Tel: 519.823.1311
Fax: 519.823.1316

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West
Guelph, Ontario, Canada
N1K 1B8

Edward J. Sullivan Courthouse Redevelopment Project

Cambridge, Massachusetts

Final Report

Pedestrian Wind Study

RWDI # 1302052
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SUBMITTED TO
Mark Sardegna AIA LEED AP
Vice President
ELKUS MANFREDI ARCHITECTS
300 A Street
Boston Massachusetts 02210
617.368.3320
msardegna@elkus-manfredi.com

cc: Maria Schroeder
mschroeder@elkus-manfredi.com

cc: Gordon H. Smith
Gordon H. Smith Corportation
GHSCorp@GordonHSmithCorp.com

SUBMITTED BY
Jesse Brydges, E.I.T.
Technical Coordinator
Jesse.Brydges@rwdi.com

Derek Kelly, M.Eng., P.Eng.
Project Manager / Principal
Derek.Kelly@rwdi.com

Ray Sinclair, Ph.D.
Project Director / Principal
Ray.Sinclair@rwdi.com

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CONSULTING ENGINEERS & SCIENTISTS

Tel: 519.823.1311
Fax: 519.823.1316

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Tel: 519.823.1311
Fax: 519.823.1316

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Appendices

1. SUMMARY

At the direction of LMP, RWDI, CJA and Elkus Manfredi Architects reviewed numerous wind mitigation techniques to utilize on and around the building with the goal of improving the pedestrian wind environment over the conditions which exist today. These mitigation techniques were tested in various configurations in RWDI's facilities to ascertain the best possible results.

The process included a wind tunnel study conducted by RWDI to determine the pedestrian wind conditions around the existing (no build) Edward J. Sullivan Courthouse building and three proposed designs for the redeveloped building. The results are summarized in Table 1 below and also in the figures and tables provided in the report. Table 1 reports on predicted wind comfort and safety using the two BRA criteria at 75 sensor locations for the No Build (Existing) Configuration and 84 sensor locations for the three new Build configurations 1, 2 and 3 described in the report. Table 1 shows that in all cases there are several locations of uncomfortable wind conditions for walking (yellow) for the existing and proposed build conditions.

Results for the Build 1 configuration provide slightly better comfort conditions than the Existing conditions. Wind comfort is slightly reduced for configurations of Build 2 and Build 3, as compared to Build 1. Additionally, Build 3 has one location predicted to fall in the category of Dangerous wind conditions (Red).

Based on the results of the study, the Build 1 option is the optimum choice for proposed mitigation measures. As a result, numerous elements of the building design and the surrounding landscaping have been adjusted to accommodate these measures.

Table 1: Summary of Wind Tunnel Results

					Unacceptable Wind Conditions		Wind Comfort (BRA Mean Wind Criteria - See Table 2)									
Configuration	Figures		Total Number of Sensors		Effective Gust Speed > 31mph more than 1% of time as per BRA Wind Criteria		Dangerous		Uncomfortable for Walking		Comfortable for Walking		Comfortable for Standing		Comfortable for Sitting	
			Number	Pecentage	Number	Pecentage	Number	Pecentage	Number	Pecentage	Number	Pecentage	Number	Pecentage	Number	Pecentage
No Build (Existing)	1a, 3a, 4a	Total	75		6	8%	0	0%	16	21%	19	25%	17	23%	23	31%
		On-Site	18	24%	4	22%	0	0%	9	50%	3	17%	4	22%	2	11%
		Off-Site	57	76%	2	4%	0	0%	7	12%	16	28%	13	23%	21	37%
Build 1	1b, 3b, 4b	Total	84		3	4%	0	0%	20	24%	18	21%	18	21%	28	33%
		On-Site	27	32%	2	7%	0	0%	12	44%	3	11%	5	19%	7	26%
		Off-Site	57	68%	1	2%	0	0%	8	14%	15	26%	13	23%	21	37%
Build 2	1c, 3c, 4c	Total	84		8	10%	0	0%	22	26%	21	25%	19	23%	22	26%
		On-Site	27	32%	6	22%	0	0%	13	48%	6	22%	7	26%	1	4%
		Off-Site	57	68%	2	4%	0	0%	9	16%	14	25%	13	23%	21	37%
Build 3	1d, 3d, 4d	Total	84		8	10%	1	1%	22	26%	21	25%	19	23%	21	25%
		On-Site	27	32%	6	22%	1	4%	12	44%	6	22%	7	26%	1	4%
		Off-Site	57	68%	2	4%	0	0%	10	18%	15	26%	12	21%	20	35%

2. INTRODUCTION

A pedestrian wind study was conducted on the proposed Edward J. Sullivan Courthouse Redevelopment Project located in Cambridge, Massachusetts. The objective of the study was to assess the effect of the proposed development on local conditions in pedestrian areas around the study site, provide recommendations, and test alternatives with the goal of improving the pedestrian wind comfort level wherever possible in areas surrounding the subject site.

The study involved wind simulations on a 1:300 scale model of the proposed building and surroundings. These simulations were then conducted in RWDI's boundary-layer wind tunnel at Guelph, Ontario, for the purpose of quantifying local wind speed conditions and comparing to appropriate criteria for gauging wind comfort in pedestrian areas. A list of the drawings used for the construction of the model can be found in Appendix A. The City of Cambridge does not have a standard by which to measure pedestrian wind comfort levels, thus the team utilized the criteria recommended by the Boston Redevelopment Authority (BRA) as the basis for this study. This report describes the methods and presents the results of four wind tunnel simulations.

3. OVERVIEW

Major buildings, especially those that protrude above their surroundings, often cause increased local wind speeds at the pedestrian level. Typically, wind speeds increase with elevation above the ground surface, and taller buildings intercept these faster winds and deflect them down to the pedestrian level, and is referred to as downwashing flow (Image 1). The funneling of wind through gaps between buildings (channeling flow, Image 2) and the acceleration of wind around corners of buildings may also cause increases in wind speed. Conversely, if a building is surrounded by others of equivalent height, it may be protected from the prevailing upper-level winds, resulting in no significant changes to the local pedestrian-level wind environment. The most effective way to assess potential pedestrian-level wind impacts around a proposed new building is to conduct scale model tests in a wind tunnel.

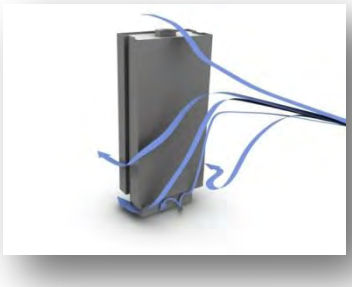

Image 1 – Downwashing Flow

Image 2 – Channeling Effect

The consideration of wind in planning outdoor activity areas is important since high winds in an area tend to deter pedestrian use. For example, winds should be light or relatively light in areas where people would be sitting, such as outdoor cafes or playgrounds. For bus stops and other locations where people would be standing, somewhat higher winds can be tolerated. For frequently used sidewalks, where people are primarily walking, stronger winds are acceptable. For infrequently used areas, the wind comfort criteria can be relaxed even further. The actual effects of wind can range from pedestrian inconvenience, due to the blowing of dust and other loose material in a moderate breeze, to severe difficulty with walking due to the wind forces on the pedestrian.

4. METHODOLOGY

Information concerning the site and surroundings was derived from: site photographs; information on surrounding buildings and terrain; site plans and elevations of the proposed development provided by the design team. The following configurations were simulated:

No Build (Existing): includes the existing building and all existing surrounding buildings;

Build 1: includes the proposed Edward J. Sullivan Courthouse Redevelopment and all existing surroundings, in addition to heavy landscaping on site and off site, numerous canopies around the perimeter of the building and a grade level trellis,

Build 2: includes the proposed Edward J. Sullivan Courthouse Redevelopment and all existing surroundings, in addition to alternative landscaping on site and off site, alternative canopies on the proposed development, a grade level trellis and a tall parapet on the 5th level podium,

Build 3: includes the proposed Edward J. Sullivan Courthouse Redevelopment and all existing surroundings, in addition to alternative landscaping on site and off site, alternative canopies on the proposed development and a grade level trellis.

As shown in Figures 1a through 1d, the wind tunnel model included the proposed development and all relevant surrounding buildings and topography within a 1125 ft radius of the study site. The mean speed profile and turbulence of the natural wind approaching the modeled area were also simulated in RWDI's boundary layer wind tunnel. The scale model was equipped with 84 specially designed wind speed sensors that were connected to the wind tunnel's data acquisition system to record the mean and fluctuating components of wind speed at a full-scale height of 5 feet above grade in pedestrian areas throughout the study site. Wind speeds were measured for 36 wind directions, in 10 degree increments, starting from true north. The measurements at each sensor location were recorded in the form of ratios of local mean and gust speeds to the reference wind speed in the free stream above the model. The results were then combined with long-term meteorological data, recorded during the years 1980 to 2013 at Boston's Logan International Airport, in order to predict full scale wind conditions. The analysis was performed separately for each of the four seasons and for the entire year.

Figures 2a and 2b present "wind roses", summarizing the annual and seasonal wind climates in the Boston area, based on the data from Logan Airport. The wind roses in Figure 2a are based on all observed wind readings for the given season. The upper left wind rose in Figure 2a, for example summarize the spring (March, April, and May) wind data. In general, the prevailing winds at this time of year are from the west-northwest, northwest, west, southwest and east. In the case of strong winds, however, the most common wind directions are the west, west-northwest, northwest, northeast and south-southwest directions.

On an annual basis (Figure 2b) the most common wind directions are those between south-southwest and northwest. Winds from the east and east-southeast are also relatively common. In the case of strong winds, northeast, west-northwest and northwest are the dominant wind directions.

This study involved state-of-the-art measurement and analysis techniques to predict wind conditions at the study site. Nevertheless, some uncertainty remains in predicting wind comfort, and this must be kept in mind. For example, the sensation of comfort among individuals can be quite variable. Variations in age, individual health, clothing, and other human factors can change a particular response of an individual. The comfort limits used in this report represent an average for the total population. Also, unforeseen changes in the project area, such as the construction or removal of buildings, can affect the conditions experienced at the site. Finally, the prediction of wind speeds is necessarily a statistical procedure. The wind speeds reported are for the frequency of occurrence stated (one percent of the time). Higher wind speeds will occur but on a less frequent basis.

5. PEDESTRIAN WIND COMFORT CRITERIA

The BRA has adopted two standards for assessing the relative wind comfort of pedestrians. First, the BRA wind design guidance criterion states that an effective gust velocity (hourly mean wind speed +1.5 times the root-mean-square wind speed) of 31 mph should not be exceeded more than one percent of the time. The second set of criteria used by the BRA to determine the acceptability of specific locations is based on the work of Melbourne1. This set of criteria is used to determine the relative level of pedestrian wind comfort for activities such as sitting, standing, or walking. The criteria are expressed in terms of benchmarks for the 1-hour mean wind speed exceeded 1% of the time (i.e., the 99-percentile mean wind speed). They are as follows:

Table 2: BRA Mean Wind Criteria*

Dangerous	> 27 mph
Uncomfortable for Walking	> 19 and ≤ 27 mph
Comfortable for Walking	> 15 and ≤ 19 mph
Comfortable for Standing	> 12 and ≤ 15 mph
Comfortable for Sitting	< 12 mph

* Applicable to the hourly mean wind speed exceeded one percent of the time.

The wind climate found in a typical downtown location in Boston is generally comfortable for the pedestrian use of sidewalks and thoroughfares and meets the BRA effective gust velocity criterion of 31 mph. However, without any mitigation measures, this wind climate is likely to be frequently uncomfortable for more passive activities such as sitting.

6. BUILDING GEOMETRY CHANGES

When comparing the results of the mitigation configurations to the no build configuration (using the existing building), it is important to acknowledge some fundamental differences between these models. While the general building massing is similar between the two models, these differences are significant enough to influence the overall comfort categories expected both on-site and on the surrounding site. These differences are outlined below.

- Removed colonnade (building recess) on the second floor
- Replaced sunken service area with an at grade pedestrian green space | Plaza
- Removed overhang from the 5th level podium
- Included a colonnade (building recess) at the northeast corner of the building
- Included canopies at the north and south building entrances

The following images highlight these fundamental differences between the existing building (no build) and proposed redevelopment (build), excluding any mitigation techniques proposed by RWDI.

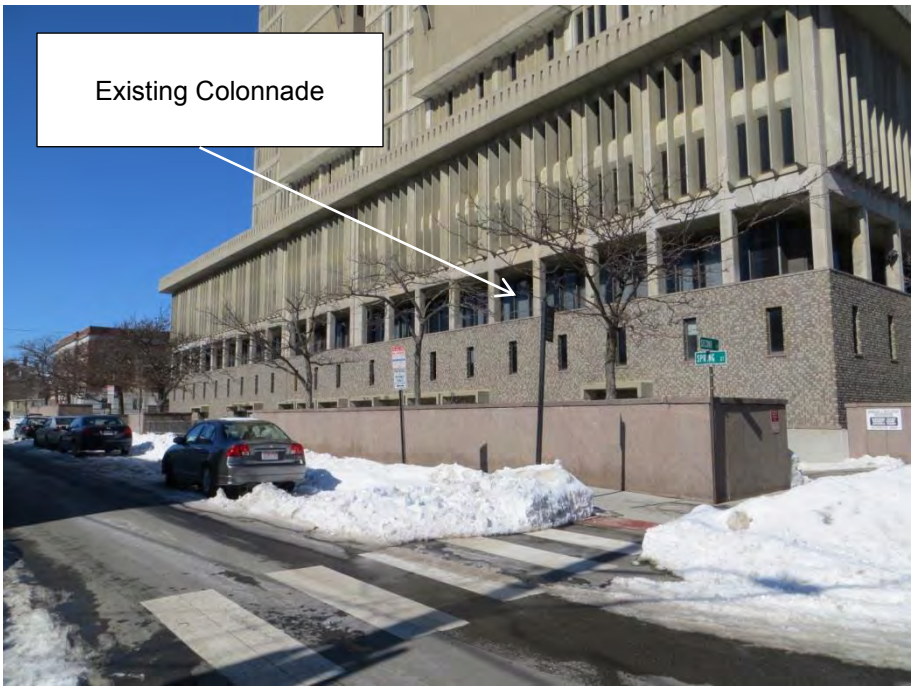

Image 3a – Colonnade on Existing Building (No Build)

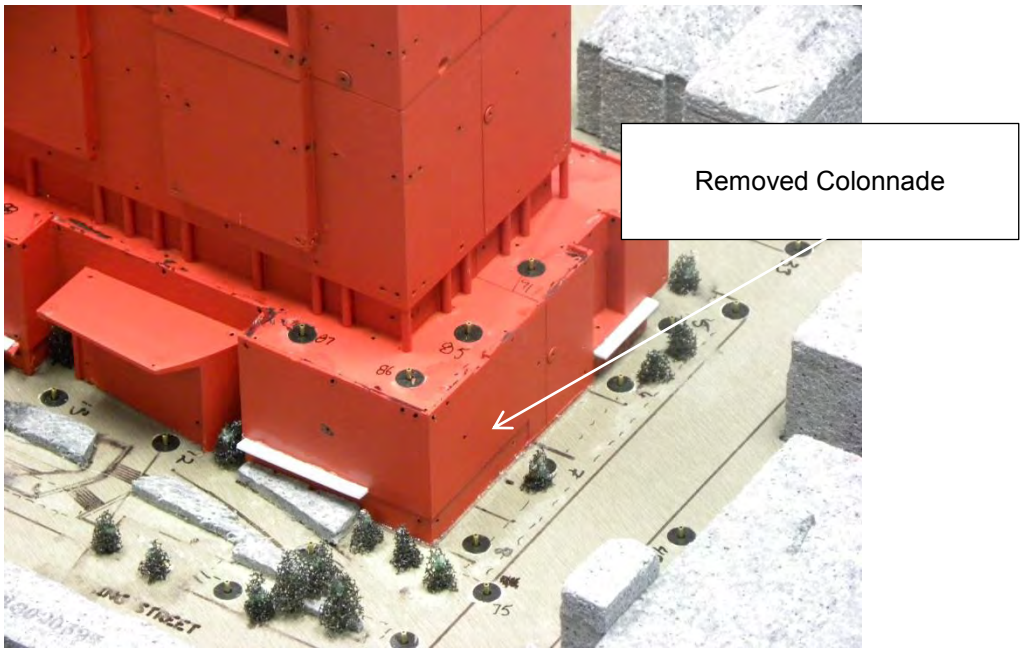

Image 3b – Removed Colonnade on the Proposed Redevelopment (Build)

The removal of the colonnade from the existing building (no build) is expected to redirect wind flow to different grade level locations around the study site.

Image 4a – Sunken Area to the South of the Existing Building (No Build)

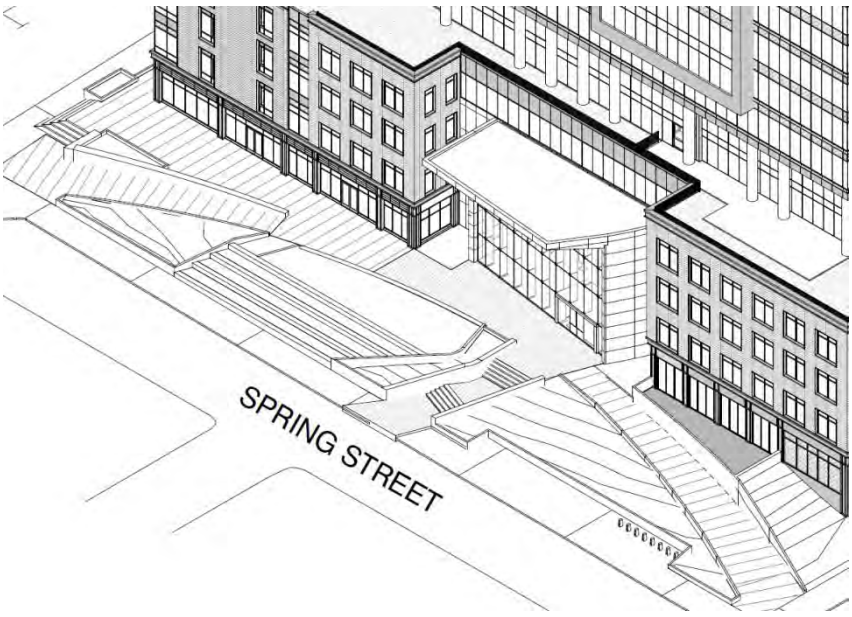

Image 4b – Proposed Elevated Area to the South of the Redeveloped Building (Build)

The area to the south of the existing building is a sunken service area that is expected to provide wind shelter for pedestrians in both this area and the surrounding areas (along Spring Street). The design of the proposed area to the south of the redeveloped building is not expected to be a poor configuration in terms of promoting calm wind speeds, however when compared to the highly beneficial sunken service area, the redeveloped building gives the appearance of generating negative conditions. For this reason, comparing these two areas objectively is not entirely representative, nor does it do the redevelopment proper justice. The existing sunken service area is shielded from the wind, however the only beneficiary

of this sheltered area is the dumpsters and loading vehicles as this area is not a pedestrian accessible zone.

