

# **ATTACHMENT 1: Wind Study**



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## Watermark Central Cambridge, Massachusetts

# Draft Final Report

## Pedestrian Wind Consultation

RWDI # 1601643  
June 21, 2016

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## 1. INTRODUCTION

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Rowan Williams Davies & Irwin Inc. (RWDI) was retained by SVP Development to consult on the pedestrian wind conditions for the proposed Watermark Central Project located at the intersection of Main Street and Massachusetts Avenue in Cambridge, Massachusetts. The purpose of the study was to assess the wind environment around the development in terms of pedestrian wind comfort and safety. The achievement of this objective included wind tunnel testing of a 1:300 scale model of the proposed development for the following configurations:

Configuration A - Existing: existing building with surroundings;

Configuration B - Proposed: existing surroundings with the proposed development; and,

The photographs in Figures 1a and 1b show the test model in RWDI's boundary-layer wind tunnel. The proposed development consists of a tower building, 192 ft high, with an accessible roof terrace, and a neighbouring building, mostly 70ft tall, with a single story portion, "Apollo". The test model was constructed using the design information and drawings listed in Appendix A as well as a number of canopies, trees and screens as agreed with the design team and can be seen in Figures 1b, 3b and 4b. This report summarizes the methodology of wind tunnel studies for pedestrian wind conditions, describes the RWDI pedestrian wind comfort and safety criteria, and presents the local wind conditions and their effects on pedestrians.

The placement of wind measurement locations was based on our experience and understanding of the pedestrian usage for this site, and reviewed by SVP Development.

## 2. SUMMARY OF WIND CONDITIONS

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The wind conditions around the proposed Watermark Central are discussed in detail in Section 5 of this report and may be summarized as follows:

- All locations, with or without the proposed development, are predicted to pass the wind criterion used to assess pedestrian wind safety.
- Appropriate wind comfort conditions are expected with the addition of the proposed development.
- The proposed development includes several positive design features for wind control such as canopies and windscreens. These features, in addition to the proposed landscaping, are predicted to bring about comfortable wind conditions around the development.

## 3. METHODOLOGY

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As shown in Figures 1a and 1b, the wind tunnel model included the proposed development and all relevant surrounding buildings and topography within a 1200 ft radius of the study site. The boundary-layer wind conditions beyond the modelled area were also simulated in RWDI's wind tunnel. The model



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was instrumented with 86 wind speed sensors to measure mean and gust wind speeds at a full-scale height of approximately 5 ft. These measurements were recorded for 36 equally incremented wind directions.

Wind statistics recorded at the Boston Logan International Airport between 1995 to 2015 were analyzed for the Summer (May through October) and Winter (November through April) seasons. Figure 2 graphically depicts the directional distributions of wind frequencies and speeds for the two seasons. Winds from the easterly, southwesterly and west-northwesterly directions tend to be the most frequent throughout the year. Strong winds of a mean speed greater than 20 mph measured at the airport (at an anemometer height of 30 ft) occur more often in the winter (11.5%) than in the summer (4.2%).

Wind statistics from the Boston Logan International Airport were combined with the wind tunnel data in order to predict the frequency of occurrence of full-scale wind speeds. The full-scale wind predictions were then compared with the RWDI criteria for pedestrian comfort and safety.

## 4. EXPLANATION OF CRITERIA

The RWDI pedestrian wind criteria are used in the current study. These criteria have been developed by RWDI through research and consulting practice since 1974 (References 1 through 6). They have also been widely accepted by municipal authorities as well as by the building design and city planning community.

### RWDI Pedestrian Wind Criteria

Comfort Category	GEM Speed (mph)	Description
Sitting	≤ 6	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 8	Gentle breezes suitable for main building entrances and bus stops
Strolling	≤ 10	Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park
Walking	≤ 12	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 12	Strong winds of this magnitude are considered a nuisance for most activities, and wind mitigation is typically recommended
<b>Notes:</b> (1) Gust Equivalent Mean (GEM) speed = $\max(\text{mean speed}, \text{gust speed}/1.85)$ ; and (2) GEM speeds listed above are based on a seasonal exceedance of 20% of the time between 6:00 and 23:00.		
Safety Criterion	Gust Speed (mph)	Description
Exceeded	> 56	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is typically required.
<b>Note:</b> Based on an annual exceedance of 9 hours or 0.1% of the time for 24 hours a day.		



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A few additional comments are provided below to further explain the wind criteria and their applications.

- Both mean and gust speeds can affect pedestrian comfort and their combined effect is typically quantified by a Gust Equivalent Mean (GEM) speed, with a gust factor of 1.85 (References 1, 5, 7 and 8).
- Nightly hours between midnight and 5 o'clock in the morning are excluded from the wind analysis for wind comfort since limited usage of outdoor spaces is anticipated.
- A 20% exceedance is used in these criteria to determine the comfort category, which suggests that wind speeds would be comfortable for the corresponding activity at least 80% of the time or four out of five days.
- Only gust winds 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.
- These criteria for wind forces represent average wind tolerance. They are sometimes subjective and regional differences in wind climate and thermal conditions as well as variations in age, health, clothing, etc. can also affect people's perception of the wind climate. Comparisons of wind speeds for different building configurations are the most objective way in assessing local pedestrian wind conditions.

## 5. PREDICTED WIND CONDITIONS

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Table 1, located in the Tables section of this report, presents the predicted wind comfort and safety conditions pertaining to the TWO tested configurations. These conditions are graphically depicted on a site plan in Figures 3a through 4b.

The following is a detailed discussion of the suitability of the predicted wind comfort conditions for the anticipated pedestrian use of each area.

### 5.1 Configuration A – Existing

Wind conditions comfortable for walking or strolling are appropriate for sidewalks. Lower wind speeds conducive to sitting are recommended for terraces and podiums, while winds suitable for standing are preferred at main entrances where pedestrians are apt to linger.

As shown in Figures 3a and 4a, the existing configuration was tested with the existing building on the site. These figures show the mean wind speeds are comfortable for standing or better in the summer and strolling or better in the winter across the entire site. These are comfortable conditions and considered suitable for the current use of the area.

## 5.2 Configuration B – Proposed

Wind conditions at the main building entrances on the north and south side of the building are expected to be comfortable for standing or better, throughout the year for the proposed configuration, which is considered acceptable for their intended purpose (Locations 2, 14 and 15 Figures 3b and 4b).

The secondary entrances around both proposed buildings (Locations 3, 5, 12, 16, 17, 18, 21, and 22) are expected to be comfortable for standing or better in the summer (Figure 3b) and strolling or better in the winter (Figure 4b), it is assumed that pedestrians will not linger for long at secondary entrances and therefore these conditions are suitable throughout the year.

