APPENDIX I

WIND ASSESSMENT

PEDESTRIAN WIND ASSESSMENT

CPP PROJECT 16223
5 DECEMBER 2023

201-247 GOLDEN GATE AVE EIR
San Francisco, CA

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EXECUTIVE SUMMARY

A wind tunnel study of the proposed 201-247 Golden Gate Ave development, as part of the 201-247 Golden Gate Avenue Mixed Use Project, was conducted to assess the impact on the surrounding pedestrian wind environment. Measurements of winds likely to be experienced by pedestrians were combined with wind statistics and evaluated against the San Francisco Planning Code Section 148 wind assessment criteria. The results of CPP's wind assessment can be summarized as follows:

Configuration	WIND COMFORT (11-mph Wind Speed Threshold)			WIND HAZARD (36-mph Wind Speed Threshold)*		
	Average Wind Speed Exceeded 10% of time (mph)	% of time Wind Speeds Exceed 11-mph	Total Exceedances	Average Wind Speed Exceeded 1 hour/year (mph)	Total Hours	Total Exceedances
A Existing	10.3 mph	9%	15 / 52	26.1 mph	1	1 / 52
B Existing + Project (Academic Light)	9.8 mph	8%	14 / 52	24.8 mph	1	1 / 52
C Project + Cumulative (Academic Light)	9.7 mph	8%	14 / 52	24.9 mph	1	1 / 52
D Existing + Project (Academic Heavy)	9.8 mph	8%	15 / 52	24.8 mph	1	1 / 52
E Project + Cumulative (Academic Heavy)	9.8 mph	8%	14 / 52	25.1 mph	2	2 / 52

* The pedestrian comfort criteria listed above are based on wind speeds measured and averaged over one minute, the same averaging time as used for the National Weather Service's wind data. In contrast, the wind hazard criterion (26 mph) is based on wind speeds measured and averaged over one hour. When stated on the same time basis as comfort wind speeds, the hazard wind speed is a one-minute average wind speed of 36 mph. The test results presented in this report use the one-minute average of 36 mph for the wind hazard criterion.

- The development is generally expected to result in minor decreases to the average wind speed exceeded 10% of the time and reduce the number of locations to exceed the wind comfort criterion.
- The development is also expected to reduce the average wind speed exceeded 1-hour/year and total hours where winds exceed the wind hazard criterion. The total number of test locations to exceed the wind hazard criterion is generally expected to remain the same as the Existing configuration.
- The addition of the cumulative developments within the modelled test radius are expected to have a minimal influence on the overall wind activity around the project site.
- The "Academic Light" versus "Academic Heavy" building massing options of the development are expected to perform comparable from a wind comfort and hazard perspective.

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1. INTRODUCTION

Pedestrian wind studies are conducted to investigate pedestrian comfort and safety in and around developments. This assessment of the acceptability of the wind environment around developments can inform designers about the suitability of outdoor areas for their intended uses. Where advisable, design modifications can be made, or intervention measures added to mitigate areas with the potential for excessive wind speeds.

The proposed 201-247 Golden Gate Ave Mixed Use Project is part of the UC College of the Law, San Francisco ("UC Law SF") redevelopment project. The project site is located on the southwest side of the intersection of Golden Gate Ave and Leavenworth St in a C-3-G District in San Francisco, CA (Block 0348, Lots 022, 022A, 023, 024 and 026) (see Image 1 for reference). As CPP understands, the project will demolish the four (4) existing on-site low-rise buildings to construct the approximately 17-story / 176' tall development.

The wind conditions were assessed for two massing schemes of the development ("Academic Light" and "Academic Heavy") (see Figure 2) which vary slightly in design by the elevation of the central terrace along the north façade.

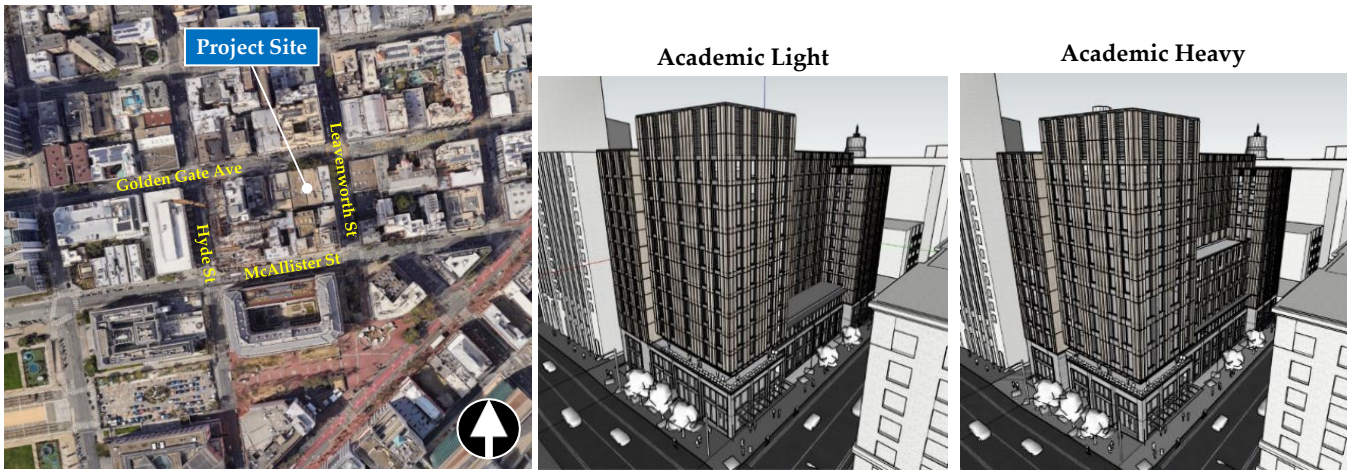


Image 1: Aerial View of Project Site (Google Earth™) (Left) and 3D Models of Development – Academic Light (Middle) and Academic Heavy (Right)

The results presented within this report are based on the 3D model information received by CPP on 30 November 2022.

