

166 & 186 FERGUSON AVENUE NORTH & 203 ROBERT STREET

HAMILTON, ON

PEDESTRIAN WIND STUDY

RWDI # 2206155

February 21, 2025

SUBMITTED TO

Carmen Jandu, MCIP RPP
Senior Associate – Manager, Planning
carmen.jandu@arcadis.com

Arcadis
Suite 200, East Wing
360 James Street N
Hamilton, Ontario, L8L 1H5
T: 905.546.1010 x63116

SUBMITTED BY

Senwen Yang, Ph.D.
Technical Coordinator
Senwen.Yang@rwdi.com

Hanqing Wu, Ph.D., P.Eng.
Senior Technical Director | Principal
Hanqing.Wu@rwdi.com

Scott Bell
Project manager
Scott.Bell@rwdi.com

RWDI
600 Southgate Drive
Guelph, Ontario N1G 4P6
T: 519.823.1311



EXECUTIVE SUMMARY

RWDI was retained to conduct a pedestrian wind assessment for the proposed 166 & 186 Ferguson Avenue North & 203 Robert Street in the City of Hamilton (Image 1). The preliminary study is being conducted to support an OPA and ZBLA application and that study is based on the conceptual site plan. It is anticipated that a final wind assessment will be completed as a part of the ultimate building design. The assessment was based on the wind-tunnel testing conducted for the proposed development site under the Existing and Proposed configurations (Image 2). The results were analysed using the regional wind climate records (Image 3) and evaluated against the criteria specified in the Pedestrian Level Wind Study Terms of Reference Guide (March 2018) prepared by the City of Hamilton. The criteria description is appended to this report to assist with interpretation of the results. The predicted wind conditions are presented in Figures 1A-1 through 3B-2, and Table 1, and are summarized as follows:

- **Existing Configuration:** All pedestrian areas around the project site meet the wind safety criterion. Wind speeds are rated as suitable for standing or sitting in summer, while winter conditions are comfortable for walking or better.
- **Proposed Configuration:** Most pedestrian areas at grade meet the wind safety requirement, except for a few isolated spots at building corners or between towers. Summer wind conditions are predicted to be suitable for strolling or better in general, while winter mean wind speeds increase to walking or uncomfortable levels at locations between towers or near building corners.
- **Above-Grade Amenities:** Annual results show that most locations meet wind safety criterion, with a few exceptions. Wind speeds are comfortable for sitting or standing at most test locations in the summer, when these areas are typically in use. Elevated wind speeds are predicted around tower corners or between towers, especially in the winter.

While referring to the Pedestrian Wind Criteria description that follows, we encourage the design team to review the results and assess them against the intended pedestrian usage at specific locations. If there are locations where improved conditions are desired, the RWDI team is prepared to discuss and suggest conceptual wind control strategies. Additional commentary regarding background on wind flow patterns, wind comfort levels, and any further recommendations for wind control will be presented within the final report.

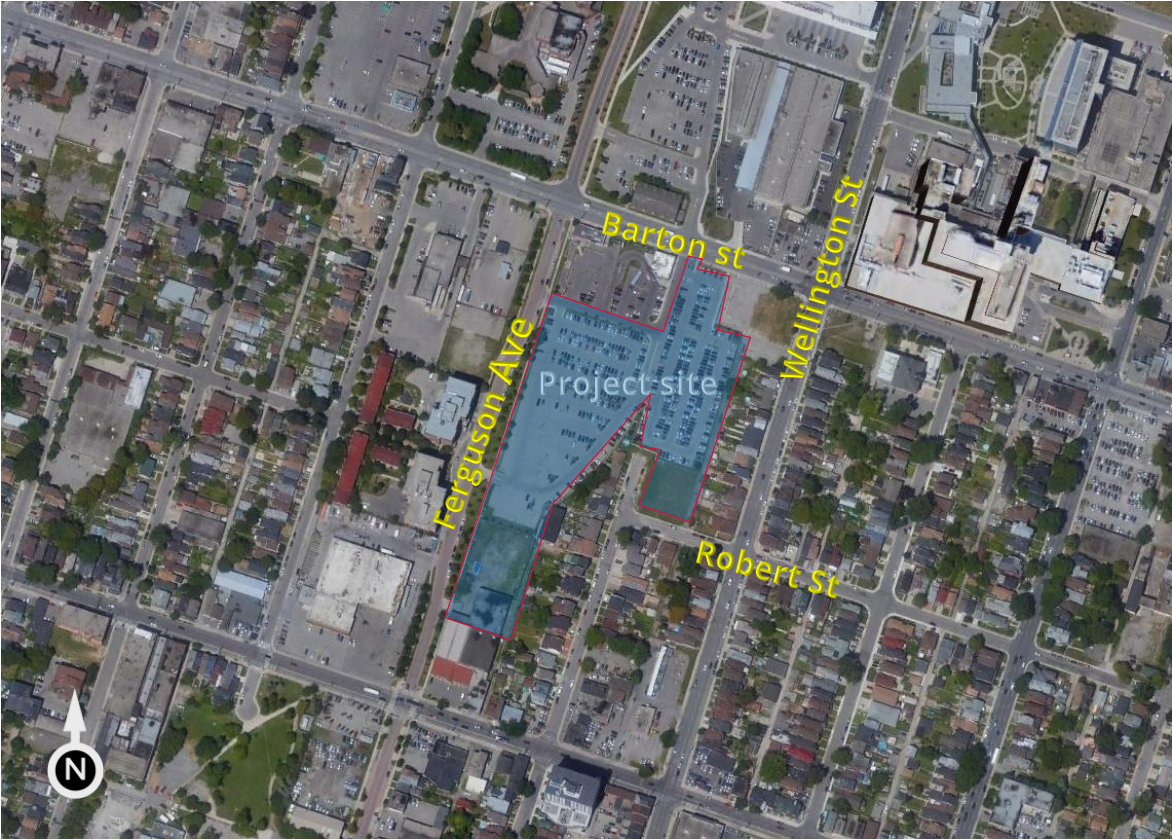


Image 1: Aerial View of Site and Surroundings (Photo Credit: Google™ Earth)

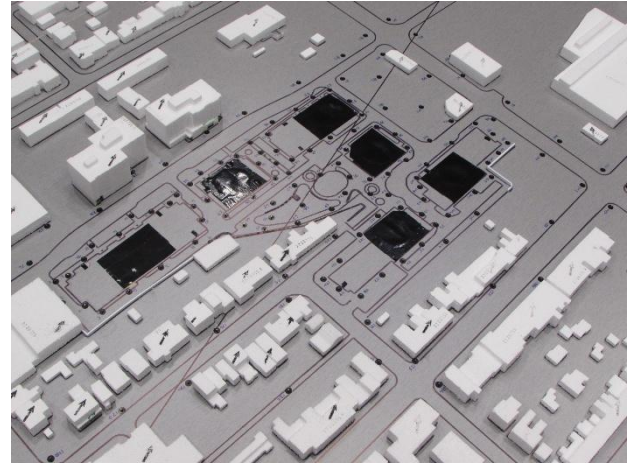
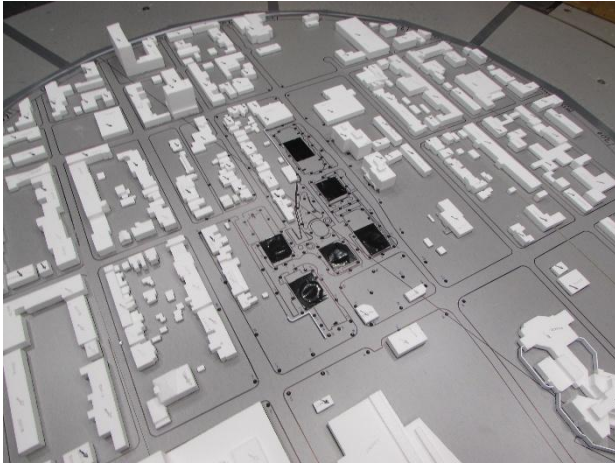