Image 5a – Cornice Overhang on the Existing Building (No Build)

Image 5b – Removed Cornice Overhang on the Redeveloped Building (Build)

The overhang on the existing building (no build) helps redirect downwashing winds away from grade level.

Image 6a – Existing North Façade of the Existing Building

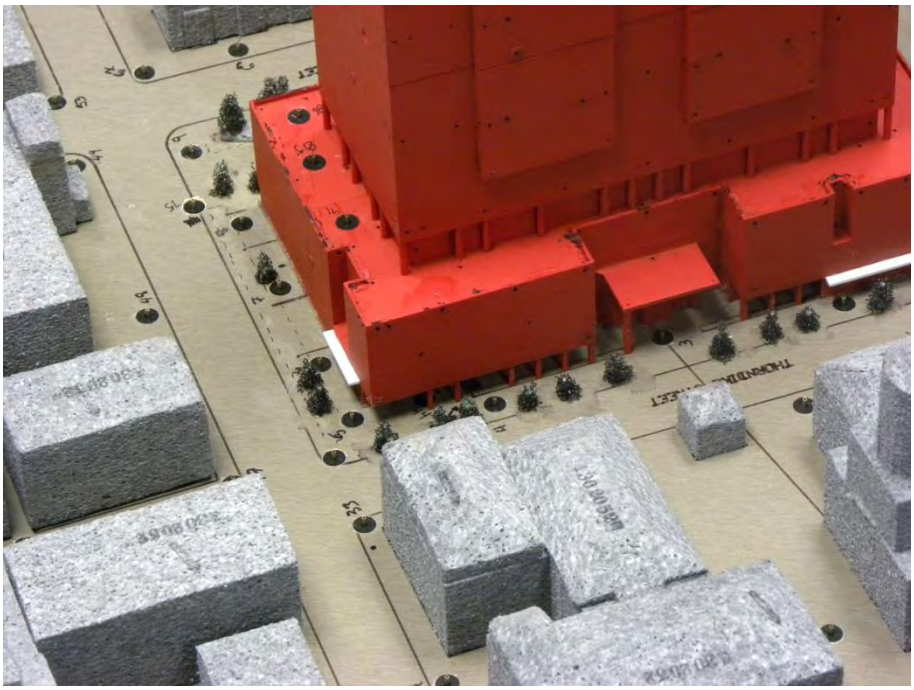

Image 6b – Proposed Colonnade (Building Recess) on the North Façade

The addition of a colonnade on the north façade can provide wind shelter for pedestrians.

Image 7a – Existing South Façade

Image 7b – Proposed Canopy on South Façade

Image 7c – Existing North Façade

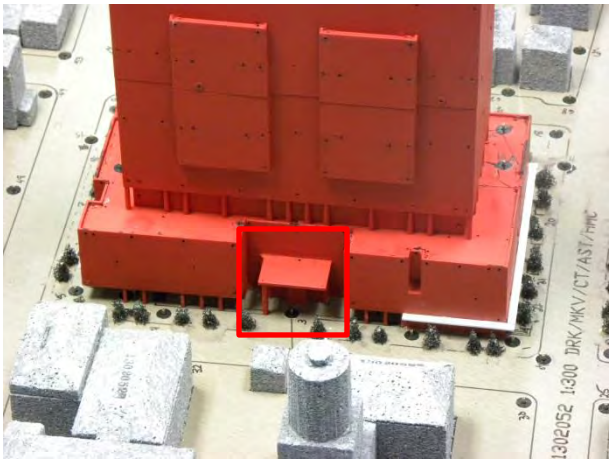

Image 7d – Proposed Canopy on North Façade

The addition of canopies over the north and south entrances will help reduce the impact of downwashing winds on pedestrian comfort.

The building geometry changes mentioned above are architectural in nature and are a result of changing the use of the building and the aesthetics to accommodate a new primary use. The new configuration of the building façade and site related geometries are described in the following section of the report and acknowledge the changes in the primary building geometry.

7. RESULTS

Table 3 presents the mean and effective gust wind speeds for each season as well as annually. Figures 3a, 3b, 3c, 3d and Figures 4a, 4b, 4c and 4d graphically depict the wind comfort conditions at each wind measurement location based on the annual winds. Typically the summer and fall winds tend to be more comfortable than the annual winds while the winter and spring winds are less comfortable than the annual winds.

The following summary of pedestrian wind comfort is based on the annual winds for each configuration tested, except where noted below in the text. In all the following configurations, wind conditions suitable for walking or strolling are appropriate for sidewalks. Lower wind speeds conducive to standing are preferred at main entrances where pedestrians are apt to linger.

It should be noted that only coniferous or marcescent trees were modeled in the wind tunnel study, because deciduous trees are not a representative mitigation feature in the winter (when using annual wind data). For this reason, it is worth noting that the comfort results represent a conservative approach, and that it is expected that comfort conditions in the summer will benefit from any deciduous trees in the vicinity.

7.1 No Build (Existing Configuration)

This configuration represents the existing building and the current landscaping around the site.

7.1.1 Annual Gust Speeds

The existing build is expected to have 6 locations deemed unacceptable as a result of elevated annual gust speeds (Figure 4a). These individual wind speeds are provided in Table 3.

The conditions expected at Location 1 are a result of winds from the southwest through west accelerating around the northwest corner of the building, in addition to downwashing winds in this area.

The conditions at Location 8 are expected to be a result of winds from the south-southwest through southwest accelerating around the southeast corner of the existing building.

The conditions at Location 38, Located at the intersection of Thorndike and 2nd Street, are expected to be caused by winds from the west-northwest through northwest, and is likely exposed to high wind speeds accelerating around the southwest corner of the multi-story complex to the north of Thorndike Street.

The conditions at Location 65 are expected to be a result of winds from the west-northwest through northwest, with a portion of the influencing winds downwashing and wrapping around the southwest corner of the existing building.

The conditions at Location 75 are expected to be a result of winds from the south-southwest through southwest downwashing down the existing building and flows wrapping around the concrete walls along the sidewalk of 2nd Street and Spring Street.

The conditions at Location 81 are expected to be a result of predominant winds approaching from the west and wrapping around the northeast corner of the existing juvenile courthouse.

7.1.2 Annual Mean Speeds

The comfort conditions expected on the study site are expected to range from uncomfortable to sitting (Figure 3a). The primary building entrance, represented by Location 3 in Figure 3a, is expected to be comfortable for standing, which is a suitable comfort category for these areas. Secondary entrances are represented by Locations 2 and 4 and are expected to be comfortable for walking. Uncomfortable conditions are expected at 9 locations on-site, represented by Locations 1, 8, 9, 14, 18, 36, 38, 71 and 75, and are typically concentrated at the four building corners.

Off-site conditions are expected to range from uncomfortable conditions to conditions comfortable for sitting. In general, higher wind conditions are expected at off-site areas close to the existing building and improve as this distance is increased.

7.2 Configuration 1

This configuration includes dense trees to the west of the redeveloped building, around the juvenile courthouse, and involves supplementing the existing deciduous trees in this area with marcescent or coniferous trees. It includes planted marcescent trees to the southwest and south of the proposed development, additional marcescent or coniferous trees surrounding the redeveloped building, and a grade level trellis in the courtyard to the south of the building. It includes extensive canopies on the west, northwest, northeast and south side of the redeveloped building. The addition of the colonnade on the north façade of the redeveloped building, in addition to the overhead canopies above the north and south building entrances (previously described in this report), are included in this configuration. These features can be seen in Figure 1b.

This configuration offered the highest number of category improvements when compared to the existing configuration.

7.2.1 Annual Gust Speeds

The implementation of the mitigation mentioned above is expected to reduce the number of unacceptable conditions on and around the redeveloped building from 6 in the existing configuration to 3 (Locations 5, 19 and 65 in Figure 4b). Of these three, Location 19 was excluded from testing in the existing configuration.

The new conditions at Location 5 are expected to be a result of channeled winds from the northwest. It is expected that the colonnade in this area on the redeveloped building will provide adequate shelter for pedestrians seeking shelter on particularly windy days.

The new conditions at Location 19 are a result of prevailing winds from the west-northwest and northwest, accelerating around the southwest corner of the redeveloped building. Some of these winds are a result of winds downwashing down the west façade of the building.

The events taking place at Location 65 are a result of the same winds contributing to the conditions at Location 19, and are present in the existing configuration.

7.2.2 Annual Mean Speeds

The comfort conditions immediately around the redeveloped building are expected to range from uncomfortable to being comfortable for sitting, as shown in Figure 3b. The primary entrances to the redeveloped building, represented by Locations 3 and 12 in Figure 3b, are expected to be comfortable for sitting which meets the suggested criteria for these areas. Secondary entrances to the redeveloped building are represented by Locations 2, 6, 15, 16, 20, 21 and 22 and are expected to be comfortable for either standing or sitting, both of which are considered ideal for these areas. Uncomfortable wind conditions are expected at 12 locations on-site (Locations 1, 5, 8, 9, 14, 17, 18, 19, 36, 38, 71 and 75), and are generally concentrated around the corners of the redeveloped building. Excluding the previously untested locations in the existing configuration, the redeveloped building and the mitigation in configuration 1 is expected to create one additional uncomfortable area at Location 5 when compared to the existing wind conditions in the existing configuration.

Off-site conditions are expected to range from uncomfortable conditions to conditions comfortable for sitting. When compared to the existing configuration (Figure 3a), two additional uncomfortable conditions are expected along the sidewalk to the south of Spring Street (Locations 59 and 66), while the previously uncomfortable conditions expected at Location 79 are expected to improve to conditions suitable for walking (Figure 3b). Similar to the existing configuration, higher wind conditions are generally expected at off-site areas close to the existing building and improve as this distance is increased.

7.3 Configuration 2

This configuration includes dense trees to the west of the redeveloped building, around the juvenile courthouse, but does not replace the existing trees in this area with marcescent or coniferous trees. It includes planted marcescent trees to the southwest and south of the proposed development, but has had some of the trees present in configuration 1 removed. It includes a grade level trellis in the courtyard to the south of the building, but does not include additional trees to the northwest, north and east of the redeveloped building. It includes a lighter canopy configuration on the southwest and west facades of the redeveloped building, and does not include any canopies on the northwest, east and southwest facades of the building. It also includes a 6 foot parapet that reduces in height to 4 feet at certain locations along the podium level. The addition of the colonnade on the north façade of the redeveloped building, in addition to the overhead canopies above the north and south building entrances (previously described in this report), are included in this configuration. These features can be seen in Figure 1c.

7.3.1 Annual Gust Speeds

The redeveloped building and the mitigation mentioned above is expected to generate 8 unacceptable wind conditions on and around the study site (Locations 1, 5, 14, 17, 19, 38, 65 and 81 in Figure 4c).

The conditions at Location 1 is expected to be a result of winds approaching from the southwest through west and accelerating around the northwest corner of the building. Some downwashing winds along the west façade are contributing to these winds. Additionally, a smaller contribution from winds from the northeast and following the same wind patterns as those previously mentioned are contributing to the conditions at this corner.

The wind conditions expected at Location 5 are expected to be a result of the same winds contributing to the unacceptable wind conditions in configuration 1, with additional wind activity from the southwest. The wind conditions expected at Location 38 are similar to those at Location 5, with a higher contribution of winds from the south-southwest through southwest contributing to the gust speeds in this area. Similar to Location 5, it is expected that winds from the north-northwest through northwest are accelerating around the corners of the buildings to the north of Thorndike, and coupled with redirected flows off the redeveloped building, are contributing to high gust wind activity in this area.

The wind conditions expected at Location 14, similar to the winds contributing to the conditions at sensors 17, 19 and 65, are a result of winds from the west-northwest and northwest accelerating around the southwest corner of the redeveloped building.

The wind conditions at Location 81 are expected to be a result of prevailing winds from the west and west-northwest. Some corner acceleration around the existing juvenile courthouse are contributing to the conditions at this Location, and shows similar wind speeds to those present in the existing configuration.

When compared to the existing configuration, an additional 2 unacceptable locations are expected (Locations 5 and 14) while two previously untested locations are expected to be unacceptable (Locations 17 and 19). The mitigation and redeveloped building are expected to improve the unacceptable conditions at Locations 8 and 75 in the existing configuration.

7.3.2 Annual Mean Speeds

The comfort conditions on-site are expected to range from uncomfortable conditions to wind activity comfortable for sitting (Figure 3c). The primary entrances to the redeveloped building, represented by Locations 3 and 12, are expected to be comfortable for standing, a category that is considered ideal for these areas. Secondary entrances to the redeveloped building are represented by Locations 2, 6, 15, 16, 20, 21 and 22, and are expected to range from conditions comfortable for walking (Locations 6 and 22) to conditions comfortable for standing or sitting. The walking conditions at Locations 6 and 22 are not considered ideal for entrances, and are both associated with winds approaching from the south-southwest. Location 22 is also expected to have a southwest and northeast component associated with the walking conditions at this entrance.

Uncomfortable wind activity is expected at 13 locations around the redeveloped building (1, 5, 8, 9, 10, 14, 17, 18, 19, 36, 38, 71 and 75), and are generally congregated around the corners of the redeveloped building. Excluding the untested Locations in the existing configuration, the redeveloped building and the mitigation in configuration 2 (Figure 3c) is expected to generate one additional uncomfortable condition at Location 5 when compared to the comfort conditions in the existing configuration (Figure 3a).

The comfort conditions off-site are expected to range from uncomfortable conditions to conditions suitable for sitting. When compared to the existing configuration (Figure 3a), two additional uncomfortable conditions are expected to be found on the south side of Spring Street (Locations 59 and 66 in Figure 3c). Similar to the existing configuration, higher wind conditions are generally expected at off-site areas close to the existing building and improve as this distance is increased.

7.4 Configuration 3

This configuration includes dense trees to the west of the redeveloped building, around the juvenile courthouse, but does not replace the existing trees in this area with marcescent or coniferous trees. It includes planted marcescent trees to the southwest and south of the proposed development, but has had some of the trees present in configuration 1 removed. It includes a grade level trellis in the courtyard to the south of the building, but does not include additional trees to the northwest, north and east of the redeveloped building. It includes a lighter canopy configuration on the southwest and west facades of the redeveloped building, and does not include any canopies on the northwest, east and southwest facades of the building. Unlike configuration 2, this configuration does not include the parapet around the podium. The addition of the colonnade on the north façade of the redeveloped building, in addition to the overhead canopies above the north and south building entrances (previously described in this report), are included in this configuration. These features can be seen in Figure 1d.

7.4.1 Annual Gust Speeds

The removal of the parapet from the podium is not expected to generate any additional unacceptable wind activity (Figure 4d) when compared to configuration 2 (Figure 4c). The gust winds contributing to these areas are expected to be similar to those previously described in configuration 2.

Similar to configuration 2, an additional 2 unacceptable locations are expected (Locations 5 and 14) when compared to the existing configuration, while two previously untested locations are expected to be unacceptable (Locations 17 and 19). The mitigation and redeveloped building are expected to improve the unacceptable conditions at Locations 8 and 75 in the existing configuration.

Uncomfortable wind activity is expected at 12 locations around the redeveloped building (1, 8, 9, 10, 14, 17, 18, 19, 36, 38, 71 and 75), and are generally congregated around the corners of the redeveloped building. Excluding the untested Locations in the existing configuration, the redeveloped building and the mitigation in configuration 3 (Figure 3c) is expected to generate one reduction in comfort category at Location 5 when compared to the existing configuration (Figure 3a).

7.4.2 Annual Mean Speeds

Comfort conditions ranging from dangerous conditions to conditions suitable for sitting are expected on site, as shown in Figure 3d. The comfort categories at the primary and secondary entrances are not expected to change with the removal of the parapet in configuration 3 relative to configuration 2. Primary entrances, represented by Location 3 and 12 in Figure 3d, are expected to be comfortable for standing. Secondary entrances to the redeveloped building are represented by Locations 2, 6, 15, 16, 20, 21 and 22, and are expected to range from conditions comfortable for walking (Locations 6 and 22) to conditions comfortable for standing or sitting.

The removal of the parapet on the podium level is expected to result in dangerous wind activity at the northeast corner of the redeveloped building, represented by Location 5 in Figure 3d. The winds contributing to these conditions are the same as those in configurations 1 and 2, except with more downwash expected when compared to configuration 2 and with fewer obstructions to the winds approaching from the northwest when compared to configuration 1.

The comfort conditions off-site are expected to range from uncomfortable conditions to conditions suitable for sitting. When compared to the existing configuration (Figure 3a), two additional uncomfortable conditions are expected to be found on the south side of Spring Street (Locations 59 and 66 in Figure 3d) and one additional uncomfortable condition to the north of Thorndike Street (Location 32). The winds contributing to the uncomfortable conditions at this location are primarily from the south-southwest passing over the podium and through the colonnade at the northeast corner. Similar to the existing configuration, higher wind conditions are generally expected at off-site areas close to the existing building and improve as this distance is increased.

8. APPLICABILITY OF RESULTS

The results presented in this report pertain to the model of the proposed Edward J. Sullivan Courthouse Redevelopment Project and were constructed using the architectural design drawings listed in Appendix A. Should there be any design changes that deviate from this list of drawings, the results 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.