This report includes a summary of the wind tunnel test procedures / methodologies, and a discussion of the test results. Although not applicable to UC Law SF, UC Law SF opted to conduct this study in accordance with the San Francisco City Planning Code Section 148. All data collection was performed in accordance with the American Society of Civil Engineers (ASCE) Standard 49-21 on Wind Tunnel Testing of Buildings and Other Structures (2021) in addition to the specifications outlined in the ASCE Manual of Engineering Practice No. 67, "Wind Tunnel Studies of Buildings and Structures."

2. METHODOLOGY

2.1 WIND TUNNEL MODEL

The anticipated wind conditions around the project site were quantitatively evaluated through wind tunnel testing of a 1:300 scale model of the development and surrounding area. This scale allowed for an adequate portion of surrounding developments and terrain to be included within an approximately 1700 ft radius of the site and all the relevant building details to be modeled accurately. The boundary-layer wind conditions beyond the modelled area were also appropriately simulated in CPP's wind tunnel.

MEASUREMENT POINTS

Wind speed (mean and gust) measurements were taken at 60 public right of way locations (52 around the project site and 8 within designated bicycle routes). The placement of measurement points was focused towards areas of frequent pedestrian usage (i.e., near entrances, sidewalks, crosswalks, parks, plazas, outdoor dining areas etc.) as well as areas known to be susceptible to accelerated wind flows and calmer winds (i.e., building corners, setback /recessed areas, between adjacent structures etc.). Measurements were made at the model-scale equivalent of 5 ft above the surface for 36 wind directions in 10° increments for each of the measurement locations.

TEST CONFIGURATIONS

The following is a summary and description of the configurations evaluated. Photographs of the test model within the wind tunnel are provided for each of the test configurations in Images 3A through 3E.

Configurations		Description
A	Existing	Includes all existing buildings and buildings that are under construction.
B	Existing + Project (Academic Light)	Existing conditions plus the "Academic Light" massing option of the 201-247 Golden Gate Ave development.
C	Project + Cumulative (Academic Light)	Existing + Project (Academic Light) configuration with the addition of approved future (cumulative) buildings within the modelled test radius (see section 2.2 for reference).
D	Existing + Project (Academic Heavy)	Existing conditions plus the "Academic Heavy" massing option of the 201-247 Golden Gate Ave development.
E	Project + Cumulative (Academic Heavy)	Existing + Project (Academic Heavy) configuration with the addition of approved future (cumulative) buildings within the modelled test radius (see section 2.2 for reference).

Image 2A: Photographs of Wind Tunnel Test Model – Existing Configuration

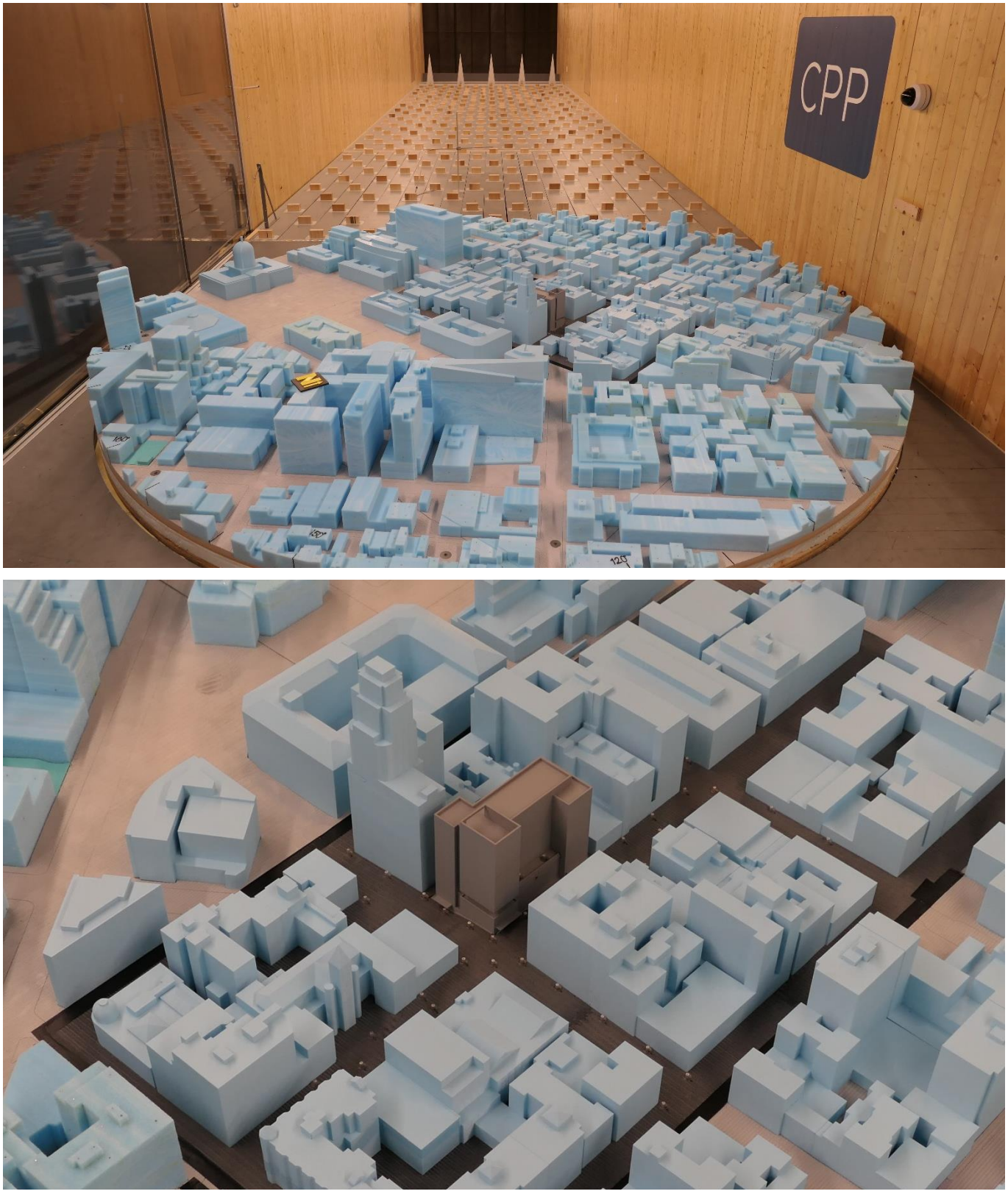


Image 2B: Photographs of Wind Tunnel Test Model – Existing + Project (Academic Light) Configuration

