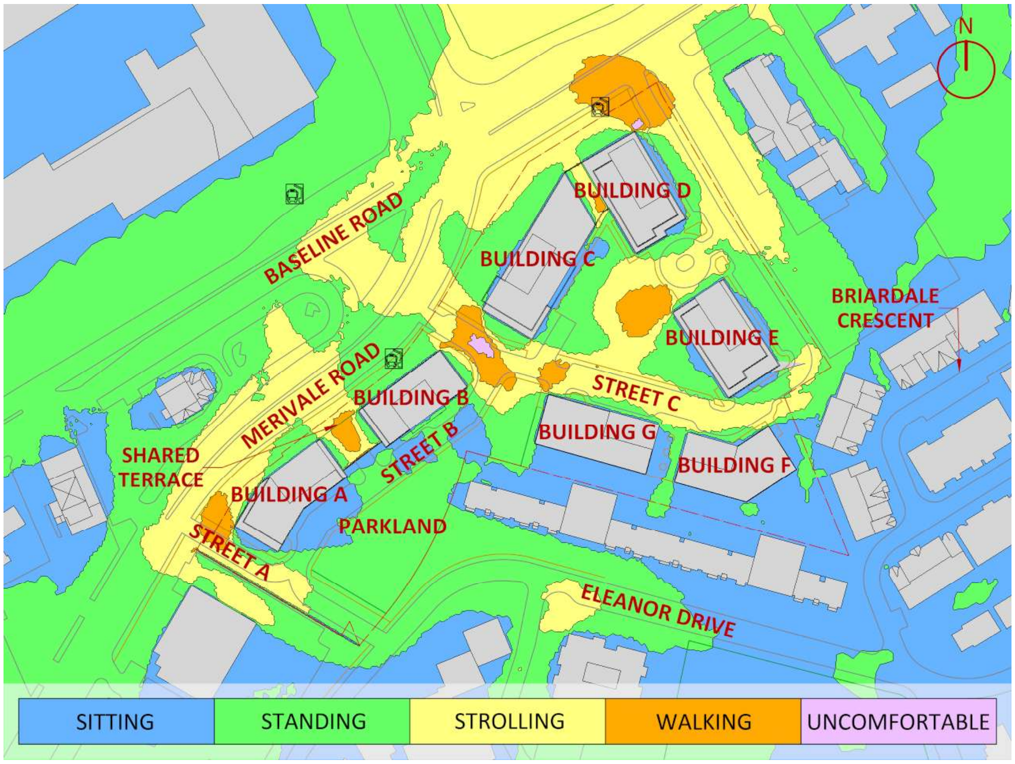



**FIGURE 3A: SPRING – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING**

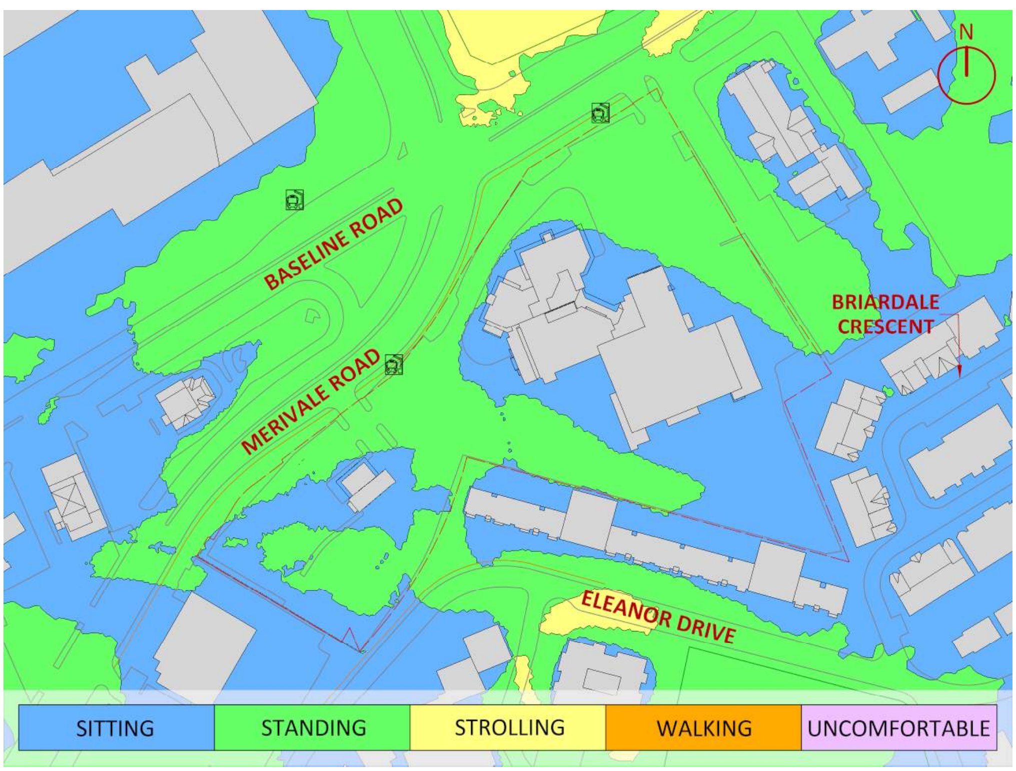



**FIGURE 3B: SPRING – WIND COMFORT, GRADE LEVEL – EXISTING MASSING**

