

## 2150 LAKE SHORE BOULEVARD WEST

TORONTO, ONTARIO

PEDESTRIAN WIND STUDY

RWDI # 2002887

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## EXECUTIVE SUMMARY

RWDI was retained to conduct a pedestrian wind assessment for the proposed 2150 Lake Shore Boulevard West in Toronto, Ontario (Image 1). Based on our wind-tunnel testing for the proposed development under the Existing, Proposed Phase 1, Proposed Phase 1 & 2, Proposed Phase 1, 2 & 3 and All Phases configurations (Images 2A through 2E), and the local wind records (Image 3), the potential wind comfort and safety conditions are predicted as shown on site plans in Figures 1A through 3E, while the associated wind speeds are listed in Table 1. These results can be summarized as follows:

- Winds measured at Billy Bishop City Airport are generally characterized by a strong prevailing wind from the southwest through northwest and east-northeast the existing site is fairly exposed to the north with extensive surrounding developments to the south, west and east.
- Wind speeds during the summer season throughout all phases of the development are generally expected to be within suitable or desirable levels. On-site conditions are expected to improve as the development progresses, due to the sheltering offered by the buildings themselves.
- During the winter season, wind conditions at some locations such as building corners and street canyons are expected to be higher than desired due to seasonally higher wind speeds and interaction with the development. Most notably, uncomfortable conditions are expected around Phase 6, the west side of Phase 3 adjacent to building D3-1, to the west of building D2-1 and adjacent to Park Lawn Road at the southwest corner of Phase 1 at D1-1.
- For the existing configuration, wind speeds at one off-site location to the northeast of the site along Lake Shore Boulevard. is expected to exceed the safety criterion. After the completion of the development, wind safety concern at that location is resolved due to a sheltering provided by the proposed development. However, wind speeds at a number of new locations around Phase 6 are expected to exceed the safety criterion.
- It is anticipated that satisfactory wind conditions can be achieved through the use of various hard and soft landscaping elements. Conceptual wind control measures have been included in this report.



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# 1 INTRODUCTION

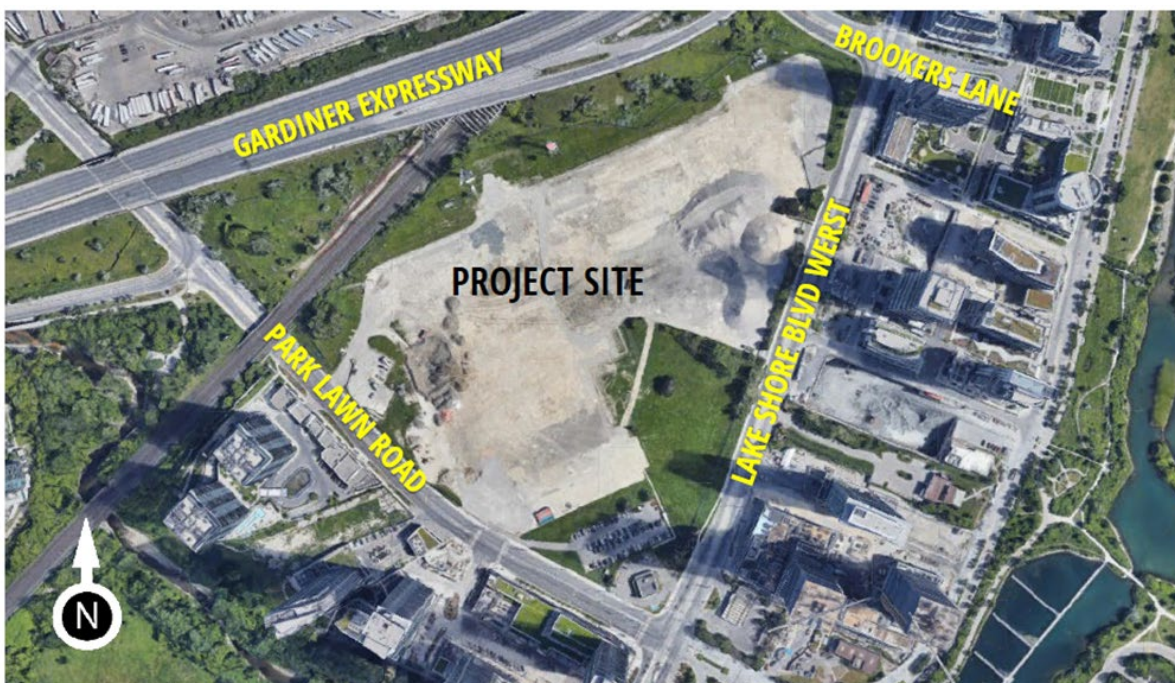
RWDI was retained to conduct a pedestrian wind assessment for the proposed 2150 Lake Shore Boulevard development in Toronto, Ontario. This report presents the project objectives, approach and the main results from RWDI's assessment and provides conceptual wind control measures, where necessary.

## 1.1 Project Description

The project (site shown in Image 1) is located on the east side of Park Lawn Road between Lake Shore Boulevard and Gardiner Expressway. The proposed project is to redevelop the lands located at 2150 Lake Shore Boulevard West with a mixed-use Masterplan development that will include residential, commercial and entertainment uses.

## 1.2 Objectives

The objective of the study was to assess the effect of the proposed development on local conditions in pedestrian areas on and around the study site and provide recommendations for minimizing adverse effects, if needed. This quantitative assessment was based on wind speed measurements on a scale model of the project and its surroundings in one of RWDI's boundary-layer wind tunnels. These measurements were combined with the local wind records and compared to appropriate criteria for gauging wind comfort and safety in pedestrian areas. The assessment focused on critical pedestrian areas.



**Image 1: Aerial View of Site and Surroundings (Photo Courtesy of Google™ Earth)**

## 2 BACKGROUND AND APPROACH

### 2.1 Wind Tunnel Study Model

To assess the wind environment around the proposed project, a 1:300 scale model of the project site and surroundings was constructed for the wind tunnel tests of the following configurations:

- |                             |  |
|-----------------------------|--|
| A - Existing:               | Existing site with existing and future surroundings (Image 2A),  |
| B - proposed Phase 1:       | Phase 1 with existing and future surroundings (Image 2B), and,   |
| C - Proposed Phase 1, 2:    | Phase 1, 2 with existing and future surroundings (Image 2C).     |
| D - Proposed Phase 1, 2, 3: | Phase 1, 2 & 3 with existing and future surroundings (Image 2D). |
| E - Proposed All Phases:    | All phases with existing and future surroundings (Image 2E).     |

The wind tunnel model included all relevant surrounding buildings and topography within an approximately 760 m radius of the study site. The wind and turbulence profiles in the atmospheric boundary layer beyond the modelled area were also simulated in RWDI's wind tunnel. The wind tunnel model was instrumented with 176 specially designed wind speed sensors to measure mean and gust speeds at a full-scale height of approximately 1.5 m above local grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 directions in a 10-degree increments. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the mean wind speed at a reference height above the model. The placement of wind measurement locations was based on our experience and understanding of the pedestrian usage for this site.