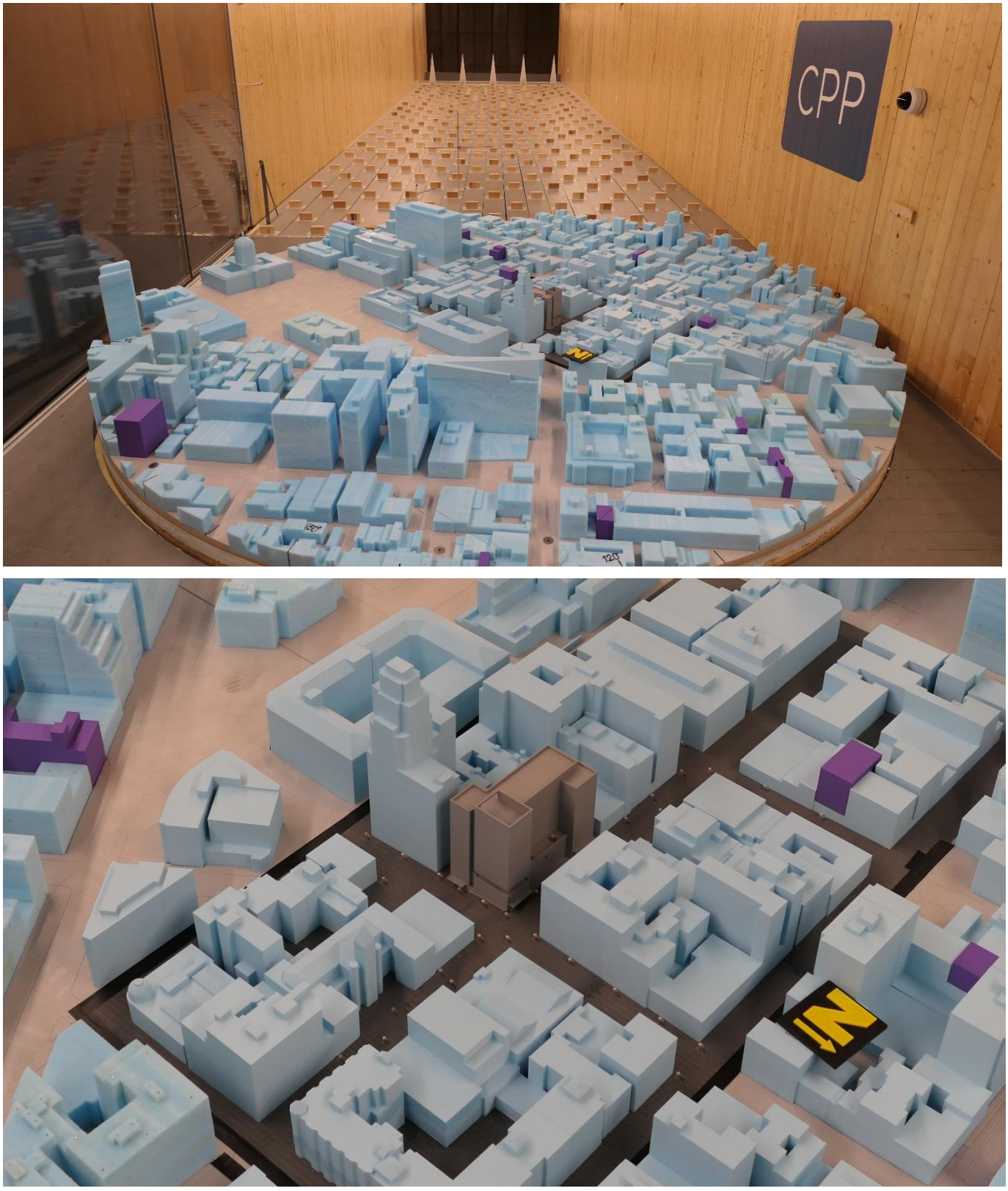


Image 2C: Photographs of Wind Tunnel Test Model – Project + Cumulative (Academic Light) Configuration