Image 2A: Wind Tunnel Study Model – Existing Configuration

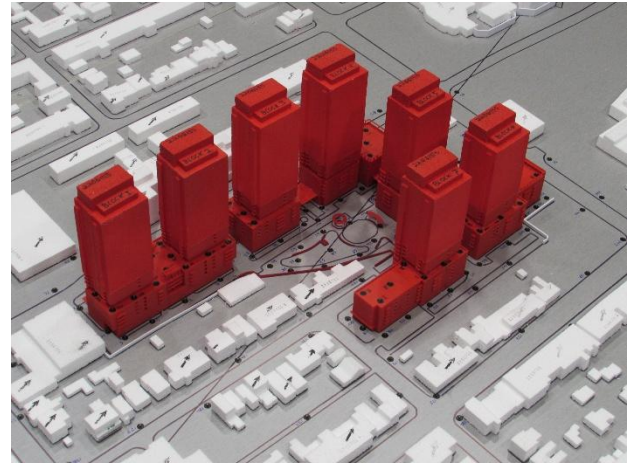
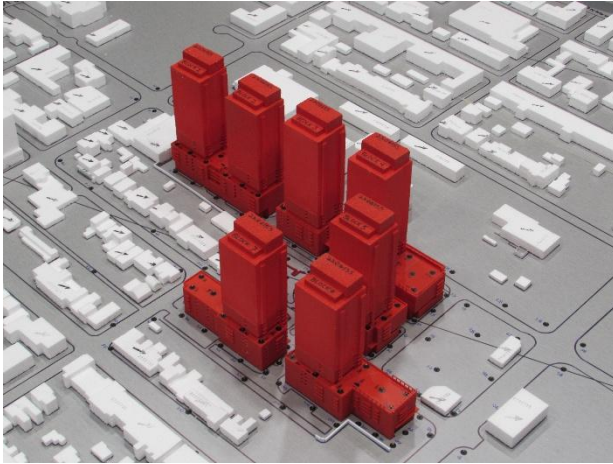


Image 2B: Wind Tunnel Study Model – Proposed Configuration



RWDI Pedestrian Wind Criteria

The criteria specified in the Pedestrian Level Wind Study Terms of Reference Guide (March 2018) prepared by the City of Hamilton are used in the current study and are presented below. The criteria consider pedestrian comfort (pertaining to common wind speeds conducive to different levels of human activity) and safety (pertaining to infrequent but strong gusts that could affect a person's footing).

Comfort Category	GEM Speed (km/h)	Description
Sitting	≤ 10	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 14	Gentle breezes suitable for main building entrances, bus stops, and other places where pedestrians may linger
Strolling	≤ 17	Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park
Walking	≤ 20	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 20	Strong winds of this magnitude are considered a nuisance for all pedestrian activities, and wind mitigation is typically recommended
<p>Notes:</p> <p>(1) Gust Equivalent Mean (GEM) Speed = max (Mean Speed, Gust Speed/1.85) and Gust Speed = Mean Speed + 3*RMS Speed</p> <p>(2) Wind conditions are considered to have met a criterion if the predicted GEM speeds are within the respective thresholds for at least 80% of the time in each season</p> <p>(3) Comfort calculations are applied to each season and based on wind events recorded between 6:00 and 23:00</p>		
Safety Criterion	Gust Speed (km/h)	Description
Exceeded	> 90	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is typically required.
<p>Notes:</p> <p>Based on an annual exceedance of 9 hours or 0.1% of the time for 24 hours a day</p>		



Statement of Limitations

This report entitled “20250214 RWDI 2206155 DRF 166 & 186 Ferguson Avenue North & 203 Robert Street” was prepared by Rowan Williams Davies & Irwin Inc. (“RWDI”) for IBI Group (“Client”). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein (“Project”). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

Design Assumptions

RWDI confirms that the pedestrian wind assessment (the “**Assessment**”) discussed herein was performed by RWDI in accordance with generally accepted professional standards at the time when the Assessment was performed and in the location of the Project. No other representations, warranties, or guarantees are made with respect to the accuracy or completeness of the information, findings, recommendations, or conclusions contained in this Report. This report is not a legal opinion regarding compliance with applicable laws.

The findings and recommendations set out in this report are based on the following information disclosed to RWDI. Drawings and information listed below were received from IBI Group and used to construct the scale model of the proposed 166 & 186 Ferguson Avenue North & 203 Robert Street (“**Project Data**”)

File Name	File Type	Date Received (dd/mm/yyyy)
136464SP-2025-01-28	PDF	31/01/2025
B&F Site Plan- 2025-01-28	CAD	28/01/2025

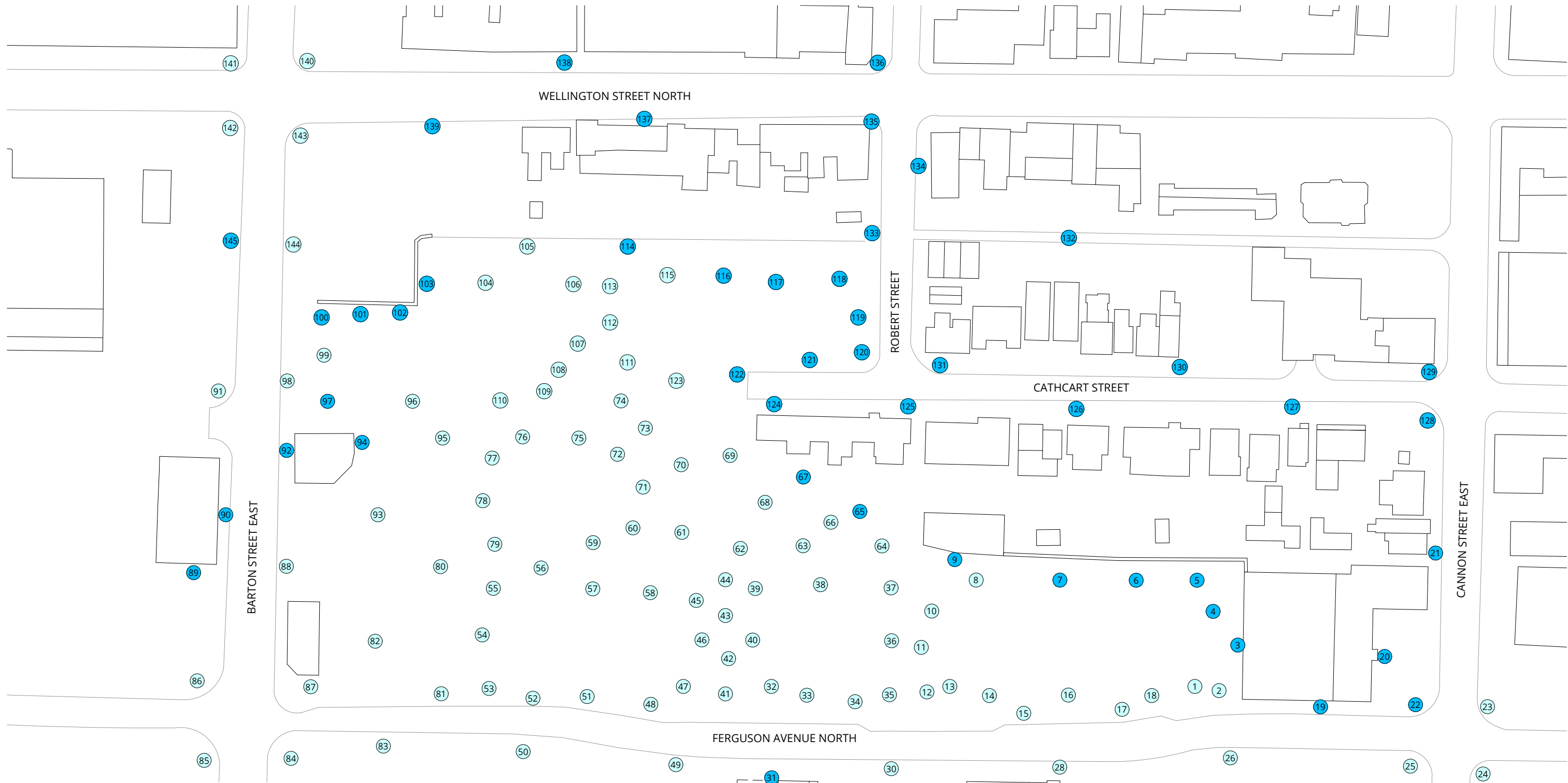


The recommendations and conclusions are based on the assumption that the Project Data and Climate Data are accurate and complete. RWDI assumes no responsibility for any inaccuracy or deficiency in information it has received from others. In addition, the recommendations and conclusions in this report are partially based on historical data and can be affected by a number of external factors, including but not limited to Project design, quality of materials and construction, site conditions, meteorological events, and climate change. As such, the conclusions and recommendations contained in this report do not list every possible outcome.