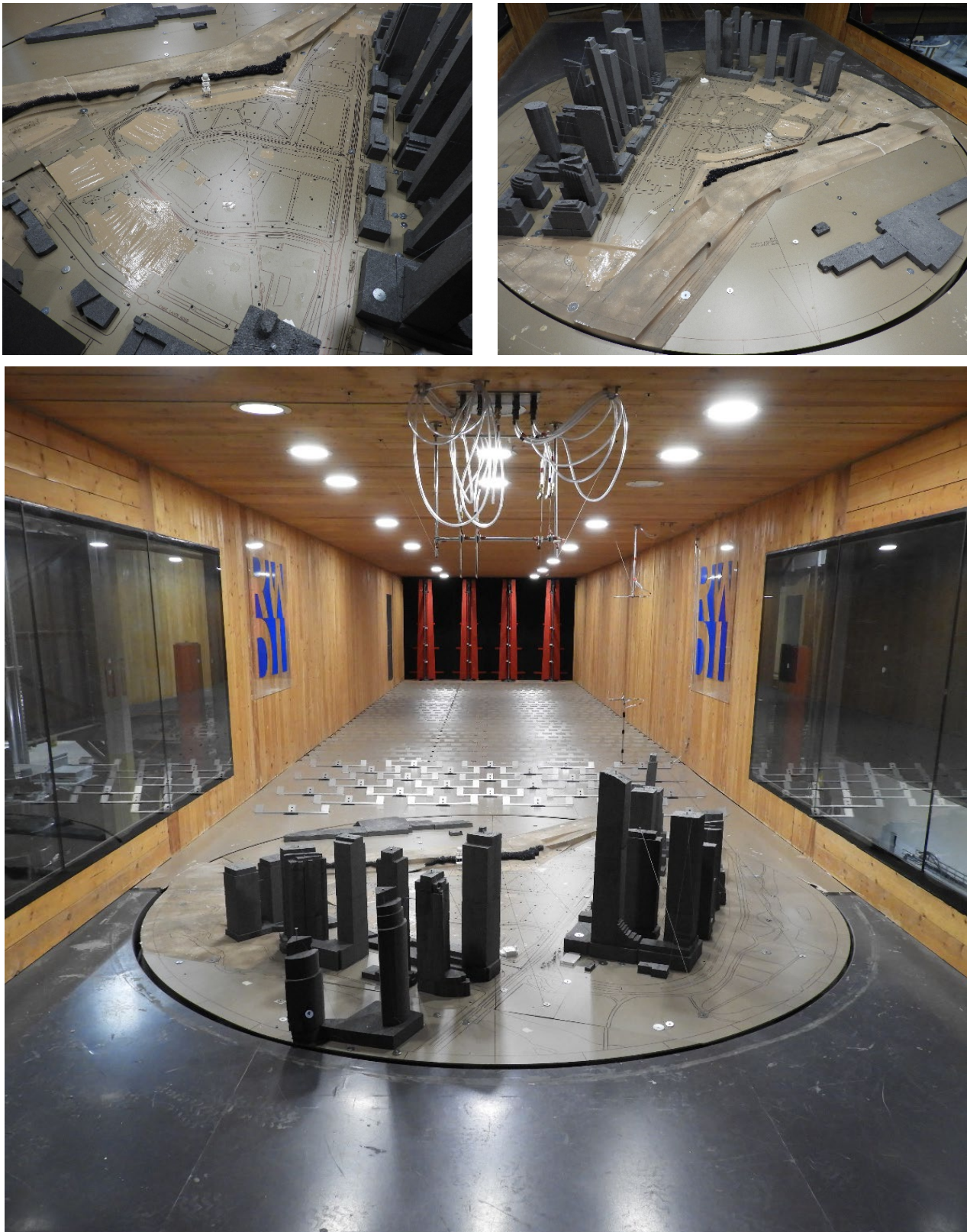


Image 2A: Wind Tunnel Study Model – Existing Configuration



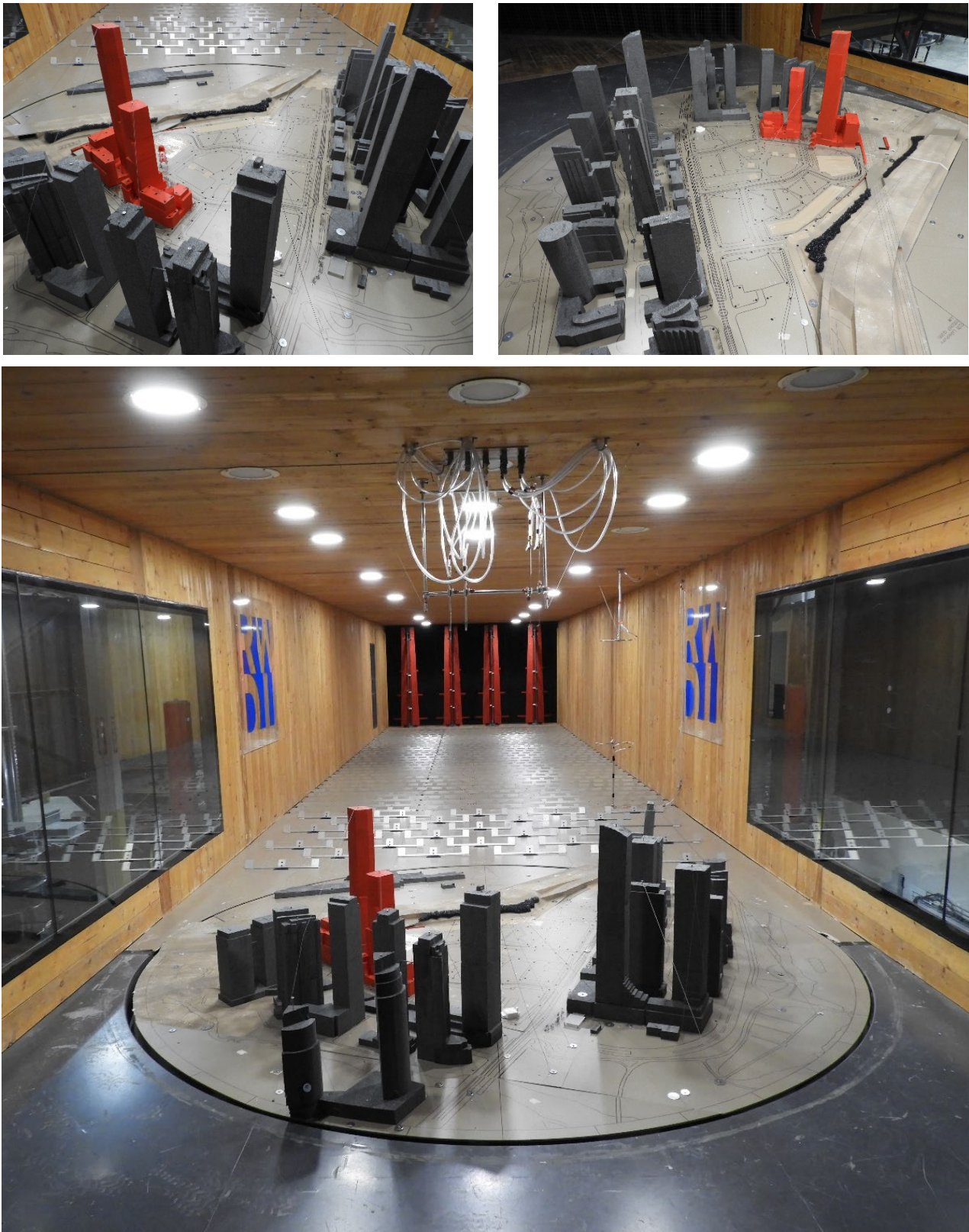


Image 2B: Wind Tunnel Study Model – Proposed Phase 1 Configuration





Image 2C: Wind Tunnel Study Model – Proposed Phase 1, 2 Configuration



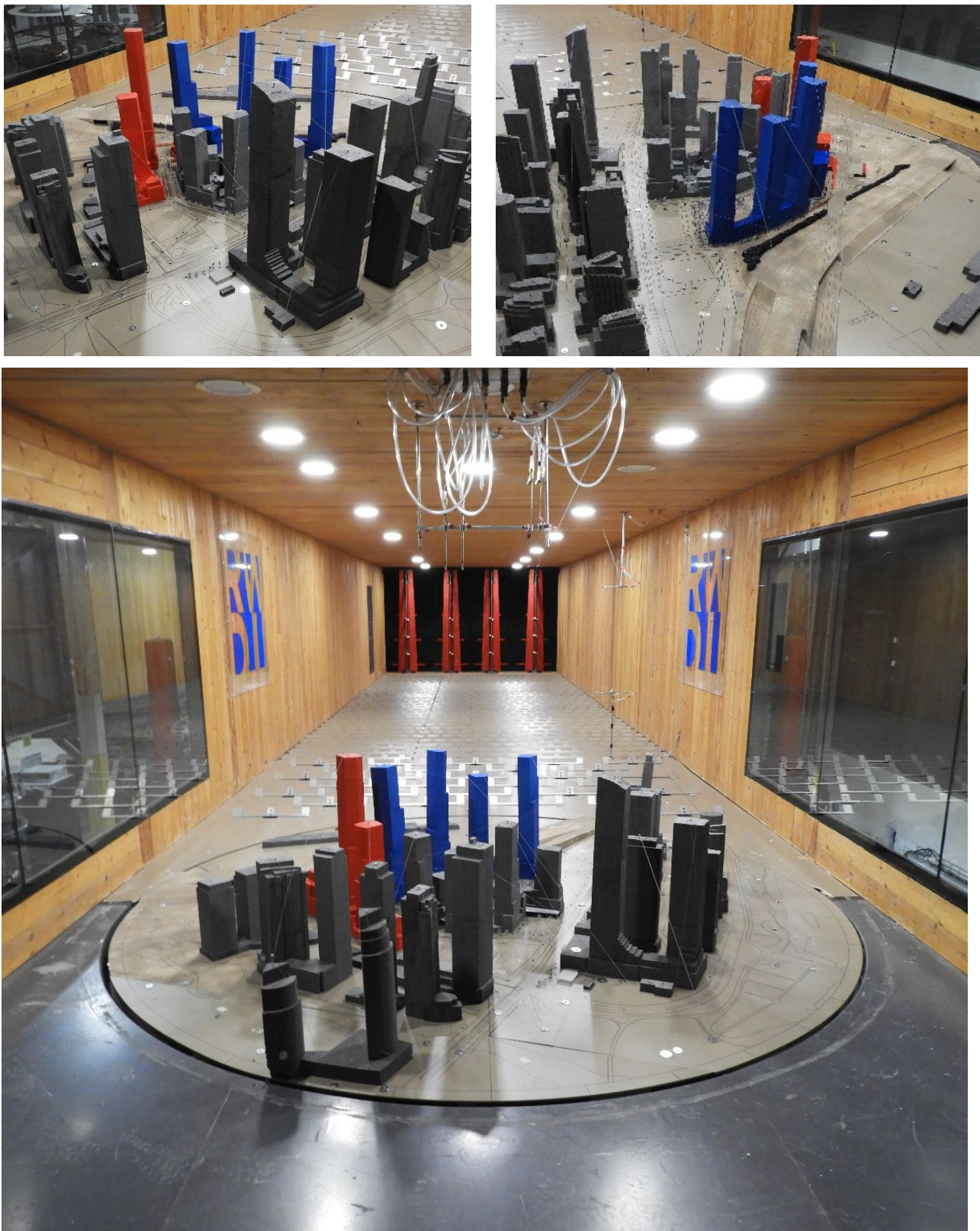


Image 2D: Wind Tunnel Study Model – Proposed Phase 1, 2, 3 Configuration



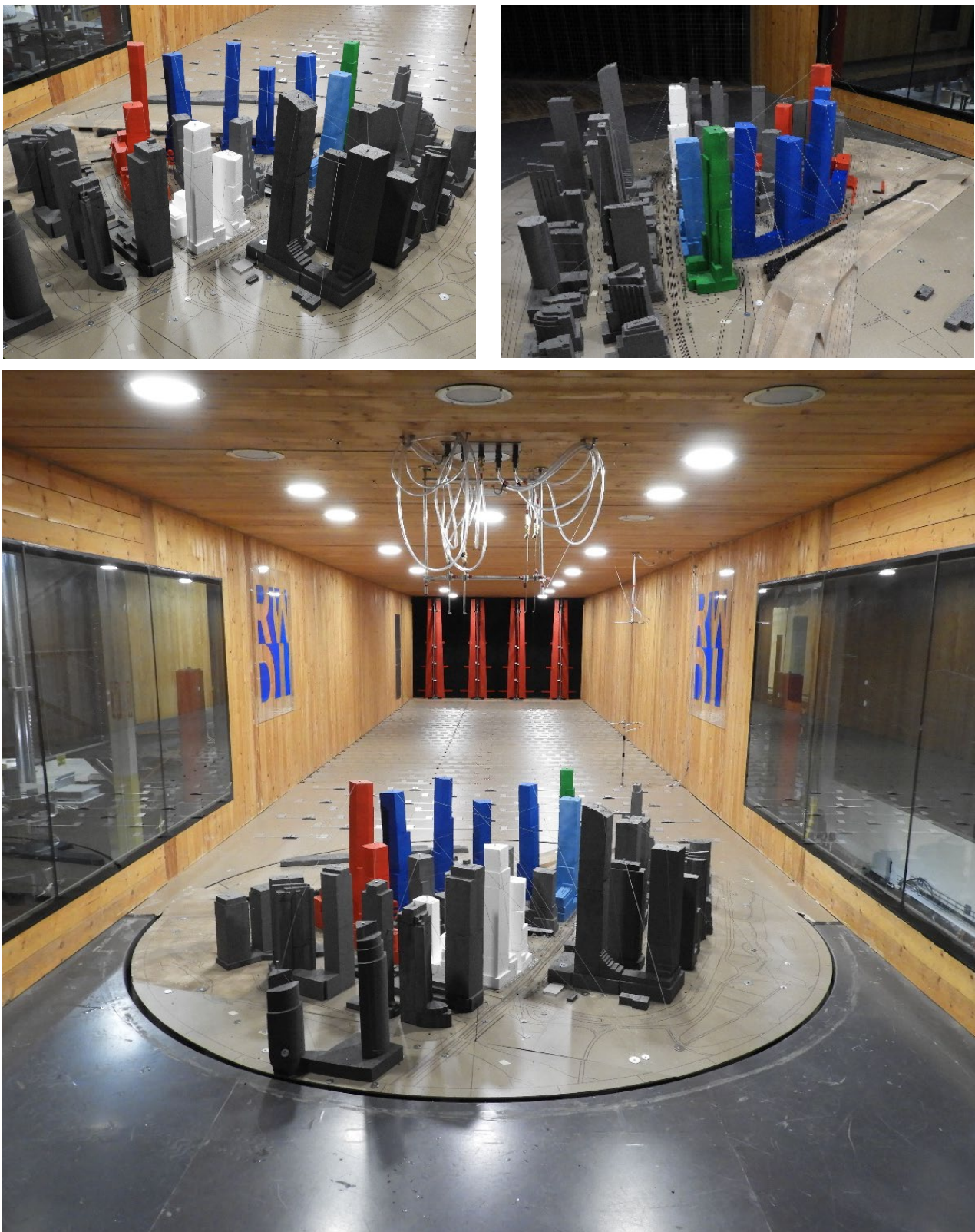


Image 2E: Wind Tunnel Study Model – Proposed All Phases Configuration

## 2.2 Meteorological Data

Wind statistics recorded at Billy Bishop Toronto City Airport between 1988 and 2020, inclusive, were analyzed for the Summer (May through October) and Winter (November through April) seasons. Image 3 graphically depicts the directional distributions of wind frequencies and speeds for these two seasons. Winds from the southwest and northeast directions are predominant in the summer and winter seasons as indicated by the wind roses. Strong winds of a mean speed greater than 30 km/h measured at the airport (at an anemometer height of 10 m) occur for 4.3% and 17.3% of the time during the summer and winter seasons, respectively, and they are primarily from the southwest and northeast directions.

Wind statistics were combined with the wind tunnel data to predict the frequency of occurrence of full-scale wind speeds. The full-scale wind predictions were then compared with the wind criteria for pedestrian comfort and safety.

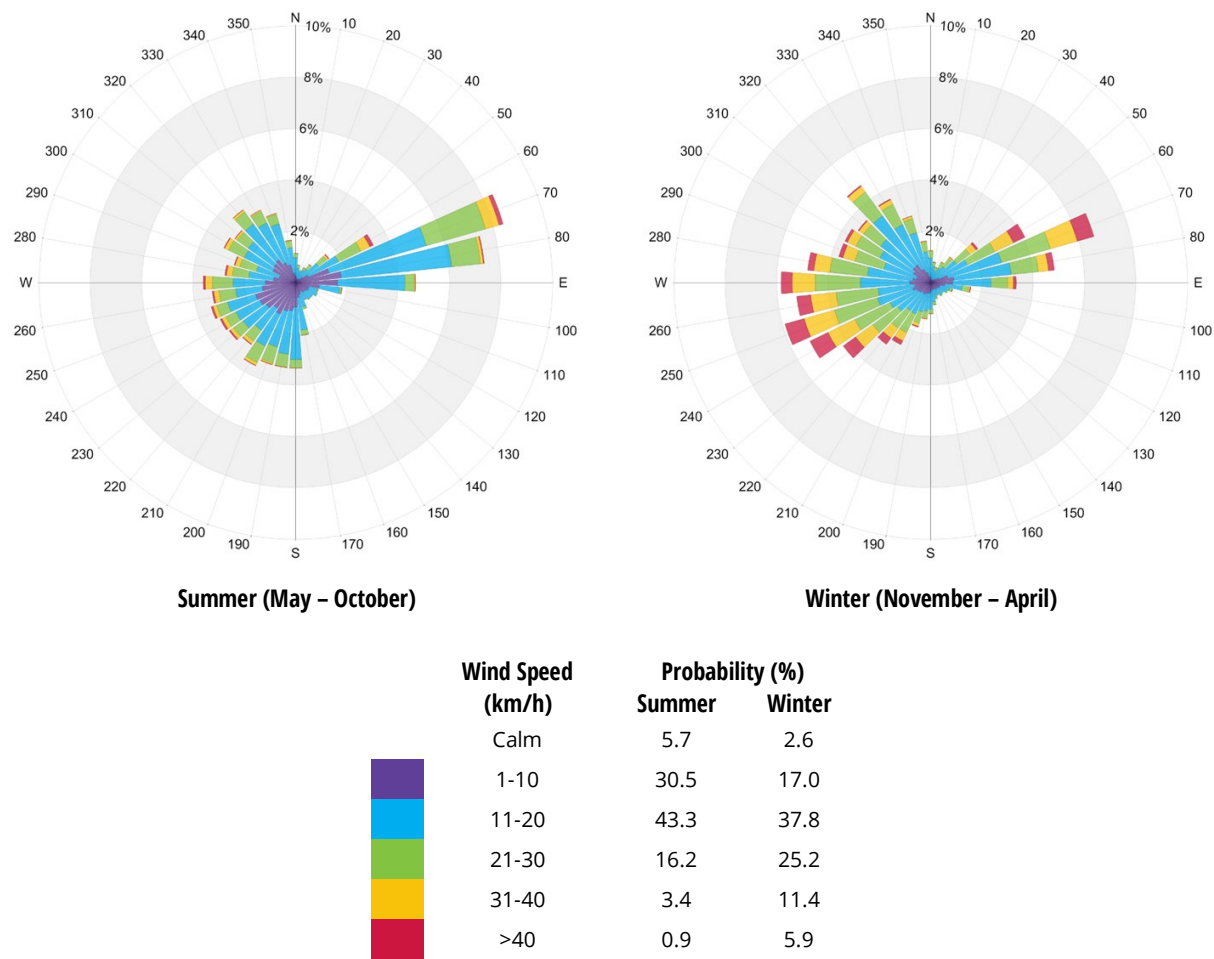


Image 3: Directional Distribution of Winds Approaching Billy Bishop Toronto City Airport between 1988 and 2020



## 2.3 RWDI Pedestrian Wind Criteria

The RWDI pedestrian wind criteria, which have been developed by RWDI through research and consulting practice since 1974, are used in the current study. These criteria have been widely accepted by municipal authorities as well as by the building design and city planning community. Regional differences in wind climate and thermal conditions as well as variations in age, health, clothing, etc. can affect a person's perception of the wind climate. Therefore, comparisons of wind speeds for the existing and proposed building configurations are the most objective way in assessing local pedestrian wind conditions. In general, the combined effect of mean and gust speeds on pedestrian comfort can be quantified by a Gust Equivalent Mean (GEM).

Comfort Category	GEM Speed (km/h)	Description
<b>Sitting</b>	$\leq 10$	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
<b>Standing</b>	$\leq 14$	Gentle breezes suitable for main building entrances, bus stops, and other places where pedestrians may linger
<b>Strolling</b>	$\leq 17$	Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park
<b>Walking</b>	$\leq 20$	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
<b>Uncomfortable</b>	$> 20$	Strong winds of this magnitude are considered a nuisance for all pedestrian activities, and wind mitigation is typically recommended

**Notes:**

- (1)  $GEM\ Speed = \max (Mean\ Speed, Gust\ Speed/1.85)$  and  $Gust\ Speed = Mean\ Speed + 3 \cdot RMS\ Speed$ ;
- (2) Wind conditions are considered to be comfortable if the predicted GEM speeds are within the respective thresholds for at least 80% of the time between 6:00 and 23:00. Nightly hours between 0:00 and 5:00 are excluded from the wind analysis for comfort since limited usage of outdoor spaces is anticipated; and,
- (3) Instead of standard four seasons, two periods of summer (May to October) and winter (November to April) are adopted in the wind analysis, because in a cold climate such as that found in Toronto, there are distinct differences in pedestrian outdoor behaviours between these two-time periods.

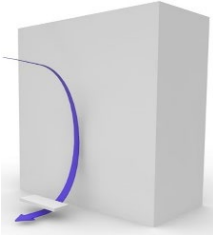
Safety Criterion	Gust Speed (km/h)	Description
<b>Exceeded</b>	$> 90$	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is typically required.

**Notes:**

- (1) Based on an annual exceedance of 9 hours or 0.1% of the time for 24 hours a day; and,
- (2) Only gust speeds need to be considered in the wind safety criterion. These are usually rare events, but deserve special attention in city planning and building design due to their potential safety impact on pedestrians.

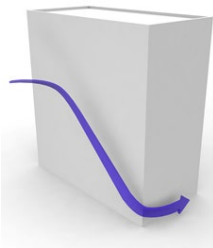
## 2.4 Generalized Wind Flows

In our discussion of wind conditions, reference may be made to the following generalized wind flows (Image 4):



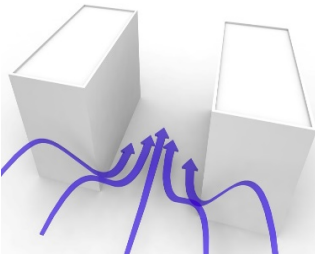
### **DOWNWASHING**

Tall buildings tend to intercept the stronger winds at higher elevations and redirect them to the ground level. This is often the main cause for wind accelerations around large buildings at the pedestrian level.



### **CORNER ACCELERATION**

When winds approach at an oblique angle to a tall façade and are deflected down, a localized increase in the wind activity or corner acceleration can be expected around the exposed building corners at pedestrian level.



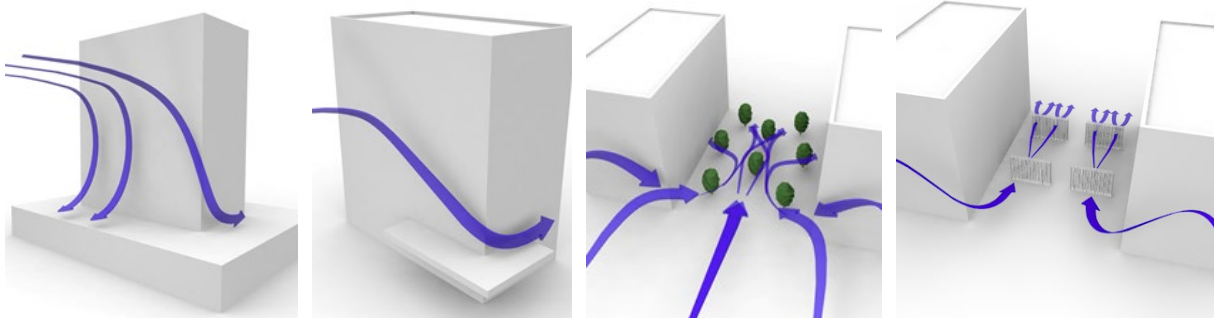
### **CHANNELING EFFECT**

When two buildings are situated side by side, wind flow tends to accelerate through the space between the buildings due to channeling effect caused by the narrow gap.

**Image 4: Generalized Wind Flows**

If these building/wind combinations occur for prevailing winds, there is a greater potential for increased wind activity. Design details such as setting back a tall tower from the edges of a podium, deep canopies close to ground level, wind screens, tall trees with dense landscaping, etc. (Image 5) can help reduce wind speeds. The choice and effectiveness of these measures would depend on the exposure and orientation of the site with respect to the prevailing wind directions and the size and massing of the proposed buildings.

### **Podium/tower setback, canopy, landscaping and wind screens (left to right)**



**Image 5: Common Wind Control Measures**

## **3 RESULTS AND DISCUSSION**

The predicted wind conditions are shown on site plans in Figures 1A through 3E located in the “Figures” section of this report. These conditions and the associated wind speeds are also represented in Table 1, located in the “Tables” section of this report. The following is a detailed discussion of the suitability of the predicted wind conditions for the anticipated pedestrian use of each area of interest.

Wind conditions comfortable for walking or strolling are appropriate for sidewalks and walkways as pedestrians will be active and less likely to remain in one area for prolonged periods of time. Lower wind speeds conducive to standing are preferred at main entrances where pedestrians are apt to linger. Wind speeds comfortable for sitting are preferred for areas intended for passive activities.

The wind tunnel study included a phased addition of winter trees (bare deciduous species and coniferous trees). This was included to model a more realistic scenario where landscaping is present.

### **3.1 Existing Configuration**

During the summer season (Figure 1A), existing wind conditions around the site are mostly expected to be suitable for sitting and standing on all on-site areas. At locations located near to the existing tall residential buildings along Lake Shore Boulevard and Park Lawn Road, some higher wind speeds are anticipated, although still suitable for the current intended use of the sidewalks. During the winter, a season characterized by higher wind speeds in the Toronto area, wind conditions on the existing site are expected to be suitable for strolling at most locations and walking at areas closer to existing tall buildings (Figure 2A). Wind speeds at some areas, notably at existing building corners (such as near locations 68, 69 and 153 in Figure 2A) are expected to be uncomfortable.

Wind speeds at all areas on the existing site are expected to pass the wind safety criterion with the exception of one area along Lake Shore Boulevard near the existing tall buildings (location 68 in Figure 3A).