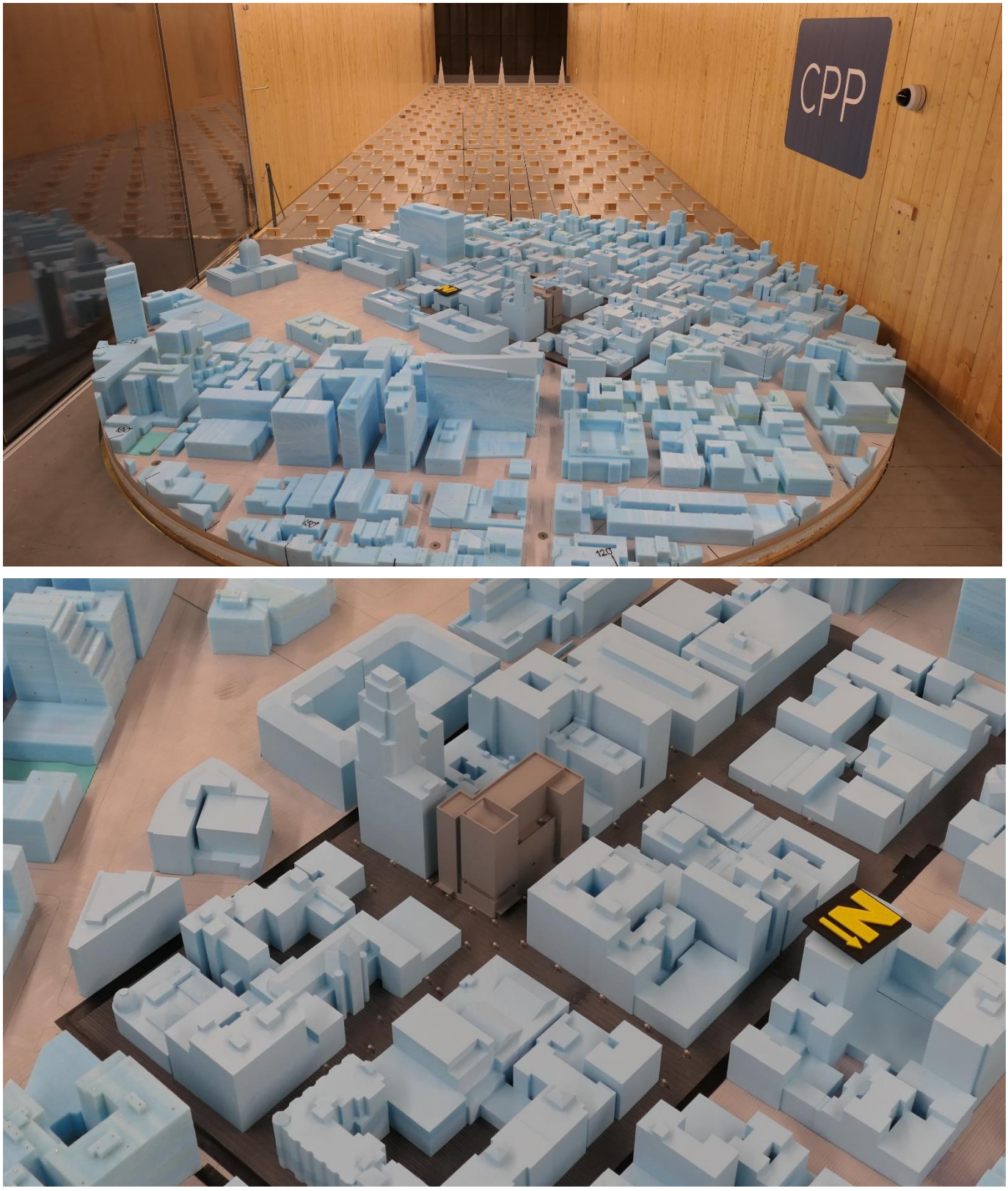
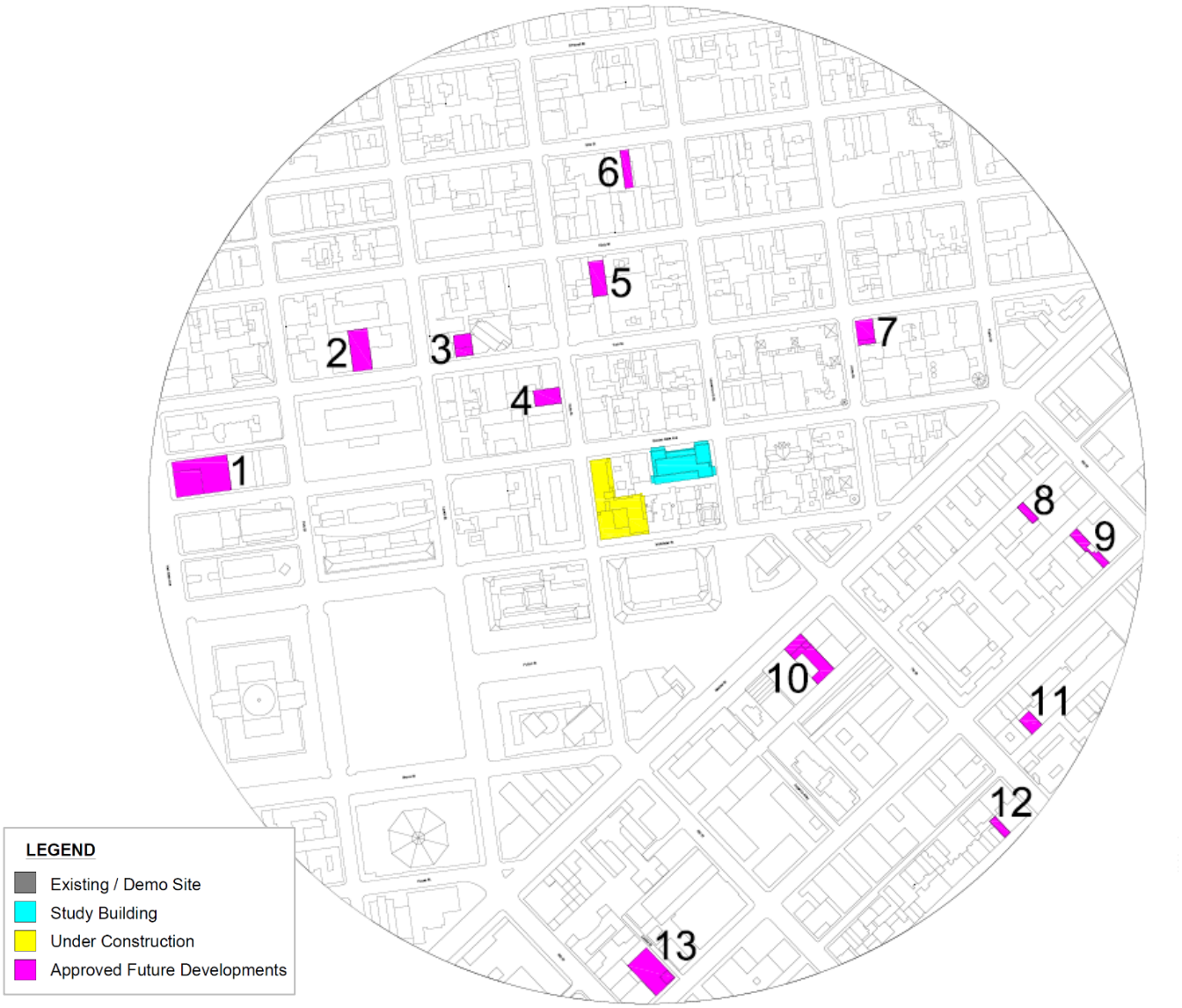