The opinions in this report can only be relied upon to the extent that the Project Data and Project Specific Conditions have not changed. Any change in the Project Data or Project Specific Conditions not reflected in this report can impact and/or alter the recommendations and conclusions in this report. Therefore, it is incumbent upon the Client and/or any other third party reviewing the recommendations and conclusions in this report to contact RWDI in the event of any change in the Project Data and Project Specific Conditions in order to determine whether any such change(s) may impact the assumptions upon which the recommendations and conclusions were made.

A large decorative graphic on the left side of the page. It features a blue triangular shape at the top left, a white curved line separating it from a large grey circular area, and a white curved line separating the grey area from the rest of the page.

FIGURES

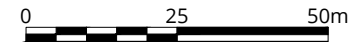


LEGEND:

COMFORT CATEGORIES:

- Sitting — ●
- Standing — ●
- Strolling — ●
- Walking — ●
- Uncomfortable — ●

○ Grade Level Sensor



Pedestrian Wind Comfort Conditions
 Existing Configuration
 Summer (May to October, 6:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

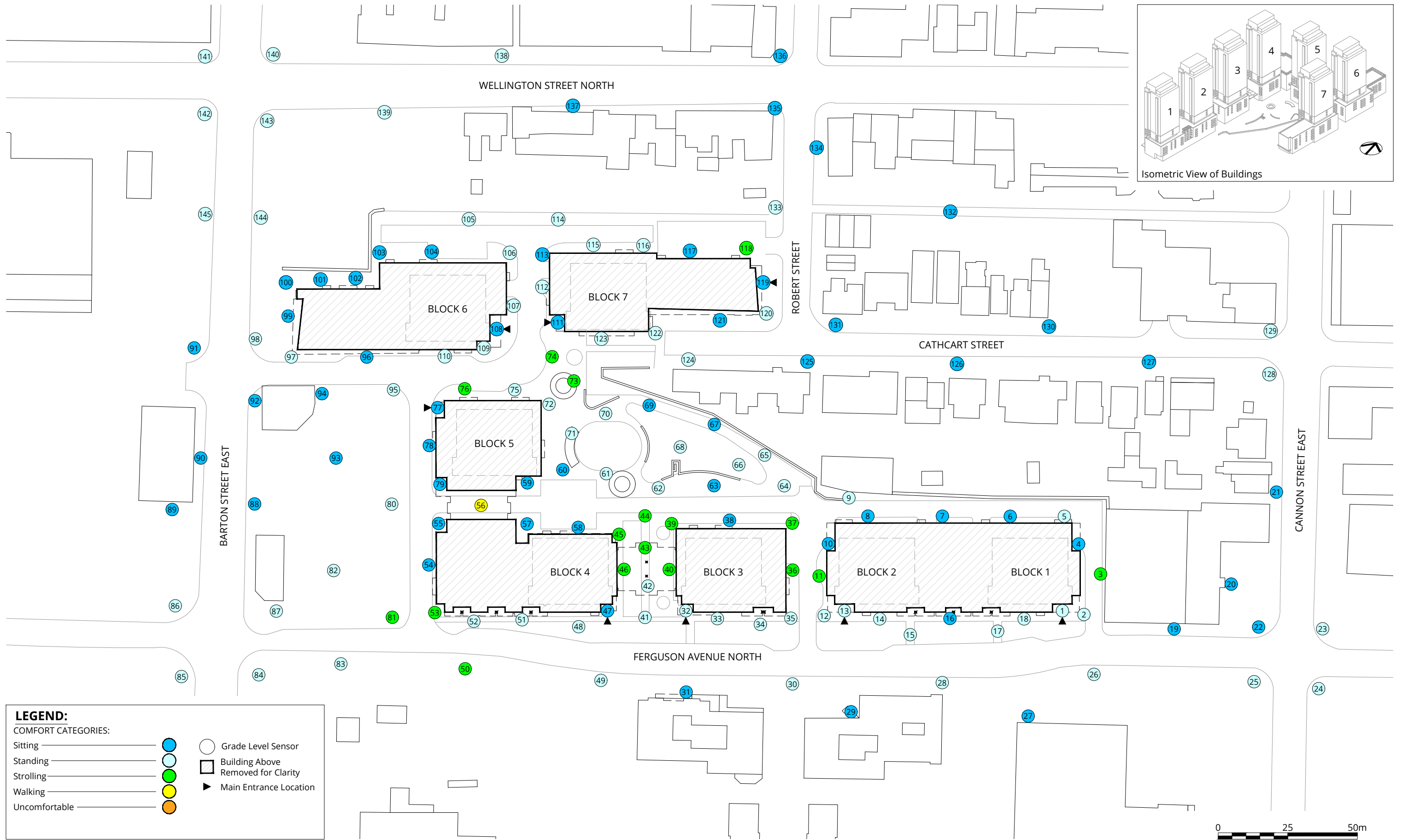
Project North True North

Drawn by: GRE Figure: 1A-1

Approx. Scale: 1:1250

Date Revised: Feb. 14, 2025

Project #2206155



LEGEND:

COMFORT CATEGORIES:

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

- (White) Grade Level Sensor
- (Hatched) Building Above Removed for Clarity
- ▶ (Black) Main Entrance Location

Pedestrian Wind Comfort Conditions
 Proposed Configuration
 Summer (May to October, 6:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

Project North True North

Drawn by: GRE Figure: 1B-1
 Approx. Scale: 1:1250
 Date Revised: Feb. 14, 2025

Project #2206155

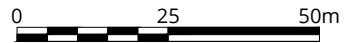


LEGEND:

COMFORT CATEGORIES:

- Sitting — ●
- Standing — ●
- Strolling — ●
- Walking — ●
- Uncomfortable — ●

- Terrace Level Sensor
- Building Above Removed for Clarity



Pedestrian Wind Comfort Conditions
 Proposed Configuration
 Summer (May to October, 6:00 to 23:00)

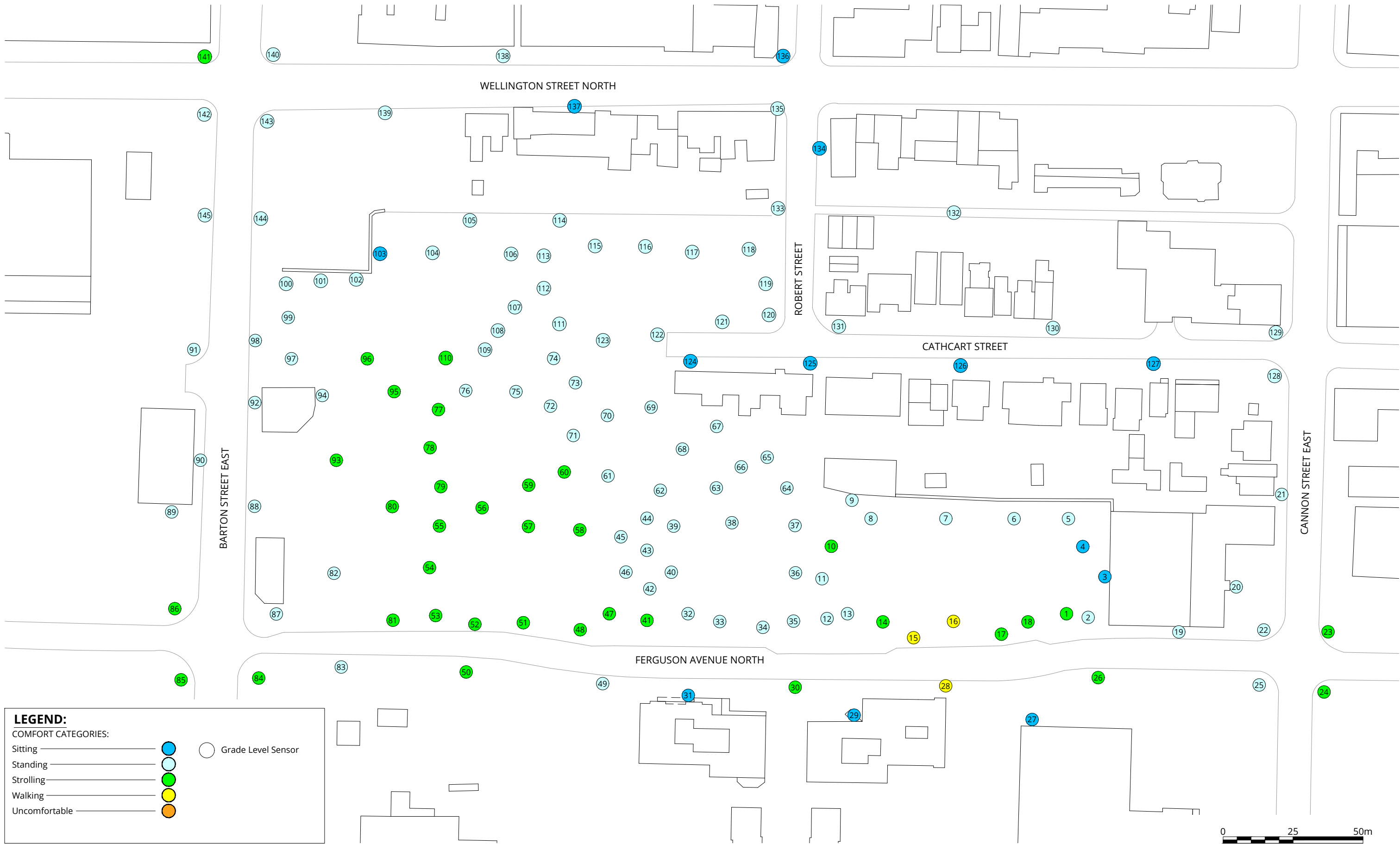
166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON



Drawn by: GRE Figure: 1B-2
 Approx. Scale: 1:1250
 Date Revised: Feb. 14, 2025



Project #2206155



LEGEND:

COMFORT CATEGORIES:

- Sitting — ●
- Standing — ●
- Strolling — ●
- Walking — ●
- Uncomfortable — ●

Grade Level Sensor

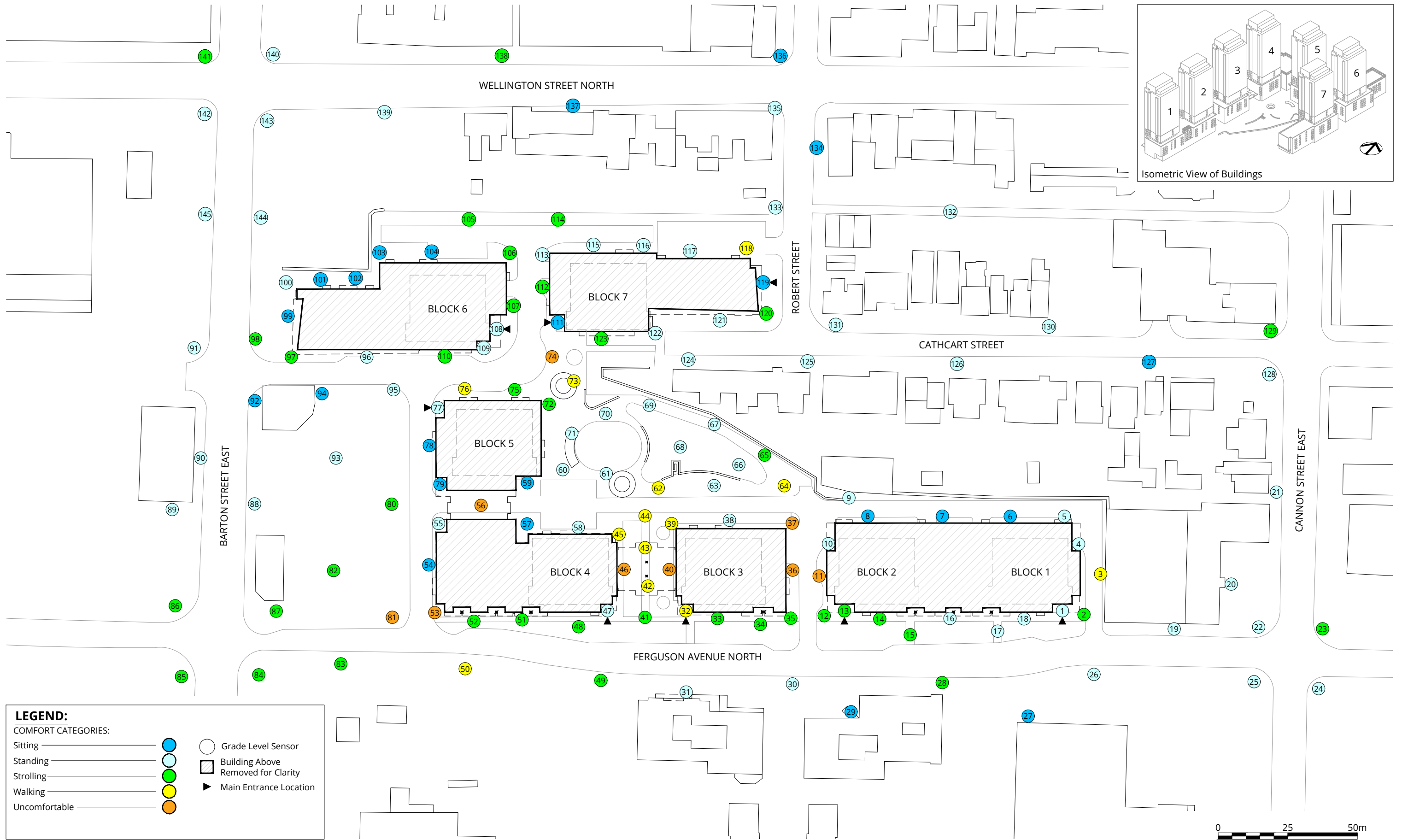
Pedestrian Wind Comfort Conditions
 Existing Configuration
 Winter (November to April, 6:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

Project North True North

Drawn by: GRE Figure: 2A-1
 Approx. Scale: 1:1250
 Date Revised: Feb. 14, 2025

Project #2206155



LEGEND:

COMFORT CATEGORIES:

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

- (White circle) Grade Level Sensor
- (Hatched rectangle) Building Above Removed for Clarity
- (Black triangle) Main Entrance Location

Pedestrian Wind Comfort Conditions
 Proposed Configuration
 Winter (November to April, 6:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

Project North True North

Drawn by: GRE Figure: 2B-1
 Approx. Scale: 1:1250
 Date Revised: Feb. 14, 2025

Project #2206155



LEGEND:

COMFORT CATEGORIES:

- Sitting ———— ●
- Standing ———— ●
- Strolling ———— ●
- Walking ———— ●
- Uncomfortable ———— ●

- Terrace Level Sensor
- Building Above Removed for Clarity

Pedestrian Wind Comfort Conditions
 Proposed Configuration
 Winter (November to April, 6:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