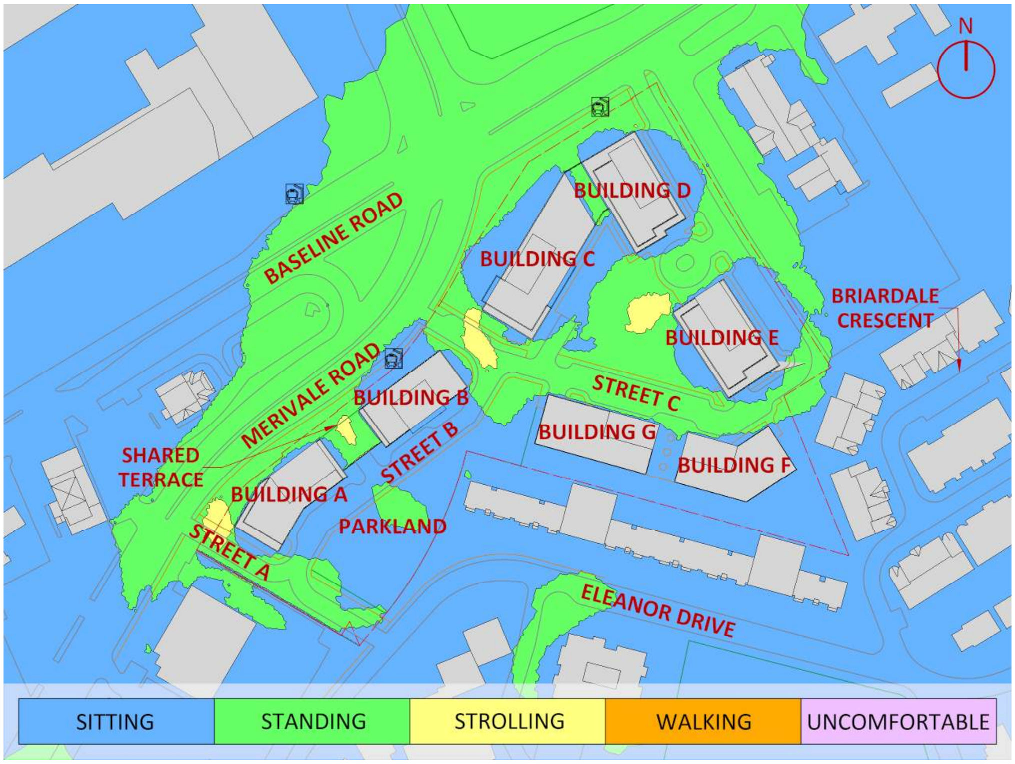



**FIGURE 4A: SUMMER – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING**

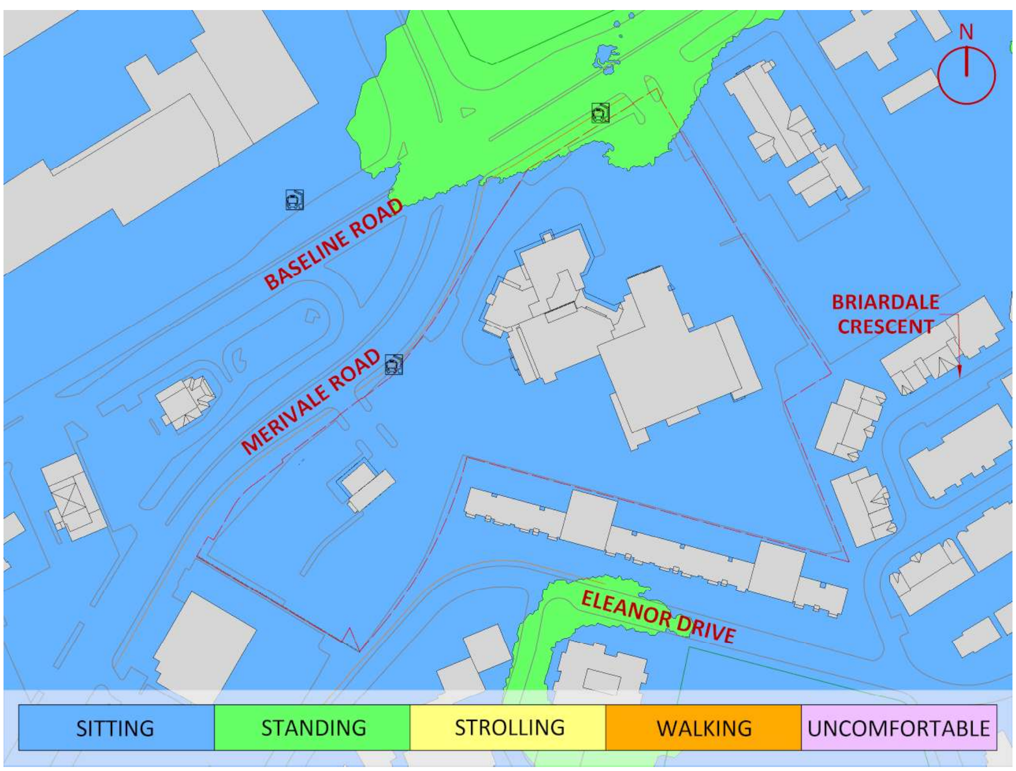



**FIGURE 4B: SUMMER – WIND COMFORT, GRADE LEVEL – EXISTING