The space between the tower building and the single story, “Apollo” building (Locations 10 and 11) is intended to be used as a pedestrian laneway with individual unit entrances and potential outdoor seating. Ideally, wind conditions comfortable for sitting or standing would be suitable for this area in the summer, and can increase to strolling or walking in the winter months, when the seating areas are not expected to be in use. As can be seen in Figures 3b and 4b, with the proposed canopies, windscreens and trees in place, the conditions in this area are suitable for the intended purpose throughout the year.

The wind conditions along the majority of the sidewalks (Locations 23 through 71) are suitable for strolling or better with the proposed configuration throughout the year (Figures 3b and 4b). There are a number of locations closer to the development where the wind speeds are slightly higher in the winter months and would be considered suitable for walking. These conditions are considered suitable for the intended purpose of sidewalks and walkways.

The accessible roof terrace on the tower building (Locations 85 and 86) is expected to have conditions comfortable for sitting or standing throughout the year (Figures 3b and 4b.) This is suitable for the intended use of an above grade terrace where prolonged periods of idling of patrons would be expected.

## 6. APPLICABILITY

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The wind conditions presented in this report pertain to the proposed Watermark Central development as detailed in the architectural design drawings listed in Appendix A. 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.



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## 7. REFERENCES

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- 1) ASCE Task Committee on Outdoor Human Comfort (2004). *Outdoor Human Comfort and Its Assessment*, 68 pages, American Society of Civil Engineers, Reston, Virginia, USA.
- 2) Williams, C.J., Hunter, M.A. and Waechter, W.F. (1990). "Criteria for Assessing the Pedestrian Wind Environment," *Journal of Wind Engineering and Industrial Aerodynamics*, Vol.36, pp.811-815.
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# TABLES



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

Location	Configuration	Wind Comfort (20% Seasonal Exceedance)				Wind Safety (0.1% Exceedance)	
		Summer		Winter		Annual	
		Speed (mph)	Rating	Speed (mph)	Rating	Speed (mph)	Rating
2	Existing	DATA NOT AVAILABLE				27	Pass
	Proposed	6	Sitting	6	Sitting		
3	Existing	7	Standing	9	Strolling	36	Pass
	Proposed	6	Sitting	7	Standing	28	Pass
4	Existing	8	Standing	10	Strolling	38	Pass
	Proposed	9	Strolling	12	Walking	48	Pass
5	Existing	7	Standing	7	Standing	32	Pass
	Proposed	8	Standing	8	Standing	52	Pass
6	Existing	6	Sitting	6	Sitting	30	Pass
	Proposed	10	Strolling	12	Walking	42	Pass
7	Existing	8	Standing	10	Strolling	39	Pass
	Proposed	DATA NOT AVAILABLE					
10	Existing	DATA NOT AVAILABLE				45	Pass
	Proposed	8	Standing	11	Walking		
11	Existing	DATA NOT AVAILABLE				37	Pass
	Proposed	8	Standing	9	Strolling		
12	Existing	DATA NOT AVAILABLE				33	Pass
	Proposed	7	Standing	8	Standing		
13	Existing	8	Standing	9	Strolling	35	Pass
	Proposed	8	Standing	12	Walking	46	Pass
14	Existing	6	Sitting	6	Sitting	27	Pass
	Proposed	7	Standing	8	Standing	35	Pass
15	Existing	6	Sitting	7	Standing	26	Pass
	Proposed	6	Sitting	7	Standing	30	Pass
16	Existing	DATA NOT AVAILABLE				39	Pass
	Proposed	8	Standing	10	Strolling		
17	Existing	5	Sitting	7	Standing	26	Pass
	Proposed	8	Standing	9	Strolling	37	Pass
18	Existing	6	Sitting	8	Standing	32	Pass
	Proposed	7	Standing	8	Standing	30	Pass
19	Existing	7	Standing	8	Standing	34	Pass
	Proposed	8	Standing	10	Strolling	37	Pass
20	Existing	6	Sitting	7	Standing	28	Pass
	Proposed	7	Standing	8	Standing	35	Pass

<b>Seasons</b>	<b>Hours</b>	<b>Wind Comfort Category</b>	<b>Wind Safety Category</b>
Summer = May to October	6:00 to 23:00 for Comfort	(20% Seasonal Exceedance)	(0.1% Annual Exceedance)
Winter = November to April	0:00 to 23:00 for Safety	≤ 6 mph      Sitting	≤ 56 mph      Pass
		7 to 8      Standing	> 56 mph      Exceeded
<b>Configuration</b>		9 to 10      Strolling	
Existing = Existing Building with Existing Surrounds		11 to 12      Walking	
Proposed = Proposed Building with Existing Surrounds		> 12 mph      Uncomfortable	



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

Location	Configuration	Wind Comfort (20% Seasonal Exceedance)				Wind Safety (0.1% Exceedance)	
		Summer		Winter		Annual	
		Speed (mph)	Rating	Speed (mph)	Rating	Speed (mph)	Rating
21	Existing	7	Standing	8	Standing	30	Pass
	Proposed	7	Standing	8	Standing	34	Pass
22	Existing	7	Standing	8	Standing	30	Pass
	Proposed	7	Standing	8	Standing	35	Pass
23	Existing	7	Standing	9	Strolling	35	Pass
	Proposed	10	Strolling	10	Strolling	47	Pass
24	Existing	7	Standing	8	Standing	35	Pass
	Proposed	9	Strolling	11	Walking	43	Pass
25	Existing	6	Sitting	7	Standing	29	Pass
	Proposed	9	Strolling	10	Strolling	41	Pass
26	Existing	7	Standing	9	Strolling	36	Pass
	Proposed	9	Strolling	11	Walking	42	Pass
27	Existing	7	Standing	8	Standing	31	Pass
	Proposed	8	Standing	10	Strolling	37	Pass
28	Existing	7	Standing	8	Standing	32	Pass
	Proposed	9	Strolling	10	Strolling	40	Pass
29	Existing	7	Standing	8	Standing	32	Pass
	Proposed	8	Standing	9	Strolling	36	Pass
30	Existing	7	Standing	8	Standing	31	Pass
	Proposed	8	Standing	9	Strolling	35	Pass
31	Existing	7	Standing	8	Standing	31	Pass
	Proposed	7	Standing	8	Standing	33	Pass
32	Existing	8	Standing	10	Strolling	39	Pass
	Proposed	7	Standing	9	Strolling	35	Pass
33	Existing	8	Standing	10	Strolling	37	Pass
	Proposed	8	Standing	10	Strolling	38	Pass
34	Existing	8	Standing	9	Strolling	35	Pass
	Proposed	8	Standing	10	Strolling	38	Pass
35	Existing	8	Standing	10	Strolling	36	Pass
	Proposed	8	Standing	8	Standing	36	Pass
36	Existing	8	Standing	10	Strolling	39	Pass
	Proposed	10	Strolling	11	Walking	45	Pass
37	Existing	7	Standing	9	Strolling	35	Pass
	Proposed	7	Standing	8	Standing	34	Pass