### **3.2 Proposed Phase 1 Configuration**

Phase 1 of the development includes a collection of buildings (D1-1, D1-2, C-1, C-2 & C-3) at the east side of the site directly adjacent to Park Lawn Road and the proposed Park Lawn GO Station. It also includes the proposed Phase 1 bare deciduous and coniferous landscaping confined to the immediate area around the Phase 1 buildings. There exists a pedestrian plaza, Park Lawn Gardens, located between the C and D buildings.

During the summer season, with the addition of the proposed Phase 1 of the development wind speeds are generally expected to slightly increase on the areas directly around the Phase 1 buildings at building corners nearest to the Station Square plaza to a comfort level suitable for strolling (of buildings D1-1 and C-1, notably near locations 141, 146 & 160 in Figure 1B). While wind conditions at most other locations around the site are not expected to change as a result of the presence of Phase 1. In the winter season, a similar increase in wind speeds are expected in the same area. Wind conditions in the pedestrian plaza and building corners are expected to be suitable for walking or in some areas uncomfortable (near location 141 and 144 in Figure 2B). In general, winter

wind conditions on the extended surrounding areas are not expected to be altered due to the addition of the Phase 1 buildings.

Some entrances located in the pedestrian plaza between the two parcels of Phase 1 (near location 142 in Figures 2B) may be higher than desired for the intended use of an entranceway in the winter season. Once the entrance locations have been finalized, some best practices should be considered as outlined in Section 3.6.

With the addition of the Phase 1 buildings, wind speeds at the area in exceedance of the wind safety criterion that was predicted in the existing configuration (location 68) is expected to be reduced and no safety exceedance is expected at this location. Wind speeds at no other areas are expected to exceed the wind safety criterion in this configuration.

### **3.3 Proposed Phase 1, 2 Configuration**

Phase 2 of the proposed development includes a number of buildings, a 0.25 ha public park fronting Lake Shore Boulevard West, a central enclosed galleria and a public market building. This phase of the development is located directly to the northeast of Phase 1, and also includes the second phase of the landscaping plan.

During the summer season, with the addition of the second phase of the development wind speeds at all areas around Phase 2 are anticipated to be suitable for the intended use of the space (Figure 1C). Conditions are expected to be suitable for sitting or standing at almost all areas. These wind conditions are considered desirable. Notably, Phase 2 of the development has a sheltering effect on various areas around the site, including a large area to the north that is expected to reduce wind speeds to a sitting level. In the winter season, the presence of the Phase 2 buildings will not have a significant impact on wind conditions due to the sheltering offered by the Phase 1 buildings (Figure 2C). One additional uncomfortable area near location 141 in Figure 2C is anticipated as a result of the addition of Phase 2.

It is our understanding that an entrance location may be included at space near location 15 in Figure 2C. During the winter season this area may experience higher than desired wind speeds, and some mitigation strategies for entrances should be considered as described in Section 3.6.

Similar to the Phase 1 configuration, wind speeds at no areas are expected to exceed the wind safety criterion (Figure 3C).

### **3.4 Proposed Phase 1, 2, 3 Configuration**

Phase 3 of the development includes a large 1 ha public park and a number of residential buildings (D2-1, D2-2, D3-1, D3-2 and D3-3). This phase is located on the north side of the development, directly adjacent to the existing Gardiner Expressway and the CN rail corridor.

With the addition of the proposed Phase 3 of the development, wind conditions during the summer season are not expected to be significantly altered (Figure 1D). In general, wind conditions around the site are expected to be suitable for sitting or standing in most areas, considered desirable for the use. In the winter (Figure 2D), wind



conditions on the extended surroundings are not expected to change significantly. Directly around the phase 3 buildings however, wind conditions in some areas are anticipated to increase. Most notably at the southwest corner of building D3-1 wind conditions are expected to be uncomfortable (near locations 22, 49 and 50 in Figure 2D). Similarly, uncomfortable conditions are expected to the west of building D2-2 near location 138 in Figure 2D.

The Station Square plaza (near location 135) is expected to experience higher than desired wind speeds during the winter season. It is our understanding that some entrance locations may be positioned there. Prior to the finalizing of entrance locations in this area, some design best practices detailed in Section 3.6 should be considered.

Like the previous configuration, the wind safety criterion is not expected to be exceeded at any location with the addition of Phase 3 of the development.

### **3.5 Proposed All Phases Configuration**

The All Phases configuration of the test included the addition of Phase 4, 5 and 6 (buildings B1-1 to B2-2, E-1, E-2, F-1 and F-2). These phases are located along Lake Shore Boulevard from Park Lawn Road extending east to Brookers Lane.

In the summer configuration, the addition of Phases 4, 5 and 6 do not significantly alter wind conditions around the site. In most areas, conditions are expected to be considered suitable for sitting or standing (Figure 1E). Notably, the Phase 6 buildings offer additional sheltering to areas across Lake Shore Boulevard, a positive benefit. During the winter season, the presence of these phases does not significantly alter wind conditions on the extending site (Figure 2E). However, some areas nearest to Phase 6 are expected to be uncomfortable (near locations 58, 61, 71, 72, 73 and 74 in Figure 2E). Similarly, at the southwest corner of building B2-2 (near location 155 in Figure 2E) conditions are expected to be uncomfortable. This is considered higher than desired for the use of these spaces and mitigation is recommended.

Due to the higher wind speeds predicted around the west side of the Phase 6 of the development, particularly in the winter season, positioning of doors should consider some of the design best practices for entranceways presented in section 3.6.

Wind speeds at a number of areas are expected to exceed the wind safety criterion around Phase 6 of the development (near locations 61, 67, 69, 72, 73 and 74 in Figure 3E). Wind mitigation strategies are recommended in these areas at a later stage in the design process, and some design concepts are presented in Section 3.6.



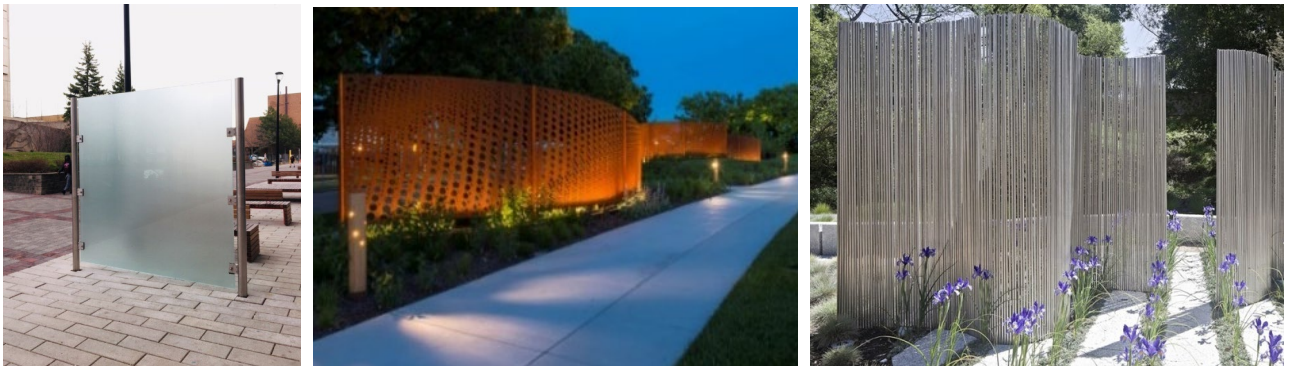
## 3.6 Wind Mitigation Strategies

### Grade Level

To achieve conditions conducive to walking or better throughout the year at areas where wind speeds are anticipated to be uncomfortable or exceed the safety criterion on walkways (areas around Phase 6 of the development, locations 61, 71, 72 and 73 in Figure 2E), tall wind screens (with a minimum height of 2m) or coniferous planters are recommended to be installed on the pedestrian walkway at those areas (Image 6).

For the areas closer to the buildings where downwashing and corner accelerating flows (described in Image 4 and 5) drive the uncomfortable conditions (near location 141, 144, 155, 160, 138, 49 and 50 in Figures 2B through 2E), a canopy is recommended to prevent downwashing winds from reaching grade level, similar to the examples shown in Image 7. To mitigate the uncomfortable wind conditions at building corners (particularly those at the intersections mentioned in Sections 3.2 to 3.5), minimum 2 m tall 70% solid wind screens or coniferous landscaping can be added near these areas.

Entrance locations with wind conditions higher than recommended (for example entrances near locations 15, 50, 58, 142, etc. in Figures 2B through 2E) can be recessed into the building to provide protection from the wind. Examples of these mitigation measures are shown in Image 8.



**Image 6: Examples of Hard Landscaping Features such as Windscreens**



**Image 7: Examples of Grade Level Canopies**



**Image 8: Examples of Recessed Entrances**

### **Above Grade Level**

It is RWDI's understanding that the above grade amenity spaces are still being designed and have not yet been finalized. During the design phase of these areas, it is recommended that the best practices for above grade wind mitigation be considered. Increased wind speeds on upper terraces can result from an increased exposure to the prevailing westerly and northwesterly winds, and susceptibility to winds downwashing, accelerating, and channeling between the towers on the podiums. For improved wind conditions on any proposed amenity level terraces, the following wind control measures can be considered (see Image 9 through 11 for examples):

- Tall guardrails (minimum 6 ft tall) along the north perimeter of terraces. Our experience shows that porous parapets (20-40% open) are more effective than solid ones.
- Vertical features (minimum 6 ft tall, 20-40% open) such as wind screens/ partitions or evergreen/marcescent landscaping (if planned to be used during spring and winter) should be placed in staggered arrangements. These types of features should be placed most densely between towers, and perpendicular to tower façades, to be of greatest benefit in providing protection to channeling winds.
- The use of trellises and/or canopies are recommended to reduce the impact of downwashing winds from reaching terraces.



**Image 9: Examples of Terrace Level Perimeter Windscreens**





Image 10: Examples of Terrace Level Landscaping Elements

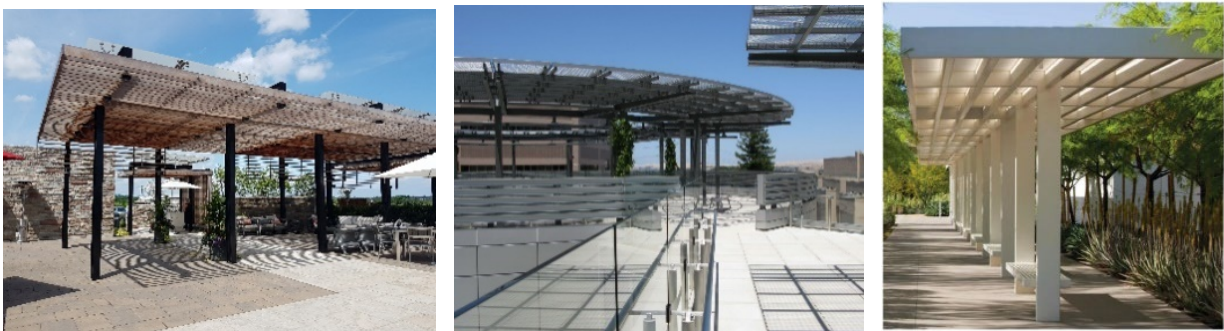


Image 11: Examples of Terrace Level Trellises/Canopies

## 4 APPLICABILITY OF RESULTS

The wind conditions presented in this report pertain to the model of the 2150 Lake Shore Boulevard East constructed using the drawings and information listed below. Should there be any design changes that deviate from this list of drawings, the wind condition predictions presented may change. Therefore, if changes in the design are made, it is recommended that RWDI be contacted and requested to review their potential effects on wind conditions.

File Name	File Type	Date Received (dd/mm/yyyy)
17219_3D View – 210125	AutoCAD	25/01/2021



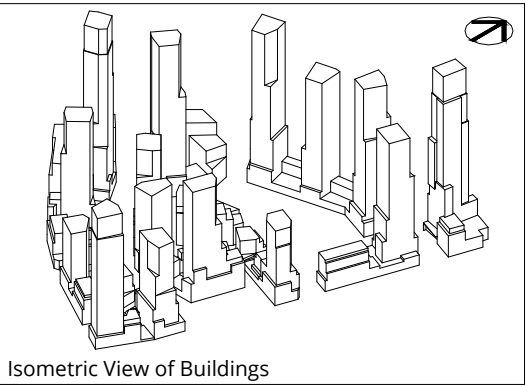
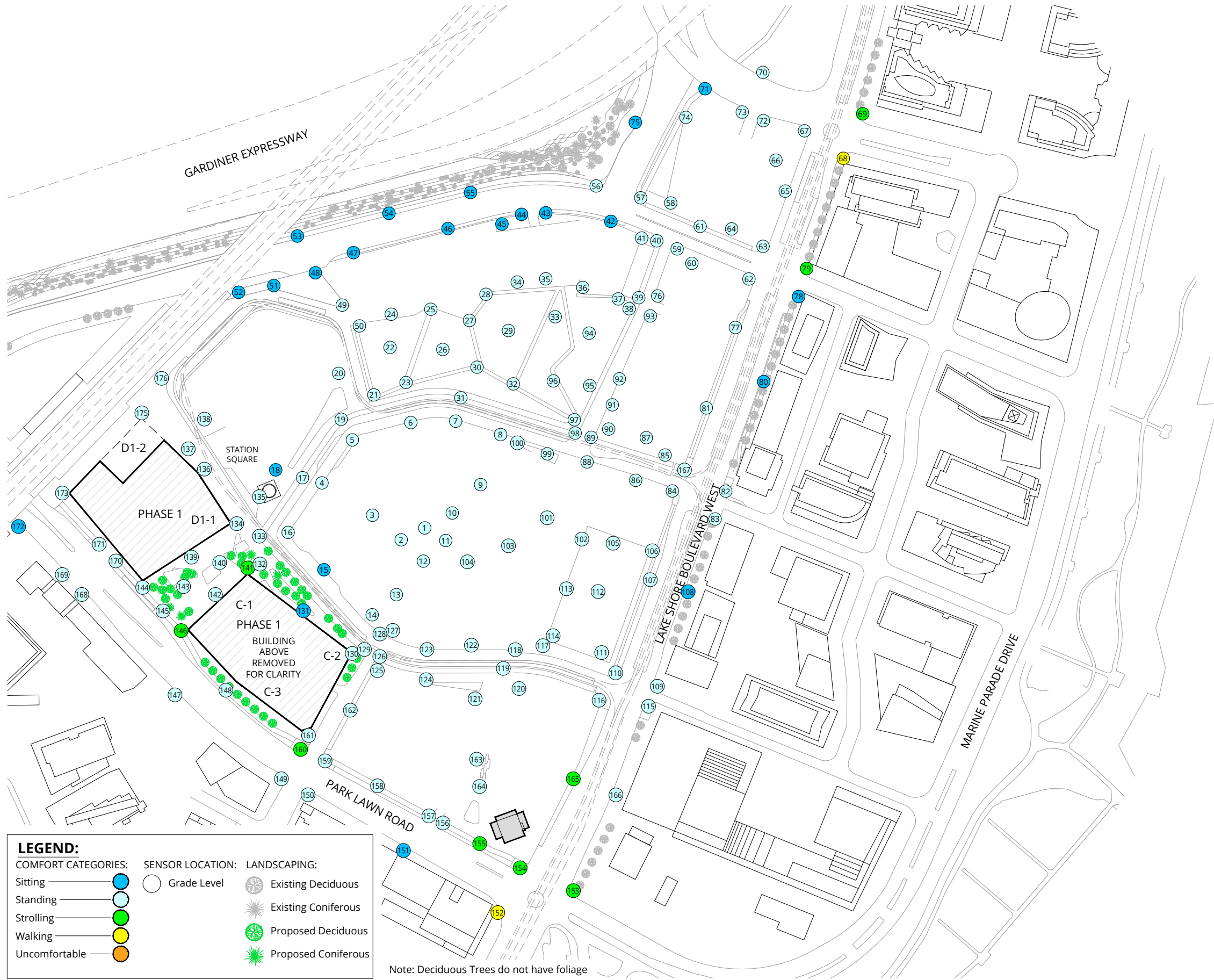


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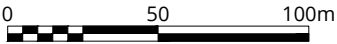
# FIGURES



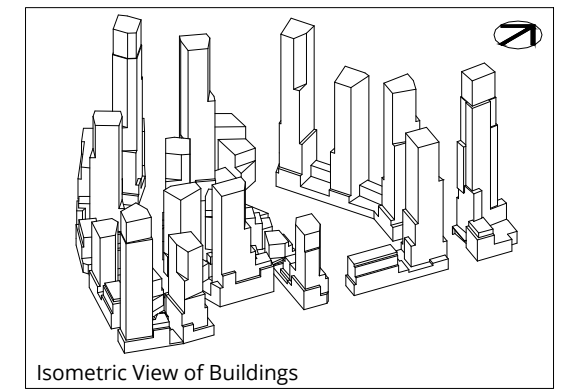


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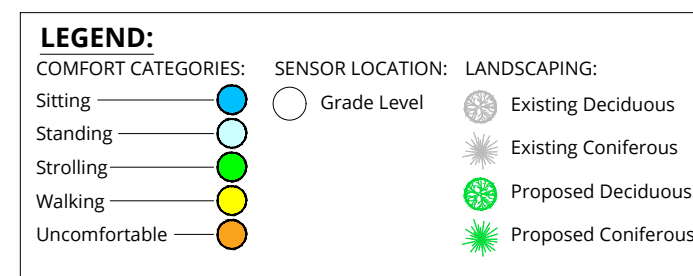
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Standing — <span style="color: lightblue;">●</span>		Existing Coniferous —
Strolling — <span style="color: green;">●</span>		Proposed Deciduous — <span style="color: green;">●</span>
Walking — <span style="color: yellow;">●</span>		Proposed Coniferous — <span style="color: green;">●</span>
Uncomfortable — <span style="color: orange;">●</span>		