MASSING**

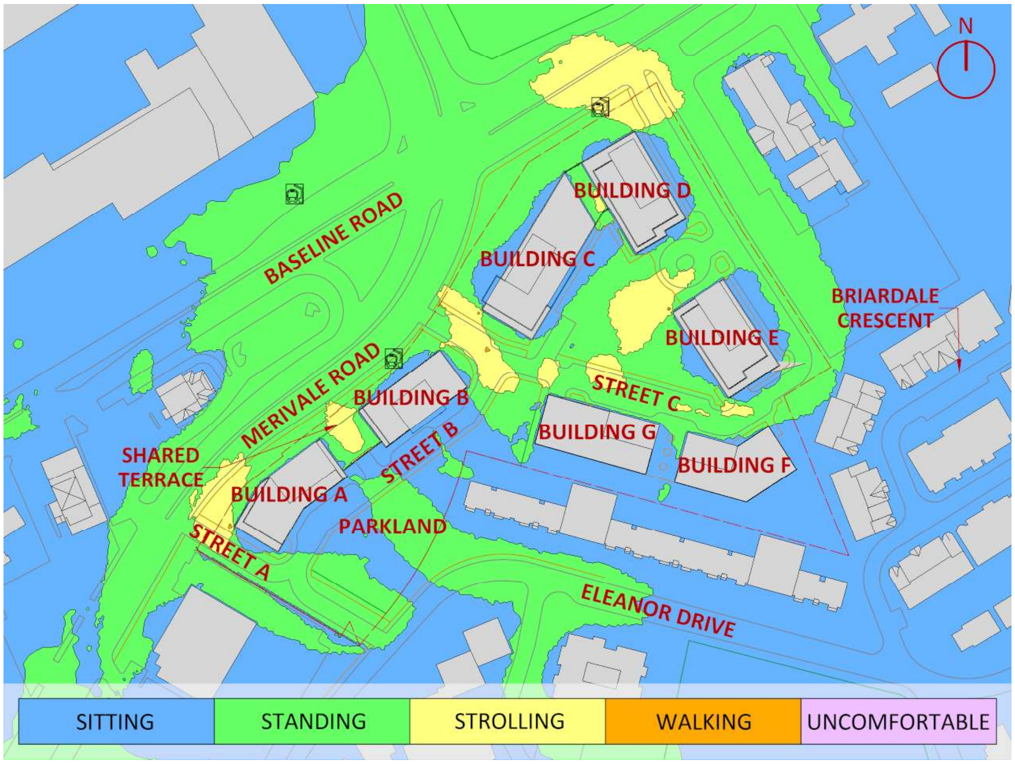



**FIGURE 5A: AUTUMN – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING**

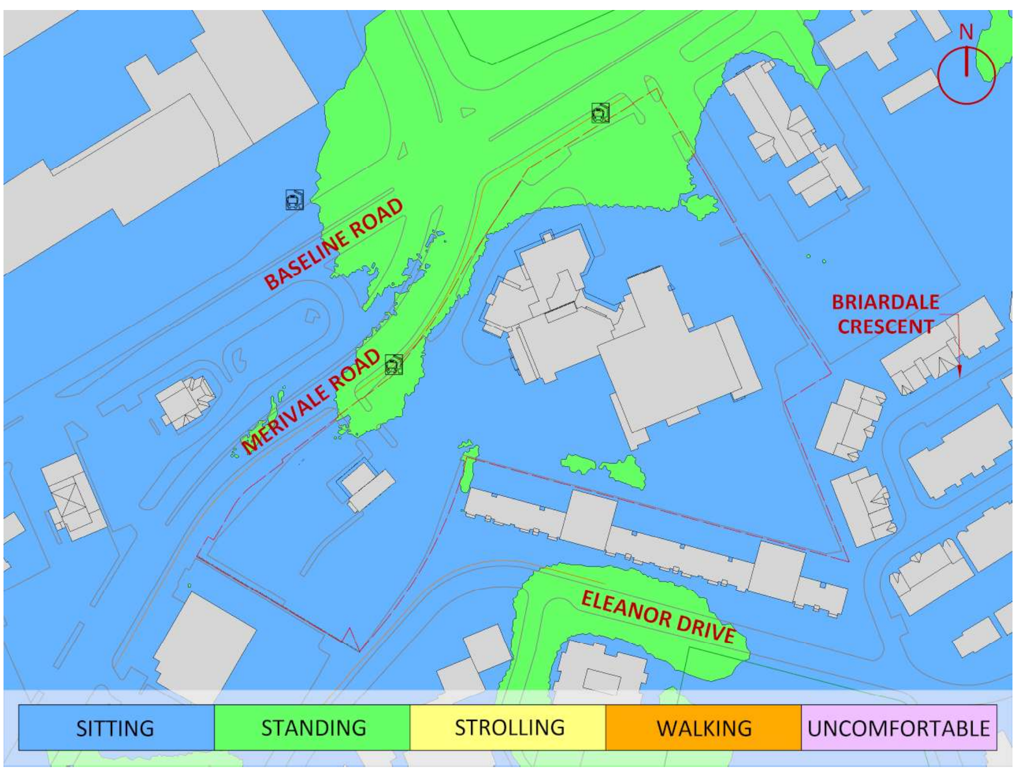



**FIGURE 5B: AUTUMN – WIND COMFORT, GRADE LEVEL – EXISTING