TABLES

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
1	A	Spring	27		Uncomfortable	35		Unacceptable
		Summer	22		Uncomfortable	28		Acceptable
		Fall	25		Uncomfortable	33		Unacceptable
		Winter	27		Uncomfortable	36		Unacceptable
		Annual	26		Uncomfortable	34		Unacceptable
	B	Spring	25		Uncomfortable	32		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	C	Spring	28		Dangerous	37	12%	Unacceptable
		Summer	24	14%	Uncomfortable	30	11%	Acceptable
		Fall	27	12%	Uncomfortable	34		Unacceptable
		Winter	29	12%	Dangerous	38	12%	Unacceptable
		Annual	27	12%	Uncomfortable	35		Unacceptable
	D	Spring	28		Dangerous	37	12%	Unacceptable
		Summer	24	14%	Uncomfortable	30	11%	Acceptable
		Fall	27	12%	Uncomfortable	34		Unacceptable
		Winter	29	12%	Dangerous	38	12%	Unacceptable
		Annual	27	12%	Uncomfortable	35		Unacceptable
2	A	Spring	18		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	13	-24%	Standing	18	-25%	Acceptable
		Summer	10	-23%	Sitting	15	-17%	Acceptable
		Fall	12	-20%	Sitting	17	-23%	Acceptable
		Winter	13	-24%	Standing	19	-24%	Acceptable
		Annual	12	-25%	Sitting	18	-22%	Acceptable
	C	Spring	15	-12%	Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	D	Spring	15	-12%	Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
3	A	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	11	-21%	Sitting	18	-14%	Acceptable
		Summer	9	-18%	Sitting	14	-18%	Acceptable
		Fall	11	-15%	Sitting	16	-20%	Acceptable
		Winter	12	-14%	Sitting	18	-18%	Acceptable
		Annual	11	-15%	Sitting	17	-19%	Acceptable
	C	Spring	15		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	16	14%	Walking	23		Acceptable
		Annual	14		Standing	21		Acceptable
	D	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
4	A	Spring	19		Walking	26		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	10	-44%	Sitting	16	-36%	Acceptable
		Summer	9	-40%	Sitting	14	-33%	Acceptable
		Fall	10	-41%	Sitting	15	-38%	Acceptable
		Winter	11	-42%	Sitting	16	-38%	Acceptable
		Annual	10	-41%	Sitting	15	-40%	Acceptable
	C	Spring	16	-11%	Walking	23		Acceptable
		Summer	13	-13%	Standing	19		Acceptable
		Fall	15	-12%	Standing	22		Acceptable
		Winter	17	-11%	Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	D	Spring	17		Walking	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
5	A	Spring	16		Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	26	73%	Uncomfortable	33	50%	Unacceptable
		Summer	21	62%	Uncomfortable	27	50%	Acceptable
		Fall	24	71%	Uncomfortable	31	48%	Acceptable
		Winter	27	80%	Uncomfortable	35	59%	Unacceptable
		Annual	25	79%	Uncomfortable	32	52%	Unacceptable
	C	Spring	28	87%	Dangerous	36	64%	Unacceptable
		Summer	22	69%	Uncomfortable	29	61%	Acceptable
		Fall	26	86%	Uncomfortable	34	62%	Unacceptable
		Winter	29	93%	Dangerous	37	68%	Unacceptable
		Annual	27	93%	Uncomfortable	35	67%	Unacceptable
	D	Spring	28	87%	Dangerous	36	64%	Unacceptable
		Summer	23	77%	Uncomfortable	29	61%	Acceptable
		Fall	27	93%	Uncomfortable	34	62%	Unacceptable
		Winter	30	100%	Dangerous	38	73%	Unacceptable
		Annual	28	100%	Dangerous	35	67%	Unacceptable
6	A	Spring	13		Standing	20		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	B	Spring	16	33%	Walking	23	28%	Acceptable
		Summer	14	40%	Standing	19	27%	Acceptable
		Fall	15	36%	Standing	21	24%	Acceptable
		Winter	15	25%	Standing	22	22%	Acceptable
		Annual	15	36%	Standing	21	24%	Acceptable
	C	Spring	18	50%	Walking	25	39%	Acceptable
		Summer	15	50%	Standing	21	40%	Acceptable
		Fall	16	45%	Walking	23	35%	Acceptable
		Winter	16	33%	Walking	24	33%	Acceptable
		Annual	16	45%	Walking	23	35%	Acceptable
	D	Spring	19	58%	Walking	25	39%	Acceptable
		Summer	16	60%	Walking	22	47%	Acceptable
		Fall	17	55%	Walking	24	41%	Acceptable
		Winter	17	42%	Walking	24	33%	Acceptable
		Annual	17	55%	Walking	24	41%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
7	A	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	14		Standing	20		Acceptable
	B	Spring	17	21%	Walking	24	20%	Acceptable
		Summer	14	40%	Standing	19	27%	Acceptable
		Fall	16	23%	Walking	23	28%	Acceptable
		Winter	18	29%	Walking	26	30%	Acceptable
		Annual	17	31%	Walking	24	26%	Acceptable
	C	Spring	17	21%	Walking	24	20%	Acceptable
		Summer	13	30%	Standing	19	27%	Acceptable
		Fall	16	23%	Walking	22	22%	Acceptable
		Winter	18	29%	Walking	25	25%	Acceptable
		Annual	16	23%	Walking	23	21%	Acceptable
	D	Spring	17	21%	Walking	25	25%	Acceptable
		Summer	14	40%	Standing	20	33%	Acceptable
		Fall	16	23%	Walking	23	28%	Acceptable
		Winter	18	29%	Walking	26	30%	Acceptable
		Annual	17	31%	Walking	24	26%	Acceptable
8	A	Spring	26		Uncomfortable	34		Unacceptable
		Summer	22		Uncomfortable	29		Acceptable
		Fall	24		Uncomfortable	31		Acceptable
		Winter	25		Uncomfortable	32		Unacceptable
		Annual	24		Uncomfortable	32		Unacceptable
	B	Spring	24		Uncomfortable	33		Unacceptable
		Summer	20		Uncomfortable	28		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	C	Spring	22	-12%	Uncomfortable	30		Acceptable
		Summer	17	-19%	Walking	23	-15%	Acceptable
		Fall	20	-13%	Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	28		Acceptable
	D	Spring	22	-12%	Uncomfortable	30		Acceptable
		Summer	18	-14%	Walking	24	-11%	Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
9	A	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	22		Uncomfortable	30	11%	Acceptable
		Summer	17	13%	Walking	23	15%	Acceptable
		Fall	20	11%	Uncomfortable	28	17%	Acceptable
		Winter	23	15%	Uncomfortable	31	15%	Acceptable
		Annual	21	11%	Uncomfortable	29	16%	Acceptable
	C	Spring	22		Uncomfortable	30	11%	Acceptable
		Summer	17	13%	Walking	23	15%	Acceptable
		Fall	20	11%	Uncomfortable	28	17%	Acceptable
		Winter	23	15%	Uncomfortable	31	15%	Acceptable
		Annual	21	11%	Uncomfortable	28	12%	Acceptable
	D	Spring	22		Uncomfortable	30	11%	Acceptable
		Summer	17	13%	Walking	23	15%	Acceptable
		Fall	21	17%	Uncomfortable	28	17%	Acceptable
		Winter	23	15%	Uncomfortable	32	19%	Unacceptable
		Annual	21	11%	Uncomfortable	29	16%	Acceptable
10	A	Data Not Available						
	B	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
	C	Spring	21		Uncomfortable	29		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	D	Spring	21		Uncomfortable	29		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	21		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
11	A	Spring	21		Uncomfortable	29		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	19		Walking	28		Acceptable
	B	Spring	16	-16%	Walking	23	-15%	Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	15	-17%	Standing	22	-12%	Acceptable
		Winter	16	-20%	Walking	23	-21%	Acceptable
		Annual	15	-17%	Standing	22	-15%	Acceptable
	C	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	D	Spring	19		Walking	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
12	A	Data Not Available						
	B	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	C	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	D	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
13	A		Data Not Available					
	B	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	12		Sitting	19		Acceptable
	C	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	21		Acceptable
	D	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	22		Acceptable
14	A	Spring	24		Uncomfortable	32		Unacceptable
		Summer	18		Walking	25		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	B	Spring	21		Uncomfortable	28		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	20		Uncomfortable	28		Acceptable
	C	Spring	24		Uncomfortable	33		Unacceptable
		Summer	18		Walking	25		Acceptable
		Fall	22		Uncomfortable	31	11%	Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	23		Uncomfortable	32		Unacceptable
	D	Spring	24		Uncomfortable	33		Unacceptable
		Summer	19	12%	Walking	25		Acceptable
		Fall	22		Uncomfortable	31	11%	Acceptable
		Winter	26		Uncomfortable	35		Unacceptable
		Annual	23		Uncomfortable	32		Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations

A – No Build (Existing)
B – Build 1
C – Build 2
D – Build 3

Mean Wind Speed Criteria

Comfortable for Sitting:	≤ 12 mph
Comfortable for Standing:	> 12 and ≤ 15 mph
Comfortable for Walking:	> 15 and ≤ 19 mph
Uncomfortable for Walking:	> 19 and ≤ 27 mph
Dangerous Conditions:	> 27 mph