Image 2D: Photographs of Wind Tunnel Test Model – Existing + Project (Academic Heavy) Configuration

Image 2E: Photographs of Wind Tunnel Test Model – Project + Cumulative (Academic Heavy) Configuration

2.2 CUMULATIVE DEVELOPMENTS

The approved future (cumulative) buildings within the modelled test radius that were evaluated within the Project + Cumulative configurations are summarized in Image 3 and the table below.



Under Construction	Cumulative Developments					
198 McAllister Ave.	**1**	600 Van Ness Ave	**6**	519 Ellis St.	**11**	580 Minna St.
	2	530-540 Turk St.	**7**	180 Jones St.	**12**	612 Natoma St.
	3	468 Turk St.	**8**	527 Stevenson St.	**13**	1270 Mission St.
	4	135 Hyde St.	**9**	1010 Mission St.		
	5	469 Eddy St.	**10**	1125 Market St.		

Image 3: Site Plan Denoting Cumulative / Future Developments

2.3 WIND CLIMATE

The measured velocity data were normalized to an approach reference wind speed and then combined with a climatological model (wind frequency and direction) from the San Francisco Wind Climatology Study. The wind information of this study, derived from a detailed Weather Research Forecasting (WRF) model, provides a standardized statistical representation of the wind climate of the City of San Francisco area to be used for the assessment of the wind conditions for developments within the City.

Due to the distinctive topography of the San Francisco area, five (5) wind zones demonstrating similar characteristics of wind speed and directionality were concluded. The proposed development is located within the "Blue" zone (see Image 4 below) and was evaluated accordingly.

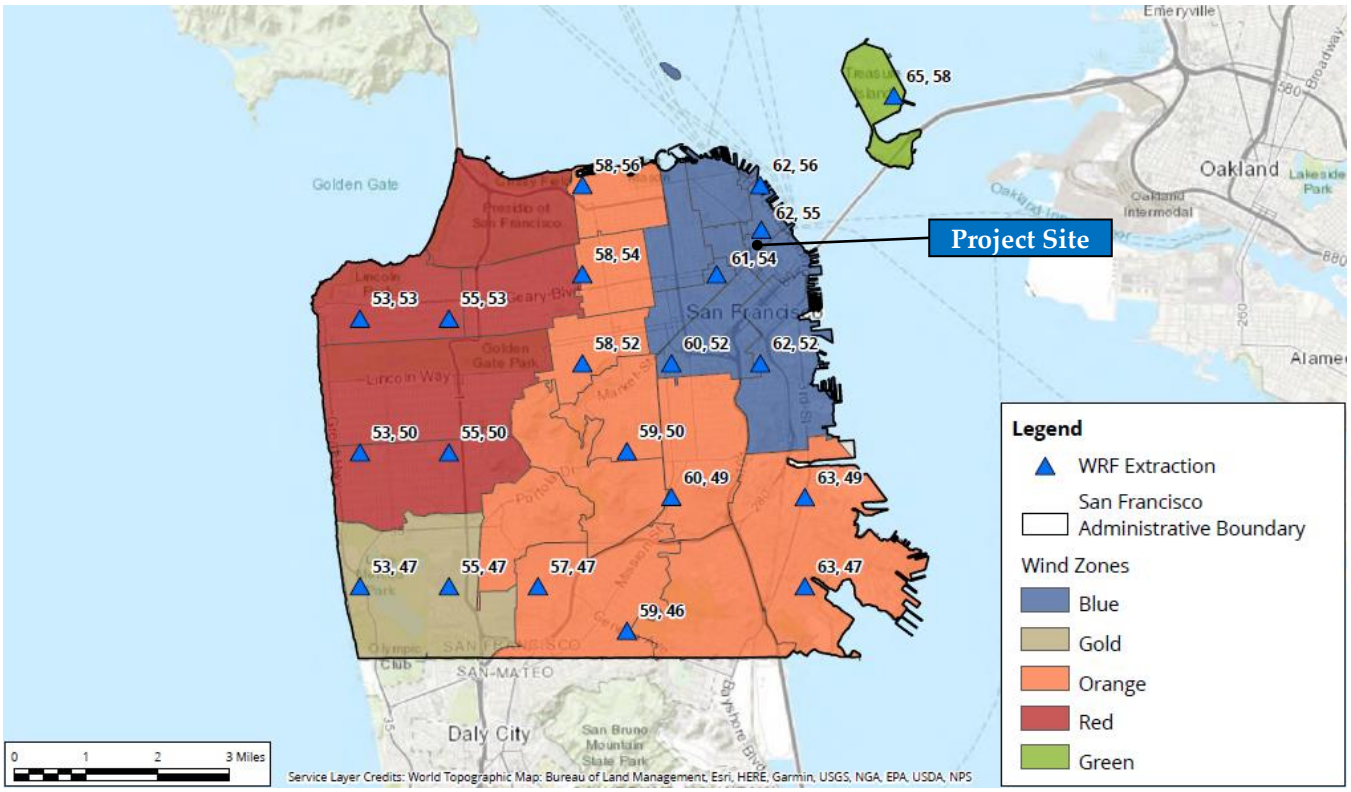


Image 4: Wind Zones in San Francisco

The data for this wind zone is portrayed in the wind rose in Image 5. The arms of the wind roses point in the direction from where the wind is blowing, the width and color of the arm represent the wind speed, and the length of the arm indicates the percent of the time that the wind blows for that combination of speed and direction. The wind rose shown in Image 5 is representative of data at 33 ft above the ground corrected to open country.