<b>Seasons</b>	<b>Hours</b>	<b>Wind Comfort Category</b>	<b>Wind Safety Category</b>
Summer = May to October	6:00 to 23:00 for Comfort	(20% Seasonal Exceedance)	(0.1% Annual Exceedance)
Winter = November to April	0:00 to 23:00 for Safety	≤ 6 mph	≤ 56 mph
		7 to 8	Pass
		9 to 10	Exceeded
		11 to 12	
		> 12 mph	
<b>Configuration</b>		Sitting	
Existing = Existing Building with Existing Surrounds		Standing	
Proposed = Proposed Building with Existing Surrounds		Strolling	
		Walking	
		Uncomfortable	



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

Location	Configuration	Wind Comfort (20% Seasonal Exceedance)				Wind Safety (0.1% Exceedance)	
		Summer		Winter		Annual	
		Speed (mph)	Rating	Speed (mph)	Rating	Speed (mph)	Rating
38	Existing	7	Standing	8	Standing	33	Pass
	Proposed	8	Standing	9	Strolling	35	Pass
39	Existing	7	Standing	9	Strolling	34	Pass
	Proposed	7	Standing	9	Strolling	35	Pass
40	Existing	7	Standing	9	Strolling	34	Pass
	Proposed	8	Standing	9	Strolling	40	Pass
41	Existing	7	Standing	9	Strolling	34	Pass
	Proposed	6	Sitting	7	Standing	29	Pass
42	Existing	6	Sitting	8	Standing	30	Pass
	Proposed	7	Standing	8	Standing	30	Pass
43	Existing	7	Standing	8	Standing	30	Pass
	Proposed	7	Standing	8	Standing	33	Pass
44	Existing	7	Standing	8	Standing	29	Pass
	Proposed	7	Standing	8	Standing	30	Pass
45	Existing	6	Sitting	7	Standing	28	Pass
	Proposed	7	Standing	8	Standing	33	Pass
46	Existing	7	Standing	8	Standing	33	Pass
	Proposed	7	Standing	8	Standing	32	Pass
47	Existing	8	Standing	9	Strolling	36	Pass
	Proposed	8	Standing	10	Strolling	39	Pass
48	Existing	7	Standing	8	Standing	34	Pass
	Proposed	7	Standing	8	Standing	31	Pass
49	Existing	7	Standing	8	Standing	30	Pass
	Proposed	6	Sitting	7	Standing	30	Pass
50	Existing	7	Standing	8	Standing	32	Pass
	Proposed	7	Standing	8	Standing	34	Pass
51	Existing	7	Standing	7	Standing	34	Pass
	Proposed	6	Sitting	7	Standing	30	Pass
52	Existing	7	Standing	8	Standing	35	Pass
	Proposed	7	Standing	8	Standing	32	Pass
53	Existing	7	Standing	8	Standing	34	Pass
	Proposed	7	Standing	7	Standing	29	Pass
54	Existing	7	Standing	8	Standing	32	Pass
	Proposed	7	Standing	8	Standing	32	Pass

<b>Seasons</b>	<b>Hours</b>	<b>Wind Comfort Category</b>	<b>Wind Safety Category</b>
Summer = May to October	6:00 to 23:00 for Comfort	(20% Seasonal Exceedance)	(0.1% Annual Exceedance)
Winter = November to April	0:00 to 23:00 for Safety	≤ 6 mph	≤ 56 mph
		7 to 8	Pass
		9 to 10	Exceeded
		11 to 12	
		> 12 mph	
<b>Configuration</b>		Sitting	
Existing = Existing Building with Existing Surrounds		Standing	
Proposed = Proposed Building with Existing Surrounds		Strolling	
		Walking	
		Uncomfortable	



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

Location	Configuration	Wind Comfort (20% Seasonal Exceedance)				Wind Safety (0.1% Exceedance)	
		Summer		Winter		Annual	
		Speed (mph)	Rating	Speed (mph)	Rating	Speed (mph)	Rating
55	Existing	6	Sitting	7	Standing	27	Pass
	Proposed	8	Standing	10	Strolling	39	Pass
56	Existing	7	Standing	8	Standing	32	Pass
	Proposed	8	Standing	8	Standing	38	Pass
57	Existing	6	Sitting	7	Standing	29	Pass
	Proposed	7	Standing	8	Standing	30	Pass
58	Existing	7	Standing	10	Strolling	38	Pass
	Proposed	7	Standing	9	Strolling	35	Pass
59	Existing	6	Sitting	8	Standing	30	Pass
	Proposed	8	Standing	11	Walking	44	Pass
60	Existing	7	Standing	8	Standing	36	Pass
	Proposed	7	Standing	8	Standing	37	Pass
61	Existing	7	Standing	10	Strolling	38	Pass
	Proposed	7	Standing	9	Strolling	35	Pass
62	Existing	8	Standing	10	Strolling	38	Pass
	Proposed	8	Standing	9	Strolling	37	Pass
63	Existing	8	Standing	10	Strolling	39	Pass
	Proposed	8	Standing	9	Strolling	37	Pass
64	Existing	7	Standing	8	Standing	33	Pass
	Proposed	6	Sitting	7	Standing	29	Pass
65	Existing	7	Standing	8	Standing	35	Pass
	Proposed	7	Standing	8	Standing	34	Pass
66	Existing	7	Standing	8	Standing	34	Pass
	Proposed	8	Standing	9	Strolling	39	Pass
67	Existing	6	Sitting	8	Standing	39	Pass
	Proposed	8	Standing	10	Strolling	36	Pass
68	Existing	6	Sitting	7	Standing	28	Pass
	Proposed	6	Sitting	7	Standing	27	Pass
69	Existing	6	Sitting	7	Standing	32	Pass
	Proposed	6	Sitting	7	Standing	32	Pass
70	Existing	8	Standing	9	Strolling	38	Pass
	Proposed	7	Standing	9	Strolling	35	Pass
71	Existing	8	Standing	10	Strolling	36	Pass
	Proposed	8	Standing	10	Strolling	37	Pass

<b>Seasons</b>	<b>Hours</b>	<b>Wind Comfort Category</b>	<b>Wind Safety Category</b>
Summer = May to October	6:00 to 23:00 for Comfort	(20% Seasonal Exceedance)	(0.1% Annual Exceedance)
Winter = November to April	0:00 to 23:00 for Safety	≤ 6 mph      Sitting	≤ 56 mph      Pass
		7 to 8        Standing	> 56 mph      Exceeded
<b>Configuration</b>		9 to 10      Strolling	
Existing = Existing Building with Existing Surrounds		11 to 12     Walking	
Proposed = Proposed Building with Existing Surrounds		> 12 mph     Uncomfortable	