Effective Gust Criteria

Acceptable:	≤ 31 mph
Unacceptable:	> 31 mph

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed	
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
15	A		Data Not Available					
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	C	Spring	14		Standing	21		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	15		Standing	22		Acceptable
		Annual	14		Standing	20		Acceptable
	D	Spring	15		Standing	22		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
16	A		Data Not Available					
	B	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	18		Acceptable
	C	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	18		Acceptable
	D	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	15		Acceptable
		Fall	13		Standing	18		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
17	A		Data Not Available					
	B	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	28		Acceptable
		Winter	23		Uncomfortable	33		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	C	Spring	24		Uncomfortable	33		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	36		Unacceptable
		Annual	24		Uncomfortable	32		Unacceptable
	D	Spring	24		Uncomfortable	33		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	22		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	36		Unacceptable
		Annual	23		Uncomfortable	33		Unacceptable
18	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	21		Acceptable
		Fall	19		Walking	26		Acceptable
		Winter	22		Uncomfortable	29		Acceptable
		Annual	20		Uncomfortable	27		Acceptable
	B	Spring	22	16%	Uncomfortable	30	15%	Acceptable
		Summer	17	13%	Walking	23	15%	Acceptable
		Fall	20	11%	Uncomfortable	28	12%	Acceptable
		Winter	23	15%	Uncomfortable	32	14%	Unacceptable
		Annual	21	11%	Uncomfortable	29	16%	Acceptable
	C	Spring	22	16%	Uncomfortable	30	15%	Acceptable
		Summer	17	13%	Walking	23	15%	Acceptable
		Fall	21	17%	Uncomfortable	28	12%	Acceptable
		Winter	23	15%	Uncomfortable	32	14%	Unacceptable
		Annual	22	16%	Uncomfortable	29	16%	Acceptable
	D	Spring	22	16%	Uncomfortable	30	15%	Acceptable
		Summer	17	13%	Walking	23	15%	Acceptable
		Fall	21	17%	Uncomfortable	28	12%	Acceptable
		Winter	24	20%	Uncomfortable	32	14%	Unacceptable
		Annual	22	16%	Uncomfortable	29	16%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
19	A			Data Not Available				
	B	Spring	25		Uncomfortable	32		Unacceptable
		Summer	20		Uncomfortable	26		Acceptable
		Fall	24		Uncomfortable	31		Acceptable
		Winter	27		Uncomfortable	35		Unacceptable
		Annual	25		Uncomfortable	32		Unacceptable
	C	Spring	28		Dangerous	35		Unacceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	26		Uncomfortable	33		Unacceptable
		Winter	30		Dangerous	38		Unacceptable
		Annual	27		Uncomfortable	35		Unacceptable
	D	Spring	28		Dangerous	35		Unacceptable
		Summer	21		Uncomfortable	28		Acceptable
		Fall	26		Uncomfortable	33		Unacceptable
		Winter	30		Dangerous	38		Unacceptable
		Annual	27		Uncomfortable	35		Unacceptable
20	A			Data Not Available				
	B	Spring	13		Standing	21		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	12		Sitting	19		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	12		Sitting	19		Acceptable
	C	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	18		Acceptable
	D	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	19		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
21	A	Spring	12		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	14	27%	Standing	20	18%	Acceptable
		Summer	12	33%	Sitting	17	21%	Acceptable
		Fall	13	18%	Standing	19	19%	Acceptable
		Winter	14	17%	Standing	20	11%	Acceptable
		Annual	13	18%	Standing	19	19%	Acceptable
	D	Spring	15	36%	Standing	21	24%	Acceptable
		Summer	12	33%	Sitting	18	29%	Acceptable
		Fall	14	27%	Standing	20	25%	Acceptable
		Winter	14	17%	Standing	21	17%	Acceptable
		Annual	14	27%	Standing	20	25%	Acceptable
22	A	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	10	-23%	Sitting	16	-16%	Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14	-12%	Standing	22		Acceptable
		Annual	13	-13%	Standing	20		Acceptable
	C	Spring	18	20%	Walking	25	19%	Acceptable
		Summer	15	15%	Standing	20		Acceptable
		Fall	17	21%	Walking	23		Acceptable
		Winter	18	12%	Walking	25		Acceptable
		Annual	17	13%	Walking	24	14%	Acceptable
	D	Spring	18	20%	Walking	26	24%	Acceptable
		Summer	15	15%	Standing	21	11%	Acceptable
		Fall	17	21%	Walking	24	14%	Acceptable
		Winter	18	12%	Walking	26	13%	Acceptable
		Annual	17	13%	Walking	24	14%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
23	A	Spring	9		Sitting	14		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	8		Sitting	14		Acceptable
	B	Spring	9	12%	Sitting	14		Acceptable
		Summer	7	17%	Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	8		Sitting	13		Acceptable
	C	Spring	9	12%	Sitting	14		Acceptable
		Summer	7	17%	Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	8		Sitting	13		Acceptable
	D	Spring	9	12%	Sitting	14		Acceptable
		Summer	7	17%	Sitting	11		Acceptable
		Fall	8		Sitting	13		Acceptable
		Winter	9		Sitting	14		Acceptable
		Annual	8		Sitting	13		Acceptable
24	A	Spring	11		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	10		Sitting	16	-11%	Acceptable
		Summer	8	-11%	Sitting	13	-13%	Acceptable
		Fall	9		Sitting	15	-12%	Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15	-12%	Acceptable
	C	Spring	10		Sitting	16	-11%	Acceptable
		Summer	8	-11%	Sitting	13	-13%	Acceptable
		Fall	9		Sitting	15	-12%	Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	15	-12%	Acceptable
	D	Spring	10		Sitting	16	-11%	Acceptable
		Summer	8	-11%	Sitting	13	-13%	Acceptable
		Fall	9		Sitting	15	-12%	Acceptable
		Winter	10		Sitting	17		Acceptable
		Annual	9		Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
25	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	19		Walking	25		Acceptable
		Winter	20		Uncomfortable	27		Acceptable
		Annual	19		Walking	25		Acceptable
	B	Spring	19		Walking	26		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	C	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	20		Uncomfortable	26		Acceptable
		Annual	18		Walking	24		Acceptable
	D	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
26	A	Spring	10		Sitting	17		Acceptable
		Summer	7		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	10	11%	Sitting	17		Acceptable
		Summer	7		Sitting	13		Acceptable
		Fall	9	12%	Sitting	15		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9	12%	Sitting	15		Acceptable
	C	Spring	10	11%	Sitting	17		Acceptable
		Summer	8	14%	Sitting	13		Acceptable
		Fall	9	12%	Sitting	16		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9	12%	Sitting	16		Acceptable
	D	Spring	10	11%	Sitting	18	12%	Acceptable
		Summer	8	14%	Sitting	13		Acceptable
		Fall	10	25%	Sitting	16		Acceptable
		Winter	10	11%	Sitting	16		Acceptable
		Annual	10	25%	Sitting	16		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
27	A	Spring	11		Sitting	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	11	22%	Sitting	17	13%	Acceptable
		Fall	13	30%	Standing	19	12%	Acceptable
		Winter	13	18%	Standing	20	11%	Acceptable
		Annual	13	30%	Standing	19	12%	Acceptable
	C	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	11	22%	Sitting	17	13%	Acceptable
		Fall	12	20%	Sitting	19	12%	Acceptable
		Winter	13	18%	Standing	20	11%	Acceptable
		Annual	12	20%	Sitting	19	12%	Acceptable
	D	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	11	22%	Sitting	17	13%	Acceptable
		Fall	12	20%	Sitting	19	12%	Acceptable
		Winter	13	18%	Standing	20	11%	Acceptable
		Annual	13	30%	Standing	19	12%	Acceptable
28	A	Spring	18		Walking	26		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	20		Uncomfortable	29		Acceptable
		Annual	18		Walking	26		Acceptable
	B	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	16		Walking	24		Acceptable
	C	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable
	D	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	27		Acceptable
		Annual	17		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
29	A	Spring	15		Standing	25		Acceptable
		Summer	13		Standing	22		Acceptable
		Fall	14		Standing	24		Acceptable
		Winter	15		Standing	25		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	14		Standing	23		Acceptable
		Summer	12		Sitting	21		Acceptable
		Fall	14		Standing	23		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	23		Acceptable
	C	Spring	15		Standing	25		Acceptable
		Summer	14	17%	Standing	22		Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	16	14%	Walking	25		Acceptable
		Annual	15		Standing	24		Acceptable
	D	Spring	16	14%	Walking	25		Acceptable
		Summer	14	17%	Standing	23		Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	16	14%	Walking	26		Acceptable
		Annual	15		Standing	25		Acceptable
30	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	18		Walking	24		Acceptable
		Fall	21		Uncomfortable	28		Acceptable
		Winter	22		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	B	Spring	23		Uncomfortable	31		Acceptable
		Summer	18		Walking	24		Acceptable
		Fall	21	11%	Uncomfortable	29		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	C	Spring	23		Uncomfortable	31		Acceptable
		Summer	19	12%	Walking	25		Acceptable
		Fall	21	11%	Uncomfortable	29		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	22		Uncomfortable	29		Acceptable
	D	Spring	23		Uncomfortable	31		Acceptable
		Summer	19	12%	Walking	25		Acceptable
		Fall	21	11%	Uncomfortable	29		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	22		Uncomfortable	30	11%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
31	A	Spring	23		Uncomfortable	30		Acceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	32		Unacceptable
		Annual	22		Uncomfortable	30		Acceptable
	B	Spring	23		Uncomfortable	31		Acceptable
		Summer	21		Uncomfortable	28		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	32		Unacceptable
		Annual	23		Uncomfortable	30		Acceptable
	C	Spring	23		Uncomfortable	30		Acceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	22		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	31		Acceptable
		Annual	22		Uncomfortable	30		Acceptable
	D	Spring	23		Uncomfortable	31		Acceptable
		Summer	21		Uncomfortable	28		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	32		Unacceptable
		Annual	23		Uncomfortable	30		Acceptable
32	A	Spring	17		Walking	24		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	20	25%	Uncomfortable	27	17%	Acceptable
		Summer	17	31%	Walking	23	21%	Acceptable
		Fall	18	20%	Walking	25	14%	Acceptable
		Winter	18	12%	Walking	26	13%	Acceptable
		Annual	18	20%	Walking	25	14%	Acceptable
	C	Spring	21	31%	Uncomfortable	29	26%	Acceptable
		Summer	18	38%	Walking	25	32%	Acceptable
		Fall	19	27%	Walking	27	23%	Acceptable
		Winter	20	25%	Uncomfortable	28	22%	Acceptable
		Annual	19	27%	Walking	27	23%	Acceptable
	D	Spring	21	31%	Uncomfortable	29	26%	Acceptable
		Summer	18	38%	Walking	25	32%	Acceptable
		Fall	20	33%	Uncomfortable	27	23%	Acceptable
		Winter	20	25%	Uncomfortable	28	22%	Acceptable
		Annual	20	33%	Uncomfortable	27	23%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
33	A	Spring	16		Walking	24		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	24		Acceptable
	B	Spring	17	13%	Walking	25		Acceptable
		Summer	15	15%	Standing	21	11%	Acceptable
		Fall	17	13%	Walking	24		Acceptable
		Winter	18	12%	Walking	26		Acceptable
		Annual	17	13%	Walking	24		Acceptable
	C	Spring	18	20%	Walking	25		Acceptable
		Summer	15	15%	Standing	21	11%	Acceptable
		Fall	17	13%	Walking	24		Acceptable
		Winter	18	12%	Walking	26		Acceptable
		Annual	17	13%	Walking	25	14%	Acceptable
	D	Spring	18	20%	Walking	25		Acceptable
		Summer	15	15%	Standing	21	11%	Acceptable
		Fall	17	13%	Walking	24		Acceptable
		Winter	18	12%	Walking	26		Acceptable
		Annual	17	13%	Walking	24		Acceptable
34	A	Spring	13		Standing	22		Acceptable
		Summer	11		Sitting	19		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	16	23%	Walking	25	25%	Acceptable
		Summer	14	27%	Standing	22	22%	Acceptable
		Fall	15	25%	Standing	22	16%	Acceptable
		Winter	14	17%	Standing	21	11%	Acceptable
		Annual	15	25%	Standing	23	21%	Acceptable
	C	Spring	16	23%	Walking	24	20%	Acceptable
		Summer	14	27%	Standing	21	17%	Acceptable
		Fall	14	17%	Standing	22	16%	Acceptable
		Winter	14	17%	Standing	21	11%	Acceptable
		Annual	15	25%	Standing	22	16%	Acceptable
	D	Spring	16	23%	Walking	24	20%	Acceptable
		Summer	14	27%	Standing	21	17%	Acceptable
		Fall	15	25%	Standing	22	16%	Acceptable
		Winter	14	17%	Standing	21	11%	Acceptable
		Annual	15	25%	Standing	22	16%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
35	A	Spring	12		Sitting	20		Acceptable
		Summer	10		Sitting	17		Acceptable
		Fall	11		Sitting	19		Acceptable
		Winter	12		Sitting	21		Acceptable
		Annual	11		Sitting	20		Acceptable
	B	Spring	12		Sitting	21	11%	Acceptable
		Summer	10		Sitting	18	12%	Acceptable
		Fall	12		Sitting	20	11%	Acceptable
		Winter	12		Sitting	21		Acceptable
		Annual	12		Sitting	20		Acceptable
	C	Spring	12		Sitting	21	11%	Acceptable
		Summer	11		Sitting	18	12%	Acceptable
		Fall	12		Sitting	20	11%	Acceptable
		Winter	13	18%	Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
	D	Spring	12		Sitting	21	11%	Acceptable
		Summer	11		Sitting	18	12%	Acceptable
		Fall	12		Sitting	20	11%	Acceptable
		Winter	13	18%	Standing	21		Acceptable
		Annual	12		Sitting	20		Acceptable
36	A	Spring	24		Uncomfortable	33		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	B	Spring	23		Uncomfortable	31		Acceptable
		Summer	19		Walking	25		Acceptable
		Fall	22		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	31		Acceptable
		Annual	22		Uncomfortable	29		Acceptable
	C	Spring	24		Uncomfortable	32		Unacceptable
		Summer	20	11%	Uncomfortable	26		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	32		Unacceptable
		Annual	23		Uncomfortable	30		Acceptable
	D	Spring	25		Uncomfortable	32		Unacceptable
		Summer	20	11%	Uncomfortable	26		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	33		Unacceptable
		Annual	24		Uncomfortable	31		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
37	A	Spring	9		Sitting	16		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	9	12%	Sitting	15		Acceptable
		Winter	9		Sitting	16		Acceptable
		Annual	9	12%	Sitting	15		Acceptable
	C	Spring	9		Sitting	16		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	9	12%	Sitting	15		Acceptable
		Winter	10	11%	Sitting	16		Acceptable
		Annual	9	12%	Sitting	15		Acceptable
	D	Spring	10	11%	Sitting	16		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	9	12%	Sitting	15		Acceptable
		Winter	10	11%	Sitting	16		Acceptable
		Annual	9	12%	Sitting	15		Acceptable
38	A	Spring	25		Uncomfortable	33		Unacceptable
		Summer	20		Uncomfortable	26		Acceptable
		Fall	23		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	35		Unacceptable
		Annual	24		Uncomfortable	32		Unacceptable
	B	Spring	24		Uncomfortable	32		Unacceptable
		Summer	21	11%	Uncomfortable	28	12%	Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
	C	Spring	26	13%	Uncomfortable	34		Unacceptable
		Summer	21	11%	Uncomfortable	28	12%	Acceptable
		Fall	24		Uncomfortable	32	10%	Unacceptable
		Winter	26		Uncomfortable	35		Unacceptable
		Annual	25		Uncomfortable	33		Unacceptable
	D	Spring	26	13%	Uncomfortable	34		Unacceptable
		Summer	22	16%	Uncomfortable	29	16%	Acceptable
		Fall	24		Uncomfortable	32	10%	Unacceptable
		Winter	26		Uncomfortable	35		Unacceptable
		Annual	25		Uncomfortable	33		Unacceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
39	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20	11%	Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20	11%	Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	D	Spring	16		Walking	23		Acceptable
		Summer	14		Standing	20	11%	Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
40	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	19	12%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	11		Sitting	18	12%	Acceptable
		Winter	12		Sitting	20	11%	Acceptable
		Annual	12		Sitting	18		Acceptable
	C	Spring	12		Sitting	19	12%	Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18	12%	Acceptable
		Winter	13		Standing	20	11%	Acceptable
		Annual	12		Sitting	18		Acceptable
	D	Spring	12		Sitting	19	12%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	11		Sitting	18	12%	Acceptable
		Winter	12		Sitting	20	11%	Acceptable
		Annual	12		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
41	A	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	14		Standing	22		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	D	Spring	14		Standing	22		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	23		Acceptable
		Annual	14		Standing	22		Acceptable
42	A	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	23		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable
	C	Spring	18		Walking	25		Acceptable
		Summer	15	15%	Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	D	Spring	18		Walking	25		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	26		Acceptable
		Annual	18		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
43	A	Spring	12		Sitting	19		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	D	Spring	12		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
44	A			Data Not Available				
	B	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	20		Uncomfortable	26		Acceptable
		Annual	19		Walking	24		Acceptable
	C	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	20		Uncomfortable	26		Acceptable
		Annual	19		Walking	24		Acceptable
	D	Spring	19		Walking	25		Acceptable
		Summer	15		Standing	20		Acceptable
		Fall	18		Walking	23		Acceptable
		Winter	21		Uncomfortable	27		Acceptable
		Annual	19		Walking	24		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
45	A	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	D	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
46	A	Spring	18		Walking	26		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	17		Walking	24		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	17		Walking	24		Acceptable
		Summer	14		Standing	19		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	C	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	D	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
47	A	Spring	17		Walking	24		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	B	Spring	17		Walking	24		Acceptable
		Summer	14		Standing	20	11%	Acceptable
		Fall	17	13%	Walking	24		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	24		Acceptable
	C	Spring	18	12%	Walking	26	13%	Acceptable
		Summer	15	15%	Standing	21	17%	Acceptable
		Fall	17	13%	Walking	25	14%	Acceptable
		Winter	20	18%	Uncomfortable	28	17%	Acceptable
		Annual	18	12%	Walking	26	13%	Acceptable
	D	Spring	18	12%	Walking	26	13%	Acceptable
		Summer	15	15%	Standing	21	17%	Acceptable
		Fall	18	20%	Walking	25	14%	Acceptable
		Winter	20	18%	Uncomfortable	28	17%	Acceptable
		Annual	18	12%	Walking	26	13%	Acceptable
48	A	Spring	23		Uncomfortable	31		Acceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	32		Unacceptable
		Annual	23		Uncomfortable	30		Acceptable
	B	Spring	23		Uncomfortable	31		Acceptable
		Summer	20		Uncomfortable	27		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	32		Unacceptable
		Annual	22		Uncomfortable	30		Acceptable
	C	Spring	23		Uncomfortable	31		Acceptable
		Summer	21		Uncomfortable	28		Acceptable
		Fall	23		Uncomfortable	30		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	31	11%	Acceptable
	D	Spring	23		Uncomfortable	32	10%	Unacceptable
		Summer	21		Uncomfortable	28		Acceptable
		Fall	23		Uncomfortable	31	11%	Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	31	11%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
49	A	Spring	18		Walking	26		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	17		Walking	25		Acceptable
	B	Spring	14	-18%	Standing	22	-12%	Acceptable
		Summer	12	-20%	Sitting	19	-14%	Acceptable
		Fall	13	-19%	Standing	20	-17%	Acceptable
		Winter	14	-18%	Standing	21	-16%	Acceptable
		Annual	13	-19%	Standing	21	-12%	Acceptable
	C	Spring	15	-12%	Standing	23		Acceptable
		Summer	13	-13%	Standing	20		Acceptable
		Fall	14	-12%	Standing	22		Acceptable
		Winter	14	-18%	Standing	23		Acceptable
		Annual	14	-12%	Standing	22		Acceptable
	D	Spring	15	-12%	Standing	24		Acceptable
		Summer	13	-13%	Standing	20		Acceptable
		Fall	14	-12%	Standing	22		Acceptable
		Winter	15	-12%	Standing	23		Acceptable
		Annual	14	-12%	Standing	22		Acceptable
50	A	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	20		Acceptable
	B	Spring	14		Standing	21	11%	Acceptable
		Summer	13	18%	Standing	19	19%	Acceptable
		Fall	14	17%	Standing	21	11%	Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	14		Standing	21	11%	Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	12		Sitting	19	19%	Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	20		Acceptable
	D	Spring	13		Standing	21	11%	Acceptable
		Summer	13	18%	Standing	19	19%	Acceptable
		Fall	13		Standing	20		Acceptable
		Winter	14		Standing	22		Acceptable
		Annual	13		Standing	21	11%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
51	A	Spring	10		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	D	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
52	A	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	C	Spring	13		Standing	20		Acceptable
		Summer	11		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable
	D	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	21		Acceptable
		Annual	13		Standing	19		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
53	A	Spring	13		Standing	19		Acceptable
		Summer	11		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	14	17%	Standing	20	11%	Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	13		Standing	19	12%	Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	C	Spring	14	17%	Standing	20	11%	Acceptable
		Summer	12		Sitting	17	13%	Acceptable
		Fall	13		Standing	19	12%	Acceptable
		Winter	14		Standing	21	11%	Acceptable
		Annual	13		Standing	19		Acceptable
	D	Spring	14	17%	Standing	20	11%	Acceptable
		Summer	12		Sitting	17	13%	Acceptable
		Fall	13		Standing	19	12%	Acceptable
		Winter	14		Standing	21	11%	Acceptable
		Annual	13		Standing	20	11%	Acceptable
54	A	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	12		Sitting	19	12%	Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18	12%	Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	18		Acceptable
	C	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	18		Acceptable
	D	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
55	A	Spring	11		Sitting	18		Acceptable
		Summer	10		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	D	Spring	11		Sitting	18		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
56	A	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	11		Sitting	18		Acceptable
	B	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12	20%	Sitting	18		Acceptable
		Winter	12		Sitting	19	12%	Acceptable
		Annual	12	20%	Sitting	19	12%	Acceptable
	C	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20	18%	Acceptable
		Annual	12	20%	Sitting	18		Acceptable
	D	Spring	13	18%	Standing	20	11%	Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	12	20%	Sitting	18		Acceptable
		Winter	12		Sitting	20	18%	Acceptable
		Annual	12	20%	Sitting	19	12%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
57	A	Spring	17		Walking	25		Acceptable
		Summer	13		Standing	19		Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	19	19%	Walking	26	13%	Acceptable
		Summer	15	15%	Standing	21	17%	Acceptable
		Fall	17	13%	Walking	24		Acceptable
		Winter	18	12%	Walking	27	17%	Acceptable
		Annual	17	13%	Walking	25	14%	Acceptable
	C	Spring	19	19%	Walking	27	17%	Acceptable
		Summer	14		Standing	21	17%	Acceptable
		Fall	17	13%	Walking	25	14%	Acceptable
		Winter	18	12%	Walking	27	17%	Acceptable
		Annual	17	13%	Walking	25	14%	Acceptable
	D	Spring	19	19%	Walking	27	17%	Acceptable
		Summer	15	15%	Standing	21	17%	Acceptable
		Fall	17	13%	Walking	25	14%	Acceptable
		Winter	18	12%	Walking	27	17%	Acceptable
		Annual	17	13%	Walking	25	14%	Acceptable
58	A	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	17	13%	Walking	24		Acceptable
		Summer	14	17%	Standing	19	12%	Acceptable
		Fall	16	14%	Walking	23	15%	Acceptable
		Winter	18	20%	Walking	26	18%	Acceptable
		Annual	16	14%	Walking	23		Acceptable
	C	Spring	17	13%	Walking	24		Acceptable
		Summer	14	17%	Standing	19	12%	Acceptable
		Fall	16	14%	Walking	23	15%	Acceptable
		Winter	18	20%	Walking	25	14%	Acceptable
		Annual	16	14%	Walking	23		Acceptable
	D	Spring	17	13%	Walking	24		Acceptable
		Summer	14	17%	Standing	19	12%	Acceptable
		Fall	16	14%	Walking	23	15%	Acceptable
		Winter	18	20%	Walking	26	18%	Acceptable
		Annual	17	21%	Walking	24	14%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
59	A	Spring	22		Uncomfortable	30		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	19		Walking	27		Acceptable
		Annual	19		Walking	27		Acceptable
	B	Spring	22		Uncomfortable	30		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20	11%	Uncomfortable	27		Acceptable
		Winter	21	17%	Uncomfortable	30	15%	Acceptable
		Annual	20	11%	Uncomfortable	28	12%	Acceptable
	C	Spring	22		Uncomfortable	30		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20	11%	Uncomfortable	27		Acceptable
		Winter	21	17%	Uncomfortable	30	15%	Acceptable
		Annual	20	11%	Uncomfortable	28	12%	Acceptable
	D	Spring	22		Uncomfortable	30		Acceptable
		Summer	16		Walking	22		Acceptable
		Fall	20	11%	Uncomfortable	27		Acceptable
		Winter	21	17%	Uncomfortable	30	15%	Acceptable
		Annual	20	11%	Uncomfortable	28	12%	Acceptable
60	A	Spring	22		Uncomfortable	31		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	21		Uncomfortable	30		Acceptable
		Annual	20		Uncomfortable	29		Acceptable
	B	Spring	23		Uncomfortable	32	10%	Unacceptable
		Summer	17		Walking	24		Acceptable
		Fall	21	11%	Uncomfortable	29		Acceptable
		Winter	22	16%	Uncomfortable	30		Acceptable
		Annual	21	11%	Uncomfortable	29		Acceptable
	C	Spring	23		Uncomfortable	31		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	21	11%	Uncomfortable	28		Acceptable
		Winter	21	11%	Uncomfortable	30		Acceptable
		Annual	21	11%	Uncomfortable	29		Acceptable
	D	Spring	23		Uncomfortable	32	10%	Unacceptable
		Summer	17		Walking	24		Acceptable
		Fall	21	11%	Uncomfortable	29		Acceptable
		Winter	22	16%	Uncomfortable	30		Acceptable
		Annual	21	11%	Uncomfortable	29		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
61	A	Spring	14		Standing	23		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	13		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	B	Spring	15	15%	Standing	23		Acceptable
		Summer	12	20%	Sitting	18		Acceptable
		Fall	14		Standing	22		Acceptable
		Winter	16	14%	Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
	C	Spring	14		Standing	22		Acceptable
		Summer	11		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	15		Standing	24		Acceptable
		Annual	14		Standing	22		Acceptable
	D	Spring	15	15%	Standing	22		Acceptable
		Summer	12	20%	Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16	14%	Walking	24		Acceptable
		Annual	14		Standing	22		Acceptable
62	A	Spring	16		Walking	25		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	23		Acceptable
		Winter	16		Walking	26		Acceptable
		Annual	15		Standing	24		Acceptable
	B	Spring	17	13%	Walking	26		Acceptable
		Summer	13	18%	Standing	20	11%	Acceptable
		Fall	16	14%	Walking	24		Acceptable
		Winter	17	13%	Walking	27	12%	Acceptable
		Annual	16	14%	Walking	25		Acceptable
	C	Spring	16		Walking	26		Acceptable
		Summer	13	18%	Standing	20	11%	Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	17	13%	Walking	26		Acceptable
		Annual	16	14%	Walking	24		Acceptable
	D	Spring	17	13%	Walking	26		Acceptable
		Summer	13	18%	Standing	20	11%	Acceptable
		Fall	15		Standing	24		Acceptable
		Winter	17	13%	Walking	27	12%	Acceptable
		Annual	16	14%	Walking	25		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
63	A	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
	B	Spring	13	18%	Standing	21	11%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12	20%	Sitting	19	12%	Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	12		Sitting	19		Acceptable
	C	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	11		Sitting	19		Acceptable
	D	Spring	12		Sitting	20		Acceptable
		Summer	9		Sitting	15		Acceptable
		Fall	11		Sitting	18		Acceptable
		Winter	12		Sitting	20		Acceptable
		Annual	12		Sitting	19		Acceptable
64	A	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	13		Acceptable
		Fall	10		Sitting	16		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	12	20%	Sitting	19	12%	Acceptable
		Summer	9	12%	Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	11		Sitting	18	12%	Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	12	20%	Sitting	18		Acceptable
		Summer	9	12%	Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	11		Sitting	18	12%	Acceptable
		Annual	11		Sitting	17		Acceptable
	D	Spring	11		Sitting	18		Acceptable
		Summer	9	12%	Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	11		Sitting	18	12%	Acceptable
		Annual	11		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
65	A	Spring	25		Uncomfortable	34		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	23		Uncomfortable	31		Acceptable
		Winter	25		Uncomfortable	34		Unacceptable
		Annual	23		Uncomfortable	32		Unacceptable
	B	Spring	26	13%	Uncomfortable	35		Unacceptable
		Summer	20	11%	Uncomfortable	26		Acceptable
		Fall	24	14%	Uncomfortable	32	10%	Unacceptable
		Winter	26	13%	Uncomfortable	35		Unacceptable
		Annual	24		Uncomfortable	33		Unacceptable
	C	Spring	25		Uncomfortable	34		Unacceptable
		Summer	19		Walking	26		Acceptable
		Fall	23		Uncomfortable	31		Acceptable
		Winter	25		Uncomfortable	35		Unacceptable
		Annual	24		Uncomfortable	33		Unacceptable
	D	Spring	26	13%	Uncomfortable	35		Unacceptable
		Summer	20	11%	Uncomfortable	26		Acceptable
		Fall	24	14%	Uncomfortable	32	10%	Unacceptable
		Winter	26	13%	Uncomfortable	35		Unacceptable
		Annual	24		Uncomfortable	33		Unacceptable
66	A	Spring	19		Walking	27		Acceptable
		Summer	15		Standing	21		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	20		Uncomfortable	28		Acceptable
		Annual	19		Walking	26		Acceptable
	B	Spring	21	17%	Uncomfortable	28	12%	Acceptable
		Summer	17	21%	Walking	22		Acceptable
		Fall	20	18%	Uncomfortable	27	12%	Acceptable
		Winter	22	16%	Uncomfortable	30	15%	Acceptable
		Annual	20	11%	Uncomfortable	28	12%	Acceptable
	C	Spring	21	17%	Uncomfortable	29	16%	Acceptable
		Summer	17	21%	Walking	23	15%	Acceptable
		Fall	20	18%	Uncomfortable	27	12%	Acceptable
		Winter	22	16%	Uncomfortable	30	15%	Acceptable
		Annual	21	17%	Uncomfortable	28	12%	Acceptable
	D	Spring	21	17%	Uncomfortable	28	12%	Acceptable
		Summer	17	21%	Walking	22		Acceptable
		Fall	20	18%	Uncomfortable	27	12%	Acceptable
		Winter	22	16%	Uncomfortable	30	15%	Acceptable
		Annual	20	11%	Uncomfortable	28	12%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
67	A	Spring	16		Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	16		Walking	23		Acceptable
	B	Spring	16		Walking	23		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17		Walking	24		Acceptable
		Annual	16		Walking	22		Acceptable
	C	Spring	17	13%	Walking	24		Acceptable
		Summer	13		Standing	18		Acceptable
		Fall	16		Walking	22		Acceptable
		Winter	18	12%	Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
	D	Spring	17	13%	Walking	24		Acceptable
		Summer	13		Standing	19	12%	Acceptable
		Fall	16		Walking	23		Acceptable
		Winter	18	12%	Walking	24		Acceptable
		Annual	16		Walking	23		Acceptable
68	A	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	16	14%	Walking	24		Acceptable
		Summer	13	18%	Standing	19	12%	Acceptable
		Fall	15		Standing	23	15%	Acceptable
		Winter	17	13%	Walking	26	13%	Acceptable
		Annual	16	14%	Walking	24	14%	Acceptable
	C	Spring	17	21%	Walking	25	14%	Acceptable
		Summer	13	18%	Standing	20	18%	Acceptable
		Fall	16	14%	Walking	24	20%	Acceptable
		Winter	18	20%	Walking	27	17%	Acceptable
		Annual	17	21%	Walking	24	14%	Acceptable
	D	Spring	17	21%	Walking	25	14%	Acceptable
		Summer	13	18%	Standing	19	12%	Acceptable
		Fall	16	14%	Walking	23	15%	Acceptable
		Winter	18	20%	Walking	26	13%	Acceptable
		Annual	17	21%	Walking	24	14%	Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
69	A	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	22		Acceptable
	B	Spring	15		Standing	22		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	14		Standing	21		Acceptable
		Winter	16		Walking	23		Acceptable
		Annual	15		Standing	21		Acceptable
	C	Spring	16	14%	Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17	13%	Walking	24		Acceptable
		Annual	15		Standing	22		Acceptable
	D	Spring	16	14%	Walking	23		Acceptable
		Summer	13	18%	Standing	18		Acceptable
		Fall	15		Standing	21		Acceptable
		Winter	17	13%	Walking	24		Acceptable
		Annual	16	14%	Walking	22		Acceptable
70	A	Spring	12		Sitting	18		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	12		Sitting	19	12%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12	20%	Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	C	Spring	12		Sitting	18		Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12	20%	Sitting	17		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	D	Spring	13	18%	Standing	19	12%	Acceptable
		Summer	10	11%	Sitting	15		Acceptable
		Fall	12	20%	Sitting	18	12%	Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
71	A	Spring	21		Uncomfortable	29		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	B	Spring	23	15%	Uncomfortable	31	11%	Acceptable
		Summer	18	12%	Walking	24		Acceptable
		Fall	22	16%	Uncomfortable	29	12%	Acceptable
		Winter	24	14%	Uncomfortable	32	10%	Unacceptable
		Annual	23	15%	Uncomfortable	30	11%	Acceptable
	C	Spring	23	15%	Uncomfortable	31	11%	Acceptable
		Summer	18	12%	Walking	24		Acceptable
		Fall	22	16%	Uncomfortable	29	12%	Acceptable
		Winter	25	19%	Uncomfortable	32	10%	Unacceptable
		Annual	23	15%	Uncomfortable	30	11%	Acceptable
	D	Spring	24	20%	Uncomfortable	31	11%	Acceptable
		Summer	18	12%	Walking	25	14%	Acceptable
		Fall	22	16%	Uncomfortable	29	12%	Acceptable
		Winter	25	19%	Uncomfortable	32	10%	Unacceptable
		Annual	23	15%	Uncomfortable	30	11%	Acceptable
72	A	Spring	11		Sitting	18		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10		Sitting	17		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	10		Sitting	17		Acceptable
	B	Spring	11		Sitting	18		Acceptable
		Summer	9	12%	Sitting	14		Acceptable
		Fall	10	11%	Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	18	12%	Acceptable
	C	Spring	11		Sitting	17		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10	11%	Sitting	16		Acceptable
		Winter	11		Sitting	19		Acceptable
		Annual	10		Sitting	17		Acceptable
	D	Spring	10		Sitting	17		Acceptable
		Summer	8		Sitting	14		Acceptable
		Fall	10	11%	Sitting	16		Acceptable
		Winter	11		Sitting	18		Acceptable
		Annual	10		Sitting	17		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
73	A	Spring	16		Walking	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	B	Spring	13	-13%	Standing	20	-13%	Acceptable
		Summer	10	-17%	Sitting	16	-11%	Acceptable
		Fall	12	-14%	Sitting	19		Acceptable
		Winter	14	-12%	Standing	21	-12%	Acceptable
		Annual	13		Standing	19	-14%	Acceptable
	C	Spring	16		Walking	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	17		Walking	25		Acceptable
		Annual	15		Standing	23		Acceptable
	D	Spring	15		Standing	23		Acceptable
		Summer	12		Sitting	18		Acceptable
		Fall	15		Standing	22		Acceptable
		Winter	16		Walking	24		Acceptable
		Annual	15		Standing	23		Acceptable
74	A	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9	12%	Sitting	14		Acceptable
	C	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	11		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9	12%	Sitting	14		Acceptable
	D	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	8		Sitting	14		Acceptable
		Winter	9		Sitting	15		Acceptable
		Annual	9	12%	Sitting	14		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
75	A	Spring	25		Uncomfortable	33		Unacceptable
		Summer	21		Uncomfortable	27		Acceptable
		Fall	24		Uncomfortable	31		Acceptable
		Winter	26		Uncomfortable	34		Unacceptable
		Annual	24		Uncomfortable	32		Unacceptable
	B	Spring	23		Uncomfortable	31		Acceptable
		Summer	18		Walking	25		Acceptable
		Fall	21		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	33		Unacceptable
		Annual	22		Uncomfortable	30		Acceptable
	C	Spring	24		Uncomfortable	32		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	33		Unacceptable
		Annual	23		Uncomfortable	30		Acceptable
	D	Spring	24		Uncomfortable	32		Unacceptable
		Summer	19		Walking	25		Acceptable
		Fall	22		Uncomfortable	30		Acceptable
		Winter	25		Uncomfortable	34		Unacceptable
		Annual	23		Uncomfortable	31		Acceptable
76	A	Spring	10		Sitting	16		Acceptable
		Summer	8		Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	16		Acceptable
		Annual	9		Sitting	15		Acceptable
	B	Spring	9		Sitting	15		Acceptable
		Summer	8	14%	Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	C	Spring	9		Sitting	15		Acceptable
		Summer	7		Sitting	12		Acceptable
		Fall	9		Sitting	14		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	9		Sitting	14		Acceptable
	D	Spring	10	11%	Sitting	15		Acceptable
		Summer	8	14%	Sitting	12		Acceptable
		Fall	9		Sitting	15		Acceptable
		Winter	10		Sitting	15		Acceptable
		Annual	9		Sitting	15		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
77	A	Spring	13		Standing	19		Acceptable
		Summer	10		Sitting	16		Acceptable
		Fall	12		Sitting	18		Acceptable
		Winter	13		Standing	19		Acceptable
		Annual	12		Sitting	18		Acceptable
	B	Spring	9	-25%	Sitting	14	-22%	Acceptable
		Summer	7	-30%	Sitting	11	-27%	Acceptable
		Fall	9	-18%	Sitting	13	-24%	Acceptable
		Winter	9	-25%	Sitting	14	-22%	Acceptable
		Annual	9	-18%	Sitting	14	-18%	Acceptable
	C	Spring	10	-17%	Sitting	15	-17%	Acceptable
		Summer	8	-20%	Sitting	12	-20%	Acceptable
		Fall	9	-18%	Sitting	14	-18%	Acceptable
		Winter	10	-17%	Sitting	15	-17%	Acceptable
		Annual	9	-18%	Sitting	14	-18%	Acceptable
	D	Spring	10	-17%	Sitting	16	-11%	Acceptable
		Summer	8	-20%	Sitting	12	-20%	Acceptable
		Fall	10		Sitting	14	-18%	Acceptable
		Winter	10	-17%	Sitting	15	-17%	Acceptable
		Annual	10		Sitting	15	-12%	Acceptable
78	A	Spring	18		Walking	28		Acceptable
		Summer	14		Standing	22		Acceptable
		Fall	17		Walking	26		Acceptable
		Winter	19		Walking	29		Acceptable
		Annual	17		Walking	27		Acceptable
	B	Spring	15	-12%	Standing	24		Acceptable
		Summer	12		Sitting	19		Acceptable
		Fall	14	-12%	Standing	22	-12%	Acceptable
		Winter	16	-11%	Walking	26		Acceptable
		Annual	15		Standing	23	-12%	Acceptable
	C	Spring	18		Walking	27		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	29		Acceptable
		Annual	17		Walking	26		Acceptable
	D	Spring	18		Walking	27		Acceptable
		Summer	14		Standing	21		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	29		Acceptable
		Annual	17		Walking	26		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
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Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
79	A	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	32		Unacceptable
		Annual	21		Uncomfortable	30		Acceptable
	B	Spring	18		Walking	27		Acceptable
		Summer	14	-12%	Standing	21		Acceptable
		Fall	17	-11%	Walking	26		Acceptable
		Winter	20		Uncomfortable	30		Acceptable
		Annual	18		Walking	27		Acceptable
	C	Spring	21		Uncomfortable	29		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	20		Uncomfortable	27		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
	D	Spring	22		Uncomfortable	30		Acceptable
		Summer	17		Walking	23		Acceptable
		Fall	20		Uncomfortable	28		Acceptable
		Winter	23		Uncomfortable	31		Acceptable
		Annual	21		Uncomfortable	29		Acceptable
80	A	Spring	14		Standing	21		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	B	Spring	12		Sitting	18		Acceptable
		Summer	9	-18%	Sitting	15		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	19		Acceptable
		Annual	11		Sitting	17		Acceptable
	C	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	16		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	13		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable
	D	Spring	14		Standing	20		Acceptable
		Summer	12		Sitting	17		Acceptable
		Fall	13		Standing	19		Acceptable
		Winter	14		Standing	20		Acceptable
		Annual	13		Standing	19		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
81	A	Spring	23		Uncomfortable	34		Unacceptable
		Summer	18		Walking	26		Acceptable
		Fall	21		Uncomfortable	32		Unacceptable
		Winter	24		Uncomfortable	36		Unacceptable
		Annual	22		Uncomfortable	33		Unacceptable
	B	Spring	21		Uncomfortable	31		Acceptable
		Summer	18		Walking	25		Acceptable
		Fall	20		Uncomfortable	29		Acceptable
		Winter	24		Uncomfortable	34		Unacceptable
		Annual	21		Uncomfortable	31		Acceptable
	C	Spring	23		Uncomfortable	34		Unacceptable
		Summer	19	12%	Walking	27		Acceptable
		Fall	22		Uncomfortable	32		Unacceptable
		Winter	25	14%	Uncomfortable	37		Unacceptable
		Annual	23		Uncomfortable	34		Unacceptable
	D	Spring	23		Uncomfortable	34		Unacceptable
		Summer	19	12%	Walking	27		Acceptable
		Fall	22		Uncomfortable	32		Unacceptable
		Winter	25	14%	Uncomfortable	37		Unacceptable
		Annual	23		Uncomfortable	33		Unacceptable
82	A	Spring	21		Uncomfortable	30		Acceptable
		Summer	16		Walking	23		Acceptable
		Fall	19		Walking	28		Acceptable
		Winter	20		Uncomfortable	30		Acceptable
		Annual	19		Walking	28		Acceptable
	B	Spring	19		Walking	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	17		Walking	25		Acceptable
		Winter	19		Walking	28		Acceptable
		Annual	18		Walking	26		Acceptable
	C	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	19		Walking	27		Acceptable
		Winter	21	11%	Uncomfortable	30		Acceptable
		Annual	19		Walking	28		Acceptable
	D	Spring	20		Uncomfortable	29		Acceptable
		Summer	15		Standing	22		Acceptable
		Fall	18		Walking	27		Acceptable
		Winter	21	11%	Uncomfortable	30		Acceptable
		Annual	19		Walking	28		Acceptable

Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
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Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

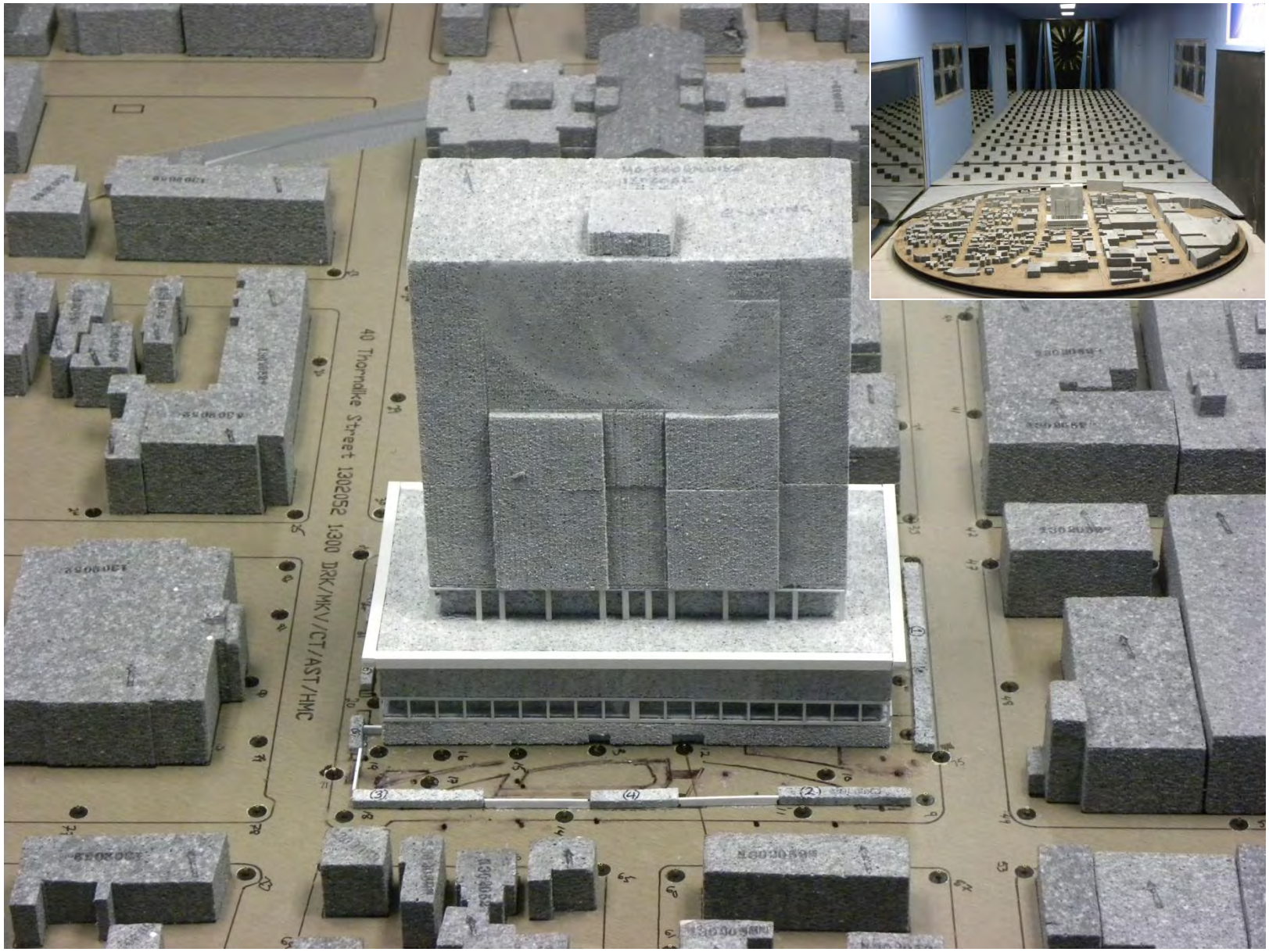
Table 3: Pedestrian Wind Comfort and Safety Categories - Multiple Seasons

BRA Criteria			Mean Wind Speed			Effective Gust Wind Speed		
Loc.	Config.	Season	Speed(mph)	%Change	RATING	Speed(mph)	%Change	RATING
83	A	Spring	20		Uncomfortable	27		Acceptable
		Summer	14		Standing	20		Acceptable
		Fall	18		Walking	25		Acceptable
		Winter	18		Walking	26		Acceptable
		Annual	18		Walking	25		Acceptable
	B	Spring	14	-26%	Standing	21	-19%	Acceptable
		Summer	10	-23%	Sitting	15	-21%	Acceptable
		Fall	13	-24%	Standing	19	-17%	Acceptable
		Winter	13	-24%	Standing	19	-21%	Acceptable
		Annual	13	-24%	Standing	19	-17%	Acceptable
	C	Spring	14	-26%	Standing	20	-23%	Acceptable
		Summer	10	-23%	Sitting	15	-21%	Acceptable
		Fall	13	-24%	Standing	19	-17%	Acceptable
		Winter	13	-24%	Standing	19	-21%	Acceptable
		Annual	13	-24%	Standing	19	-17%	Acceptable
	D	Spring	14	-26%	Standing	21	-19%	Acceptable
		Summer	10	-23%	Sitting	15	-21%	Acceptable
		Fall	13	-24%	Standing	19	-17%	Acceptable
		Winter	13	-24%	Standing	20	-17%	Acceptable
		Annual	13	-24%	Standing	19	-17%	Acceptable
84	A	Spring	12		Sitting	19		Acceptable
		Summer	9		Sitting	14		Acceptable
		Fall	11		Sitting	17		Acceptable
		Winter	12		Sitting	18		Acceptable
		Annual	11		Sitting	17		Acceptable
	B	Spring	11		Sitting	17		Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	17		Acceptable
		Annual	10		Sitting	16		Acceptable
	C	Spring	11		Sitting	16	-11%	Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable
	D	Spring	11		Sitting	16	-11%	Acceptable
		Summer	9		Sitting	13		Acceptable
		Fall	10		Sitting	15		Acceptable
		Winter	11		Sitting	16		Acceptable
		Annual	10		Sitting	15		Acceptable

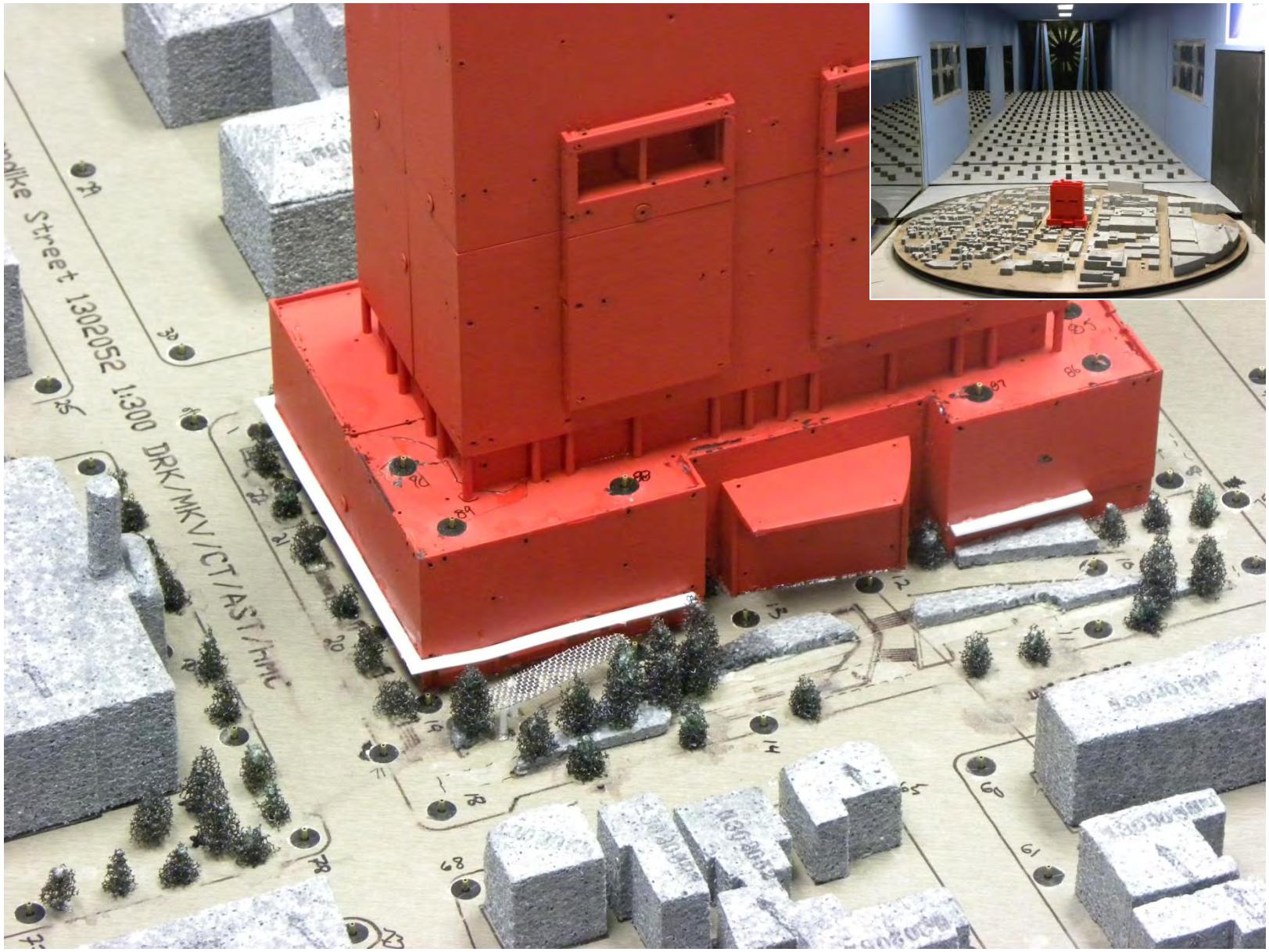
Notes: 1) Wind speeds are for a 1% probability of exceedance; and,
2) % Change is based on comparison with Configuration A and only those that are greater than 10% are listed.