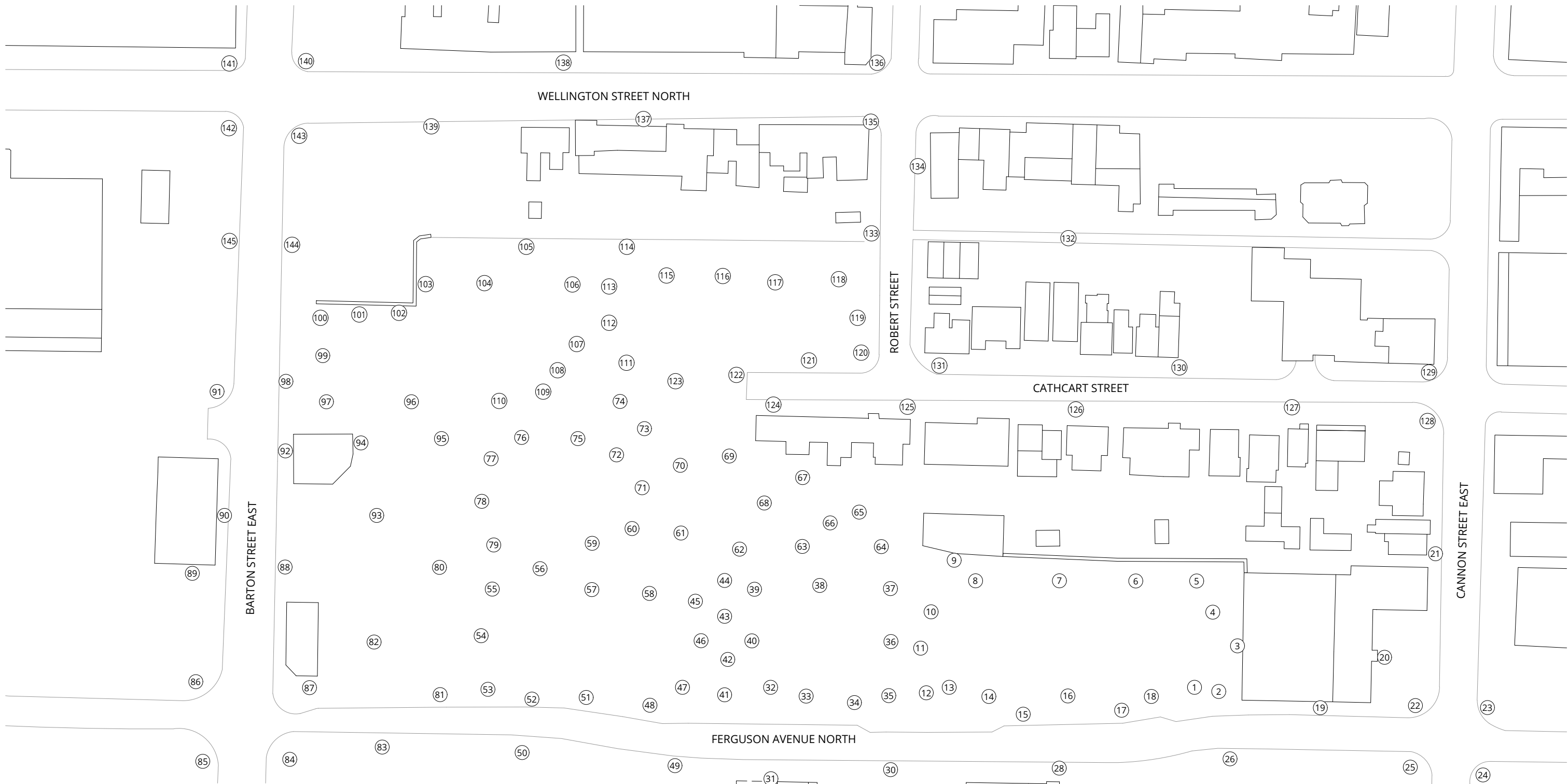
Project North True North



Drawn by: GRE Figure: 2B-2

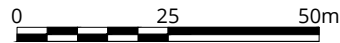
Approx. Scale: 1:1250

Date Revised: Feb. 14, 2025

Project #2206155



LEGEND:
 SAFETY CATEGORIES:
 Pass  Grade Level Sensor
 Exceeded 



Pedestrian Wind Safety Conditions
 Existing Configuration
 Annual (January to December, 0:00 to 23:00)

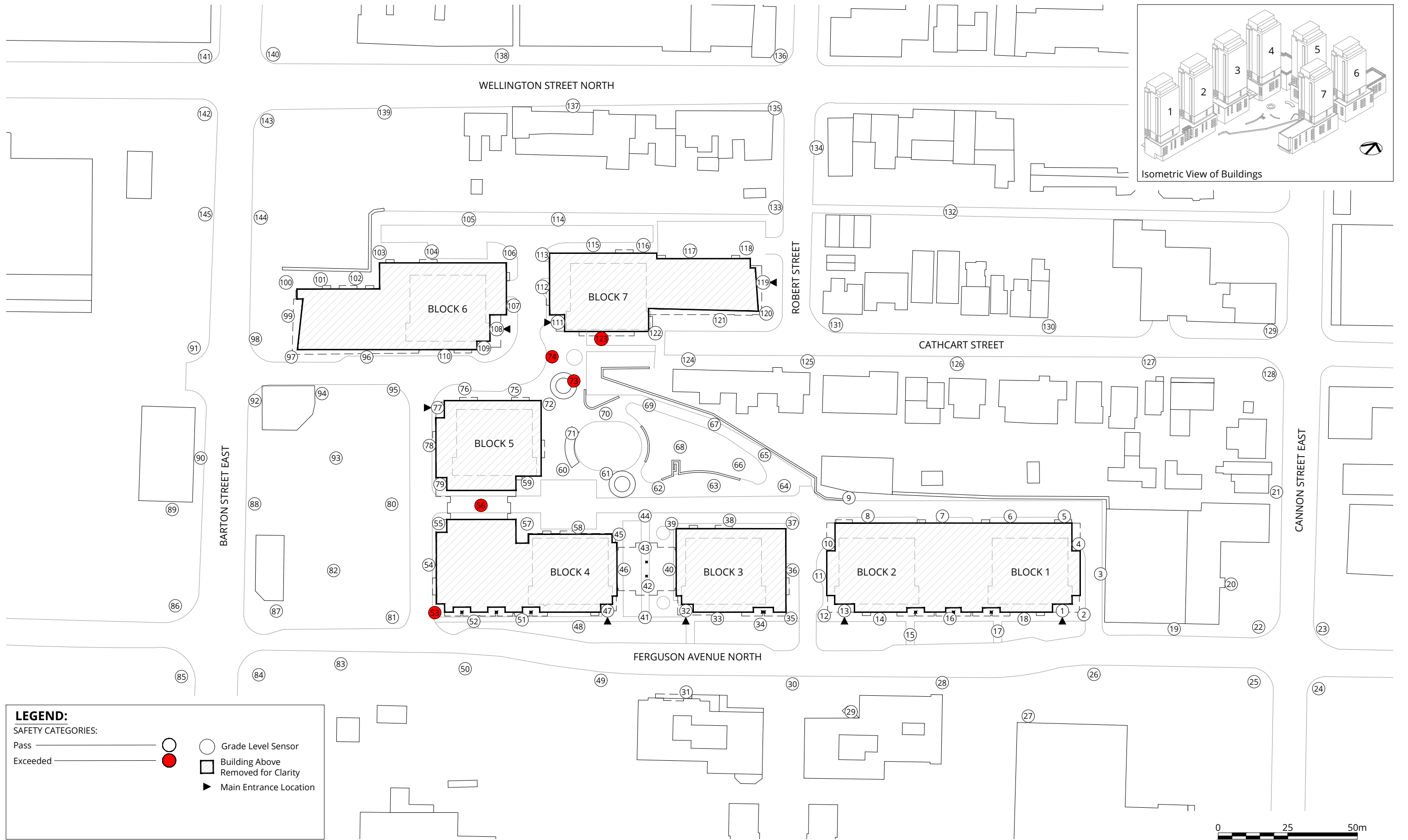
166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON



Drawn by: GRE	Figure: 3A-1
Approx. Scale: 1:1250	
Date Revised: Feb. 14, 2025	



Project #2206155



LEGEND:

SAFETY CATEGORIES:

- Pass
- Exceeded
- Grade Level Sensor
- Building Above Removed for Clarity
- Main Entrance Location