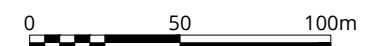




### Isometric View of Buildings



Note: Deciduous Trees do not have foliage



## Pedestrian Wind Comfort Conditions

Phase 1, 2 Configuration  
Summer (May to October, 6:00 to 23:00)

2150 Lake Shore Boulevard West - Etobicoke, ON



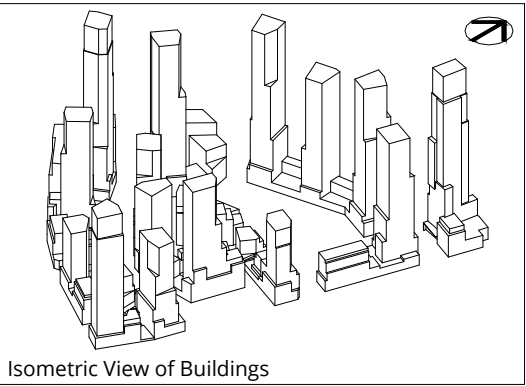
Project #2002887

th	Drawn by: GRE	Figure: 1C
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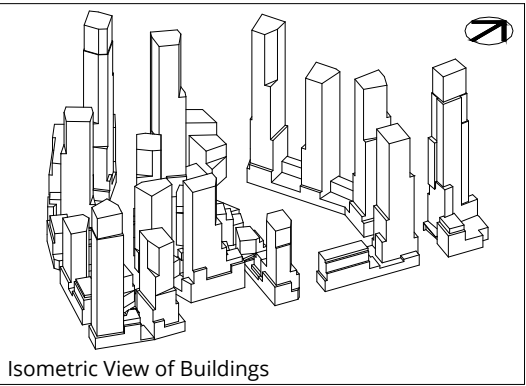
Approx. Scale: 1:2500

37	Date Revised: Feb. 24, 2021
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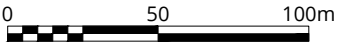




**LEGEND:**

COMFORT CATEGORIES:	SENSOR LOCATION:	LANDSCAPING:
Sitting —	Grade Level	Existing Deciduous
Standing —		Existing Coniferous
Strolling —		Proposed Deciduous
Walking —		Proposed Coniferous
Uncomfortable —		

Note: Deciduous Trees do not have foliage





**LEGEND:**

COMFORT CATEGORIES:

- Sitting — (Blue circle)
- Standing — (Light blue circle)
- Strolling — (Green circle)
- Walking — (Yellow circle)
- Uncomfortable — (Orange circle)

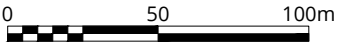
SENSOR LOCATION:

- Grade Level — (White circle)

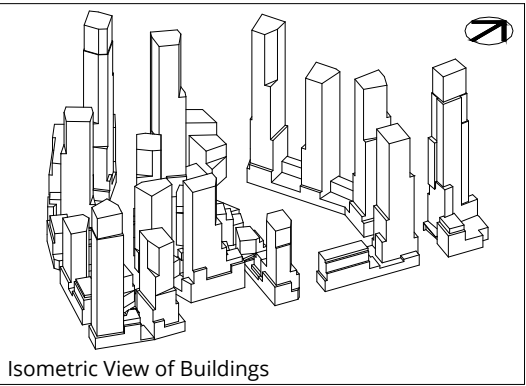
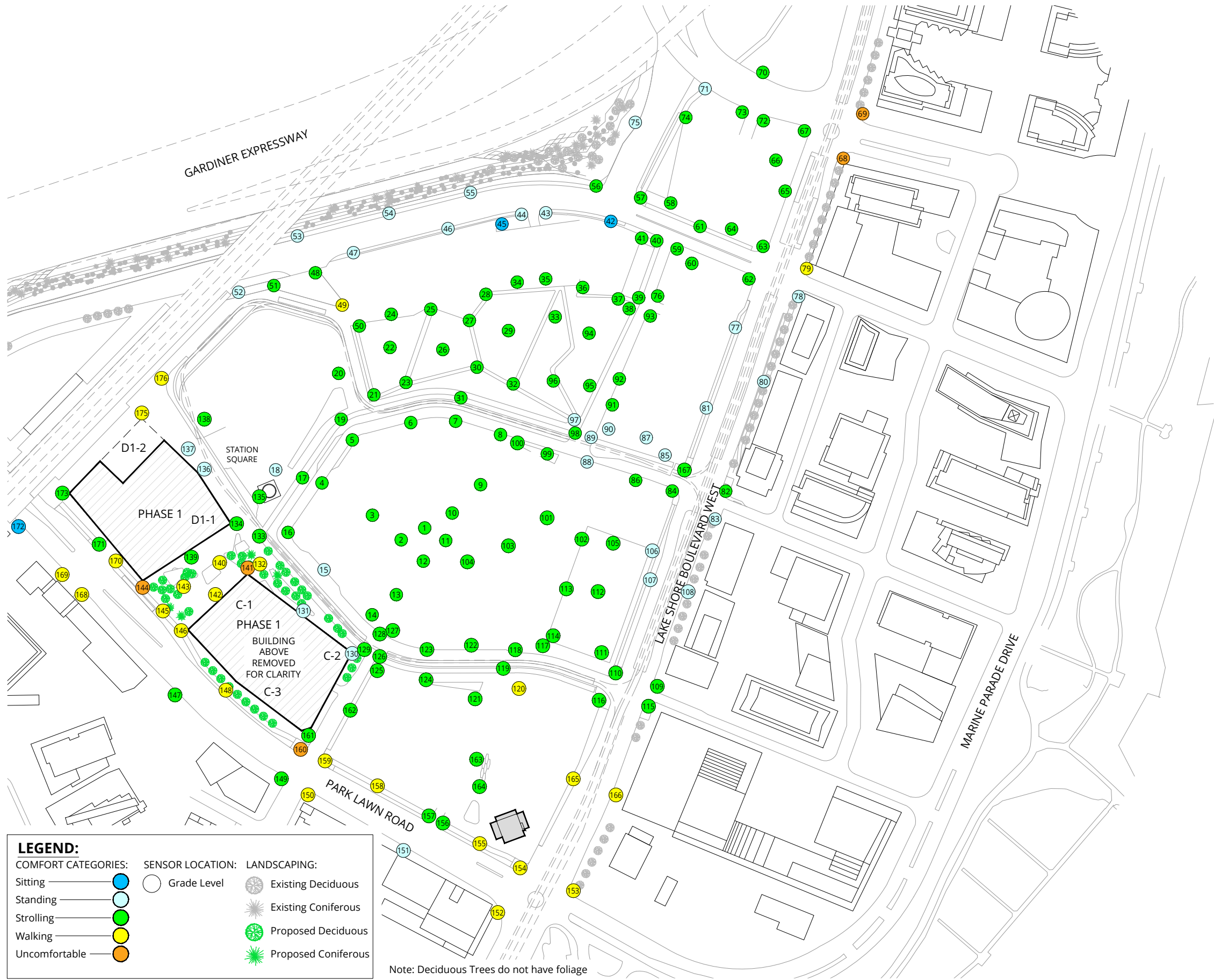
LANDSCAPING:

- Existing Deciduous — (Grey circle with crosshairs)
- Existing Coniferous — (Grey star)

Note: Deciduous Trees do not have foliage

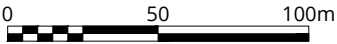


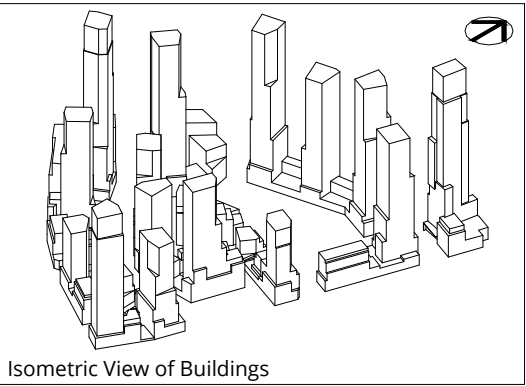
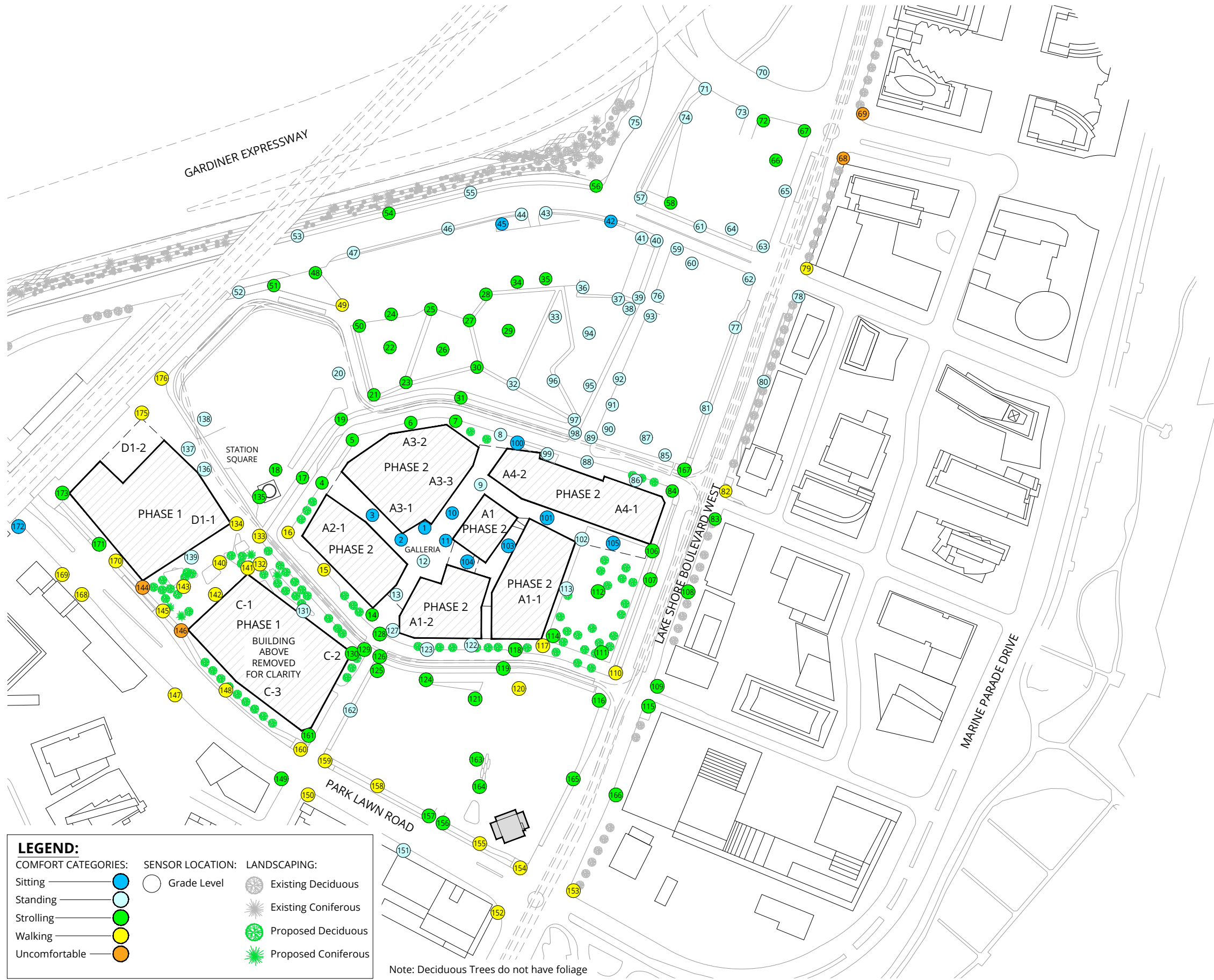




**LEGEND:**

COMFORT CATEGORIES:	SENSOR LOCATION:	LANDSCAPING:
Sitting —	Grade Level —	Existing Deciduous —
Standing —		Existing Coniferous —
Strolling —		Proposed Deciduous —
Walking —		Proposed Coniferous —
Uncomfortable —		

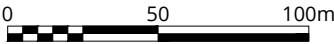




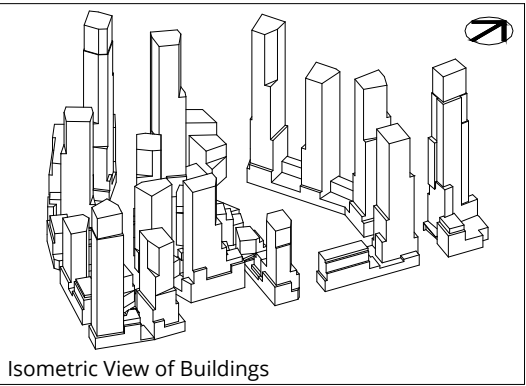
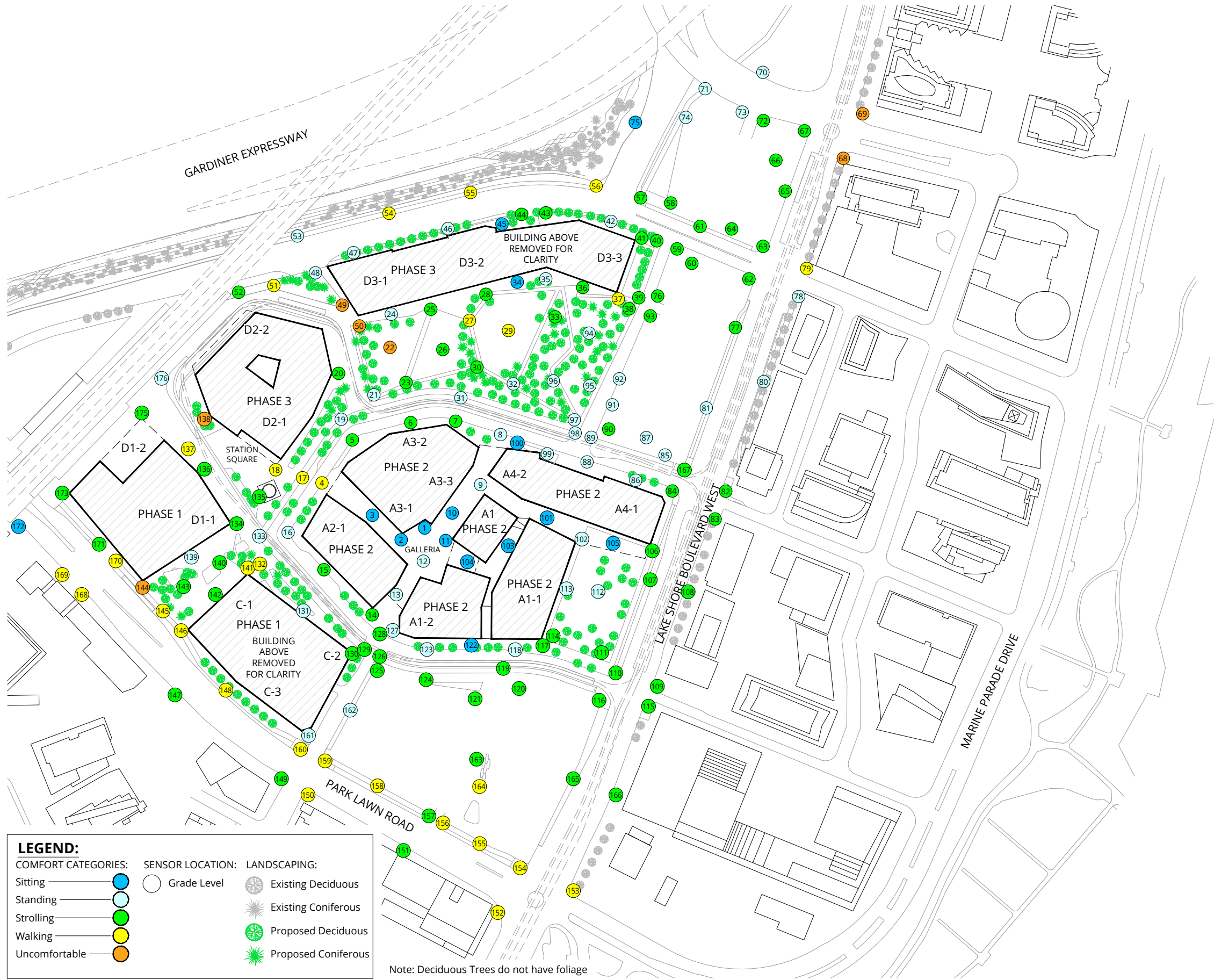
**LEGEND:**

COMFORT CATEGORIES:	SENSOR LOCATION:	LANDSCAPING:
Sitting —	Grade Level —	Existing Deciduous —
Standing —		Existing Coniferous —
Strolling —		Proposed Deciduous —
Walking —		Proposed Coniferous —
Uncomfortable —		