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

Location	Configuration	Wind Comfort (20% Seasonal Exceedance)				Wind Safety (0.1% Exceedance)	
		Summer		Winter		Annual	
		Speed (mph)	Rating	Speed (mph)	Rating	Speed (mph)	Rating
85	Existing	DATA NOT AVAILABLE				35	Pass
	Proposed	6	Sitting	7	Standing		
86	Existing	DATA NOT AVAILABLE				35	Pass
	Proposed	7	Standing	7	Standing		

**Seasons**

Summer = May to October  
Winter = November to April

**Hours**

6:00 to 23:00 for Comfort  
0:00 to 23:00 for Safety

**Wind Comfort Category**

(20% Seasonal Exceedance)

≤ 6 mph      Sitting  
7 to 8        Standing  
9 to 10       Strolling  
11 to 12      Walking  
> 12 mph     Uncomfortable

**Wind Safety Category**

(0.1% Annual Exceedance)

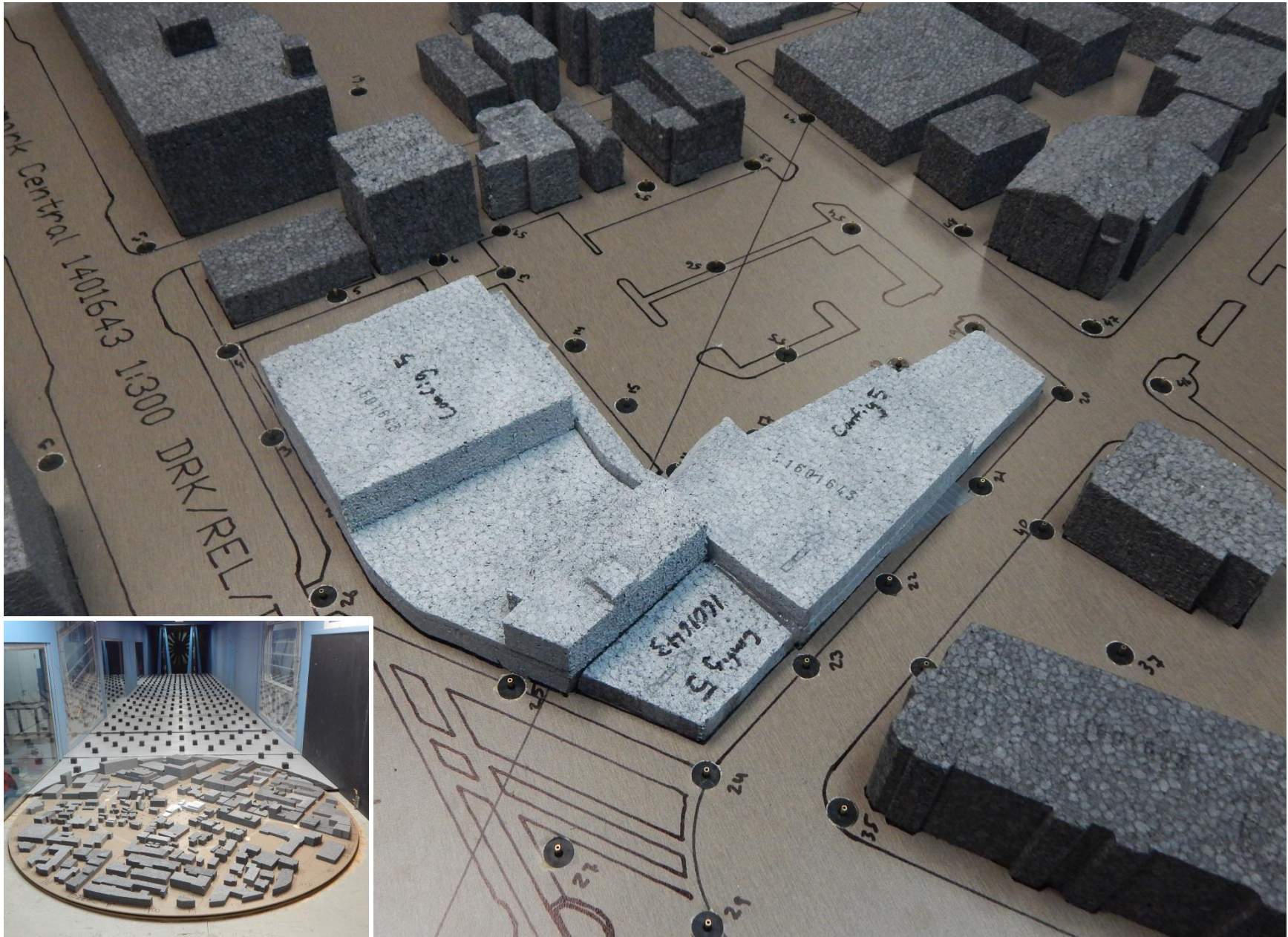
≤ 56 mph      Pass  
> 56 mph      Exceeded

**Configuration**

Existing = Existing Building with Existing Surrounds  
Proposed = Proposed Building with Existing Surrounds