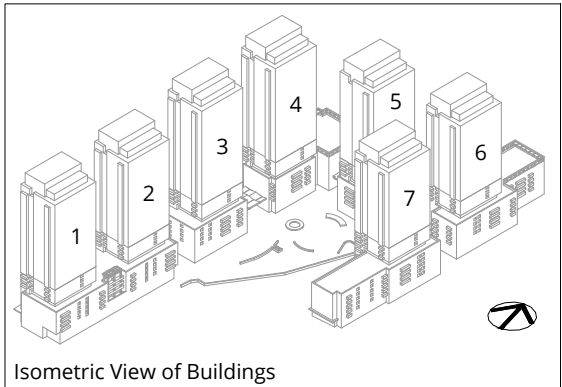
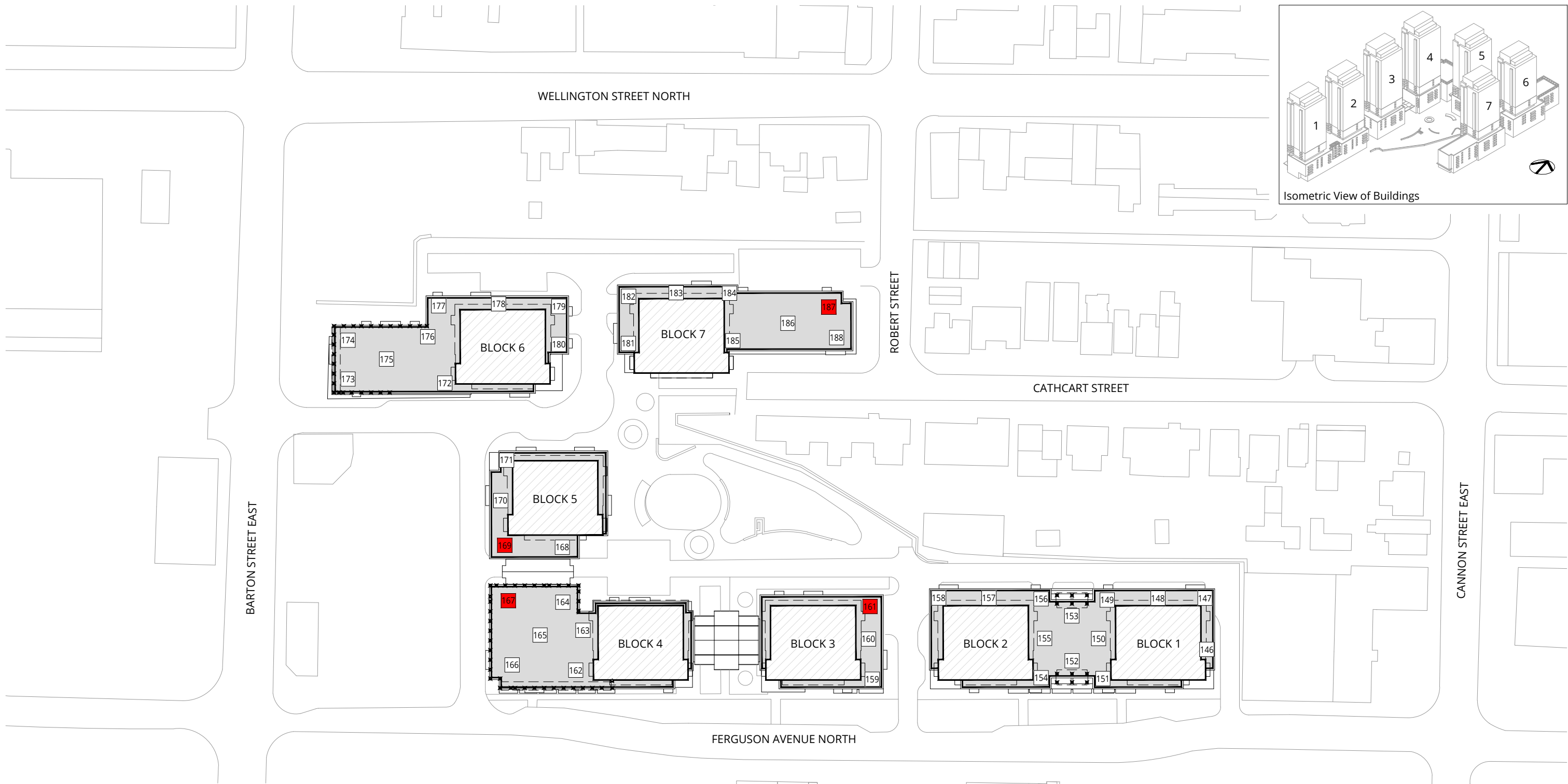
Pedestrian Wind Safety Conditions
 Proposed Configuration
 Annual (January to December, 0:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

Project North True North

Drawn by: GRE	Figure: 3B-1
Approx. Scale: 1:1250	
Date Revised: Feb. 14, 2025	

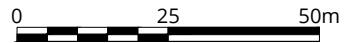
Project #2206155



LEGEND:

SAFETY CATEGORIES:

- Pass
- Exceeded
- Terrace Level Sensor
- Building Above Removed for Clarity



Pedestrian Wind Safety Conditions
 Proposed Configuration
 Annual (January to December, 0:00 to 23:00)

166 & 186 Ferguson Avenue North & 203 Robert Street - Hamilton, ON

Project North True North

Drawn by: GRE	Figure: 3B-2
Approx. Scale: 1:1250	
Date Revised: Feb. 14, 2025	

Project #2206155

A large decorative graphic on the left side of the page. It features a blue triangular shape in the top-left corner, a white curved line separating it from a large, light gray circular area that dominates the lower half of the page. The word 'TABLES' is centered within this gray area.