Note: Deciduous Trees do not have foliage



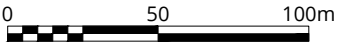


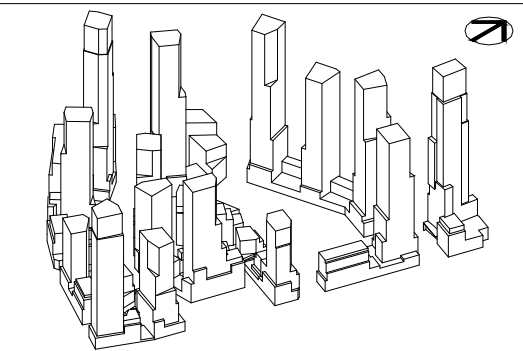


**LEGEND:**

COMFORT CATEGORIES:	SENSOR LOCATION:	LANDSCAPING:
Sitting — <span style="color: blue;">●</span>	Grade Level — <span style="border: 1px solid black; border-radius: 50%; width: 10px; height: 10px; display: inline-block;"></span>	Existing Deciduous — <span style="color: grey;">●</span>
Standing — <span style="color: lightblue;">●</span>		Existing Coniferous — <span style="color: grey;">✳</span>
Strolling — <span style="color: green;">●</span>		Proposed Deciduous — <span style="color: green;">✳</span>
Walking — <span style="color: yellow;">●</span>		Proposed Coniferous — <span style="color: green;">✳</span>
Uncomfortable — <span style="color: orange;">●</span>		

Note: Deciduous Trees do not have foliage



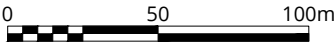


Isometric View of Buildings

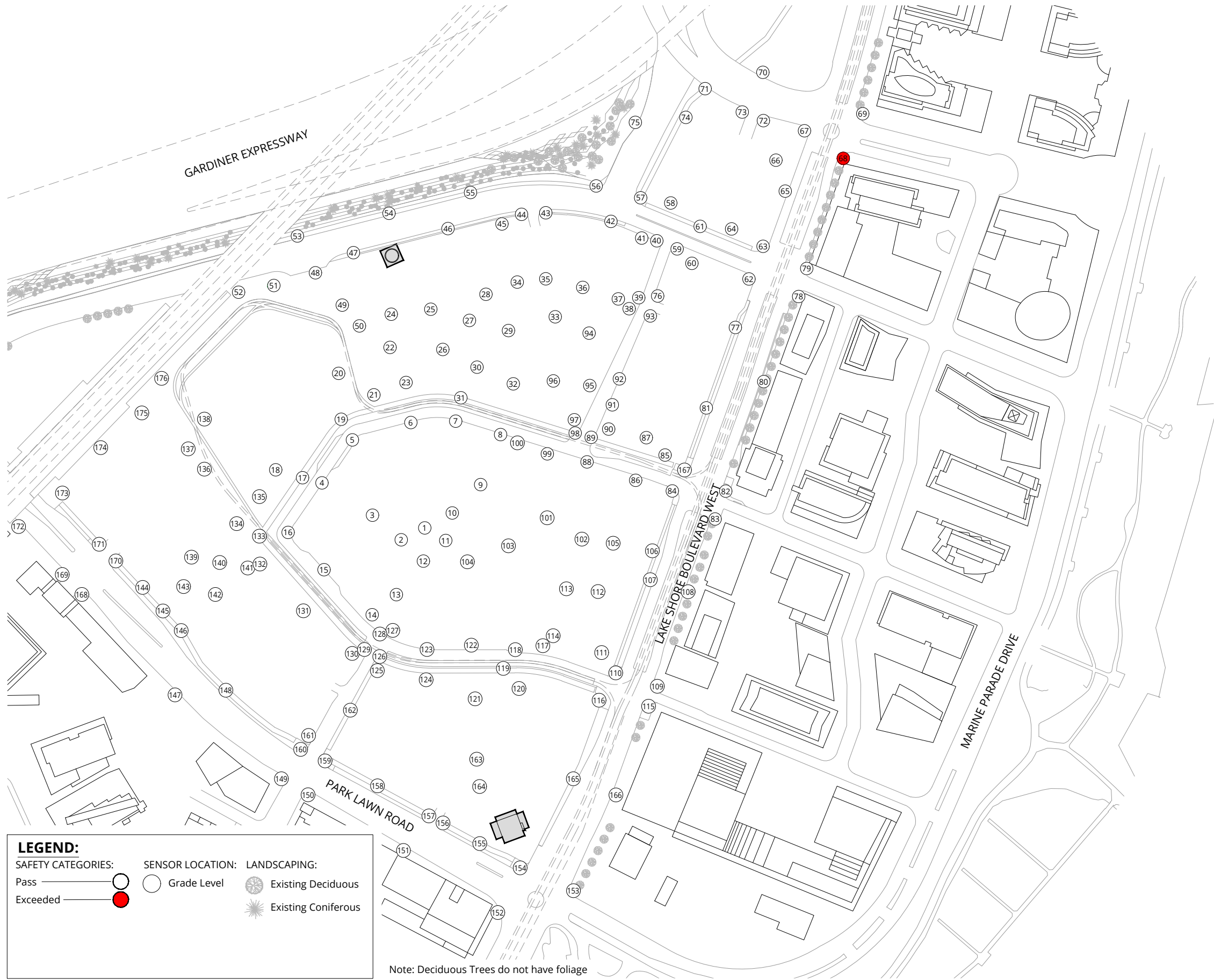
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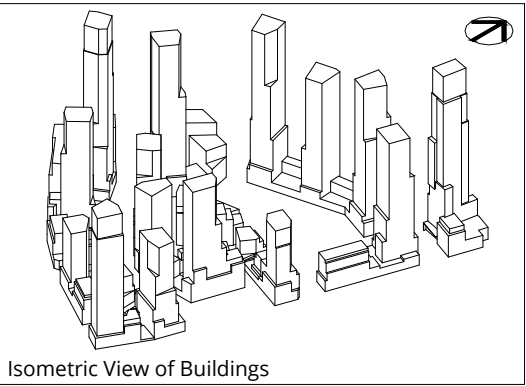
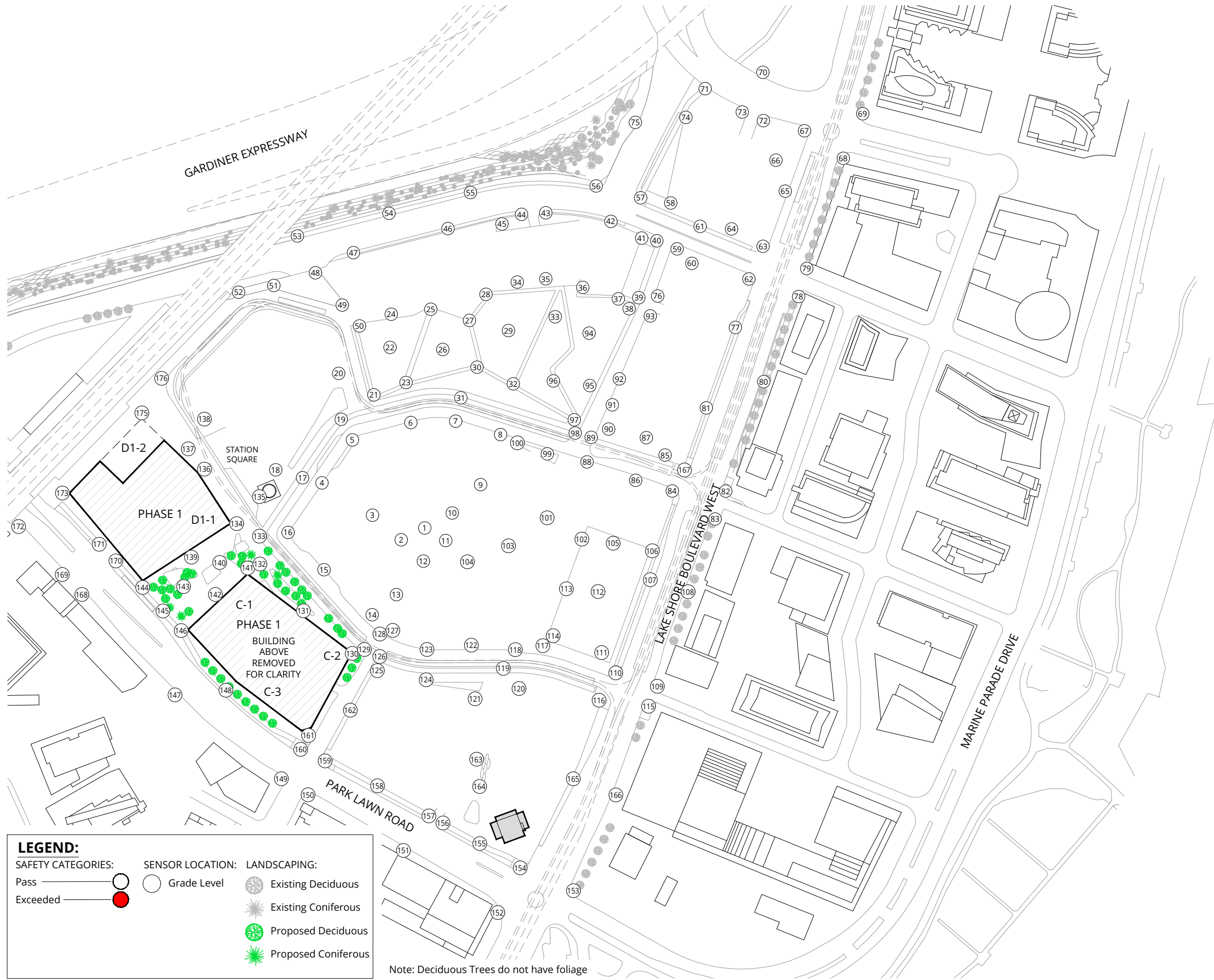
<b>COMFORT CATEGORIES:</b>	<b>SENSOR LOCATION:</b>	<b>LANDSCAPING:</b>
Sitting — (Blue circle)	Grade Level — (White circle)	Existing Deciduous — (Grey star)
Standing — (Light blue circle)		Existing Coniferous — (Grey star with cross)
Strolling — (Green circle)		Proposed Deciduous — (Green star)
Walking — (Yellow circle)		Proposed Coniferous — (Green star with cross)
Uncomfortable — (Orange circle)		

Note: Deciduous Trees do not have foliage

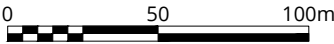




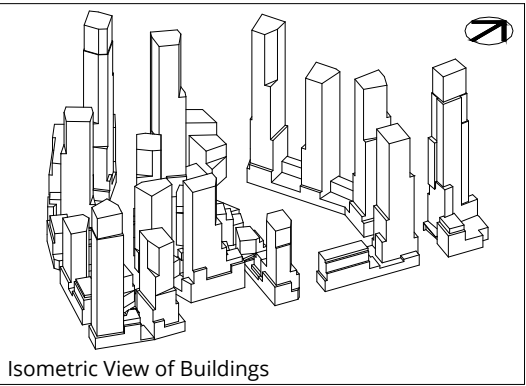




Isometric View of Buildings







**LEGEND:**

**SAFETY CATEGORIES:**

Pass ———— ○

Exceeded ———— ●

**SENSOR LOCATION:**

○ Grade Level

**LANDSCAPING:**

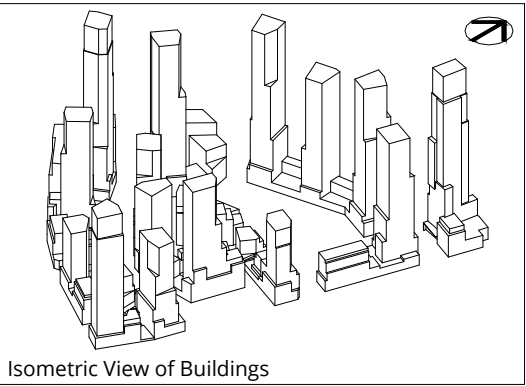
● Existing Deciduous

● Existing Coniferous

● Proposed Deciduous

● Proposed Coniferous

Note: Deciduous Trees do not have foliage



Isometric View of Buildings

**LEGEND:**

**SAFETY CATEGORIES:**

Pass ———— ○

Exceeded ———— ●

**SENSOR LOCATION:**

○ Grade Level

**LANDSCAPING:**

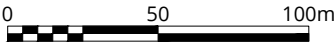
● Existing Deciduous

● Existing Coniferous

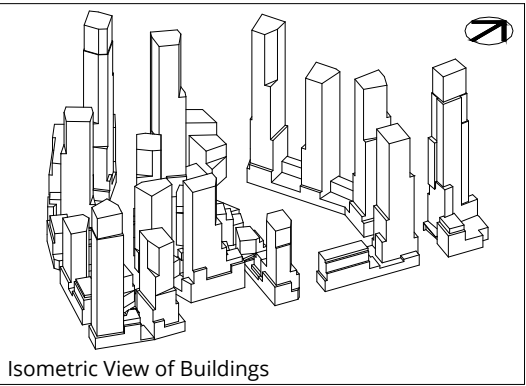
● Proposed Deciduous

● Proposed Coniferous

Note: Deciduous Trees do not have foliage







# TABLES

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>1</b>	Existing	12	Standing	15	Strolling	56	Pass
	Phase 1	13	Standing	16	Strolling	65	Pass
	Phase 1, 2	5	Sitting	6	Sitting	33	Pass
	Phase 1, 2, 3	4	Sitting	5	Sitting	29	Pass
	All Phases	3	Sitting	4	Sitting	18	Pass
<b>2</b>	Existing	12	Standing	15	Strolling	57	Pass
	Phase 1	12	Standing	16	Strolling	65	Pass
	Phase 1, 2	7	Sitting	9	Sitting	42	Pass
	Phase 1, 2, 3	5	Sitting	8	Sitting	40	Pass
	All Phases	4	Sitting	7	Sitting	40	Pass
<b>3</b>	Existing	12	Standing	16	Strolling	57	Pass
	Phase 1	12	Standing	15	Strolling	64	Pass
	Phase 1, 2	6	Sitting	8	Sitting	43	Pass
	Phase 1, 2, 3	5	Sitting	9	Sitting	46	Pass
	All Phases	4	Sitting	8	Sitting	45	Pass
<b>4</b>	Existing	12	Standing	16	Strolling	58	Pass
	Phase 1	11	Standing	15	Strolling	59	Pass
	Phase 1, 2	10	Sitting	15	Strolling	62	Pass
	Phase 1, 2, 3	12	Standing	18	Walking	64	Pass
	All Phases	11	Standing	17	Strolling	62	Pass
<b>5</b>	Existing	12	Standing	16	Strolling	62	Pass
	Phase 1	12	Standing	15	Strolling	60	Pass
	Phase 1, 2	10	Sitting	15	Strolling	67	Pass
	Phase 1, 2, 3	11	Standing	16	Strolling	71	Pass
	All Phases	11	Standing	16	Strolling	69	Pass
<b>6</b>	Existing	12	Standing	16	Strolling	61	Pass
	Phase 1	12	Standing	15	Strolling	62	Pass
	Phase 1, 2	10	Sitting	15	Strolling	71	Pass
	Phase 1, 2, 3	10	Sitting	15	Strolling	57	Pass
	All Phases	10	Sitting	14	Standing	55	Pass
<b>7</b>	Existing	12	Standing	16	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	58	Pass
	Phase 1, 2	11	Standing	15	Strolling	70	Pass
	Phase 1, 2, 3	10	Sitting	15	Strolling	63	Pass
	All Phases	10	Sitting	14	Standing	58	Pass
<b>8</b>	Existing	12	Standing	15	Strolling	56	Pass
	Phase 1	12	Standing	15	Strolling	57	Pass
	Phase 1, 2	9	Sitting	12	Standing	49	Pass
	Phase 1, 2, 3	9	Sitting	12	Standing	51	Pass
	All Phases	8	Sitting	11	Standing	51	Pass
<b>9</b>	Existing	11	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	62	Pass
	Phase 1, 2	8	Sitting	11	Standing	53	Pass
	Phase 1, 2, 3	8	Sitting	11	Standing	55	Pass
	All Phases	7	Sitting	10	Sitting	57	Pass