MASSING**

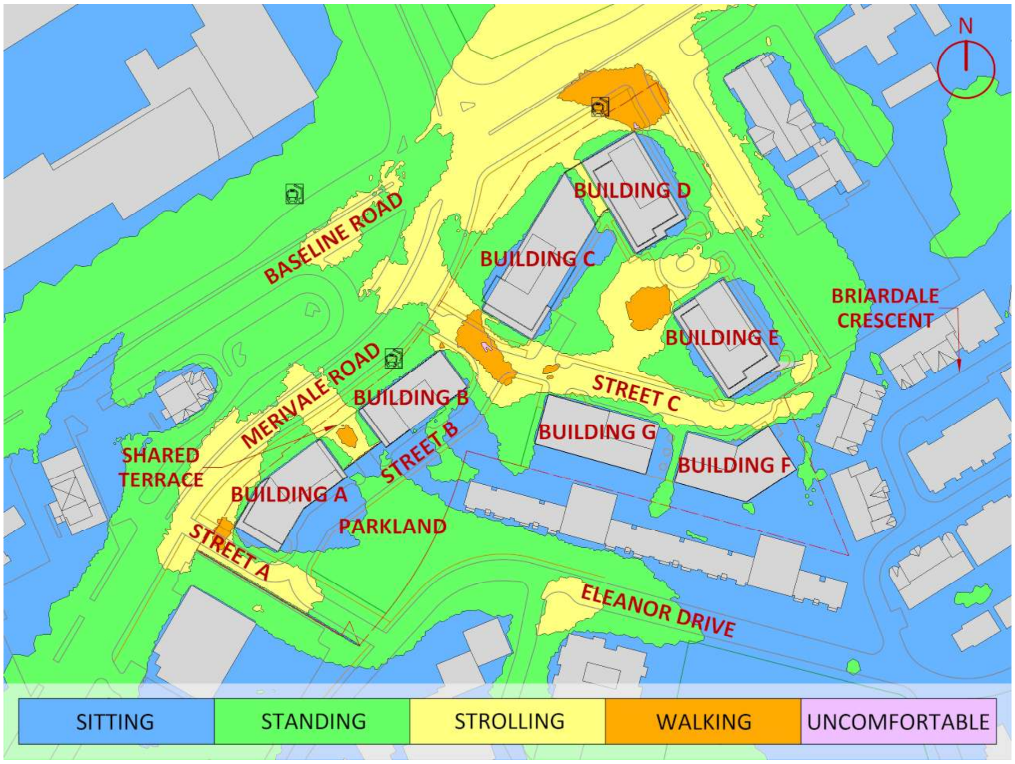



**FIGURE 6A: WINTER – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING**

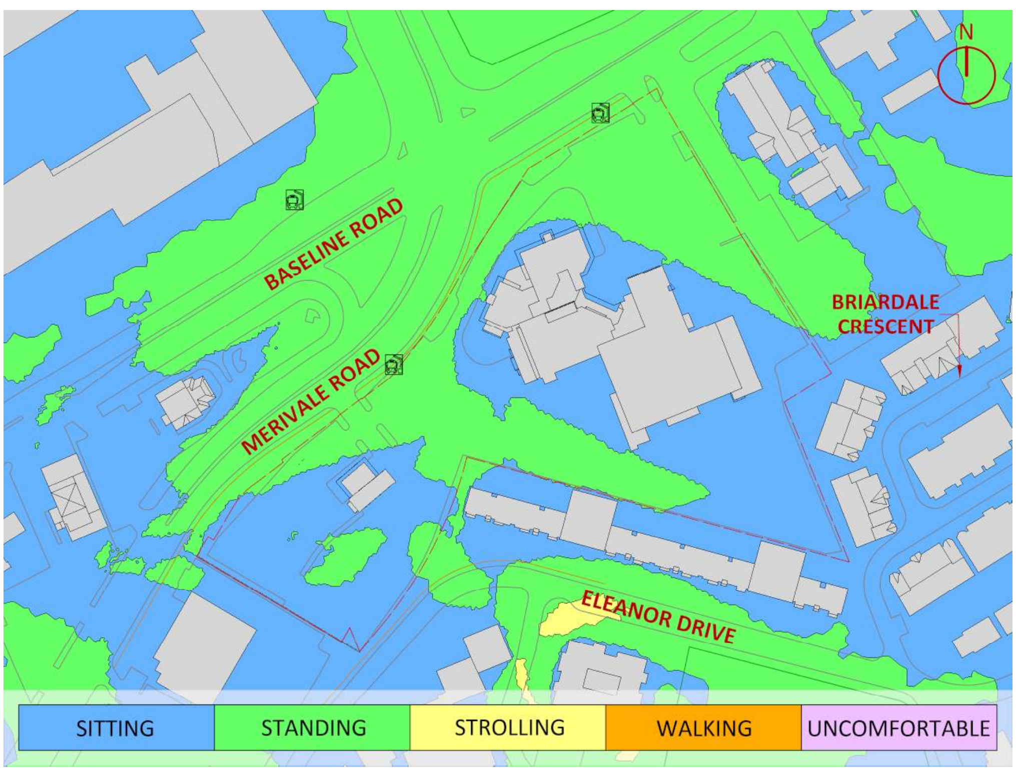



**FIGURE 6B: WINTER – WIND COMFORT, GRADE LEVEL – EXISTING MASSING**

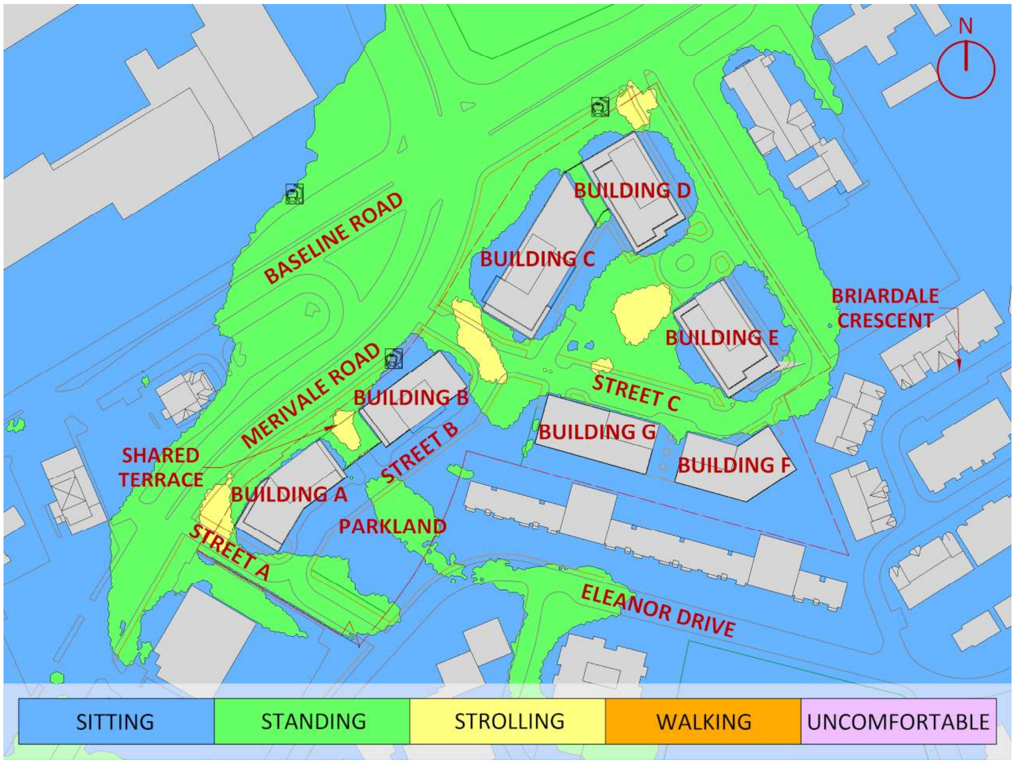



**FIGURE 7: TYPICAL USE PERIOD – WIND COMFORT, GRADE LEVEL – PROPOSED MASSING**

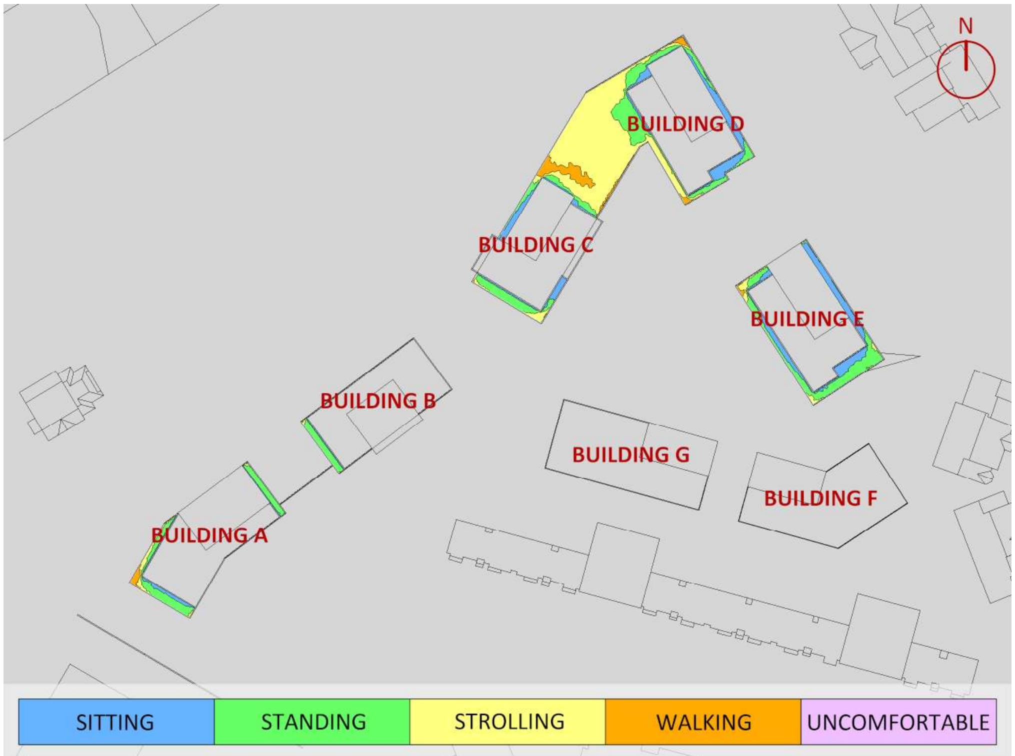



**FIGURE 8A: SPRING – WIND COMFORT, LEVEL 5 