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
1	Existing	12	Standing	16	Strolling	60	Pass
	Proposed	11	Standing	14	Standing	55	Pass
2	Existing	11	Standing	14	Standing	55	Pass
	Proposed	12	Standing	15	Strolling	59	Pass
3	Existing	7	Sitting	9	Sitting	42	Pass
	Proposed	16	Strolling	20	Walking	86	Pass
4	Existing	8	Sitting	10	Sitting	41	Pass
	Proposed	9	Sitting	12	Standing	53	Pass
5	Existing	8	Sitting	11	Standing	45	Pass
	Proposed	11	Standing	13	Standing	67	Pass
6	Existing	9	Sitting	12	Standing	53	Pass
	Proposed	7	Sitting	9	Sitting	45	Pass
7	Existing	10	Sitting	13	Standing	58	Pass
	Proposed	7	Sitting	9	Sitting	38	Pass
8	Existing	11	Standing	14	Standing	59	Pass
	Proposed	7	Sitting	9	Sitting	42	Pass
9	Existing	10	Sitting	13	Standing	55	Pass
	Proposed	11	Standing	14	Standing	60	Pass
10	Existing	12	Standing	16	Strolling	67	Pass
	Proposed	10	Sitting	13	Standing	57	Pass
11	Existing	11	Standing	14	Standing	62	Pass
	Proposed	16	Strolling	23	Uncomfortable	81	Pass
12	Existing	11	Standing	14	Standing	59	Pass
	Proposed	13	Standing	17	Strolling	67	Pass
13	Existing	11	Standing	14	Standing	61	Pass
	Proposed	11	Standing	15	Strolling	65	Pass
14	Existing	12	Standing	15	Strolling	67	Pass
	Proposed	11	Standing	15	Strolling	62	Pass
15	Existing	14	Standing	18	Walking	78	Pass
	Proposed	13	Standing	17	Strolling	65	Pass
16	Existing	14	Standing	18	Walking	72	Pass
	Proposed	10	Sitting	13	Standing	53	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
17	Existing	12	Standing	15	Strolling	65	Pass
	Proposed	11	Standing	13	Standing	55	Pass
18	Existing	12	Standing	16	Strolling	61	Pass
	Proposed	11	Standing	13	Standing	55	Pass
19	Existing	9	Sitting	12	Standing	47	Pass
	Proposed	9	Sitting	12	Standing	53	Pass
20	Existing	8	Sitting	11	Standing	50	Pass
	Proposed	8	Sitting	11	Standing	47	Pass
21	Existing	8	Sitting	11	Standing	44	Pass
	Proposed	9	Sitting	12	Standing	50	Pass
22	Existing	10	Sitting	12	Standing	47	Pass
	Proposed	10	Sitting	13	Standing	52	Pass
23	Existing	11	Standing	15	Strolling	57	Pass
	Proposed	11	Standing	15	Strolling	62	Pass
24	Existing	12	Standing	15	Strolling	58	Pass
	Proposed	11	Standing	14	Standing	68	Pass
25	Existing	11	Standing	14	Standing	56	Pass
	Proposed	11	Standing	14	Standing	60	Pass
26	Existing	13	Standing	16	Strolling	66	Pass
	Proposed	11	Standing	14	Standing	61	Pass
27	Existing	8	Sitting	9	Sitting	61	Pass
	Proposed	8	Sitting	10	Sitting	40	Pass
28	Existing	14	Standing	18	Walking	76	Pass
	Proposed	12	Standing	15	Strolling	61	Pass
29	Existing	6	Sitting	7	Sitting	39	Pass
	Proposed	6	Sitting	8	Sitting	32	Pass
30	Existing	12	Standing	15	Strolling	60	Pass
	Proposed	11	Standing	14	Standing	57	Pass
31	Existing	9	Sitting	10	Sitting	64	Pass
	Proposed	9	Sitting	12	Standing	54	Pass
32	Existing	11	Standing	13	Standing	63	Pass
	Proposed	13	Standing	18	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
33	Existing	11	Standing	13	Standing	61	Pass
	Proposed	12	Standing	16	Strolling	67	Pass
34	Existing	11	Standing	14	Standing	61	Pass
	Proposed	12	Standing	15	Strolling	66	Pass
35	Existing	11	Standing	14	Standing	58	Pass
	Proposed	13	Standing	15	Strolling	61	Pass
36	Existing	11	Standing	14	Standing	61	Pass
	Proposed	16	Strolling	21	Uncomfortable	82	Pass
37	Existing	11	Standing	14	Standing	62	Pass
	Proposed	16	Strolling	22	Uncomfortable	84	Pass
38	Existing	11	Standing	14	Standing	61	Pass
	Proposed	10	Sitting	12	Standing	52	Pass
39	Existing	11	Standing	14	Standing	60	Pass
	Proposed	15	Strolling	20	Walking	73	Pass
40	Existing	11	Standing	14	Standing	58	Pass
	Proposed	17	Strolling	22	Uncomfortable	90	Pass
41	Existing	12	Standing	15	Strolling	62	Pass
	Proposed	12	Standing	15	Strolling	65	Pass
42	Existing	12	Standing	14	Standing	62	Pass
	Proposed	14	Standing	19	Walking	69	Pass
43	Existing	12	Standing	14	Standing	61	Pass
	Proposed	15	Strolling	20	Walking	68	Pass
44	Existing	12	Standing	14	Standing	62	Pass
	Proposed	15	Strolling	20	Walking	74	Pass
45	Existing	12	Standing	14	Standing	61	Pass
	Proposed	15	Strolling	20	Walking	78	Pass
46	Existing	12	Standing	14	Standing	62	Pass
	Proposed	17	Strolling	22	Uncomfortable	79	Pass
47	Existing	12	Standing	15	Strolling	61	Pass
	Proposed	10	Sitting	13	Standing	60	Pass
48	Existing	12	Standing	15	Strolling	61	Pass
	Proposed	13	Standing	16	Strolling	72	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
49	Existing	11	Standing	14	Standing	52	Pass
	Proposed	13	Standing	17	Strolling	78	Pass
50	Existing	12	Standing	15	Strolling	66	Pass
	Proposed	16	Strolling	20	Walking	83	Pass
51	Existing	12	Standing	15	Strolling	63	Pass
	Proposed	11	Standing	15	Strolling	65	Pass
52	Existing	12	Standing	15	Strolling	66	Pass
	Proposed	13	Standing	17	Strolling	67	Pass
53	Existing	12	Standing	15	Strolling	66	Pass
	Proposed	17	Strolling	22	Uncomfortable	97	Exceeded
54	Existing	12	Standing	15	Strolling	67	Pass
	Proposed	8	Sitting	10	Sitting	61	Pass
55	Existing	12	Standing	15	Strolling	65	Pass
	Proposed	9	Sitting	11	Standing	53	Pass
56	Existing	12	Standing	15	Strolling	66	Pass
	Proposed	18	Walking	21	Uncomfortable	105	Exceeded
57	Existing	12	Standing	15	Strolling	64	Pass
	Proposed	8	Sitting	9	Sitting	45	Pass
58	Existing	12	Standing	15	Strolling	63	Pass
	Proposed	9	Sitting	11	Standing	56	Pass
59	Existing	12	Standing	15	Strolling	63	Pass
	Proposed	8	Sitting	10	Sitting	46	Pass
60	Existing	12	Standing	15	Strolling	62	Pass
	Proposed	10	Sitting	12	Standing	51	Pass
61	Existing	12	Standing	14	Standing	60	Pass
	Proposed	11	Standing	14	Standing	57	Pass
62	Existing	12	Standing	14	Standing	61	Pass
	Proposed	14	Standing	19	Walking	75	Pass
63	Existing	11	Standing	14	Standing	61	Pass
	Proposed	10	Sitting	13	Standing	54	Pass
64	Existing	11	Standing	14	Standing	59	Pass
	Proposed	14	Standing	19	Walking	78	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
65	Existing	10	Sitting	13	Standing	56	Pass
	Proposed	12	Standing	16	Strolling	73	Pass
66	Existing	11	Standing	14	Standing	60	Pass
	Proposed	11	Standing	14	Standing	56	Pass
67	Existing	10	Sitting	13	Standing	56	Pass
	Proposed	10	Sitting	13	Standing	51	Pass
68	Existing	11	Standing	14	Standing	60	Pass
	Proposed	11	Standing	14	Standing	59	Pass
69	Existing	11	Standing	14	Standing	57	Pass
	Proposed	10	Sitting	13	Standing	69	Pass
70	Existing	11	Standing	14	Standing	58	Pass
	Proposed	11	Standing	14	Standing	65	Pass
71	Existing	12	Standing	14	Standing	60	Pass
	Proposed	11	Standing	14	Standing	64	Pass
72	Existing	12	Standing	14	Standing	58	Pass
	Proposed	13	Standing	16	Strolling	85	Pass
73	Existing	11	Standing	14	Standing	58	Pass
	Proposed	15	Strolling	18	Walking	92	Exceeded
74	Existing	11	Standing	14	Standing	59	Pass
	Proposed	17	Strolling	21	Uncomfortable	91	Exceeded
75	Existing	11	Standing	14	Standing	59	Pass
	Proposed	13	Standing	16	Strolling	72	Pass
76	Existing	11	Standing	14	Standing	58	Pass
	Proposed	17	Strolling	20	Walking	86	Pass
77	Existing	12	Standing	15	Strolling	58	Pass
	Proposed	10	Sitting	13	Standing	60	Pass
78	Existing	12	Standing	15	Strolling	64	Pass
	Proposed	8	Sitting	10	Sitting	42	Pass
79	Existing	12	Standing	15	Strolling	66	Pass
	Proposed	9	Sitting	10	Sitting	75	Pass
80	Existing	12	Standing	15	Strolling	66	Pass
	Proposed	12	Standing	15	Strolling	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
81	Existing	12	Standing	15	Strolling	65	Pass
	Proposed	16	Strolling	22	Uncomfortable	77	Pass
82	Existing	12	Standing	14	Standing	63	Pass
	Proposed	12	Standing	16	Strolling	66	Pass
83	Existing	11	Standing	14	Standing	60	Pass
	Proposed	13	Standing	17	Strolling	71	Pass
84	Existing	12	Standing	15	Strolling	67	Pass
	Proposed	12	Standing	15	Strolling	63	Pass
85	Existing	12	Standing	15	Strolling	69	Pass
	Proposed	12	Standing	16	Strolling	69	Pass
86	Existing	12	Standing	15	Strolling	71	Pass
	Proposed	12	Standing	16	Strolling	69	Pass
87	Existing	11	Standing	14	Standing	60	Pass
	Proposed	11	Standing	15	Strolling	69	Pass
88	Existing	11	Standing	13	Standing	57	Pass
	Proposed	9	Sitting	11	Standing	54	Pass
89	Existing	10	Sitting	13	Standing	51	Pass
	Proposed	9	Sitting	11	Standing	45	Pass
90	Existing	9	Sitting	12	Standing	52	Pass
	Proposed	10	Sitting	14	Standing	58	Pass