# FIGURES





**Wind Tunnel Study Model  
Existing**

Watermark Central – Cambridge, Massachusetts

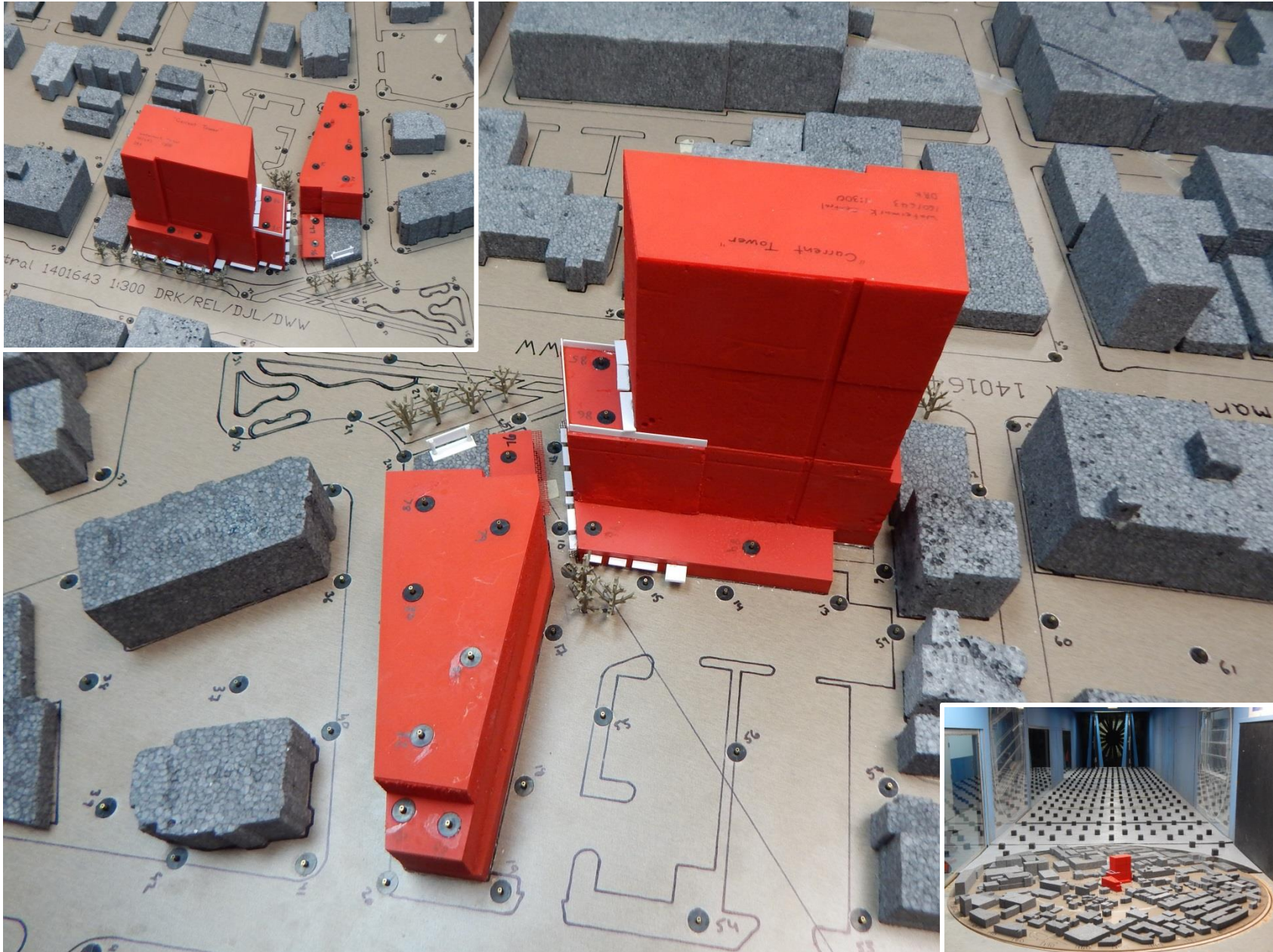
Figure No. 1a

Project #1601643

Date: April 28, 2016

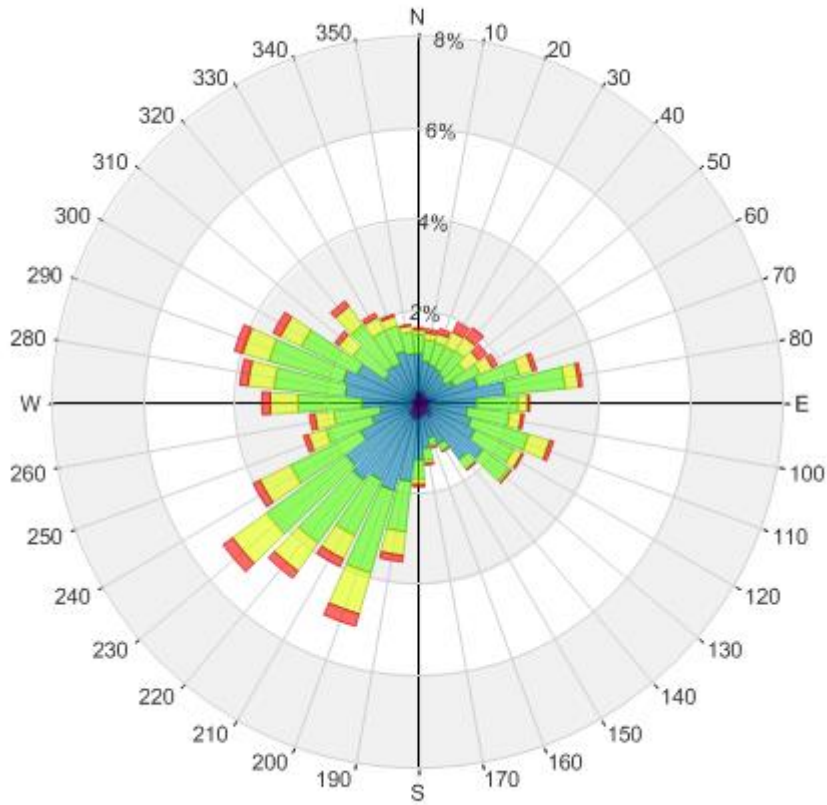




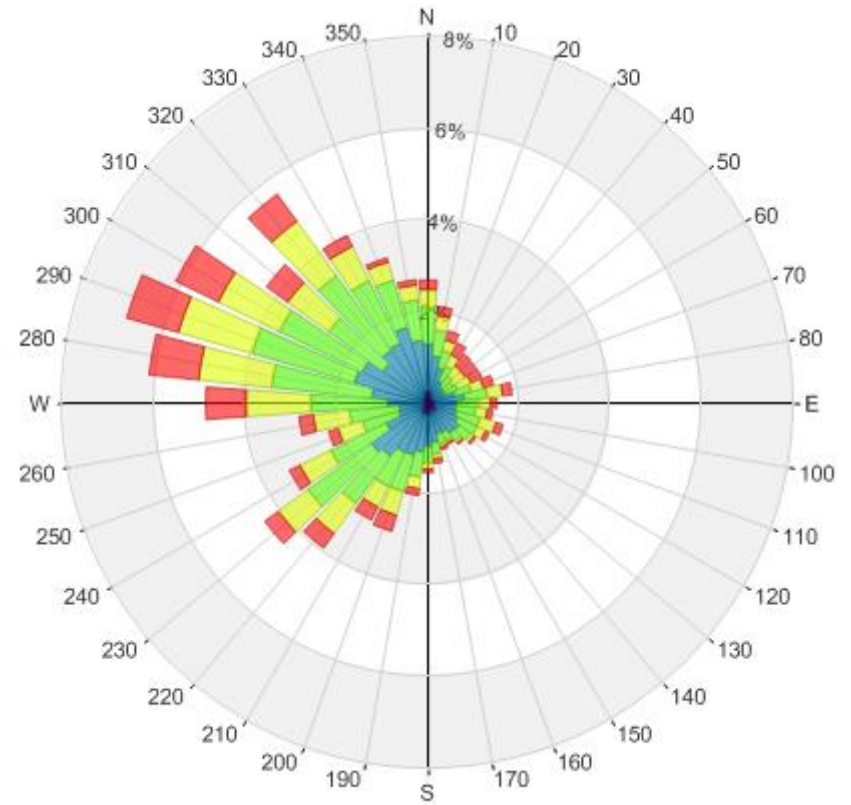


<b>Wind Tunnel Study Model Proposed</b>  Watermark Central – Cambridge, Massachusetts	Figure No. 1b	
	Date: June 17, 2016	