Configurations	Mean Wind Speed Criteria		Effective Gust Criteria	
A – No Build (Existing)	Comfortable for Sitting:	≤ 12 mph	Acceptable:	≤ 31 mph
B – Build 1	Comfortable for Standing:	> 12 and ≤ 15 mph	Unacceptable:	> 31 mph
C – Build 2	Comfortable for Walking:	> 15 and ≤ 19 mph		
D – Build 3	Uncomfortable for Walking:	> 19 and ≤ 27 mph		
	Dangerous Conditions:	> 27 mph		

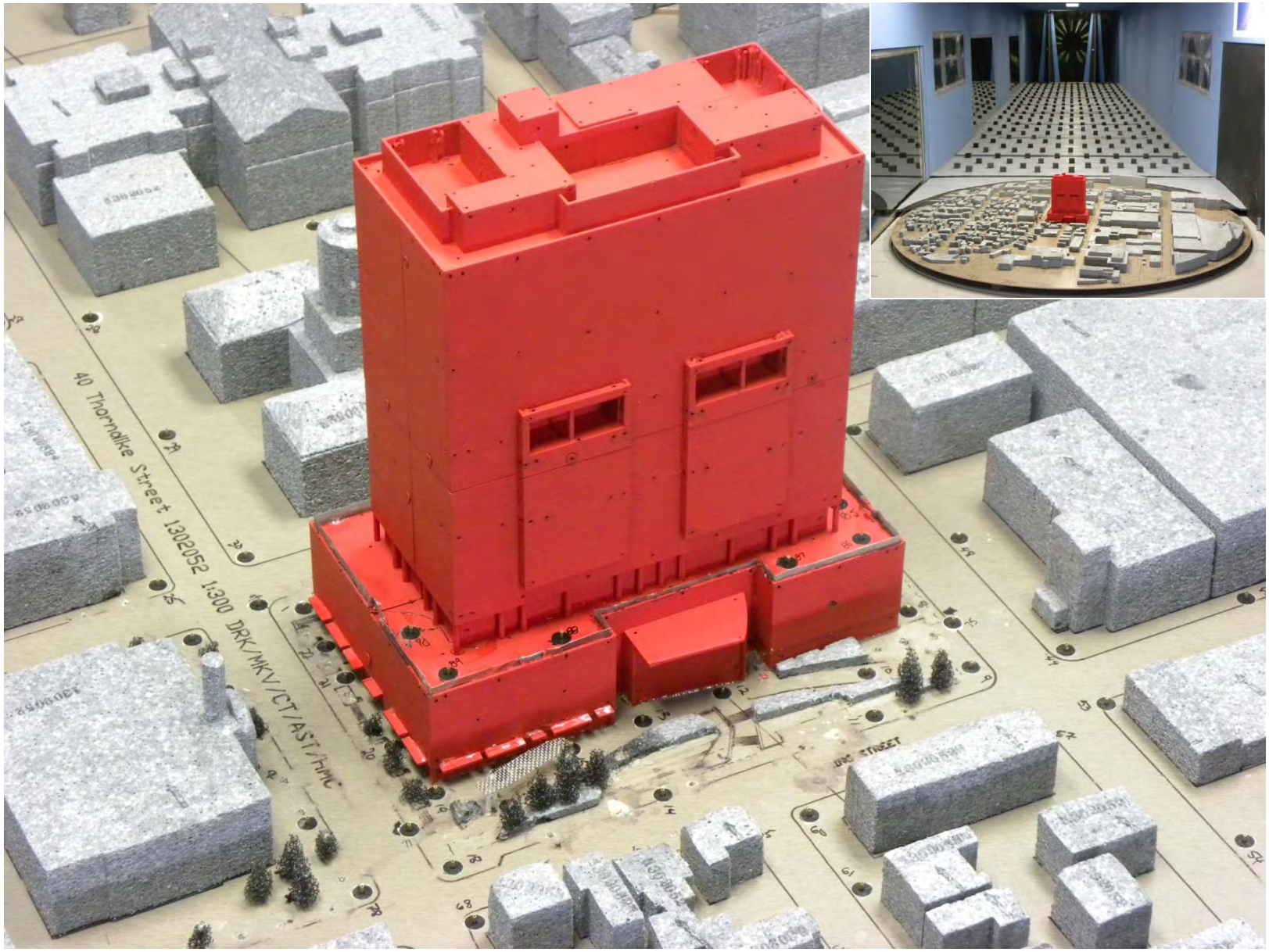
FIGURES



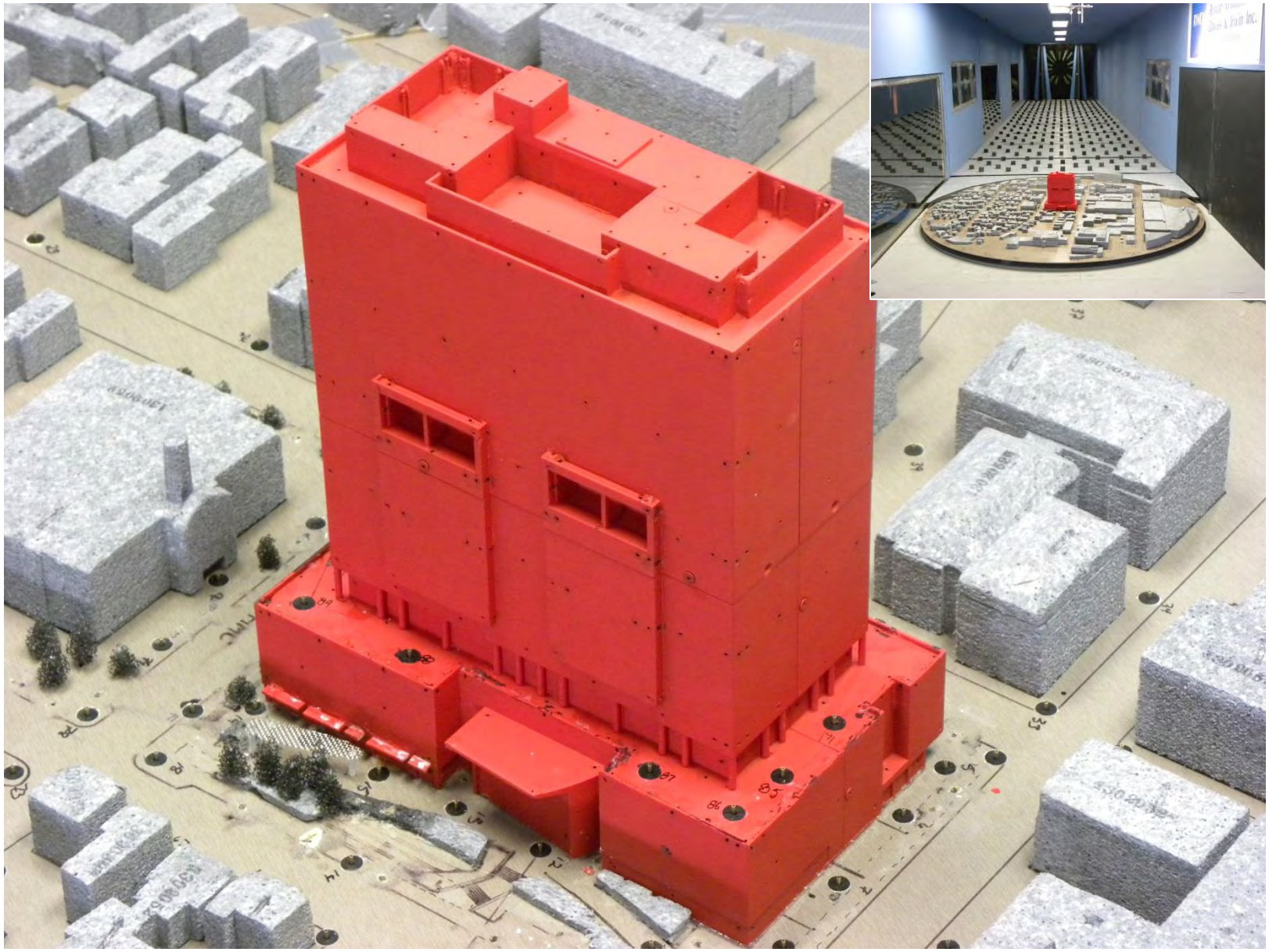
Wind Tunnel Study Model **No Build (Existing) Configuration**	Figure No. 1a	RWDI
Edward J. Sullivan Courthouse Redevelopment Project – Cambridge, MA. Project #1302052	Date: February 27, 2014	



Wind Tunnel Study Model **Build 1 Configuration**	Figure No. 1b	RWDI
Edward J. Sullivan Courthouse Redevelopment Project – Cambridge, MA. Project #1302052	Date: February 27, 2014	



Wind Tunnel Study Model **Build 2 Configuration**	Figure No. 1c	RWDI
Edward J. Sullivan Courthouse Redevelopment Project – Cambridge, MA. Project #1302052	Date: February 21, 2014	



Wind Tunnel Study Model
Build 3 Configuration

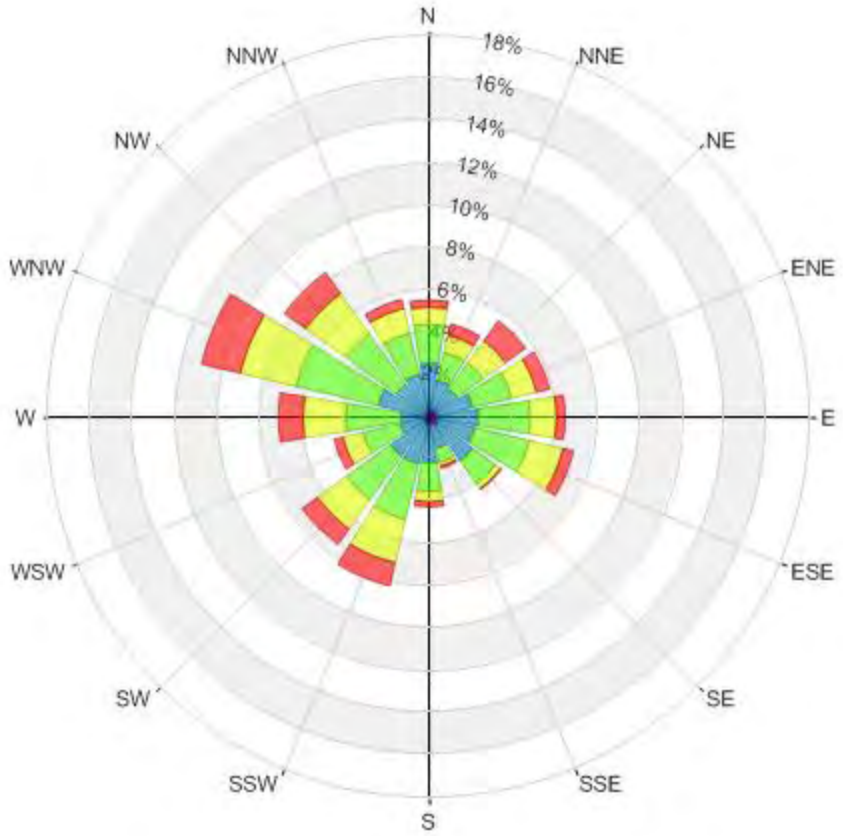
Edward J. Sullivan Courthouse Redevelopment Project – Cambridge, MA.

Project #1302052

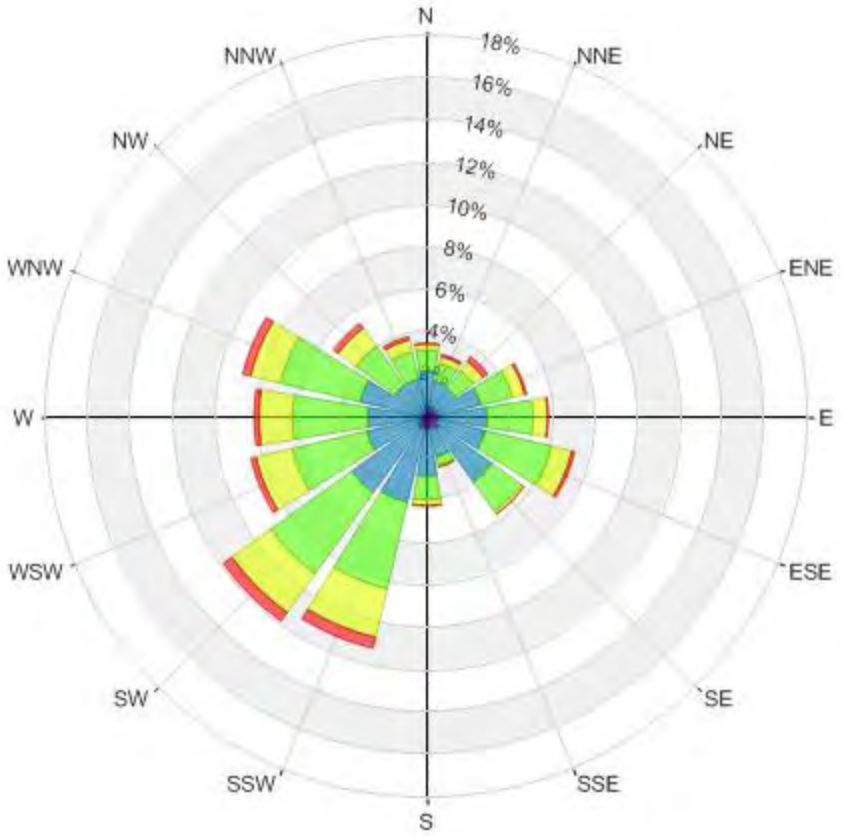
Figure No. 1d

Date: February 21, 2014

RWDI



Spring
(March - May)



Summer
(June - August)

Wind Speed (mph)	Probability (%) Spring	Summer
Calm	1.7	1.9
1-5	5.3	7.2
6-10	27.3	36.4
11-15	33.6	36.7
16-20	20.9	14.9
>20	11.1	3.0

Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1980 - 2013)

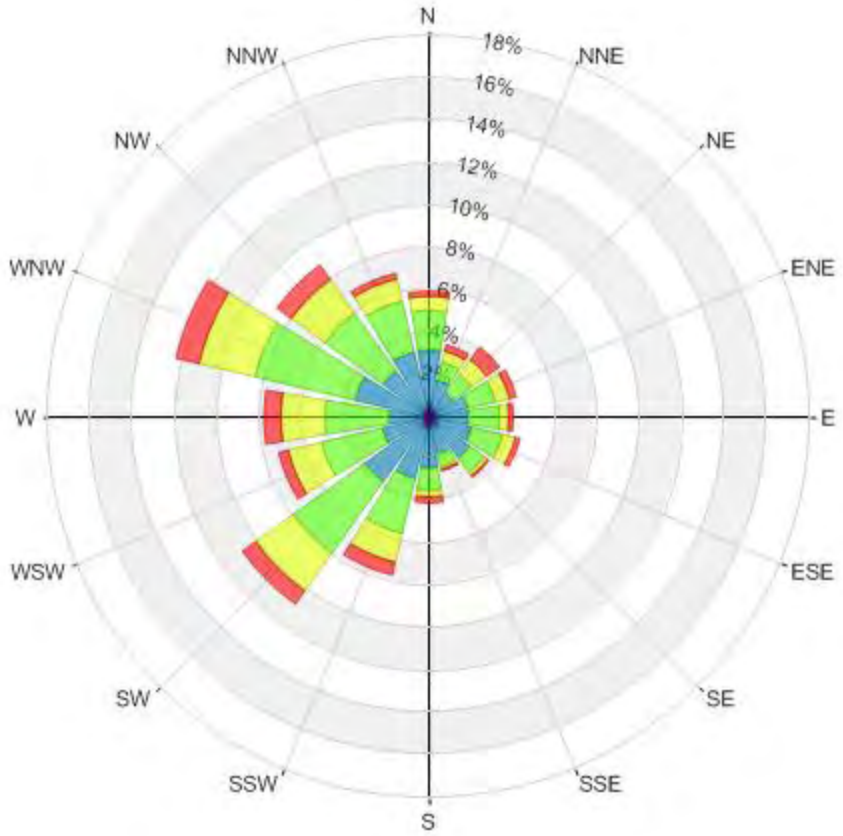
Edward J. Sullivan Courthouse – Boston, MA