In general, winds within the "Blue" zone primarily occur from the west-southwesterly (250°) through west-northwesterly (280°) directions. Less frequent winds also occur from the north-northwest and south-southeasterly directions.

The combination of this statistical data with the wind tunnel data results in cumulative probability distributions of wind speed for the full-scale site at each pedestrian measurement location which are then evaluated against the established criteria for pedestrian wind comfort and hazard.

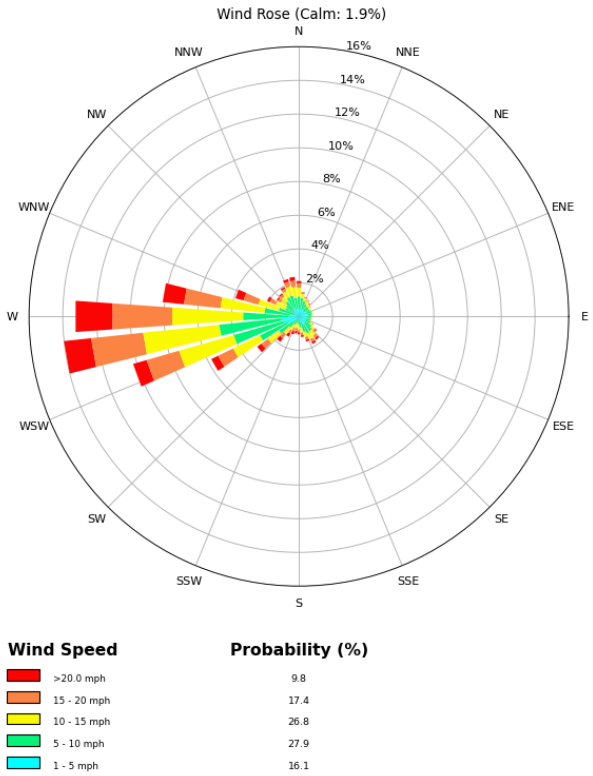


Image 5: Probability of Wind Speed by Direction Blue Zone (2000 – 2019)

2.4 WIND ASSESSMENT CRITERIA

Although not applicable to UC Law SF, the project was evaluated under the requirements of Planning Code Section 148 which establishes pedestrian wind comfort criteria using equivalent wind speeds of 7 mph in public seating areas, and 11 mph in areas of substantial pedestrian use, not to be exceeded more than 10% of the time year-round between 7:00 a.m. and 6:00 p.m. (see table below). If wind speeds exceed the comfort criteria, Planning Code Section 148 requires that new buildings and additions must be designed to reduce wind speeds to comply with these requirements, unless certain findings are made for an allowable exception.

Equivalent Wind Speed Categories (U_{Equiv})	Description
< 7 mph	Calm or light breezes suitable for pedestrians in dining, seating, and park spaces for longer durations
< 11 mph	Moderate winds appropriate for strolling, walking, running, or cycling along a downtown street, or park.
≥ 11 mph	Stronger winds typically considered uncomfortable for most pedestrian use activities. Wind mitigation may be required.

Equivalent wind speeds (U_{Equiv}) are defined as an hourly mean wind speed (U_{Mean}) adjusted to incorporate the effects of gustiness or turbulence (TI) on pedestrians and are calculated according to the following formula (White, 1992):

$$U_{Equiv} = U_{Mean}\ x\ (2\ x\ TI + 0.7)$$

$U_{Equiv} = Equivalent\ Wind\ Speed$
$U_{Mean} = Mean\ Wind\ Speed$
$TI = Turbulence\ Intensity$

In addition to the assessment of winds against the wind comfort criteria, Planning Code Section 148 also requires the assessment of winds against a wind hazard criterion wherein equivalent wind speeds are not permitted to exceed 26 mph for a single hour of the year (or 0.0114% of the time).* The assessment of hazardous winds have been assessed based on the criteria summarized in the table below. For locations where potentially hazardous wind conditions are identified, recommendations for remedial wind control measures can be discussed with the project team. While the provisions of the Section 148 wind hazard criterion are used to evaluate a significant wind impact for the purposes of the California Environmental Quality Act (CEQA) in San Francisco, which UC Law SF is voluntarily analyzing, the Section 148 wind comfort criteria are not considered CEQA significance criteria.

* The pedestrian comfort criteria listed above are based on wind speeds measured and averaged over one minute, the same averaging time as used for the National Weather Service's wind data. In contrast, the wind hazard criterion (26 mph) is based on wind speeds measured and averaged over one hour. When stated on the same time basis as comfort wind speeds, the hazard wind speed is a one-minute average wind speed of 36 mph. The test results presented in this report use the one-minute average of 36 mph for the wind hazard criterion.

Hazard Rating	U_{Equiv}	Description
○ Pass	< 36 mph	Meets wind hazard criterion.
● Exceeds	≥ 36 mph	Excessive wind speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is often required.

3. DISCUSSION OF RESULTS

The assessment of pedestrian comfort and hazard is presented in Figures 1A through 2E, which contains color-coded markers indicating the measurement point on a site plan. Tables 1.1, 1.2, 2.1, 2.2 and 3 show the Comfort and Hazard wind speeds associated with each point, and the corresponding percentage of time / total hours that the criteria is exceeded (if applicable).