**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>10</b>	Existing	12	Standing	15	Strolling	57	Pass
	Phase 1	13	Standing	16	Strolling	64	Pass
	Phase 1, 2	5	Sitting	7	Sitting	37	Pass
	Phase 1, 2, 3	6	Sitting	7	Sitting	37	Pass
	All Phases	4	Sitting	5	Sitting	26	Pass
<b>11</b>	Existing	12	Standing	16	Strolling	57	Pass
	Phase 1	13	Standing	16	Strolling	63	Pass
	Phase 1, 2	6	Sitting	7	Sitting	35	Pass
	Phase 1, 2, 3	5	Sitting	7	Sitting	32	Pass
	All Phases	5	Sitting	7	Sitting	30	Pass
<b>12</b>	Existing	12	Standing	16	Strolling	58	Pass
	Phase 1	13	Standing	16	Strolling	62	Pass
	Phase 1, 2	10	Sitting	12	Standing	62	Pass
	Phase 1, 2, 3	8	Sitting	11	Standing	57	Pass
	All Phases	7	Sitting	10	Sitting	47	Pass
<b>13</b>	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	13	Standing	16	Strolling	62	Pass
	Phase 1, 2	11	Standing	13	Standing	61	Pass
	Phase 1, 2, 3	10	Sitting	12	Standing	57	Pass
	All Phases	7	Sitting	10	Sitting	40	Pass
<b>14</b>	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	11	Standing	16	Strolling	76	Pass
	Phase 1, 2, 3	10	Sitting	15	Strolling	70	Pass
	All Phases	8	Sitting	14	Standing	65	Pass
<b>15</b>	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	10	Sitting	14	Standing	66	Pass
	Phase 1, 2	14	Standing	19	Walking	79	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	64	Pass
	All Phases	9	Sitting	14	Standing	60	Pass
<b>16</b>	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	11	Standing	15	Strolling	61	Pass
	Phase 1, 2	15	Strolling	18	Walking	66	Pass
	Phase 1, 2, 3	12	Standing	14	Standing	57	Pass
	All Phases	10	Sitting	12	Standing	51	Pass
<b>17</b>	Existing	11	Standing	16	Strolling	60	Pass
	Phase 1	11	Standing	15	Strolling	61	Pass
	Phase 1, 2	11	Standing	16	Strolling	63	Pass
	Phase 1, 2, 3	13	Standing	19	Walking	69	Pass
	All Phases	12	Standing	17	Strolling	67	Pass
<b>18</b>	Existing	11	Standing	16	Strolling	61	Pass
	Phase 1	10	Sitting	14	Standing	60	Pass
	Phase 1, 2	11	Standing	15	Strolling	56	Pass
	Phase 1, 2, 3	14	Standing	20	Walking	76	Pass
	All Phases	13	Standing	19	Walking	76	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
19	Existing	12	Standing	16	Strolling	61	Pass
	Phase 1	11	Standing	15	Strolling	60	Pass
	Phase 1, 2	10	Sitting	15	Strolling	61	Pass
	Phase 1, 2, 3	10	Sitting	14	Standing	56	Pass
	All Phases	10	Sitting	13	Standing	54	Pass
20	Existing	12	Standing	17	Strolling	64	Pass
	Phase 1	11	Standing	15	Strolling	66	Pass
	Phase 1, 2	10	Sitting	14	Standing	60	Pass
	Phase 1, 2, 3	9	Sitting	16	Strolling	81	Pass
	All Phases	9	Sitting	15	Strolling	79	Pass
21	Existing	12	Standing	17	Strolling	62	Pass
	Phase 1	11	Standing	15	Strolling	61	Pass
	Phase 1, 2	10	Sitting	15	Strolling	62	Pass
	Phase 1, 2, 3	9	Sitting	14	Standing	61	Pass
	All Phases	9	Sitting	14	Standing	61	Pass
22	Existing	12	Standing	17	Strolling	62	Pass
	Phase 1	12	Standing	15	Strolling	63	Pass
	Phase 1, 2	10	Sitting	15	Strolling	62	Pass
	Phase 1, 2, 3	14	Standing	21	Uncomfortable	81	Pass
	All Phases	13	Standing	20	Walking	80	Pass
23	Existing	12	Standing	17	Strolling	60	Pass
	Phase 1	11	Standing	15	Strolling	60	Pass
	Phase 1, 2	10	Sitting	15	Strolling	58	Pass
	Phase 1, 2, 3	11	Standing	17	Strolling	76	Pass
	All Phases	11	Standing	17	Strolling	76	Pass
24	Existing	12	Standing	18	Walking	63	Pass
	Phase 1	12	Standing	17	Strolling	67	Pass
	Phase 1, 2	11	Standing	17	Strolling	66	Pass
	Phase 1, 2, 3	8	Sitting	12	Standing	51	Pass
	All Phases	7	Sitting	11	Standing	50	Pass
25	Existing	12	Standing	17	Strolling	61	Pass
	Phase 1	12	Standing	16	Strolling	63	Pass
	Phase 1, 2	11	Standing	16	Strolling	62	Pass
	Phase 1, 2, 3	10	Sitting	15	Strolling	63	Pass
	All Phases	9	Sitting	13	Standing	63	Pass
26	Existing	12	Standing	17	Strolling	60	Pass
	Phase 1	11	Standing	15	Strolling	59	Pass
	Phase 1, 2	10	Sitting	15	Strolling	60	Pass
	Phase 1, 2, 3	12	Standing	17	Strolling	74	Pass
	All Phases	11	Standing	16	Strolling	73	Pass
27	Existing	12	Standing	17	Strolling	61	Pass
	Phase 1	12	Standing	15	Strolling	61	Pass
	Phase 1, 2	11	Standing	16	Strolling	61	Pass
	Phase 1, 2, 3	13	Standing	19	Walking	79	Pass
	All Phases	11	Standing	17	Strolling	79	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>28</b>	Existing	12	Standing	17	Strolling	60	Pass
	Phase 1	11	Standing	16	Strolling	62	Pass
	Phase 1, 2	11	Standing	16	Strolling	62	Pass
	Phase 1, 2, 3	9	Sitting	15	Strolling	62	Pass
	All Phases	8	Sitting	13	Standing	62	Pass
<b>29</b>	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	10	Sitting	15	Strolling	60	Pass
	Phase 1, 2, 3	12	Standing	18	Walking	79	Pass
	All Phases	11	Standing	16	Strolling	78	Pass
<b>30</b>	Existing	12	Standing	17	Strolling	60	Pass
	Phase 1	12	Standing	15	Strolling	60	Pass
	Phase 1, 2	10	Sitting	15	Strolling	61	Pass
	Phase 1, 2, 3	11	Standing	16	Strolling	79	Pass
	All Phases	11	Standing	16	Strolling	79	Pass
<b>31</b>	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	12	Standing	15	Strolling	58	Pass
	Phase 1, 2	11	Standing	15	Strolling	65	Pass
	Phase 1, 2, 3	9	Sitting	14	Standing	68	Pass
	All Phases	11	Standing	15	Strolling	69	Pass
<b>32</b>	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	10	Sitting	14	Standing	61	Pass
	Phase 1, 2, 3	9	Sitting	13	Standing	61	Pass
	All Phases	9	Sitting	13	Standing	60	Pass
<b>33</b>	Existing	12	Standing	16	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	58	Pass
	Phase 1, 2	10	Sitting	14	Standing	58	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	66	Pass
	All Phases	11	Standing	15	Strolling	66	Pass
<b>34</b>	Existing	11	Standing	16	Strolling	59	Pass
	Phase 1	11	Standing	15	Strolling	59	Pass
	Phase 1, 2	10	Sitting	15	Strolling	58	Pass
	Phase 1, 2, 3	7	Sitting	10	Sitting	39	Pass
	All Phases	6	Sitting	9	Sitting	39	Pass
<b>35</b>	Existing	11	Standing	16	Strolling	59	Pass
	Phase 1	11	Standing	15	Strolling	59	Pass
	Phase 1, 2	10	Sitting	15	Strolling	59	Pass
	Phase 1, 2, 3	9	Sitting	12	Standing	46	Pass
	All Phases	7	Sitting	11	Standing	45	Pass
<b>36</b>	Existing	11	Standing	16	Strolling	59	Pass
	Phase 1	11	Standing	15	Strolling	58	Pass
	Phase 1, 2	10	Sitting	14	Standing	58	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	62	Pass
	All Phases	10	Sitting	14	Standing	57	Pass



**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
37	Existing	12	Standing	16	Strolling	58	Pass
	Phase 1	11	Standing	15	Strolling	57	Pass
	Phase 1, 2	10	Sitting	14	Standing	56	Pass
	Phase 1, 2, 3	14	Standing	19	Walking	70	Pass
	All Phases	14	Standing	17	Strolling	78	Pass
38	Existing	12	Standing	15	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	57	Pass
	Phase 1, 2	10	Sitting	13	Standing	56	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	59	Pass
	All Phases	13	Standing	16	Strolling	72	Pass
39	Existing	12	Standing	16	Strolling	57	Pass
	Phase 1	12	Standing	15	Strolling	56	Pass
	Phase 1, 2	10	Sitting	13	Standing	55	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	66	Pass
	All Phases	14	Standing	18	Walking	70	Pass
40	Existing	12	Standing	16	Strolling	65	Pass
	Phase 1	12	Standing	15	Strolling	64	Pass
	Phase 1, 2	10	Sitting	14	Standing	63	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	59	Pass
	All Phases	13	Standing	18	Walking	74	Pass
41	Existing	12	Standing	16	Strolling	62	Pass
	Phase 1	12	Standing	15	Strolling	61	Pass
	Phase 1, 2	10	Sitting	14	Standing	60	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	69	Pass
	All Phases	13	Standing	18	Walking	67	Pass
42	Existing	7	Sitting	9	Sitting	39	Pass
	Phase 1	7	Sitting	9	Sitting	38	Pass
	Phase 1, 2	7	Sitting	10	Sitting	39	Pass
	Phase 1, 2, 3	7	Sitting	11	Standing	46	Pass
	All Phases	7	Sitting	10	Sitting	40	Pass
43	Existing	9	Sitting	13	Standing	55	Pass
	Phase 1	9	Sitting	13	Standing	54	Pass
	Phase 1, 2	9	Sitting	13	Standing	55	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	53	Pass
	All Phases	9	Sitting	13	Standing	47	Pass
44	Existing	9	Sitting	13	Standing	52	Pass
	Phase 1	8	Sitting	13	Standing	52	Pass
	Phase 1, 2	9	Sitting	14	Standing	53	Pass
	Phase 1, 2, 3	11	Standing	16	Strolling	58	Pass
	All Phases	10	Sitting	15	Strolling	55	Pass
45	Existing	6	Sitting	9	Sitting	39	Pass
	Phase 1	6	Sitting	8	Sitting	38	Pass
	Phase 1, 2	6	Sitting	9	Sitting	40	Pass
	Phase 1, 2, 3	6	Sitting	9	Sitting	44	Pass
	All Phases	7	Sitting	9	Sitting	43	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
46	Existing	7	Sitting	10	Sitting	39	Pass
	Phase 1	7	Sitting	11	Standing	42	Pass
	Phase 1, 2	7	Sitting	11	Standing	42	Pass
	Phase 1, 2, 3	7	Sitting	12	Standing	47	Pass
	All Phases	7	Sitting	11	Standing	44	Pass
47	Existing	7	Sitting	11	Standing	40	Pass
	Phase 1	8	Sitting	12	Standing	45	Pass
	Phase 1, 2	8	Sitting	12	Standing	42	Pass
	Phase 1, 2, 3	6	Sitting	11	Standing	50	Pass
	All Phases	6	Sitting	11	Standing	49	Pass
48	Existing	10	Sitting	16	Strolling	58	Pass
	Phase 1	10	Sitting	16	Strolling	62	Pass
	Phase 1, 2	10	Sitting	17	Strolling	62	Pass
	Phase 1, 2, 3	8	Sitting	13	Standing	61	Pass
	All Phases	8	Sitting	13	Standing	60	Pass
49	Existing	12	Standing	18	Walking	61	Pass
	Phase 1	12	Standing	18	Walking	70	Pass
	Phase 1, 2	11	Standing	18	Walking	69	Pass
	Phase 1, 2, 3	14	Standing	22	Uncomfortable	86	Pass
	All Phases	14	Standing	21	Uncomfortable	85	Pass
50	Existing	12	Standing	18	Walking	61	Pass
	Phase 1	12	Standing	17	Strolling	67	Pass
	Phase 1, 2	11	Standing	17	Strolling	65	Pass
	Phase 1, 2, 3	16	Strolling	25	Uncomfortable	88	Pass
	All Phases	16	Strolling	25	Uncomfortable	86	Pass
51	Existing	10	Sitting	15	Strolling	57	Pass
	Phase 1	10	Sitting	16	Strolling	62	Pass
	Phase 1, 2	10	Sitting	16	Strolling	61	Pass
	Phase 1, 2, 3	12	Standing	19	Walking	73	Pass
	All Phases	12	Standing	19	Walking	73	Pass
52	Existing	8	Sitting	12	Standing	46	Pass
	Phase 1	9	Sitting	13	Standing	47	Pass
	Phase 1, 2	9	Sitting	13	Standing	48	Pass
	Phase 1, 2, 3	11	Standing	17	Strolling	58	Pass
	All Phases	11	Standing	17	Strolling	57	Pass
53	Existing	8	Sitting	10	Sitting	41	Pass
	Phase 1	9	Sitting	12	Standing	41	Pass
	Phase 1, 2	8	Sitting	12	Standing	44	Pass
	Phase 1, 2, 3	10	Sitting	14	Standing	59	Pass
	All Phases	9	Sitting	13	Standing	58	Pass
54	Existing	9	Sitting	13	Standing	57	Pass
	Phase 1	9	Sitting	14	Standing	65	Pass
	Phase 1, 2	9	Sitting	15	Strolling	63	Pass
	Phase 1, 2, 3	11	Standing	18	Walking	70	Pass
	All Phases	9	Sitting	16	Strolling	65	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
55	Existing	8	Sitting	13	Standing	54	Pass
	Phase 1	8	Sitting	13	Standing	61	Pass
	Phase 1, 2	8	Sitting	13	Standing	61	Pass
	Phase 1, 2, 3	11	Standing	18	Walking	64	Pass
	All Phases	10	Sitting	16	Strolling	61	Pass
56	Existing	12	Standing	17	Strolling	61	Pass
	Phase 1	11	Standing	16	Strolling	61	Pass
	Phase 1, 2	10	Sitting	16	Strolling	62	Pass
	Phase 1, 2, 3	14	Standing	19	Walking	67	Pass
	All Phases	11	Standing	15	Strolling	64	Pass
57	Existing	12	Standing	17	Strolling	66	Pass
	Phase 1	12	Standing	15	Strolling	65	Pass
	Phase 1, 2	11	Standing	14	Standing	66	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	63	Pass
	All Phases	11	Standing	15	Strolling	81	Pass
58	Existing	13	Standing	17	Strolling	64	Pass
	Phase 1	12	Standing	16	Strolling	63	Pass
	Phase 1, 2	11	Standing	15	Strolling	63	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	62	Pass
	All Phases	14	Standing	22	Uncomfortable	77	Pass
59	Existing	12	Standing	16	Strolling	61	Pass
	Phase 1	12	Standing	15	Strolling	60	Pass
	Phase 1, 2	10	Sitting	14	Standing	58	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	61	Pass
	All Phases	10	Sitting	14	Standing	56	Pass
60	Existing	11	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	56	Pass
	Phase 1, 2	10	Sitting	13	Standing	54	Pass
	Phase 1, 2, 3	11	Standing	16	Strolling	66	Pass
	All Phases	8	Sitting	12	Standing	49	Pass
61	Existing	13	Standing	17	Strolling	67	Pass
	Phase 1	12	Standing	16	Strolling	66	Pass
	Phase 1, 2	11	Standing	14	Standing	65	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	59	Pass
	All Phases	14	Standing	21	Uncomfortable	92	Exceeded
62	Existing	12	Standing	15	Strolling	68	Pass
	Phase 1	12	Standing	15	Strolling	66	Pass
	Phase 1, 2	11	Standing	14	Standing	64	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	62	Pass
	All Phases	12	Standing	15	Strolling	60	Pass
63	Existing	12	Standing	15	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	58	Pass
	Phase 1, 2	11	Standing	14	Standing	58	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	60	Pass
	All Phases	11	Standing	15	Strolling	65	Pass



**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>64</b>	Existing	12	Standing	16	Strolling	65	Pass
	Phase 1	12	Standing	15	Strolling	64	Pass
	Phase 1, 2	11	Standing	14	Standing	63	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	56	Pass
	All Phases	10	Sitting	15	Strolling	68	Pass
<b>65</b>	Existing	12	Standing	16	Strolling	64	Pass
	Phase 1	12	Standing	15	Strolling	64	Pass
	Phase 1, 2	11	Standing	14	Standing	64	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	59	Pass
	All Phases	11	Standing	16	Strolling	76	Pass
<b>66</b>	Existing	13	Standing	17	Strolling	60	Pass
	Phase 1	12	Standing	16	Strolling	59	Pass
	Phase 1, 2	11	Standing	15	Strolling	58	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	54	Pass
	All Phases	8	Sitting	13	Standing	66	Pass
<b>67</b>	Existing	14	Standing	19	Walking	65	Pass
	Phase 1	13	Standing	17	Strolling	64	Pass
	Phase 1, 2	13	Standing	16	Strolling	63	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	60	Pass
	All Phases	14	Standing	20	Walking	92	Exceeded
<b>68</b>	Existing	18	Walking	29	Uncomfortable	95	Exceeded
	Phase 1	18	Walking	26	Uncomfortable	88	Pass
	Phase 1, 2	17	Strolling	25	Uncomfortable	86	Pass
	Phase 1, 2, 3	15	Strolling	21	Uncomfortable	73	Pass
	All Phases	13	Standing	17	Strolling	62	Pass
<b>69</b>	Existing	15	Strolling	21	Uncomfortable	70	Pass
	Phase 1	15	Strolling	21	Uncomfortable	74	Pass
	Phase 1, 2	15	Strolling	21	Uncomfortable	76	Pass
	Phase 1, 2, 3	15	Strolling	22	Uncomfortable	85	Pass
	All Phases	16	Strolling	22	Uncomfortable	94	Exceeded
<b>70</b>	Existing	11	Standing	16	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	54	Pass
	Phase 1, 2	10	Sitting	14	Standing	53	Pass
	Phase 1, 2, 3	10	Sitting	14	Standing	55	Pass
	All Phases	12	Standing	19	Walking	78	Pass
<b>71</b>	Existing	11	Standing	14	Standing	52	Pass
	Phase 1	10	Sitting	14	Standing	51	Pass
	Phase 1, 2	10	Sitting	13	Standing	50	Pass
	Phase 1, 2, 3	9	Sitting	12	Standing	47	Pass
	All Phases	13	Standing	21	Uncomfortable	81	Pass
<b>72</b>	Existing	12	Standing	17	Strolling	62	Pass
	Phase 1	12	Standing	16	Strolling	61	Pass
	Phase 1, 2	11	Standing	15	Strolling	60	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	59	Pass
	All Phases	15	Strolling	23	Uncomfortable	93	Exceeded