POTENTIAL AMENITY TERRACES**

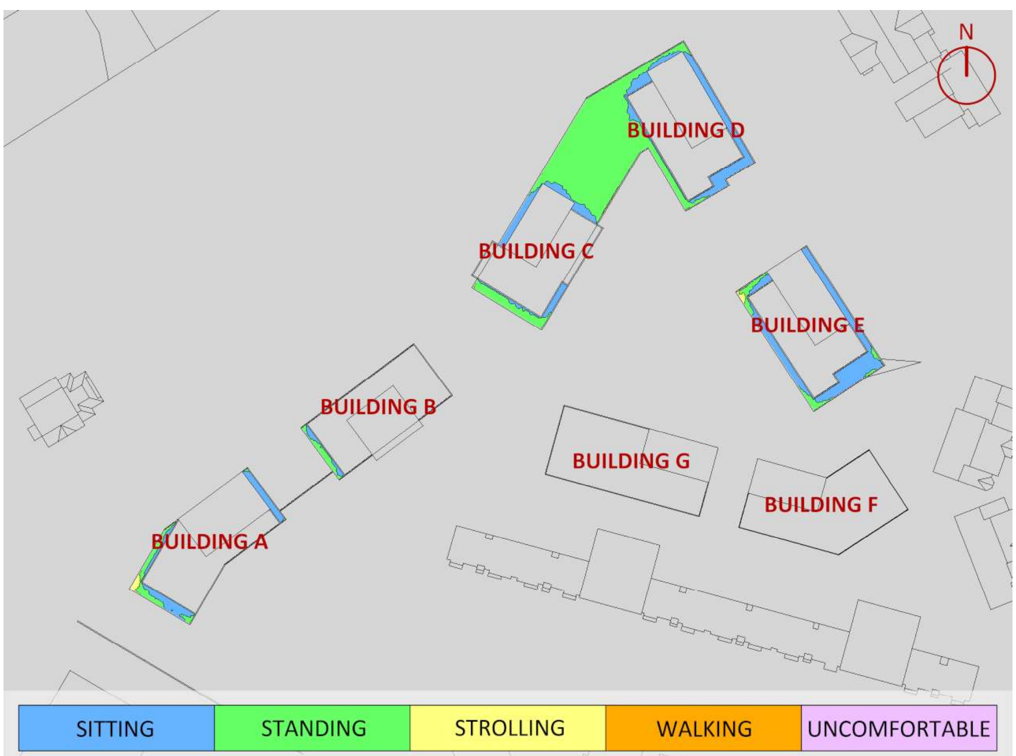



**FIGURE 8B: SUMMER – WIND COMFORT, LEVEL 5 POTENTIAL AMENITY TERRACES**

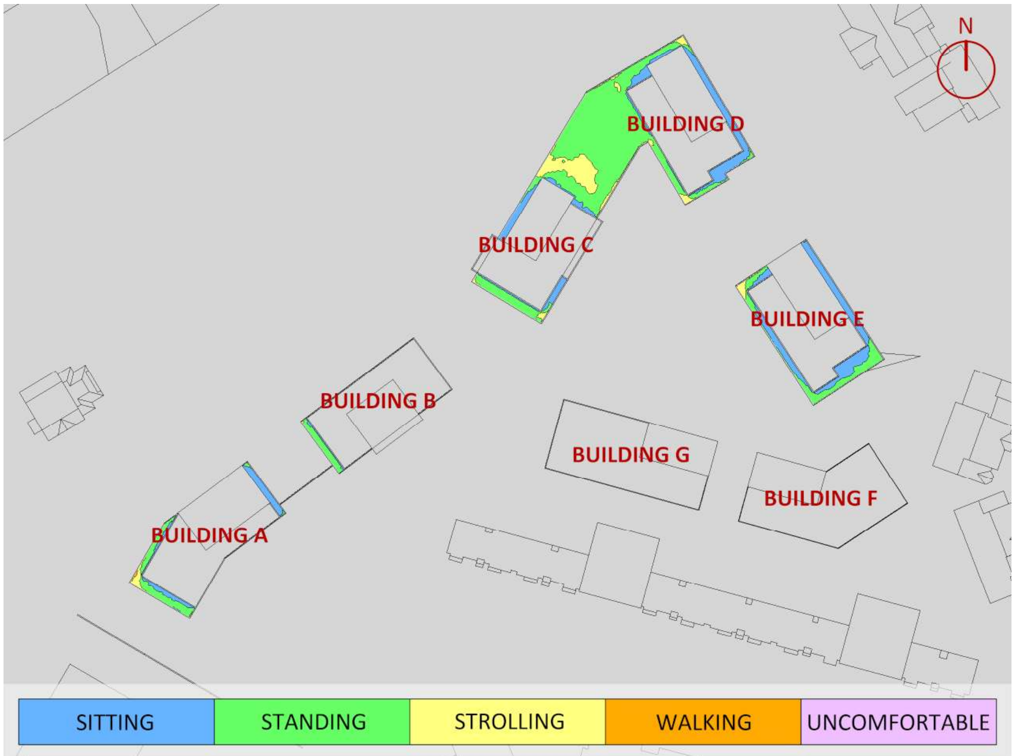



**FIGURE 8C: AUTUMN – WIND COMFORT, LEVEL 