Project #1601643



Summer  
(May - October)



Winter  
(November - April)

Wind Speed (mph)	Probability (%)	
	Summer	Winter
Calm	3.2	2.7
1-5	8.9	6.7
6-10	36.7	28.4
11-15	33.9	31.2
16-20	13.0	19.5
>20	4.2	11.5

**Directional Distribution (%) of Winds (Blowing From)  
Boston Logan International Airport (1995 - 2015)**

Watermark Central – Cambridge, Massachusetts

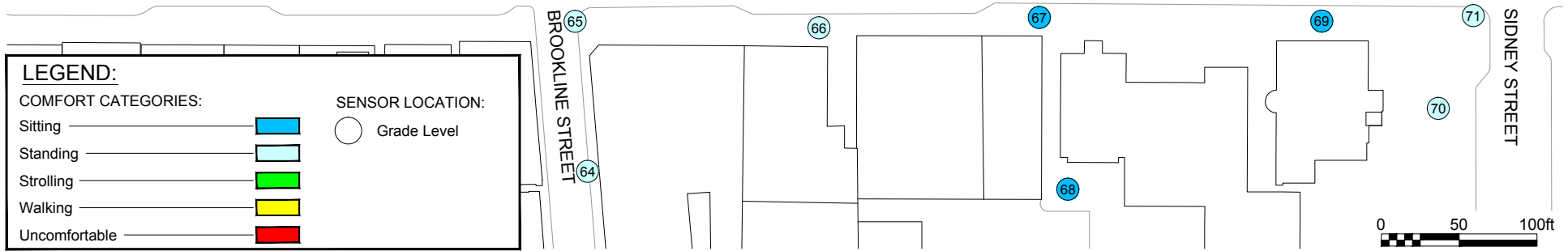
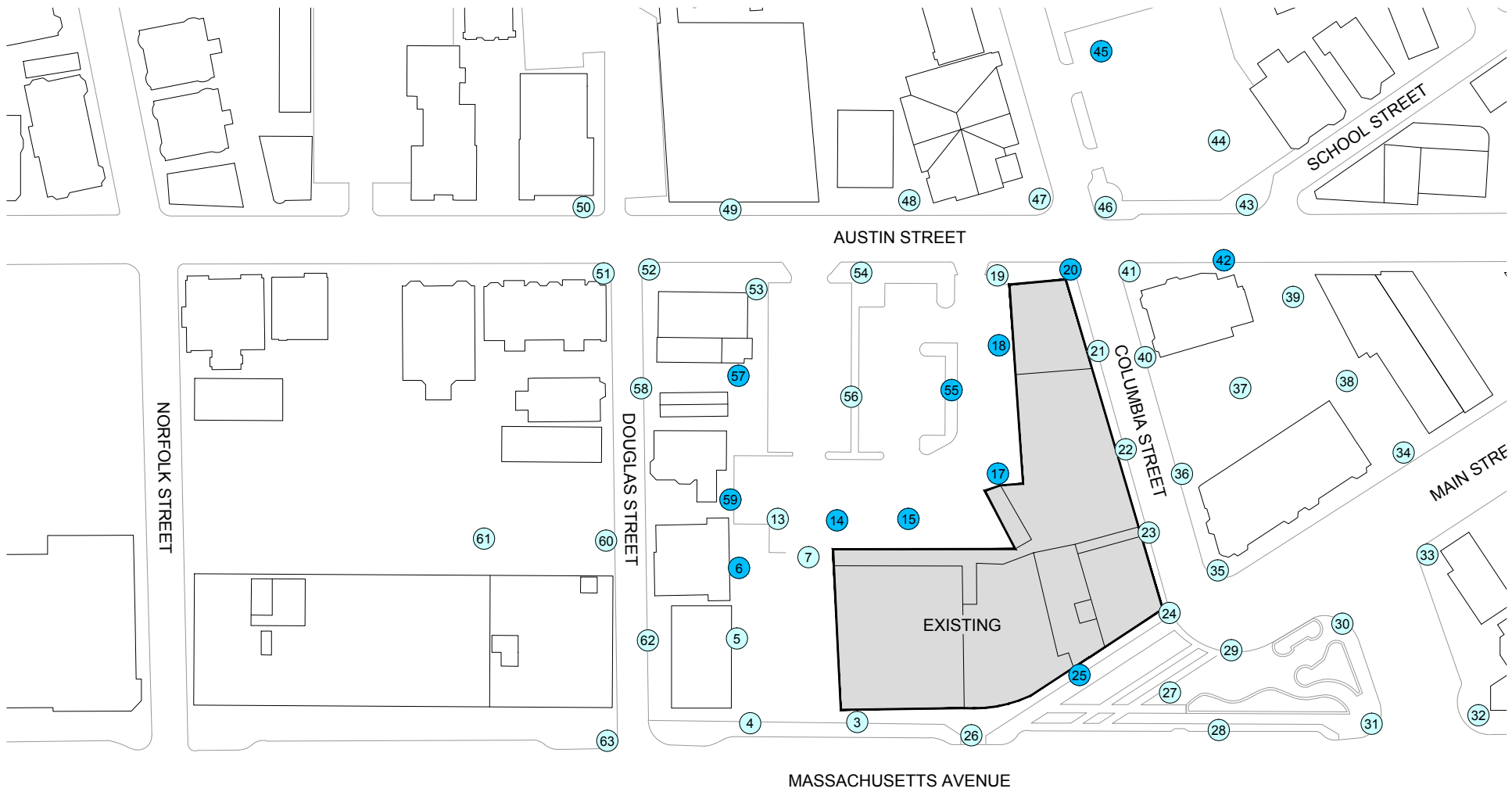
Figure No. 2