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>73</b>	Existing	12	Standing	16	Strolling	57	Pass
	Phase 1	12	Standing	15	Strolling	56	Pass
	Phase 1, 2	10	Sitting	14	Standing	55	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	56	Pass
	All Phases	15	Strolling	24	Uncomfortable	96	Exceeded
<b>74</b>	Existing	11	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	54	Pass
	Phase 1, 2	10	Sitting	14	Standing	53	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	52	Pass
	All Phases	18	Walking	26	Uncomfortable	95	Exceeded
<b>75</b>	Existing	9	Sitting	12	Standing	47	Pass
	Phase 1	9	Sitting	12	Standing	46	Pass
	Phase 1, 2	8	Sitting	11	Standing	44	Pass
	Phase 1, 2, 3	6	Sitting	9	Sitting	40	Pass
	All Phases	13	Standing	19	Walking	72	Pass
<b>76</b>	Existing	11	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	55	Pass
	Phase 1, 2	10	Sitting	13	Standing	53	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	67	Pass
	All Phases	12	Standing	16	Strolling	74	Pass
<b>77</b>	Existing	10	Sitting	14	Standing	54	Pass
	Phase 1	11	Standing	14	Standing	54	Pass
	Phase 1, 2	10	Sitting	13	Standing	50	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	62	Pass
	All Phases	11	Standing	13	Standing	60	Pass
<b>78</b>	Existing	9	Sitting	14	Standing	61	Pass
	Phase 1	8	Sitting	13	Standing	56	Pass
	Phase 1, 2	8	Sitting	12	Standing	56	Pass
	Phase 1, 2, 3	8	Sitting	11	Standing	49	Pass
	All Phases	9	Sitting	12	Standing	52	Pass
<b>79</b>	Existing	15	Strolling	19	Walking	69	Pass
	Phase 1	15	Strolling	19	Walking	68	Pass
	Phase 1, 2	15	Strolling	19	Walking	69	Pass
	Phase 1, 2, 3	15	Strolling	19	Walking	71	Pass
	All Phases	14	Standing	19	Walking	72	Pass
<b>80</b>	Existing	9	Sitting	11	Standing	44	Pass
	Phase 1	9	Sitting	11	Standing	45	Pass
	Phase 1, 2	9	Sitting	11	Standing	42	Pass
	Phase 1, 2, 3	9	Sitting	12	Standing	51	Pass
	All Phases	10	Sitting	13	Standing	60	Pass
<b>81</b>	Existing	11	Standing	14	Standing	54	Pass
	Phase 1	11	Standing	13	Standing	54	Pass
	Phase 1, 2	11	Standing	14	Standing	52	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	55	Pass
	All Phases	9	Sitting	11	Standing	62	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>82</b>	Existing	12	Standing	16	Strolling	67	Pass
	Phase 1	12	Standing	16	Strolling	66	Pass
	Phase 1, 2	14	Standing	18	Walking	70	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	61	Pass
	All Phases	9	Sitting	12	Standing	47	Pass
<b>83</b>	Existing	11	Standing	15	Strolling	69	Pass
	Phase 1	11	Standing	14	Standing	69	Pass
	Phase 1, 2	13	Standing	16	Strolling	69	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	64	Pass
	All Phases	12	Standing	14	Standing	67	Pass
<b>84</b>	Existing	12	Standing	15	Strolling	67	Pass
	Phase 1	12	Standing	15	Strolling	66	Pass
	Phase 1, 2	14	Standing	17	Strolling	71	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	62	Pass
	All Phases	12	Standing	15	Strolling	58	Pass
<b>85</b>	Existing	11	Standing	14	Standing	57	Pass
	Phase 1	11	Standing	14	Standing	57	Pass
	Phase 1, 2	12	Standing	14	Standing	59	Pass
	Phase 1, 2, 3	11	Standing	13	Standing	61	Pass
	All Phases	11	Standing	14	Standing	63	Pass
<b>86</b>	Existing	11	Standing	15	Strolling	57	Pass
	Phase 1	11	Standing	15	Strolling	57	Pass
	Phase 1, 2	10	Sitting	13	Standing	64	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	59	Pass
	All Phases	13	Standing	16	Strolling	65	Pass
<b>87</b>	Existing	11	Standing	14	Standing	54	Pass
	Phase 1	11	Standing	14	Standing	55	Pass
	Phase 1, 2	10	Sitting	13	Standing	51	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	62	Pass
	All Phases	6	Sitting	9	Sitting	42	Pass
<b>88</b>	Existing	11	Standing	15	Strolling	54	Pass
	Phase 1	11	Standing	14	Standing	56	Pass
	Phase 1, 2	9	Sitting	11	Standing	48	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	56	Pass
	All Phases	10	Sitting	12	Standing	53	Pass
<b>89</b>	Existing	11	Standing	15	Strolling	55	Pass
	Phase 1	11	Standing	14	Standing	55	Pass
	Phase 1, 2	11	Standing	13	Standing	53	Pass
	Phase 1, 2, 3	12	Standing	14	Standing	63	Pass
	All Phases	10	Sitting	13	Standing	54	Pass
<b>90</b>	Existing	11	Standing	14	Standing	56	Pass
	Phase 1	11	Standing	14	Standing	56	Pass
	Phase 1, 2	11	Standing	13	Standing	55	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	65	Pass
	All Phases	9	Sitting	12	Standing	51	Pass



**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
91	Existing	12	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	56	Pass
	Phase 1, 2	11	Standing	13	Standing	54	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	60	Pass
	All Phases	7	Sitting	10	Sitting	46	Pass
92	Existing	12	Standing	15	Strolling	60	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	11	Standing	13	Standing	58	Pass
	Phase 1, 2, 3	11	Standing	13	Standing	59	Pass
	All Phases	7	Sitting	10	Sitting	54	Pass
93	Existing	12	Standing	15	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	57	Pass
	Phase 1, 2	10	Sitting	13	Standing	56	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	67	Pass
	All Phases	11	Standing	16	Strolling	74	Pass
94	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	12	Standing	15	Strolling	58	Pass
	Phase 1, 2	11	Standing	14	Standing	58	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	56	Pass
	All Phases	11	Standing	13	Standing	66	Pass
95	Existing	12	Standing	16	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	57	Pass
	Phase 1, 2	11	Standing	14	Standing	56	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	58	Pass
	All Phases	7	Sitting	10	Sitting	45	Pass
96	Existing	12	Standing	16	Strolling	57	Pass
	Phase 1	12	Standing	15	Strolling	56	Pass
	Phase 1, 2	10	Sitting	14	Standing	56	Pass
	Phase 1, 2, 3	9	Sitting	13	Standing	55	Pass
	All Phases	8	Sitting	11	Standing	51	Pass
97	Existing	11	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	14	Standing	56	Pass
	Phase 1, 2	10	Sitting	13	Standing	55	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	60	Pass
	All Phases	9	Sitting	12	Standing	56	Pass
98	Existing	11	Standing	15	Strolling	56	Pass
	Phase 1	11	Standing	15	Strolling	56	Pass
	Phase 1, 2	11	Standing	13	Standing	54	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	66	Pass
	All Phases	10	Sitting	13	Standing	59	Pass
99	Existing	11	Standing	15	Strolling	55	Pass
	Phase 1	12	Standing	15	Strolling	56	Pass
	Phase 1, 2	10	Sitting	13	Standing	65	Pass
	Phase 1, 2, 3	9	Sitting	11	Standing	48	Pass
	All Phases	8	Sitting	11	Standing	52	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>100</b>	Existing	12	Standing	15	Strolling	58	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	7	Sitting	9	Sitting	41	Pass
	Phase 1, 2, 3	8	Sitting	10	Sitting	49	Pass
	All Phases	7	Sitting	10	Sitting	49	Pass
<b>101</b>	Existing	12	Standing	15	Strolling	59	Pass
	Phase 1	12	Standing	16	Strolling	59	Pass
	Phase 1, 2	9	Sitting	10	Sitting	42	Pass
	Phase 1, 2, 3	7	Sitting	8	Sitting	36	Pass
	All Phases	7	Sitting	9	Sitting	34	Pass
<b>102</b>	Existing	12	Standing	15	Strolling	60	Pass
	Phase 1	13	Standing	16	Strolling	60	Pass
	Phase 1, 2	13	Standing	14	Standing	59	Pass
	Phase 1, 2, 3	11	Standing	11	Standing	51	Pass
	All Phases	10	Sitting	12	Standing	55	Pass
<b>103</b>	Existing	13	Standing	16	Strolling	59	Pass
	Phase 1	13	Standing	16	Strolling	60	Pass
	Phase 1, 2	8	Sitting	10	Sitting	43	Pass
	Phase 1, 2, 3	8	Sitting	10	Sitting	46	Pass
	All Phases	7	Sitting	9	Sitting	44	Pass
<b>104</b>	Existing	13	Standing	16	Strolling	59	Pass
	Phase 1	13	Standing	16	Strolling	61	Pass
	Phase 1, 2	6	Sitting	7	Sitting	34	Pass
	Phase 1, 2, 3	5	Sitting	6	Sitting	26	Pass
	All Phases	4	Sitting	7	Sitting	26	Pass
<b>105</b>	Existing	12	Standing	15	Strolling	60	Pass
	Phase 1	12	Standing	15	Strolling	60	Pass
	Phase 1, 2	8	Sitting	10	Sitting	45	Pass
	Phase 1, 2, 3	7	Sitting	10	Sitting	42	Pass
	All Phases	7	Sitting	8	Sitting	40	Pass
<b>106</b>	Existing	11	Standing	14	Standing	57	Pass
	Phase 1	11	Standing	14	Standing	58	Pass
	Phase 1, 2	13	Standing	15	Strolling	65	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	62	Pass
	All Phases	10	Sitting	12	Standing	58	Pass
<b>107</b>	Existing	11	Standing	14	Standing	56	Pass
	Phase 1	11	Standing	14	Standing	58	Pass
	Phase 1, 2	13	Standing	16	Strolling	74	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	70	Pass
	All Phases	11	Standing	13	Standing	64	Pass
<b>108</b>	Existing	10	Sitting	12	Standing	49	Pass
	Phase 1	10	Sitting	13	Standing	51	Pass
	Phase 1, 2	13	Standing	17	Strolling	63	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	58	Pass
	All Phases	10	Sitting	12	Standing	55	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>109</b>	Existing	14	Standing	16	Strolling	67	Pass
	Phase 1	14	Standing	16	Strolling	68	Pass
	Phase 1, 2	14	Standing	17	Strolling	65	Pass
	Phase 1, 2, 3	13	Standing	16	Strolling	60	Pass
	All Phases	13	Standing	15	Strolling	60	Pass
<b>110</b>	Existing	13	Standing	16	Strolling	69	Pass
	Phase 1	14	Standing	17	Strolling	69	Pass
	Phase 1, 2	14	Standing	18	Walking	74	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	66	Pass
	All Phases	12	Standing	14	Standing	57	Pass
<b>111</b>	Existing	14	Standing	16	Strolling	67	Pass
	Phase 1	14	Standing	17	Strolling	67	Pass
	Phase 1, 2	14	Standing	17	Strolling	73	Pass
	Phase 1, 2, 3	13	Standing	16	Strolling	67	Pass
	All Phases	11	Standing	14	Standing	57	Pass
<b>112</b>	Existing	13	Standing	15	Strolling	67	Pass
	Phase 1	13	Standing	16	Strolling	66	Pass
	Phase 1, 2	12	Standing	16	Strolling	69	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	64	Pass
	All Phases	10	Sitting	12	Standing	63	Pass
<b>113</b>	Existing	13	Standing	16	Strolling	63	Pass
	Phase 1	13	Standing	16	Strolling	63	Pass
	Phase 1, 2	9	Sitting	12	Standing	50	Pass
	Phase 1, 2, 3	9	Sitting	11	Standing	48	Pass
	All Phases	8	Sitting	9	Sitting	42	Pass
<b>114</b>	Existing	13	Standing	17	Strolling	66	Pass
	Phase 1	14	Standing	17	Strolling	66	Pass
	Phase 1, 2	13	Standing	17	Strolling	74	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	73	Pass
	All Phases	10	Sitting	14	Standing	59	Pass
<b>115</b>	Existing	12	Standing	14	Standing	61	Pass
	Phase 1	13	Standing	15	Strolling	62	Pass
	Phase 1, 2	14	Standing	17	Strolling	67	Pass
	Phase 1, 2, 3	13	Standing	16	Strolling	62	Pass
	All Phases	10	Sitting	13	Standing	56	Pass
<b>116</b>	Existing	12	Standing	15	Strolling	65	Pass
	Phase 1	13	Standing	16	Strolling	66	Pass
	Phase 1, 2	13	Standing	17	Strolling	71	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	66	Pass
	All Phases	13	Standing	15	Strolling	58	Pass
<b>117</b>	Existing	13	Standing	16	Strolling	66	Pass
	Phase 1	14	Standing	17	Strolling	66	Pass
	Phase 1, 2	13	Standing	18	Walking	77	Pass
	Phase 1, 2, 3	12	Standing	17	Strolling	73	Pass
	All Phases	13	Standing	17	Strolling	73	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>118</b>	Existing	13	Standing	16	Strolling	65	Pass
	Phase 1	13	Standing	17	Strolling	64	Pass
	Phase 1, 2	12	Standing	16	Strolling	73	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	63	Pass
	All Phases	14	Standing	18	Walking	72	Pass
<b>119</b>	Existing	13	Standing	17	Strolling	66	Pass
	Phase 1	13	Standing	17	Strolling	65	Pass
	Phase 1, 2	13	Standing	17	Strolling	75	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	67	Pass
	All Phases	13	Standing	17	Strolling	67	Pass
<b>120</b>	Existing	13	Standing	17	Strolling	68	Pass
	Phase 1	14	Standing	18	Walking	69	Pass
	Phase 1, 2	13	Standing	18	Walking	74	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	69	Pass
	All Phases	6	Sitting	8	Sitting	40	Pass
<b>121</b>	Existing	13	Standing	17	Strolling	67	Pass
	Phase 1	13	Standing	17	Strolling	69	Pass
	Phase 1, 2	12	Standing	16	Strolling	71	Pass
	Phase 1, 2, 3	11	Standing	16	Strolling	66	Pass
	All Phases	9	Sitting	11	Standing	45	Pass
<b>122</b>	Existing	12	Standing	16	Strolling	62	Pass
	Phase 1	13	Standing	17	Strolling	61	Pass
	Phase 1, 2	8	Sitting	11	Standing	57	Pass
	Phase 1, 2, 3	8	Sitting	10	Sitting	55	Pass
	All Phases	10	Sitting	14	Standing	56	Pass
<b>123</b>	Existing	12	Standing	16	Strolling	61	Pass
	Phase 1	13	Standing	17	Strolling	61	Pass
	Phase 1, 2	10	Sitting	12	Standing	54	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	52	Pass
	All Phases	11	Standing	16	Strolling	58	Pass
<b>124</b>	Existing	13	Standing	16	Strolling	63	Pass
	Phase 1	13	Standing	17	Strolling	63	Pass
	Phase 1, 2	12	Standing	15	Strolling	67	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	61	Pass
	All Phases	9	Sitting	14	Standing	60	Pass
<b>125</b>	Existing	12	Standing	16	Strolling	59	Pass
	Phase 1	12	Standing	16	Strolling	64	Pass
	Phase 1, 2	12	Standing	16	Strolling	59	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	62	Pass
	All Phases	10	Sitting	15	Strolling	69	Pass
<b>126</b>	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	12	Standing	16	Strolling	61	Pass
	Phase 1, 2	12	Standing	16	Strolling	59	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	62	Pass
	All Phases	11	Standing	14	Standing	54	Pass