Project #1302052

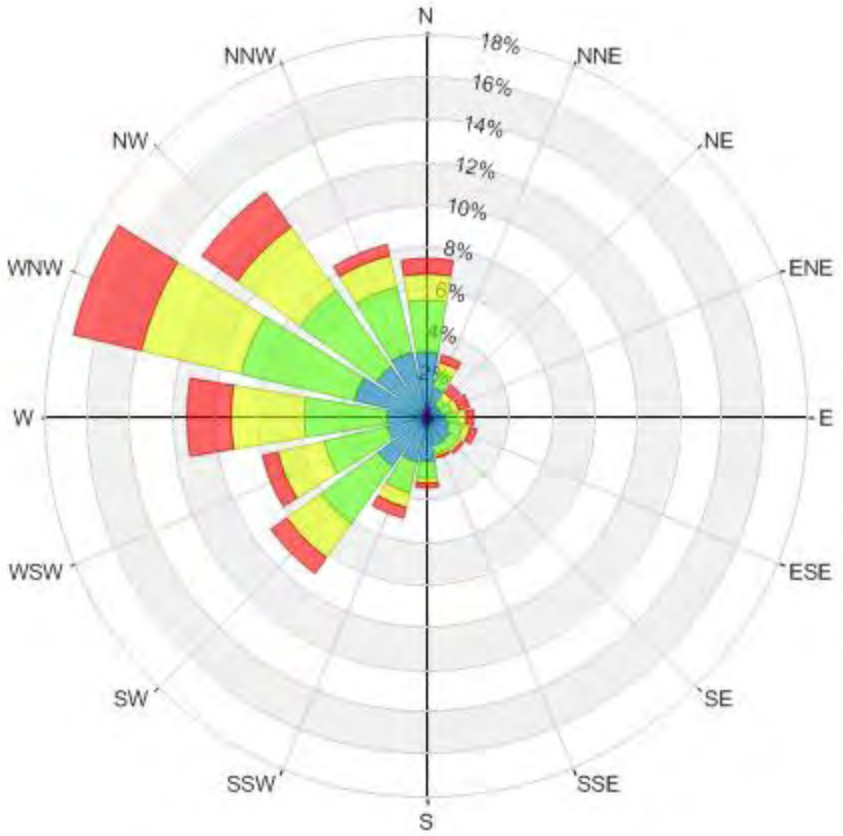
Figure No. 2a

Date: February 27, 2014

RWDI



Fall
(September - November)



Winter
(December - February)

Wind Speed (mph)	Probability (%) Fall	Winter
Calm	2.0	1.6
1-5	6.7	5.3
6-10	32.3	25.8
11-15	34.2	32.0
16-20	17.4	22.1
>20	7.4	13.3

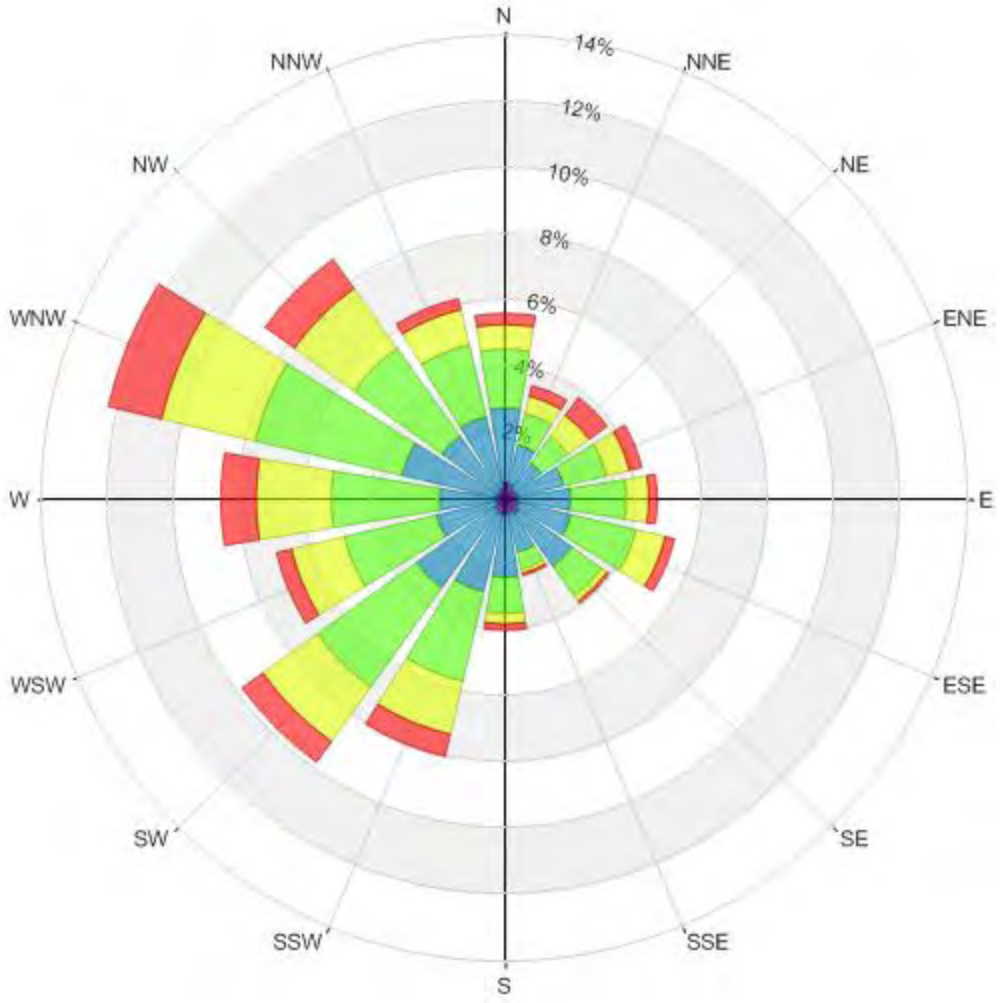
Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1980 - 2013)

Edward J. Sullivan Courthouse – Boston, MA

Project #1302052

Figure No. 2a

Date: February 27, 2014



Annual Winds

Wind Speed (mph)	Probability (%)
Calm	1.8
1-5	6.1
6-10	30.4
11-15	34.1
16-20	18.8
>20	8.7

Directional Distribution (%) of Winds (Blowing From)
Boston Logan International Airport (1980 - 2013)

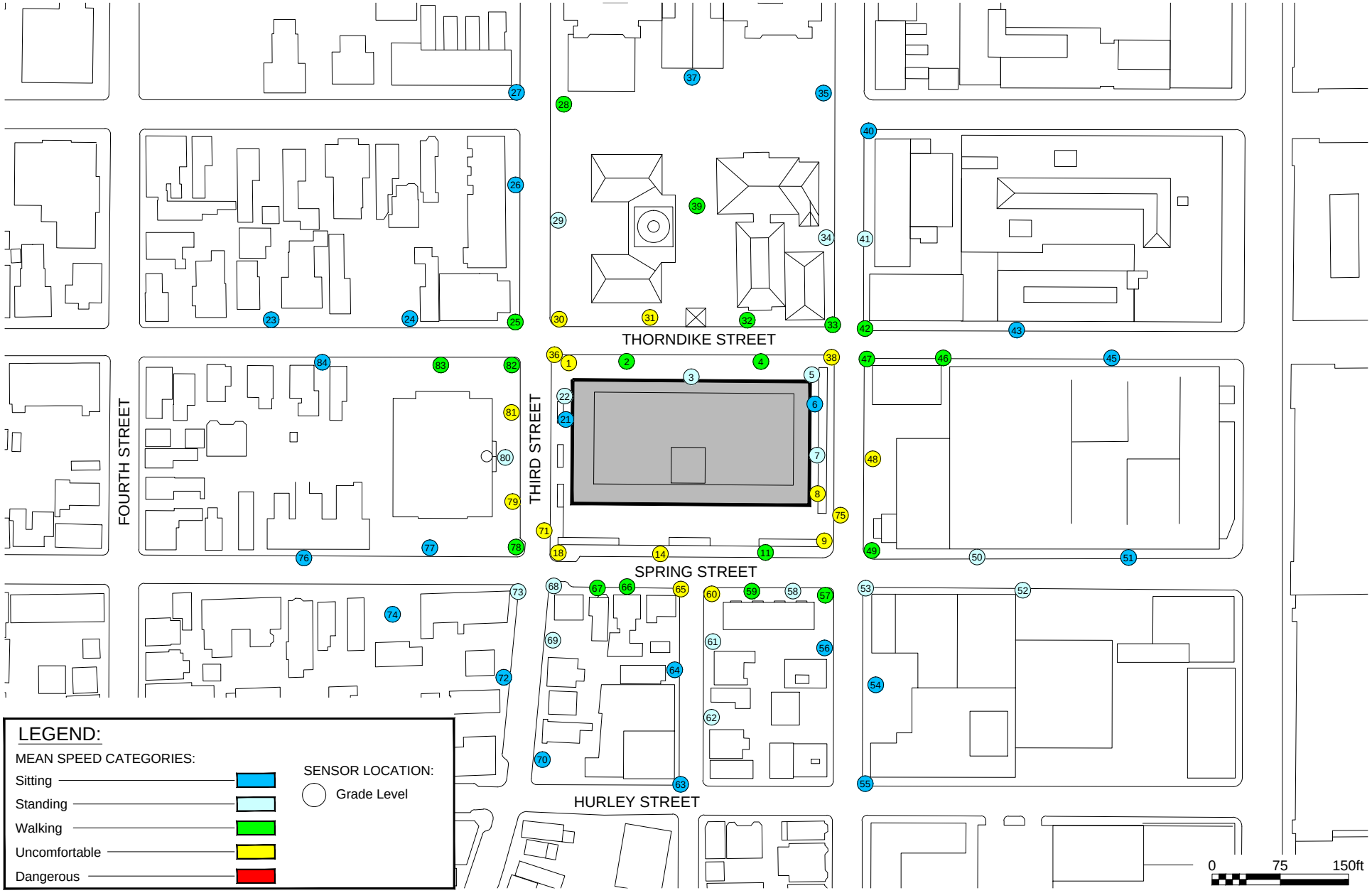
Edward J. Sullivan Courthouse – Boston, MA

Project #1302052

Figure No. 2b

Date: February 27, 2014

RWDI



Pedestrian Wind Conditions - No Build

Annual Mean Speed (January to December, 0:00 to 23:00)

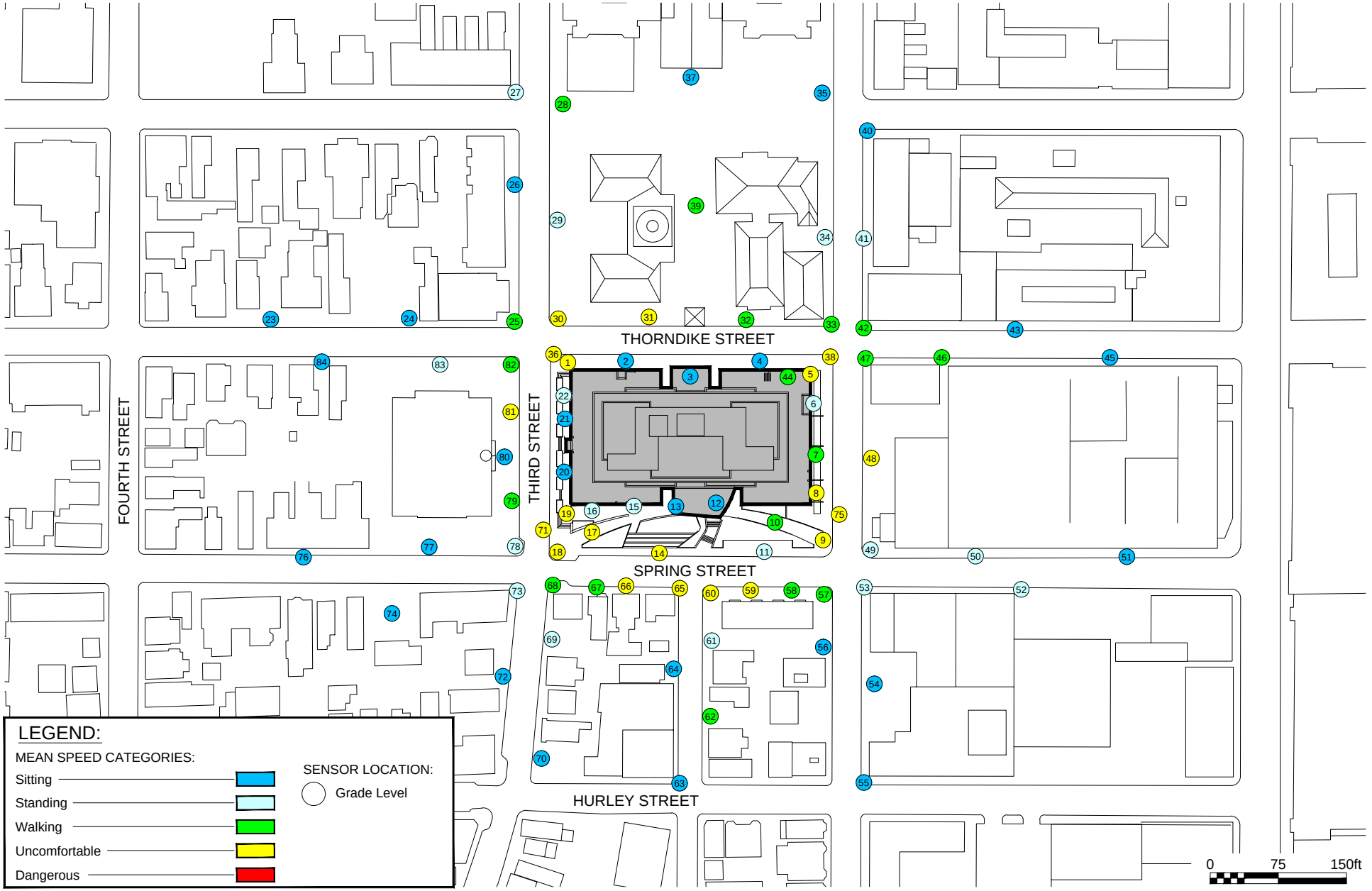
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	3a
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - Build 1

Annual Mean Speed (January to December, 0:00 to 23:00)

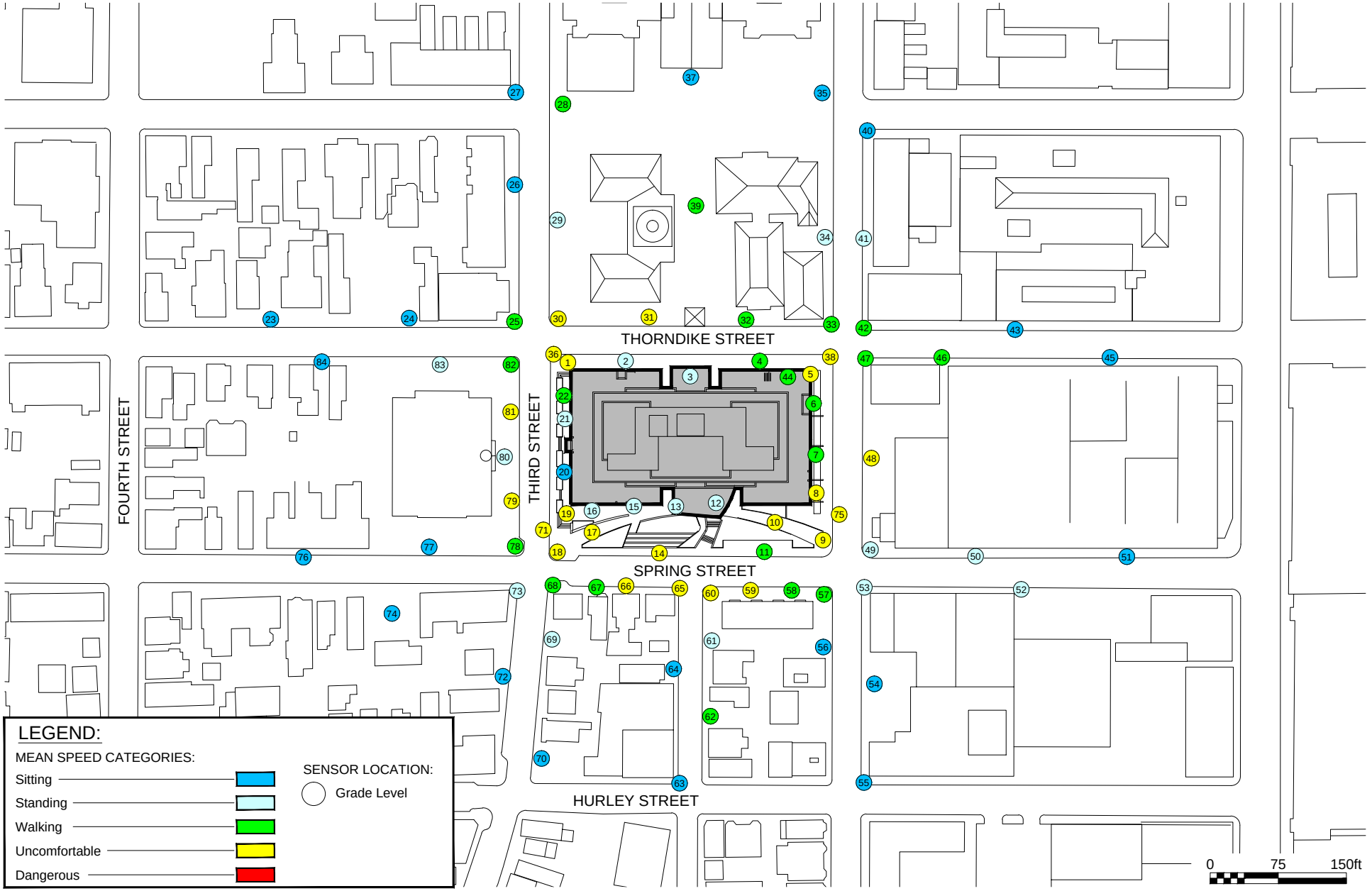
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	3b
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - Build 2

Annual Mean Speed (January to December, 0:00 to 23:00)