Of note, all configurations were evaluated without the inclusion of any existing or proposed streetscaping and therefore the results may be considered as representing worst-case conditions, as required by the San Francisco Planning Department. It is CPP's opinion that the addition of landscaping features may reduce wind speeds in some locations.

3.1. Existing Configuration

For the Existing configuration, the wind speed exceeded 10% of the time is expected to be 10.3 mph. In addition, 15 of 52 locations are expected to exceed the wind comfort threshold of 11-mph an average of 9% of the time (see Figure 1A and Table 1.1).

Regarding wind hazard assessment, the average wind speed exceeded 1 hour/year at all locations is expected to be 26.1 mph for the existing site. Wind speeds at 1 of 52 test locations are expected to exceed the wind hazard criterion for a total of 1 hour (see Figure 2A and Table 2.1).

3.2. Existing + Project (Academic Light) Configuration

The "Academic Light" massing option of the 201-247 Golden Gate Ave development includes an outdoor terrace along the north façade of the building at Level 3 in the notch between the east and west towers (see conceptual renderings in Image 6 for reference).

Image 6: Conceptual Renderings of "Academic Light" Massing Option

With the addition of this massing option, the wind speed exceeded 10% of the time was found to be 9.8 mph with 14 of 52 locations expected to exceed the wind comfort threshold of 11-mph an average of 8% of the time (see Figure 1B and Table 1.1). Compared to the Existing configuration, this is a 0.5 mph decrease in wind speeds and reduction of 1 comfort exceedance location. The new predicted wind comfort exceedances (Locations 32 and 43) are the result of insubstantial increases in wind speeds (0.3-mph and 0.5-mph, respectively) which cause the wind speed at these locations to marginally surpass the wind comfort threshold of 11-mph. Contrarily and of benefit, the addition of the "Academic Light" massing option of the development is predicted to eliminate two wind comfort exceedances (Locations 37 and 42) compared to the Existing configuration. Wind speeds at these locations are to be reduced by a notable amount (~3 to 5-mph), due to the Project massing providing shelter from the predominant westerly winds for these downwind locations. The wind speed exceeded 1-hour/year around the site is expected to decrease by 1.3 mph (24.8 mph) with the addition of the development. Wind speeds at 1 of 52 test locations are expected to exceed the wind hazard criterion for a total of 1 hour. Compared to the Existing configuration, this is the same total number of exceedance locations but hours of hazard exceedance (see Figure 2B and Table 2.1).

3.3. Project + Cumulative (Academic Light) Configuration

In general, the addition of the various cumulative developments within the modelled tested radius are expected to have minimal influence on the wind activity around the project site. The wind speed exceeded 10% of the time was found to be 9.7 mph with 14 of 52 locations expected to exceed the wind comfort threshold of 11-mph an average of 8% of the time (similar to the Existing + Project (Academic Light) configuration) (see Figure 1C and Table 1.1).

The wind speeds exceeding the wind hazard criterion are expected to marginally increase to 24.9 mph (a 0.1 mph increase relative to the Existing + Project (Academic Light) Configuration) with the addition of the

cumulative developments. Wind speeds at 1 of 52 test locations are expected to exceed the wind hazard criterion for a total of 1 hour. Compared to the Existing configuration, this is the same number of exceedance locations and hours of hazard exceedance (see Figure 2C and Table 2.1).

3.4. Existing + Project (Academic Heavy) Configuration

The "Academic Heavy" massing option of the 201-247 Golden Gate Ave development includes an outdoor terrace along the north façade of the building at Level 6 in the notch between the east and west towers (see conceptual renderings in Image 7 for reference).

Image 7: Conceptual Renderings of "Academic Heavy" Massing Option

With the addition of this massing option, the wind speed exceeded 10% of the time was found to be 9.8 mph with 15 of 52 locations expected to exceed the wind comfort threshold of 11-mph an average of 8% of the time (see Figure 1D and Table 1.2). Compared to the Existing configuration, this is a 0.5 mph decrease in wind speeds and same number of wind comfort exceedance locations.

The new predicted wind comfort exceedances (Locations 32, 43, and 51) are the result of insubstantial increases in wind speeds (0.2-mph, 0.5-mph, and 0.5-mph, respectively) which cause the wind speed at these locations to marginally surpass the wind comfort threshold of 11-mph. Contrarily and of benefit, the addition of the "Academic Heavy" massing option of the development is predicted to eliminate three wind comfort exceedances (Locations 26, 37 and 42) compared to the Existing configuration. Wind speeds at these locations are to be reduced by a notable amount (~2 to 4-mph), due to the Project massing providing shelter from the predominant westerly winds for these downwind locations.

The wind speed exceeded 1-hour/year around the site is expected to decrease by 1.3 mph (24.8 mph) with the addition of the development. Wind speeds at 1 of 52 test locations are expected to exceed the wind hazard

criterion for a total of 1 hour. Compared to the Existing configuration, this is the same total number of exceedance locations and hours of hazard exceedance (see Figure 2D and Table 2.2).

3.5. Project + Cumulative (Academic Heavy) Configuration

In general, the addition of the various cumulative developments within the modelled tested radius are expected to have minimal influence on the wind activity around the project site. The wind speed exceeded 10% of the time was found to be 9.8 mph with 14 of 52 locations expected to exceed the wind comfort threshold of 11-mph an average of 8% of the time (similar to the Existing + Project (Academic Heavy) configuration) (see Figure 1E and Table 1.2).

The wind speeds exceeding the wind hazard criterion are expected to marginally increase to 25.1 mph (a 0.3 mph increase relative to the Existing + Project (Academic Heavy) Configuration) with the addition of the cumulative developments. Wind speeds at 1 of 52 test locations are expected to exceed the wind hazard criterion for a total of 2 hours. Compared to the Existing configuration, this is 1 additional exceedance location and 1 additional hour of hazard exceedance (see Figure 2E and Table 2.2). Of note, the increase in wind speeds at this location is considered insubstantial and likely imperceivable (0.2-mph) in addition to being only a fractional exceedance (0.1-mph) of the 36-mph wind hazard threshold.