Project #1601643

Date: April 28, 2016







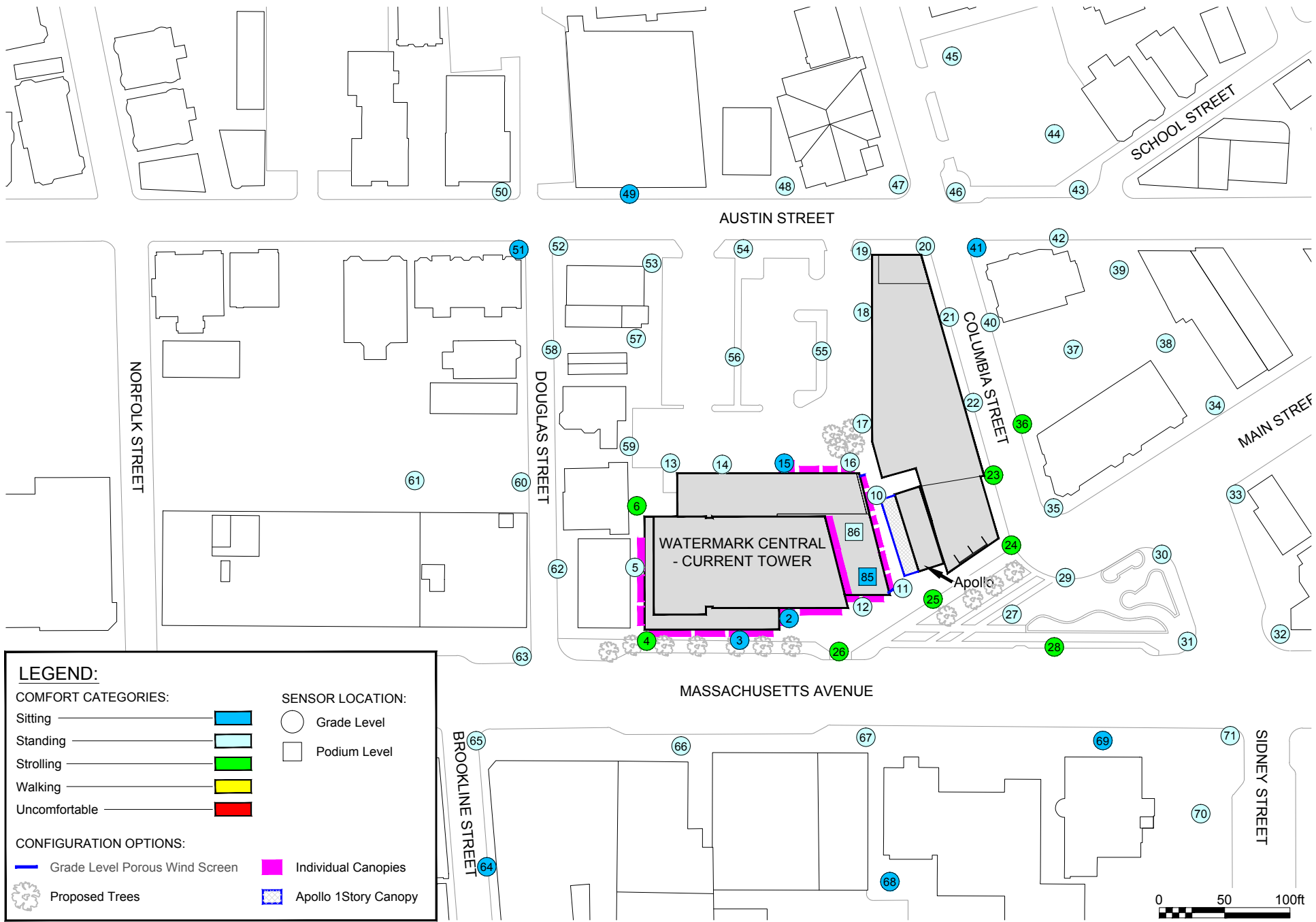
**LEGEND:**

**COMFORT CATEGORIES:**

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

**SENSOR LOCATION:**

- Grade Level



**LEGEND:**

**COMFORT CATEGORIES:**

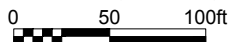
- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

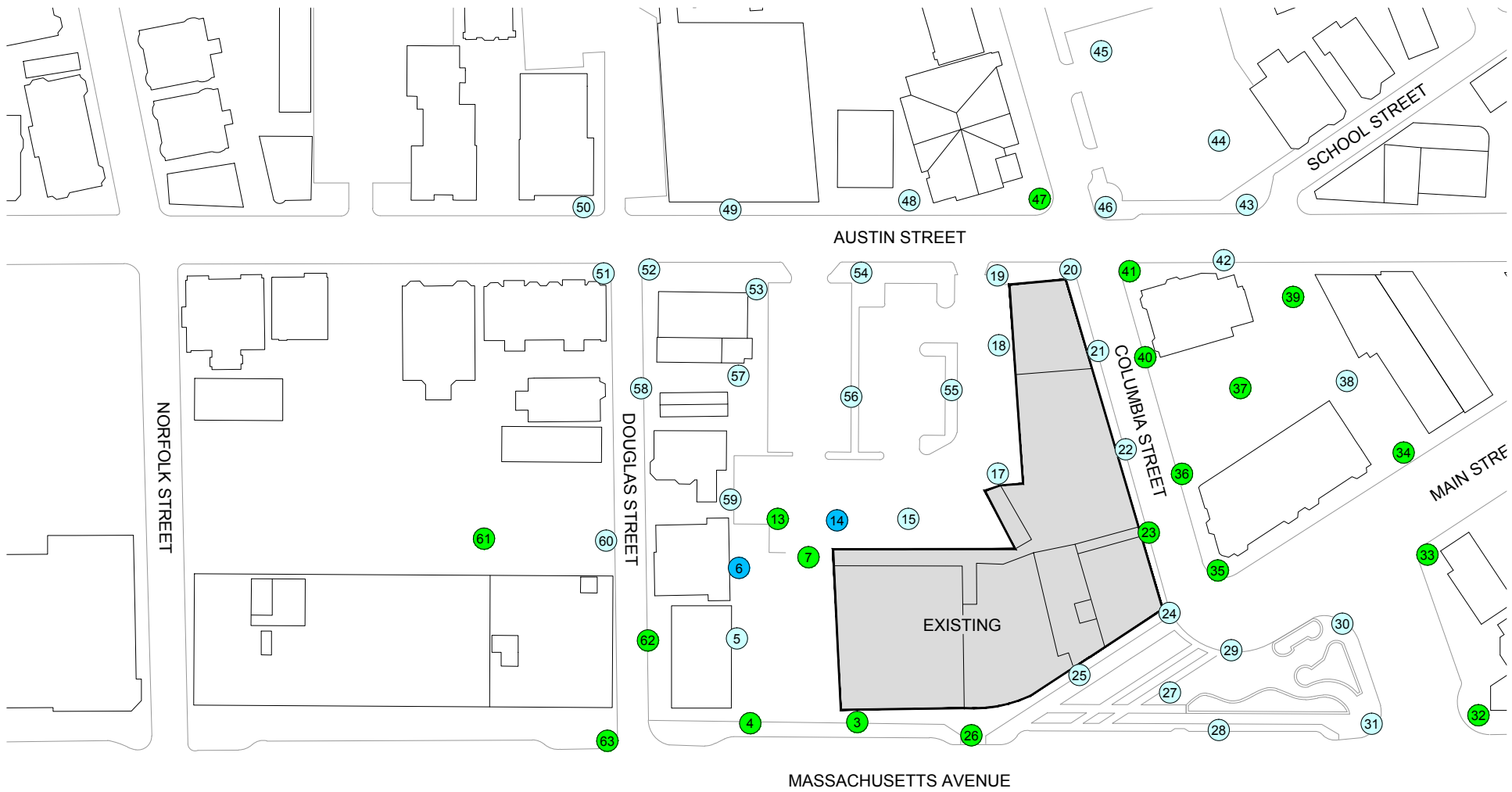
**SENSOR LOCATION:**

- Grade Level
- Podium Level

**CONFIGURATION OPTIONS:**

- Grade Level Porous Wind Screen
- Individual Canopies
- Apollo 1Story Canopy
- Proposed Trees