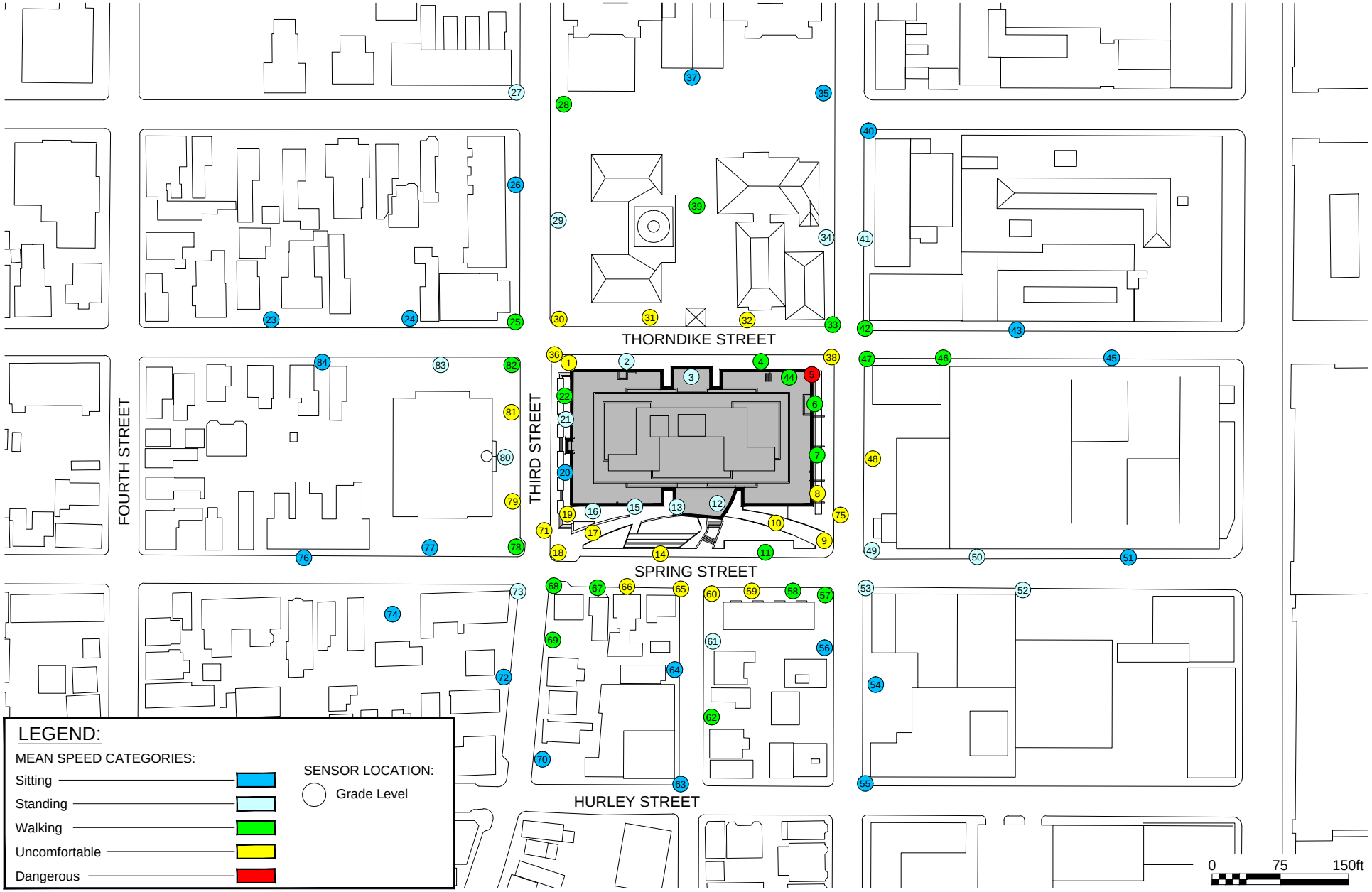
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	3c
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - Build 3

Annual Mean Speed (January to December, 0:00 to 23:00)

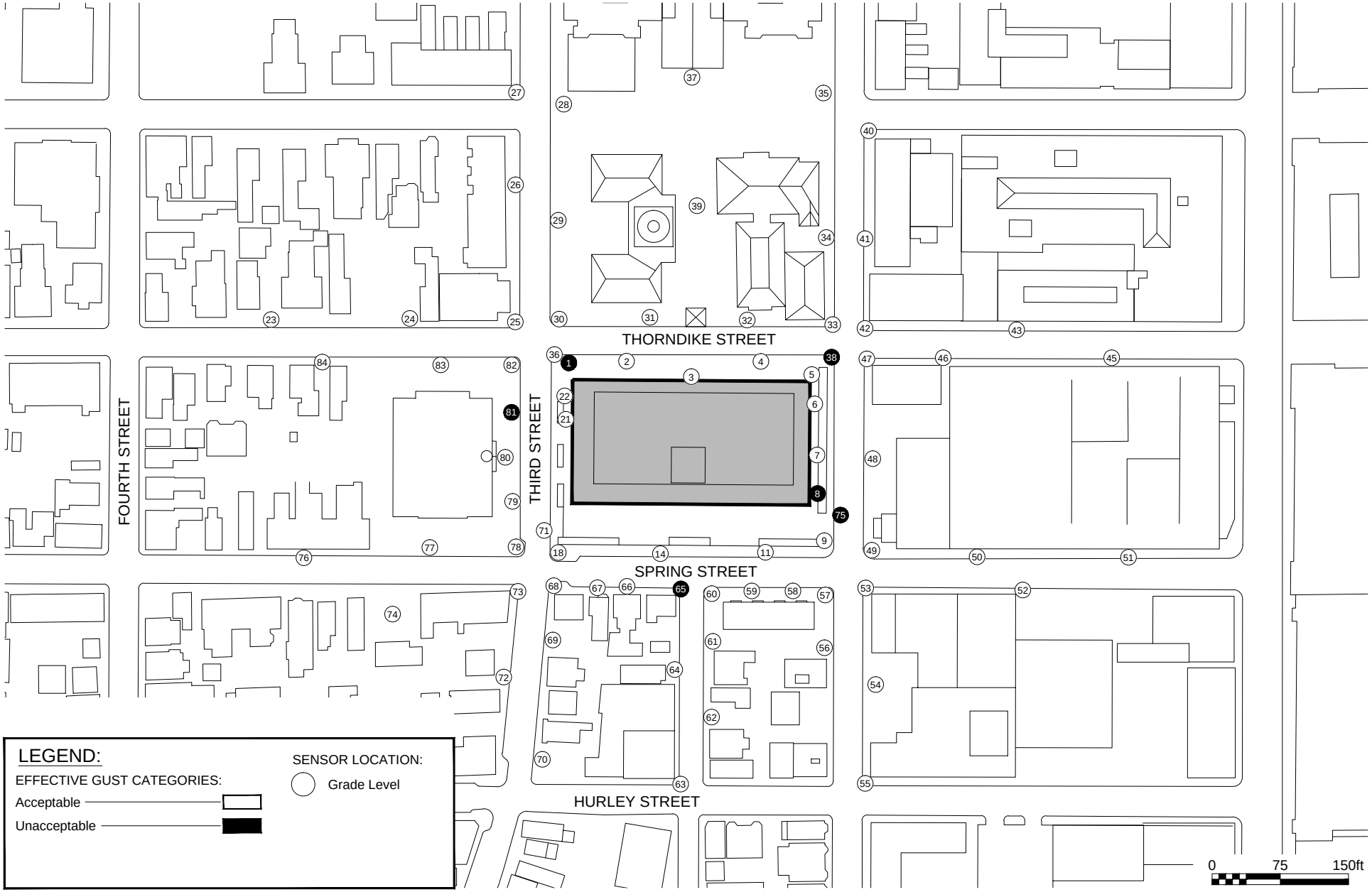
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	3d
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - No Build

Annual Gust Speed (January to December, 0:00 to 23:00)

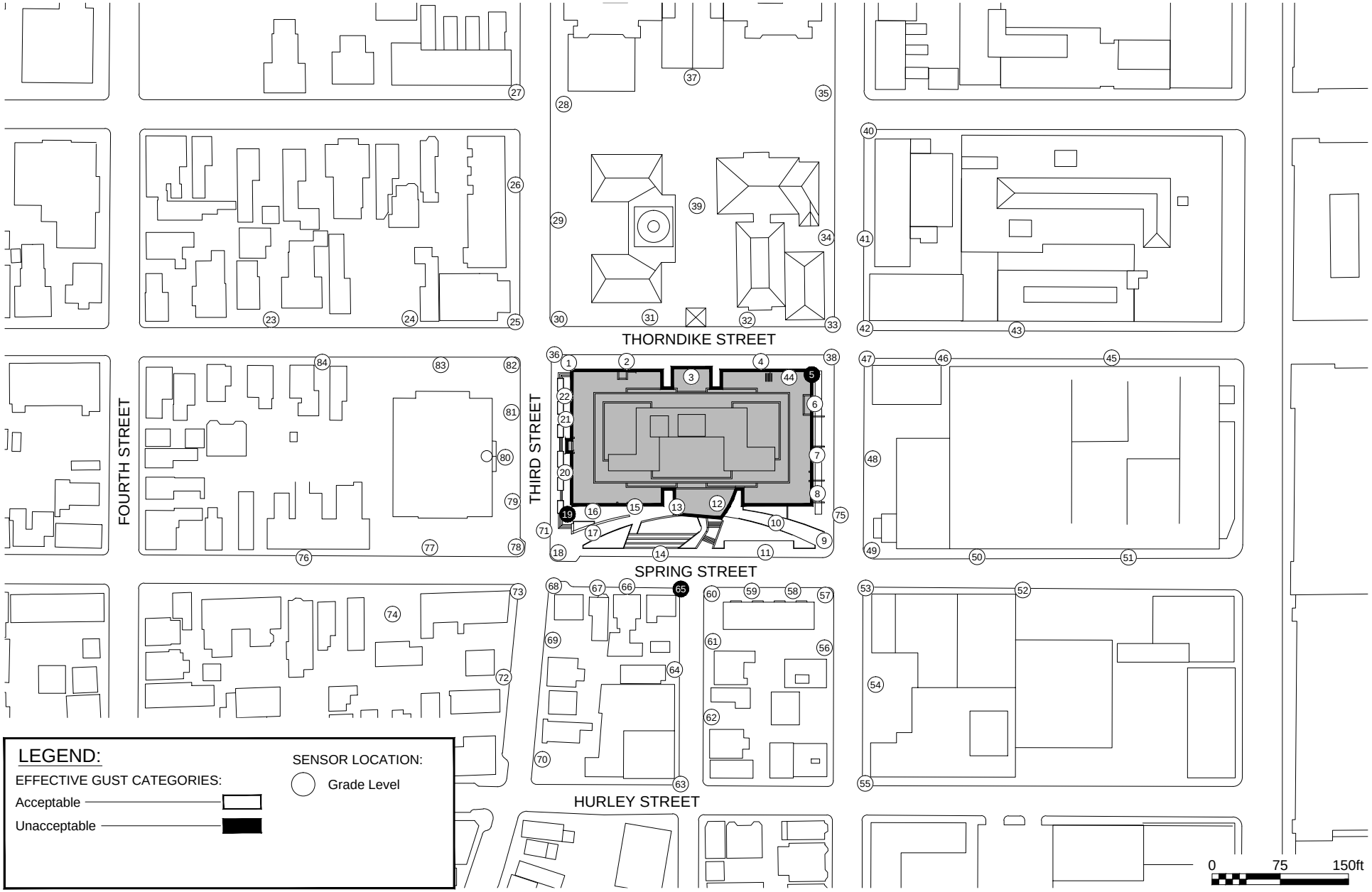
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	4a
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - Build 1

Annual Gust Speed (January to December, 0:00 to 23:00)

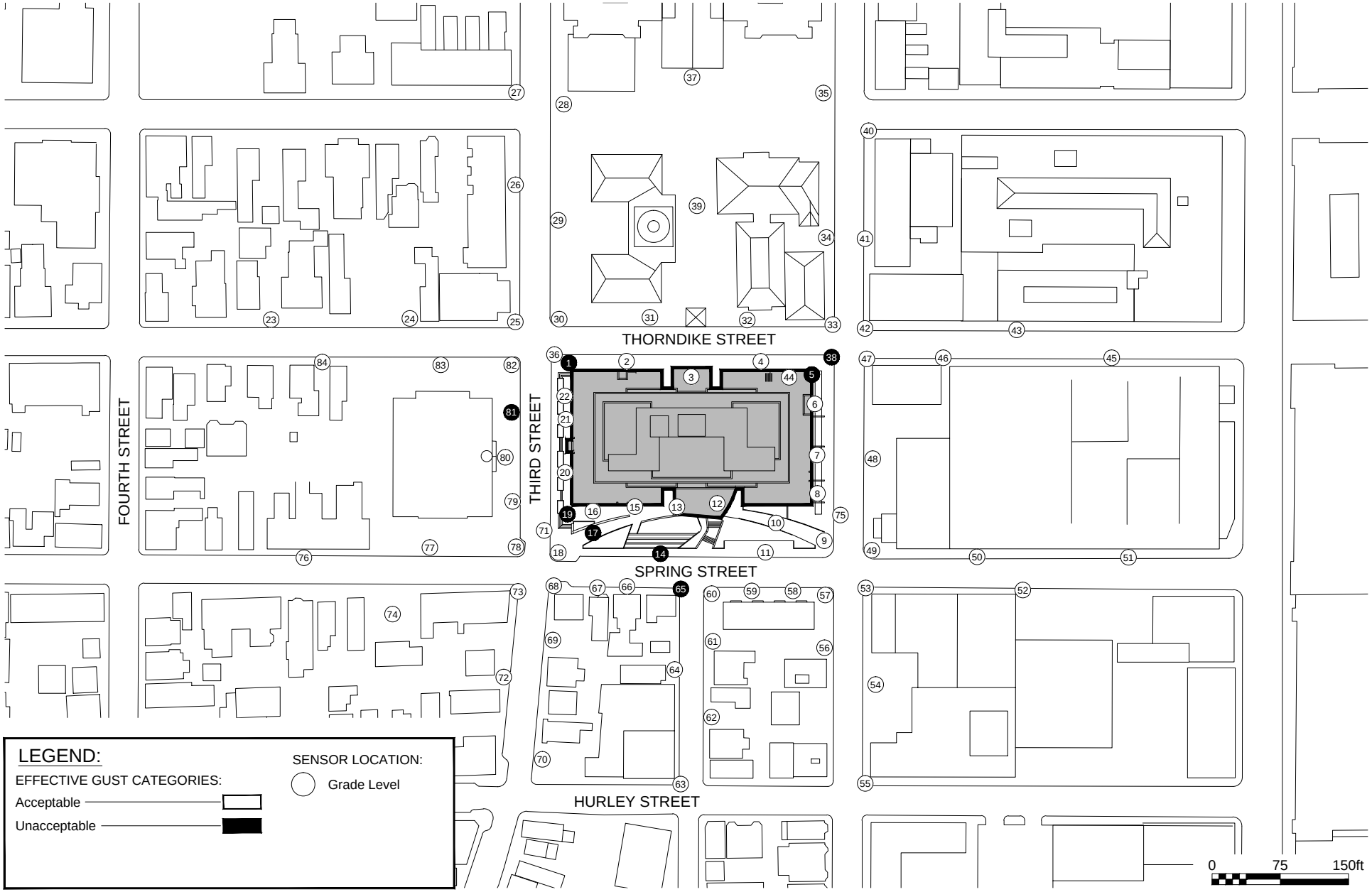
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	4b
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - Build 2

Annual Gust Speed (January to December, 0:00 to 23:00)

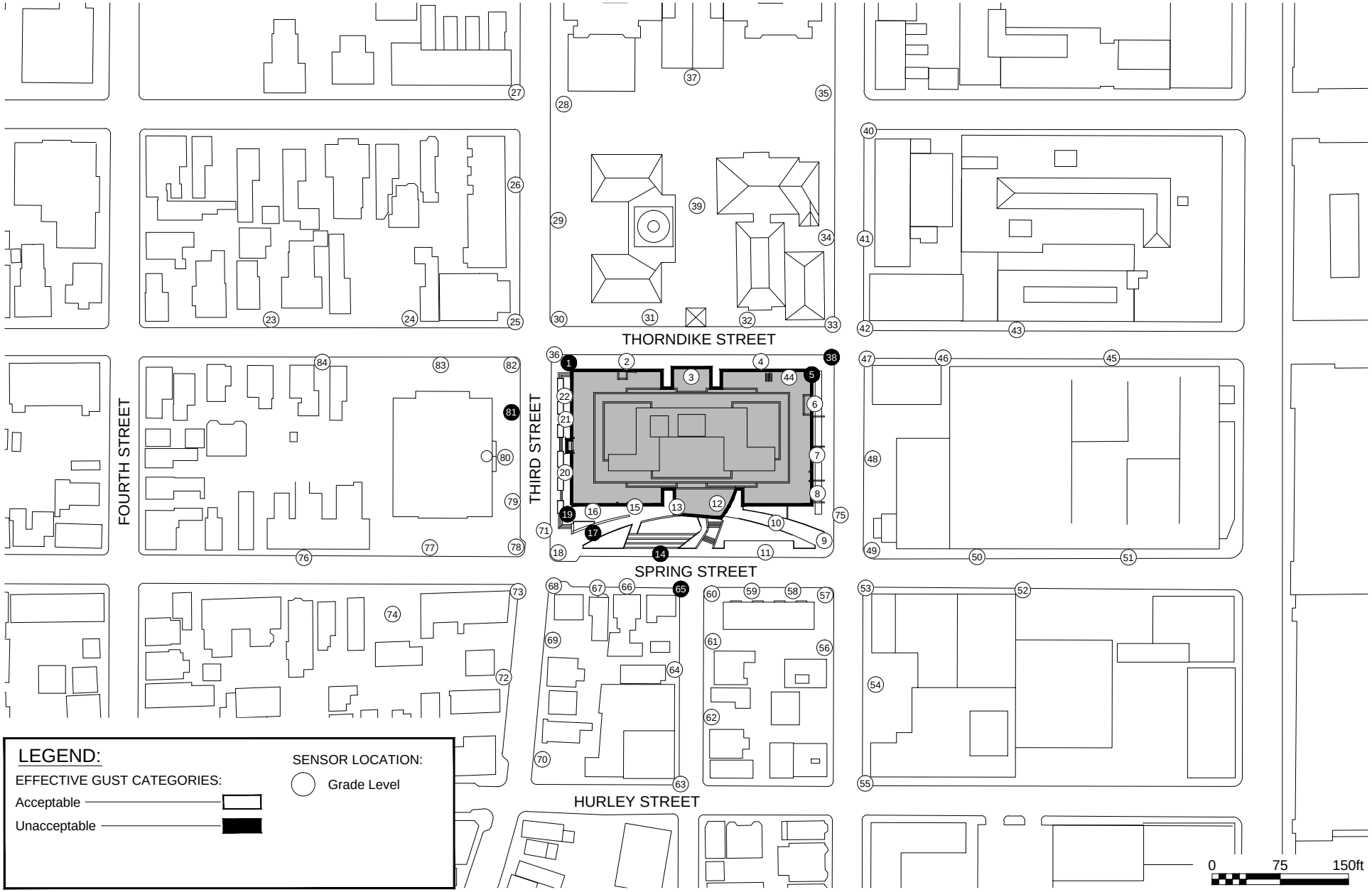
True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	4c
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI



Pedestrian Wind Conditions - Build 3

Annual Gust Speed (January to December, 0:00 to 23:00)

True North

Edward J. Sullivan Courthouse Redevelopment Project - Cambridge, MA.

Project #1302052

Drawn by:	SMR	Figure:	4d
Approx. Scale:			1"=150'
Date Revised:			Feb. 21, 2014

RWDI

APPENDIX A

APPENDIX A: DRAWING LIST FOR MODEL CONSTRUCTION

The drawings and information listed below were received from Elkus Manfredi Architects and were used to construct the scale model of the proposed Edward J. Sullivan Redevelopment Project. Should there be any design changes that deviate from this list of drawings, the results may change. Therefore, if changes in the design area 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)
14_0107_40 Throndike_Beam enc .rvt	Revit	01/08/2014
14_0107_Arch_40Thorndike_ExteriorWall_DesignAssist.rvt	Revit	01/08/2014
14_0107_site.rvt	Revit	01/08/2014