91	Existing	11	Standing	14	Standing	61	Pass
	Proposed	10	Sitting	13	Standing	54	Pass
92	Existing	9	Sitting	11	Standing	47	Pass
	Proposed	8	Sitting	10	Sitting	53	Pass
93	Existing	12	Standing	15	Strolling	63	Pass
	Proposed	10	Sitting	12	Standing	53	Pass
94	Existing	9	Sitting	12	Standing	50	Pass
	Proposed	8	Sitting	10	Sitting	44	Pass
95	Existing	11	Standing	15	Strolling	58	Pass
	Proposed	11	Standing	14	Standing	59	Pass
96	Existing	12	Standing	15	Strolling	61	Pass
	Proposed	9	Sitting	11	Standing	47	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
97	Existing	10	Sitting	13	Standing	59	Pass
	Proposed	12	Standing	15	Strolling	67	Pass
98	Existing	11	Standing	13	Standing	57	Pass
	Proposed	11	Standing	15	Strolling	63	Pass
99	Existing	11	Standing	14	Standing	57	Pass
	Proposed	8	Sitting	10	Sitting	45	Pass
100	Existing	10	Sitting	13	Standing	57	Pass
	Proposed	9	Sitting	11	Standing	55	Pass
101	Existing	9	Sitting	12	Standing	52	Pass
	Proposed	8	Sitting	10	Sitting	48	Pass
102	Existing	10	Sitting	12	Standing	53	Pass
	Proposed	6	Sitting	8	Sitting	45	Pass
103	Existing	8	Sitting	10	Sitting	42	Pass
	Proposed	8	Sitting	10	Sitting	61	Pass
104	Existing	11	Standing	13	Standing	51	Pass
	Proposed	9	Sitting	10	Sitting	58	Pass
105	Existing	11	Standing	13	Standing	53	Pass
	Proposed	13	Standing	15	Strolling	68	Pass
106	Existing	11	Standing	14	Standing	55	Pass
	Proposed	13	Standing	17	Strolling	71	Pass
107	Existing	11	Standing	14	Standing	56	Pass
	Proposed	12	Standing	16	Strolling	74	Pass
108	Existing	11	Standing	14	Standing	59	Pass
	Proposed	9	Sitting	11	Standing	45	Pass
109	Existing	11	Standing	14	Standing	58	Pass
	Proposed	11	Standing	14	Standing	58	Pass
110	Existing	12	Standing	15	Strolling	60	Pass
	Proposed	13	Standing	16	Strolling	67	Pass
111	Existing	11	Standing	14	Standing	56	Pass
	Proposed	7	Sitting	8	Sitting	38	Pass
112	Existing	11	Standing	14	Standing	57	Pass
	Proposed	14	Standing	16	Strolling	82	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
113	Existing	11	Standing	13	Standing	53	Pass
	Proposed	10	Sitting	13	Standing	60	Pass
114	Existing	10	Sitting	13	Standing	53	Pass
	Proposed	12	Standing	15	Strolling	72	Pass
115	Existing	11	Standing	13	Standing	54	Pass
	Proposed	11	Standing	13	Standing	70	Pass
116	Existing	10	Sitting	13	Standing	53	Pass
	Proposed	11	Standing	13	Standing	76	Pass
117	Existing	10	Sitting	13	Standing	53	Pass
	Proposed	9	Sitting	11	Standing	69	Pass
118	Existing	10	Sitting	12	Standing	51	Pass
	Proposed	15	Strolling	19	Walking	88	Pass
119	Existing	9	Sitting	11	Standing	50	Pass
	Proposed	8	Sitting	10	Sitting	45	Pass
120	Existing	9	Sitting	12	Standing	54	Pass
	Proposed	12	Standing	15	Strolling	65	Pass
121	Existing	10	Sitting	12	Standing	55	Pass
	Proposed	9	Sitting	11	Standing	45	Pass
122	Existing	10	Sitting	13	Standing	55	Pass
	Proposed	11	Standing	14	Standing	57	Pass
123	Existing	11	Standing	14	Standing	56	Pass
	Proposed	13	Standing	16	Strolling	92	Exceeded
124	Existing	9	Sitting	10	Sitting	56	Pass
	Proposed	11	Standing	14	Standing	58	Pass
125	Existing	8	Sitting	10	Sitting	51	Pass
	Proposed	9	Sitting	12	Standing	49	Pass
126	Existing	8	Sitting	10	Sitting	50	Pass
	Proposed	9	Sitting	12	Standing	52	Pass
127	Existing	7	Sitting	9	Sitting	46	Pass
	Proposed	8	Sitting	10	Sitting	59	Pass
128	Existing	10	Sitting	12	Standing	50	Pass
	Proposed	11	Standing	14	Standing	58	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
129	Existing	10	Sitting	14	Standing	68	Pass
	Proposed	11	Standing	15	Strolling	66	Pass
130	Existing	9	Sitting	11	Standing	42	Pass
	Proposed	9	Sitting	11	Standing	55	Pass
131	Existing	10	Sitting	13	Standing	58	Pass
	Proposed	10	Sitting	14	Standing	60	Pass
132	Existing	8	Sitting	11	Standing	46	Pass
	Proposed	9	Sitting	12	Standing	59	Pass
133	Existing	9	Sitting	11	Standing	45	Pass
	Proposed	11	Standing	14	Standing	74	Pass
134	Existing	8	Sitting	10	Sitting	39	Pass
	Proposed	8	Sitting	10	Sitting	47	Pass
135	Existing	9	Sitting	12	Standing	51	Pass
	Proposed	10	Sitting	14	Standing	56	Pass
136	Existing	8	Sitting	10	Sitting	43	Pass
	Proposed	7	Sitting	9	Sitting	40	Pass
137	Existing	7	Sitting	9	Sitting	37	Pass
	Proposed	8	Sitting	10	Sitting	47	Pass
138	Existing	10	Sitting	12	Standing	50	Pass
	Proposed	12	Standing	15	Strolling	64	Pass
139	Existing	10	Sitting	12	Standing	52	Pass
	Proposed	11	Standing	14	Standing	56	Pass
140	Existing	11	Standing	13	Standing	53	Pass
	Proposed	11	Standing	14	Standing	56	Pass
141	Existing	12	Standing	15	Strolling	59	Pass
	Proposed	12	Standing	15	Strolling	62	Pass
142	Existing	11	Standing	14	Standing	62	Pass
	Proposed	11	Standing	14	Standing	56	Pass
143	Existing	11	Standing	14	Standing	57	Pass
	Proposed	11	Standing	14	Standing	52	Pass
144	Existing	11	Standing	14	Standing	53	Pass
	Proposed	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
145	Existing	10	Sitting	12	Standing	47	Pass
	Proposed	11	Standing	14	Standing	56	Pass
146	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	11	Standing	48	Pass
147	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	21	Uncomfortable	83	Pass
148	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	9	Sitting	40	Pass
149	Existing	-	-	-	-	-	-
	Proposed	15	Strolling	19	Walking	69	Pass
150	Existing	-	-	-	-	-	-
	Proposed	14	Standing	19	Walking	82	Pass
151	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	22	Uncomfortable	86	Pass
152	Existing	-	-	-	-	-	-
	Proposed	14	Standing	17	Strolling	68	Pass
153	Existing	-	-	-	-	-	-
	Proposed	14	Standing	19	Walking	78	Pass
154	Existing	-	-	-	-	-	-
	Proposed	15	Strolling	19	Walking	81	Pass
155	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	21	Uncomfortable	82	Pass
156	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	21	Uncomfortable	72	Pass
157	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	9	Sitting	44	Pass
158	Existing	-	-	-	-	-	-
	Proposed	12	Standing	15	Strolling	69	Pass
159	Existing	-	-	-	-	-	-
	Proposed	15	Strolling	18	Walking	77	Pass
160	Existing	-	-	-	-	-	-
	Proposed	16	Strolling	20	Walking	82	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
161	Existing	-	-	-	-	-	-
	Proposed	17	Strolling	23	Uncomfortable	92	Exceeded
162	Existing	-	-	-	-	-	-
	Proposed	12	Standing	16	Strolling	69	Pass
163	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	10	Sitting	53	Pass
164	Existing	-	-	-	-	-	-
	Proposed	11	Standing	14	Standing	73	Pass
165	Existing	-	-	-	-	-	-
	Proposed	14	Standing	18	Walking	82	Pass
166	Existing	-	-	-	-	-	-
	Proposed	14	Standing	18	Walking	74	Pass
167	Existing	-	-	-	-	-	-
	Proposed	14	Standing	18	Walking	93	Exceeded
168	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	12	Standing	63	Pass
169	Existing	-	-	-	-	-	-
	Proposed	14	Standing	17	Strolling	103	Exceeded
170	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	13	Standing	65	Pass
171	Existing	-	-	-	-	-	-
	Proposed	13	Standing	16	Strolling	67	Pass
172	Existing	-	-	-	-	-	-
	Proposed	13	Standing	15	Strolling	75	Pass
173	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	9	Sitting	42	Pass
174	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	11	Standing	47	Pass
175	Existing	-	-	-	-	-	-
	Proposed	10	Sitting	13	Standing	59	Pass
176	Existing	-	-	-	-	-	-
	Proposed	11	Standing	14	Standing	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
177	Existing	-	-	-	-	-	-
	Proposed	13	Standing	15	Strolling	73	Pass
178	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	9	Sitting	56	Pass
179	Existing	-	-	-	-	-	-
	Proposed	12	Standing	15	Strolling	84	Pass
180	Existing	-	-	-	-	-	-
	Proposed	8	Sitting	10	Sitting	48	Pass
181	Existing	-	-	-	-	-	-
	Proposed	18	Walking	23	Uncomfortable	88	Pass
182	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	11	Standing	51	Pass
183	Existing	-	-	-	-	-	-
	Proposed	9	Sitting	10	Sitting	72	Pass
184	Existing	-	-	-	-	-	-
	Proposed	15	Strolling	17	Strolling	87	Pass
185	Existing	-	-	-	-	-	-
	Proposed	7	Sitting	9	Sitting	38	Pass
186	Existing	-	-	-	-	-	-
	Proposed	12	Standing	15	Strolling	86	Pass
187	Existing	-	-	-	-	-	-
	Proposed	12	Standing	15	Strolling	91	Exceeded
188	Existing	-	-	-	-	-	-
	Proposed	11	Standing	14	Standing	78	Pass

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