5 POTENTIAL AMENITY TERRACES**

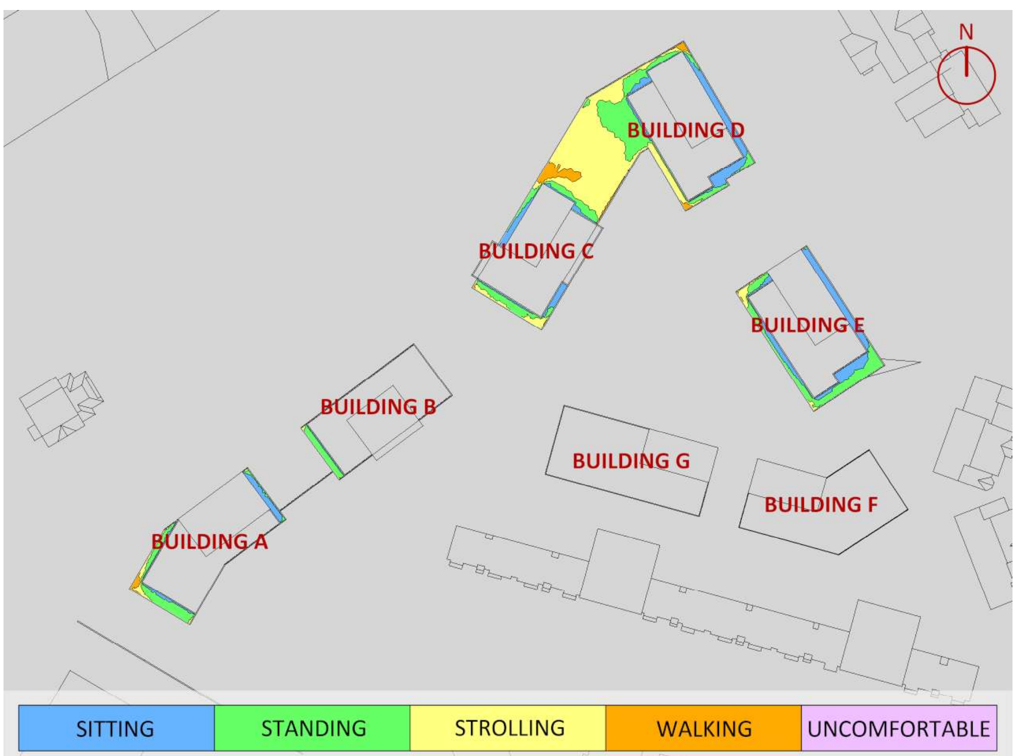



**FIGURE 8D: WINTER – WIND COMFORT, LEVEL 5 POTENTIAL AMENITY TERRACES**

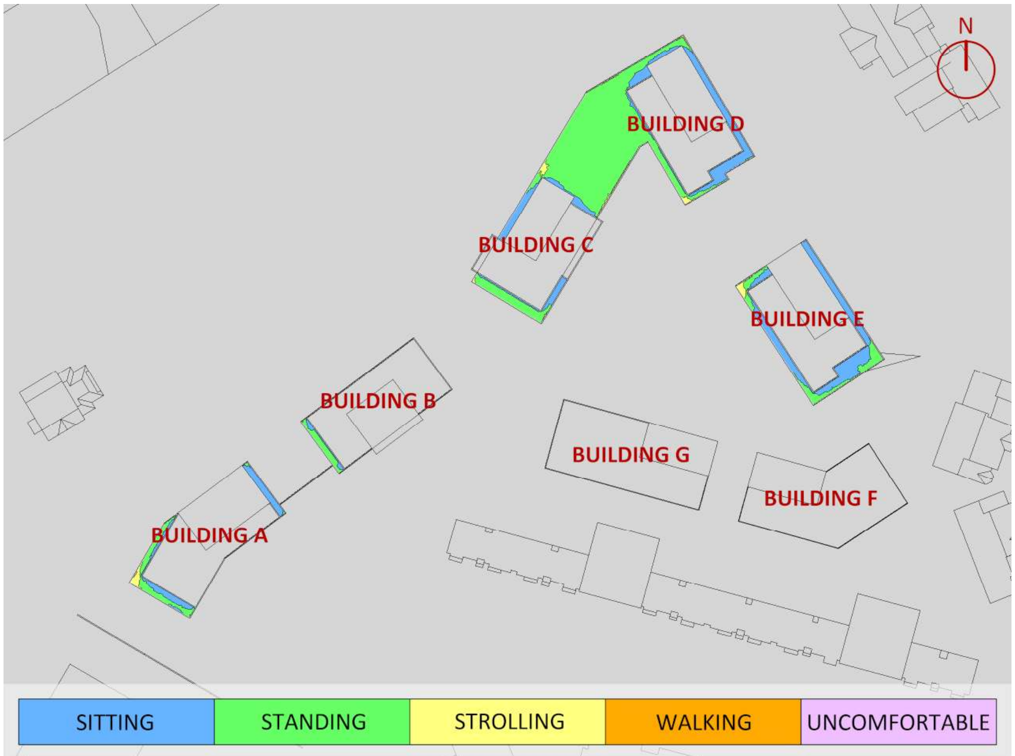
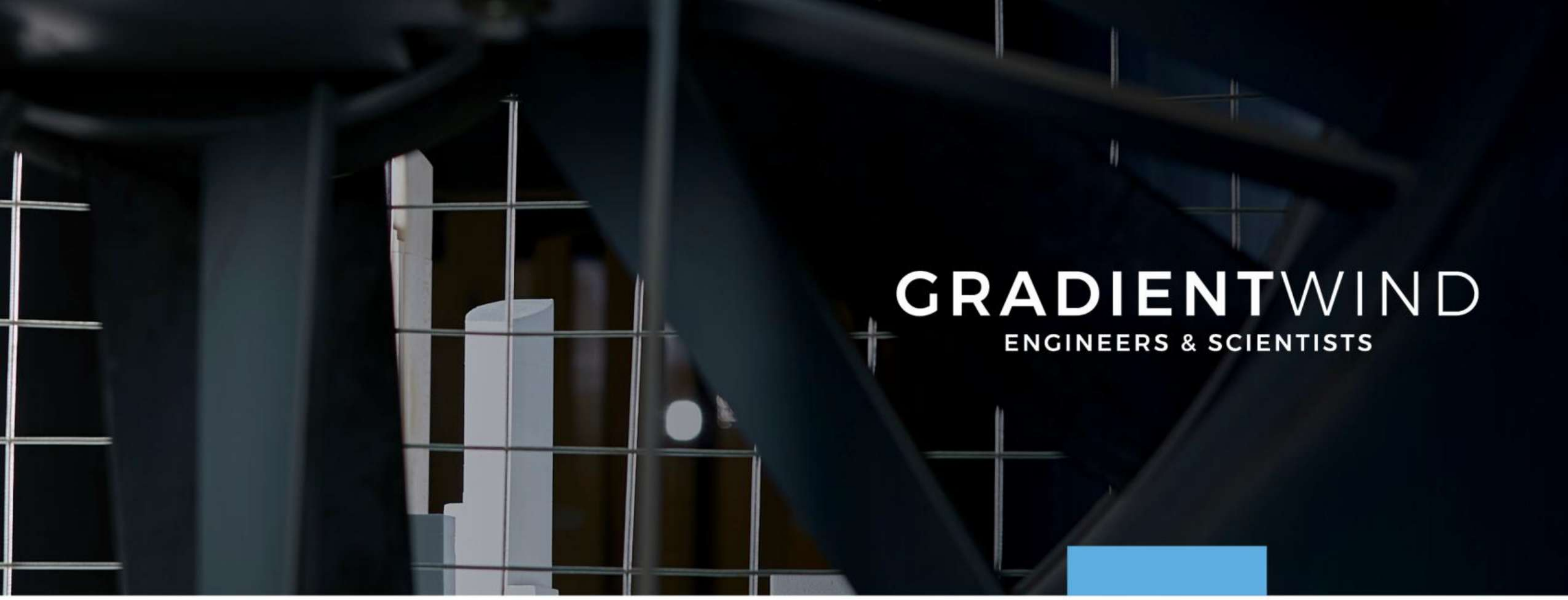