**LEGEND:**

COMFORT CATEGORIES:

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

SENSOR LOCATION:

- Grade Level

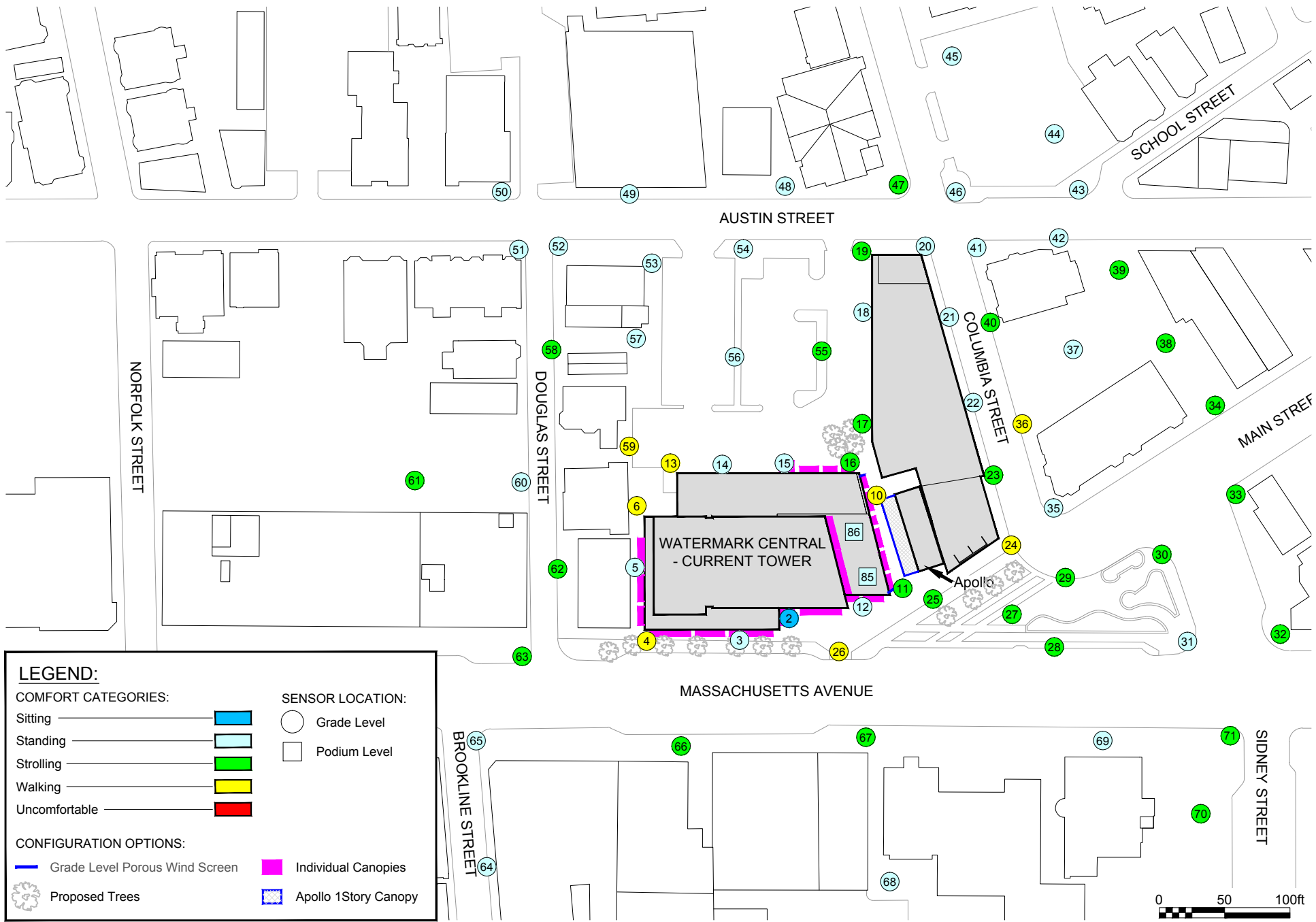
**Pedestrian Wind Comfort Conditions**  
 Existing  
 Winter (November to April, 6:00 to 23:00)  
 Watermark Central - Cambridge, Massachusetts



Drawn by: ARM	Figure: 4a
Approx. Scale: 1"=100'	
Date Revised: April 27, 2016	



Project #1601643



**LEGEND:**

**COMFORT CATEGORIES:**

- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

**SENSOR LOCATION:**

- Grade Level
- Podium Level

**CONFIGURATION OPTIONS:**

- Grade Level Porous Wind Screen
- Individual Canopies
- Apollo 1Story Canopy
- Proposed Trees

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

Watermark Central - Cambridge, Massachusetts



Drawn by: ARM    Figure: 4b  
 Approx. Scale: 1"=100'  
 Date Revised: June 1, 2016

Project #1601643



# APPENDIX A



CONSULTING ENGINEERS  
& SCIENTISTS

Watermark Central  
Pedestrian Wind Consultation  
RWDI#1601643  
June 21, 2016

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## **APPENDIX A: DRAWING LIST FOR MODEL CONSTRUCTION**

The drawings and information listed below were received from SVP Development and were used to construct the scale model of the proposed Watermark Central. Should there be any design changes that deviate from this list of drawings, the results 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.

<b>File Name</b>	<b>File Type</b>	<b>Date Received (dd/mm/yyyy)</b>
2016_03_16_Angled-Tower.skp	SketchUp	24/03/16
2016_03_16_Point-Tower.skp	SketchUp	24/03/16
2016_05_19_Mass+Main_Wind_mitigation_study.skp	SketchUp	20/05/16
2016_05_18_M+M_Wind_mitigation.pdf	Adobe Portable Document Format	20/05/16
2016_05_27_One-Story-Apollo-Plan.pdf	Adobe Portable Document Format	27/05/16