**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
127	Existing	12	Standing	16	Strolling	61	Pass
	Phase 1	13	Standing	16	Strolling	61	Pass
	Phase 1, 2	12	Standing	14	Standing	72	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	67	Pass
	All Phases	7	Sitting	10	Sitting	44	Pass
128	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	12	Standing	16	Strolling	60	Pass
	Phase 1, 2	13	Standing	17	Strolling	70	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	66	Pass
	All Phases	9	Sitting	13	Standing	50	Pass
129	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	13	Standing	17	Strolling	63	Pass
	Phase 1, 2, 3	12	Standing	16	Strolling	65	Pass
	All Phases	9	Sitting	12	Standing	46	Pass
130	Existing	12	Standing	15	Strolling	59	Pass
	Phase 1	11	Standing	13	Standing	59	Pass
	Phase 1, 2	13	Standing	16	Strolling	62	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	63	Pass
	All Phases	7	Sitting	9	Sitting	39	Pass
131	Existing	12	Standing	15	Strolling	58	Pass
	Phase 1	9	Sitting	12	Standing	52	Pass
	Phase 1, 2	10	Sitting	14	Standing	58	Pass
	Phase 1, 2, 3	9	Sitting	12	Standing	51	Pass
	All Phases	10	Sitting	12	Standing	57	Pass
132	Existing	12	Standing	15	Strolling	60	Pass
	Phase 1	12	Standing	19	Walking	83	Pass
	Phase 1, 2	11	Standing	19	Walking	87	Pass
	Phase 1, 2, 3	10	Sitting	18	Walking	80	Pass
	All Phases	11	Standing	18	Walking	79	Pass
133	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	11	Standing	16	Strolling	64	Pass
	Phase 1, 2	13	Standing	18	Walking	62	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	55	Pass
	All Phases	10	Sitting	13	Standing	53	Pass
134	Existing	12	Standing	17	Strolling	66	Pass
	Phase 1	13	Standing	17	Strolling	63	Pass
	Phase 1, 2	14	Standing	19	Walking	66	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	59	Pass
	All Phases	11	Standing	14	Standing	60	Pass
135	Existing	11	Standing	16	Strolling	62	Pass
	Phase 1	11	Standing	16	Strolling	62	Pass
	Phase 1, 2	13	Standing	17	Strolling	62	Pass
	Phase 1, 2, 3	13	Standing	16	Strolling	58	Pass
	All Phases	11	Standing	15	Strolling	55	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>136</b>	Existing	11	Standing	17	Strolling	63	Pass
	Phase 1	11	Standing	14	Standing	62	Pass
	Phase 1, 2	10	Sitting	13	Standing	54	Pass
	Phase 1, 2, 3	12	Standing	17	Strolling	74	Pass
	All Phases	12	Standing	17	Strolling	74	Pass
<b>137</b>	Existing	12	Standing	17	Strolling	61	Pass
	Phase 1	11	Standing	14	Standing	64	Pass
	Phase 1, 2	10	Sitting	13	Standing	57	Pass
	Phase 1, 2, 3	12	Standing	18	Walking	68	Pass
	All Phases	12	Standing	17	Strolling	69	Pass
<b>138</b>	Existing	12	Standing	18	Walking	64	Pass
	Phase 1	11	Standing	16	Strolling	75	Pass
	Phase 1, 2	11	Standing	14	Standing	70	Pass
	Phase 1, 2, 3	14	Standing	24	Uncomfortable	89	Pass
	All Phases	14	Standing	24	Uncomfortable	88	Pass
<b>139</b>	Existing	12	Standing	17	Strolling	67	Pass
	Phase 1	12	Standing	15	Strolling	56	Pass
	Phase 1, 2	11	Standing	14	Standing	56	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	52	Pass
	All Phases	11	Standing	14	Standing	52	Pass
<b>140</b>	Existing	11	Standing	16	Strolling	62	Pass
	Phase 1	14	Standing	19	Walking	68	Pass
	Phase 1, 2	13	Standing	18	Walking	70	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	58	Pass
	All Phases	11	Standing	15	Strolling	56	Pass
<b>141</b>	Existing	12	Standing	15	Strolling	58	Pass
	Phase 1	16	Strolling	24	Uncomfortable	83	Pass
	Phase 1, 2	11	Standing	20	Walking	83	Pass
	Phase 1, 2, 3	11	Standing	18	Walking	77	Pass
	All Phases	13	Standing	19	Walking	73	Pass
<b>142</b>	Existing	12	Standing	16	Strolling	62	Pass
	Phase 1	12	Standing	20	Walking	74	Pass
	Phase 1, 2	13	Standing	20	Walking	74	Pass
	Phase 1, 2, 3	11	Standing	17	Strolling	69	Pass
	All Phases	10	Sitting	16	Strolling	67	Pass
<b>143</b>	Existing	12	Standing	16	Strolling	68	Pass
	Phase 1	13	Standing	19	Walking	68	Pass
	Phase 1, 2	13	Standing	19	Walking	70	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	60	Pass
	All Phases	11	Standing	15	Strolling	59	Pass
<b>144</b>	Existing	12	Standing	16	Strolling	68	Pass
	Phase 1	14	Standing	24	Uncomfortable	88	Pass
	Phase 1, 2	13	Standing	23	Uncomfortable	88	Pass
	Phase 1, 2, 3	12	Standing	21	Uncomfortable	82	Pass
	All Phases	12	Standing	21	Uncomfortable	79	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>145</b>	Existing	11	Standing	15	Strolling	64	Pass
	Phase 1	14	Standing	20	Walking	78	Pass
	Phase 1, 2	14	Standing	20	Walking	79	Pass
	Phase 1, 2, 3	13	Standing	19	Walking	76	Pass
	All Phases	13	Standing	19	Walking	74	Pass
<b>146</b>	Existing	11	Standing	15	Strolling	60	Pass
	Phase 1	15	Strolling	20	Walking	77	Pass
	Phase 1, 2	16	Strolling	21	Uncomfortable	79	Pass
	Phase 1, 2, 3	14	Standing	19	Walking	76	Pass
	All Phases	14	Standing	19	Walking	75	Pass
<b>147</b>	Existing	12	Standing	15	Strolling	70	Pass
	Phase 1	14	Standing	17	Strolling	68	Pass
	Phase 1, 2	14	Standing	18	Walking	69	Pass
	Phase 1, 2, 3	14	Standing	17	Strolling	66	Pass
	All Phases	13	Standing	17	Strolling	66	Pass
<b>148</b>	Existing	12	Standing	16	Strolling	66	Pass
	Phase 1	13	Standing	18	Walking	74	Pass
	Phase 1, 2	13	Standing	18	Walking	75	Pass
	Phase 1, 2, 3	13	Standing	18	Walking	74	Pass
	All Phases	13	Standing	18	Walking	73	Pass
<b>149</b>	Existing	13	Standing	16	Strolling	64	Pass
	Phase 1	12	Standing	16	Strolling	58	Pass
	Phase 1, 2	12	Standing	16	Strolling	59	Pass
	Phase 1, 2, 3	12	Standing	15	Strolling	57	Pass
	All Phases	11	Standing	14	Standing	54	Pass
<b>150</b>	Existing	12	Standing	16	Strolling	77	Pass
	Phase 1	14	Standing	20	Walking	80	Pass
	Phase 1, 2	13	Standing	20	Walking	80	Pass
	Phase 1, 2, 3	14	Standing	20	Walking	77	Pass
	All Phases	11	Standing	17	Strolling	63	Pass
<b>151</b>	Existing	9	Sitting	13	Standing	53	Pass
	Phase 1	10	Sitting	14	Standing	60	Pass
	Phase 1, 2	10	Sitting	14	Standing	61	Pass
	Phase 1, 2, 3	10	Sitting	15	Strolling	62	Pass
	All Phases	11	Standing	16	Strolling	57	Pass
<b>152</b>	Existing	18	Walking	20	Walking	81	Pass
	Phase 1	18	Walking	20	Walking	84	Pass
	Phase 1, 2	16	Strolling	18	Walking	70	Pass
	Phase 1, 2, 3	16	Strolling	18	Walking	65	Pass
	All Phases	15	Strolling	18	Walking	67	Pass
<b>153</b>	Existing	17	Strolling	21	Uncomfortable	73	Pass
	Phase 1	16	Strolling	20	Walking	71	Pass
	Phase 1, 2	14	Standing	18	Walking	69	Pass
	Phase 1, 2, 3	14	Standing	19	Walking	70	Pass
	All Phases	12	Standing	19	Walking	85	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>154</b>	Existing	16	Strolling	20	Walking	74	Pass
	Phase 1	16	Strolling	19	Walking	77	Pass
	Phase 1, 2	15	Strolling	19	Walking	78	Pass
	Phase 1, 2, 3	16	Strolling	20	Walking	77	Pass
	All Phases	13	Standing	19	Walking	77	Pass
<b>155</b>	Existing	17	Strolling	19	Walking	80	Pass
	Phase 1	16	Strolling	19	Walking	77	Pass
	Phase 1, 2	16	Strolling	19	Walking	77	Pass
	Phase 1, 2, 3	15	Strolling	20	Walking	79	Pass
	All Phases	17	Strolling	21	Uncomfortable	76	Pass
<b>156</b>	Existing	12	Standing	16	Strolling	77	Pass
	Phase 1	12	Standing	17	Strolling	78	Pass
	Phase 1, 2	13	Standing	17	Strolling	79	Pass
	Phase 1, 2, 3	13	Standing	18	Walking	79	Pass
	All Phases	11	Standing	15	Strolling	73	Pass
<b>157</b>	Existing	12	Standing	16	Strolling	77	Pass
	Phase 1	12	Standing	16	Strolling	76	Pass
	Phase 1, 2	13	Standing	17	Strolling	77	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	76	Pass
	All Phases	10	Sitting	14	Standing	62	Pass
<b>158</b>	Existing	12	Standing	16	Strolling	70	Pass
	Phase 1	13	Standing	18	Walking	72	Pass
	Phase 1, 2	13	Standing	18	Walking	75	Pass
	Phase 1, 2, 3	13	Standing	18	Walking	72	Pass
	All Phases	10	Sitting	15	Strolling	59	Pass
<b>159</b>	Existing	12	Standing	15	Strolling	60	Pass
	Phase 1	14	Standing	20	Walking	73	Pass
	Phase 1, 2	13	Standing	19	Walking	73	Pass
	Phase 1, 2, 3	13	Standing	19	Walking	70	Pass
	All Phases	12	Standing	16	Strolling	71	Pass
<b>160</b>	Existing	12	Standing	16	Strolling	60	Pass
	Phase 1	15	Strolling	21	Uncomfortable	78	Pass
	Phase 1, 2	14	Standing	20	Walking	78	Pass
	Phase 1, 2, 3	14	Standing	20	Walking	74	Pass
	All Phases	12	Standing	16	Strolling	65	Pass
<b>161</b>	Existing	12	Standing	15	Strolling	60	Pass
	Phase 1	12	Standing	16	Strolling	84	Pass
	Phase 1, 2	12	Standing	16	Strolling	82	Pass
	Phase 1, 2, 3	11	Standing	14	Standing	77	Pass
	All Phases	9	Sitting	14	Standing	71	Pass
<b>162</b>	Existing	12	Standing	15	Strolling	61	Pass
	Phase 1	12	Standing	15	Strolling	73	Pass
	Phase 1, 2	11	Standing	14	Standing	68	Pass
	Phase 1, 2, 3	10	Sitting	13	Standing	65	Pass
	All Phases	9	Sitting	13	Standing	50	Pass



**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>163</b>	Existing	13	Standing	17	Strolling	72	Pass
	Phase 1	13	Standing	17	Strolling	72	Pass
	Phase 1, 2	13	Standing	17	Strolling	74	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	72	Pass
	All Phases	10	Sitting	14	Standing	75	Pass
<b>164</b>	Existing	13	Standing	16	Strolling	71	Pass
	Phase 1	13	Standing	17	Strolling	74	Pass
	Phase 1, 2	13	Standing	17	Strolling	74	Pass
	Phase 1, 2, 3	14	Standing	18	Walking	75	Pass
	All Phases	13	Standing	18	Walking	84	Pass
<b>165</b>	Existing	15	Strolling	17	Strolling	67	Pass
	Phase 1	15	Strolling	18	Walking	67	Pass
	Phase 1, 2	14	Standing	17	Strolling	66	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	65	Pass
	All Phases	13	Standing	14	Standing	66	Pass
<b>166</b>	Existing	13	Standing	18	Walking	72	Pass
	Phase 1	13	Standing	18	Walking	72	Pass
	Phase 1, 2	12	Standing	16	Strolling	61	Pass
	Phase 1, 2, 3	11	Standing	15	Strolling	57	Pass
	All Phases	14	Standing	17	Strolling	67	Pass
<b>167</b>	Existing	12	Standing	14	Standing	60	Pass
	Phase 1	12	Standing	15	Strolling	59	Pass
	Phase 1, 2	14	Standing	16	Strolling	68	Pass
	Phase 1, 2, 3	13	Standing	15	Strolling	62	Pass
	All Phases	13	Standing	16	Strolling	67	Pass
<b>168</b>	Existing	9	Sitting	14	Standing	60	Pass
	Phase 1	14	Standing	19	Walking	66	Pass
	Phase 1, 2	14	Standing	19	Walking	67	Pass
	Phase 1, 2, 3	14	Standing	19	Walking	65	Pass
	All Phases	14	Standing	18	Walking	64	Pass
<b>169</b>	Existing	10	Sitting	17	Strolling	81	Pass
	Phase 1	13	Standing	18	Walking	74	Pass
	Phase 1, 2	13	Standing	18	Walking	77	Pass
	Phase 1, 2, 3	13	Standing	18	Walking	73	Pass
	All Phases	13	Standing	18	Walking	68	Pass
<b>170</b>	Existing	12	Standing	17	Strolling	70	Pass
	Phase 1	14	Standing	19	Walking	69	Pass
	Phase 1, 2	14	Standing	19	Walking	70	Pass
	Phase 1, 2, 3	13	Standing	19	Walking	67	Pass
	All Phases	13	Standing	19	Walking	66	Pass
<b>171</b>	Existing	10	Sitting	15	Strolling	57	Pass
	Phase 1	14	Standing	17	Strolling	68	Pass
	Phase 1, 2	13	Standing	17	Strolling	68	Pass
	Phase 1, 2, 3	13	Standing	17	Strolling	66	Pass
	All Phases	13	Standing	17	Strolling	66	Pass

**Table 1: Pedestrian Wind Comfort and Safety Conditions**

Location	Configuration	Wind Comfort				Wind Safety	
		Summer		Winter		Annual	
		Speed (km/h)	Rating	Speed (km/h)	Rating	Speed (km/h)	Rating
<b>172</b>	Existing	7	Sitting	8	Sitting	35	Pass
	Phase 1	7	Sitting	10	Sitting	39	Pass
	Phase 1, 2	7	Sitting	10	Sitting	40	Pass
	Phase 1, 2, 3	8	Sitting	10	Sitting	39	Pass
	All Phases	7	Sitting	10	Sitting	39	Pass
<b>173</b>	Existing	7	Sitting	10	Sitting	42	Pass
	Phase 1	11	Standing	15	Strolling	84	Pass
	Phase 1, 2	11	Standing	15	Strolling	81	Pass
	Phase 1, 2, 3	11	Standing	16	Strolling	82	Pass
	All Phases	11	Standing	16	Strolling	82	Pass
<b>174</b>	Existing	12	Standing	19	Walking	66	Pass
	Phase 1	-	-	-	-	-	-
	Phase 1, 2	-	-	-	-	-	-
	Phase 1, 2, 3	-	-	-	-	-	-
	All Phases	-	-	-	-	-	-
<b>175</b>	Existing	12	Standing	19	Walking	65	Pass
	Phase 1	14	Standing	20	Walking	72	Pass
	Phase 1, 2	12	Standing	19	Walking	70	Pass
	Phase 1, 2, 3	11	Standing	17	Strolling	65	Pass
	All Phases	11	Standing	17	Strolling	63	Pass
<b>176</b>	Existing	12	Standing	18	Walking	63	Pass
	Phase 1	13	Standing	20	Walking	69	Pass
	Phase 1, 2	12	Standing	19	Walking	67	Pass
	Phase 1, 2, 3	10	Sitting	14	Standing	58	Pass
	All Phases	10	Sitting	14	Standing	56	Pass

Season	Months	Hours	Comfort Speed (km/h)	Safety Speed (km/h)
<b>Summer</b>	May - October	6:00 - 23:00 for comfort	(20% Seasonal Exceedance)	(0.1% Annual Exceedance)
<b>Winter</b>	November - April	6:00 - 23:00 for comfort	≤ 10 Sitting	≤ 90 Pass
<b>Annual</b>	January - December	0:00 - 23:00 for safety	11 - 14 Standing	> 90 Exceeded
<b>Configurations</b>				
<b>Existing</b>	Existing site and surroundings		15 - 17 Strolling	
<b>Phase 1</b>	Phase 1 with existing and future surroundings		18 - 20 Walking	
<b>Phase 1, 2</b>	Phase 1 & 2 with existing and future surroundings		> 20 Uncomfortable	
<b>Phase 1, 2, 3</b>	Phase 1, 2 & 3 with existing and future surroundings			
<b>All Phases</b>	All phases with existing and future surroundings			