**FIGURE 9: TYPICAL USE PERIOD – WIND COMFORT, LEVEL 5 POTENTIAL AMENITY TERRACES**




**APPENDIX A**

**SIMULATION OF THE ATMOSPHERIC BOUNDARY LAYER**

## SIMULATION OF THE ATMOSPHERIC BOUNDARY LAYER

The atmospheric boundary layer (ABL) is defined by the velocity and turbulence profiles according to industry standard practices. The mean wind profile can be represented, to a good approximation, by a power law relation, Equation (1), giving height above ground versus wind speed (1), (2).

$$U = U_g\left(\frac{Z}{Z_g}\right)^{\alpha} \qquad \text{Equation (1)}$$

where $\boldsymbol{U}$ = mean wind speed, $\boldsymbol{U_g}$ = gradient wind speed, $\boldsymbol{Z}$ = height above ground, $\boldsymbol{Z_g}$ = depth of the boundary layer (gradient height), and $\alpha$ is the power law exponent.

For the model, $U_g$ is set to 6.5 metres per second (m/s), which approximately corresponds to the 60% mean wind speed for Ottawa based on historical climate data and statistical analyses. When the results are normalized by this velocity, they are relatively insensitive to the selection of gradient wind speed.

$Z_g$ is set to 540 m. The selection of gradient height is relatively unimportant, so long as it exceeds the building heights surrounding the subject site. The value has been selected to correspond to our physical wind tunnel reference value.

$\alpha$ is determined based on the upstream exposure of the far-field surroundings (that is, the area that is not captured within the simulation model).

Table 1 presents the values of α used in this study, while Table 2 presents several reference values of α. When the upstream exposure of the far-field surroundings is a mixture of multiple types of terrain, the α values are a weighted average with terrain that is closer to the subject site given greater weight.

### TABLE 1: UPSTREAM EXPOSURE (ALPHA VALUE) VS TRUE WIND DIRECTION

| Wind Direction (Degrees True) | Alpha Value (α) |
|---|---|
| 0 | 0.21 |
| 22.5 | 0.19 |
| 45 | 0.20 |
| 67.5 | 0.23 |
| 90 | 0.24 |
| 112.5 | 0.24 |
| 135 | 0.24 |
| 157.5 | 0.25 |
| 180 | 0.25 |
| 202.5 | 0.24 |
| 225 | 0.23 |
| 247.5 | 0.25 |
| 270 | 0.25 |
| 292.5 | 0.25 |
| 315 | 0.24 |
| 337.5 | 0.24 |

### TABLE 2: DEFINITION OF UPSTREAM EXPOSURE (ALPHA VALUE)

| Upstream Exposure Type | Alpha Value (α) |
|---|---|
| Open Water | 0.14-0.15 |
| Open Field | 0.16-0.19 |
| Light Suburban | 0.21-0.24 |
| Heavy Suburban | 0.24-0.27 |
| Light Urban | 0.28-0.30 |
| Heavy Urban | 0.31-0.33 |

The turbulence model in the computational fluid dynamics (CFD) simulations is a two-equation shear-stress transport (SST) model, and thus the ABL turbulence profile requires that two parameters be defined at the inlet of the domain. The turbulence profile is defined following the recommendations of the Architectural Institute of Japan for flat terrain (3).

$$I(Z) = \begin{cases} 0.1\left(\dfrac{Z}{Z_g}\right)^{-\alpha-0.05}, & Z > 10\text{ m} \\ 0.1\left(\dfrac{10}{Z_g}\right)^{-\alpha-0.05}, & Z \leq 10\text{ m} \end{cases}$$ Equation (2)

$$L_t(Z) = \begin{cases} 100\text{ m}\sqrt{\dfrac{Z}{30}}, & Z > 30\text{ m} \\ 100\text{ m}, & Z \leq 30\text{ m} \end{cases}$$ Equation (3)

where ***I*** = turbulence intensity, $\boldsymbol{L_t}$ = turbulence length scale, ***Z*** = height above ground, and **α** is the power law exponent used for the velocity profile in Equation (1).

Boundary conditions on all other domain boundaries are defined as follows: the ground is a no-slip surface; the side walls of the domain have a symmetry boundary condition; the top of the domain has a specified shear, which maintains a constant wind speed at gradient height; and the outlet has a static pressure boundary condition.

## REFERENCES

[1] P. Arya, "Chapter 10: Near-neutral Boundary Layers," in *Introduction to Micrometeorology*, San Diego, California, Academic Press, 2001.

[2] S. A. Hsu, E. A. Meindl and D. B. Gilhousen, "Determining the Power-Law Wind Profile Exponent under Near-neutral Stability Conditions at Sea," vol. 33, no. 6, 1994.

[3] Y. Tamura, H. Kawai, Y. Uematsu, K. Kondo, and T. Okhuma, "Revision of AIJ Recommendations for Wind Loads on Buildings," in *The International Wind Engineering Symposium, IWES 2003*, Taiwan, 2003.