3.6. Bicycle Route Results

Wind speed measurements were taken within several bicycle routes in proximity to the project site, which in this case were all along Golden Gate Ave. Unlike other measurement locations which have been assessed against the wind comfort and hazard criterion, measurements at bicycle route test locations have been reported as average wind speeds (i.e., wind speeds that occur for 50% of the time) for informational purposes and are summarized in the table below (see Image 8 for reference).

	Wind Speeds Exceeded 50% of the Time (mph)				
Location	Existing	Project (Academic Light)	Cumulative (Academic Light)	Project (Academic Heavy)	Cumulative (Academic Heavy)
53	7.4	7.3	7.3	7.3	7.4
54	6.3	6.2	6.1	6.2	6.2
55	4.8	5.3	5.3	5.3	5.3
56	5.5	5.2	5.2	5.2	5.2
57	6.0	5.2	5.2	5.3	5.3
58	5.9	4.8	4.7	4.9	4.8
59	5.6	3.8	3.9	3.9	3.9
60	5.5	3.7	3.6	3.7	3.6
Average	5.9	5.2	5.2	5.2	5.2

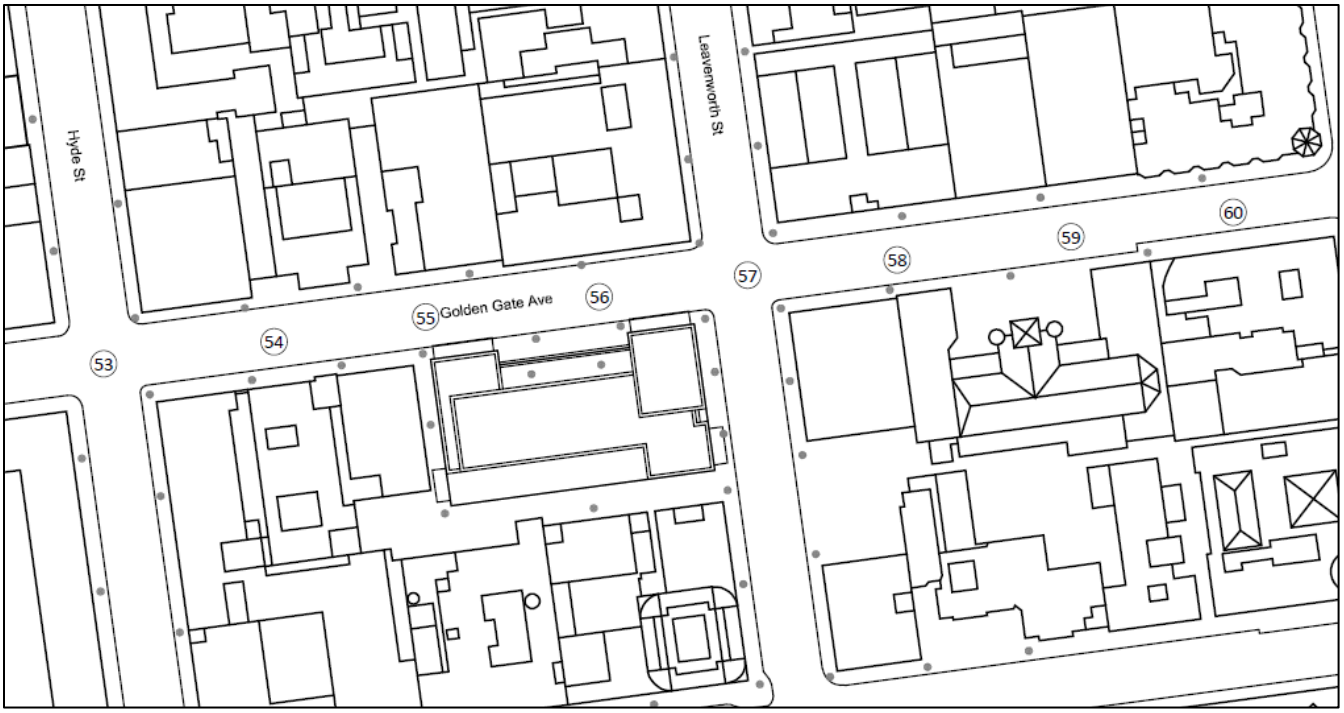


Image 8: Site Plan Denoting Bicycle Routes

4. APPLICABILITY OF RESULTS

The results presented within this report are based on the 3D model information received by CPP on 30 November 2022. If changes to the design of the development have occurred beyond this date, it is recommended that CPP be contacted to evaluate the impact of any design changes relative to the wind conditions presented within this report.

CPP

PEDESTRIAN WIND COMFORT CONDITIONS

Annual (January to December, 7:00 to 18:00 (Inclusive))

Existing Configuration

North

Figure: 1A

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022

CPP

PEDESTRIAN WIND COMFORT CONDITIONS

Annual (January to December, 7:00 to 18:00 (Inclusive))

Project (Academic Light) Configuration

North

Figure: 1B

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022

CPP

PEDESTRIAN WIND COMFORT CONDITIONS

Annual (January to December, 7:00 to 18:00 (Inclusive))

Cumulative (Academic Light) Configuration

North

Figure: 1C

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022

CPP

PEDESTRIAN WIND COMFORT CONDITIONS

Annual (January to December, 7:00 to 18:00 (Inclusive))

Project (Academic Heavy) Configuration

Figure: 1D

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022

CPP

PEDESTRIAN WIND COMFORT CONDITIONS

Annual (January to December, 7:00 to 18:00 (Inclusive))

Cumulative (Academic Heavy) Configuration

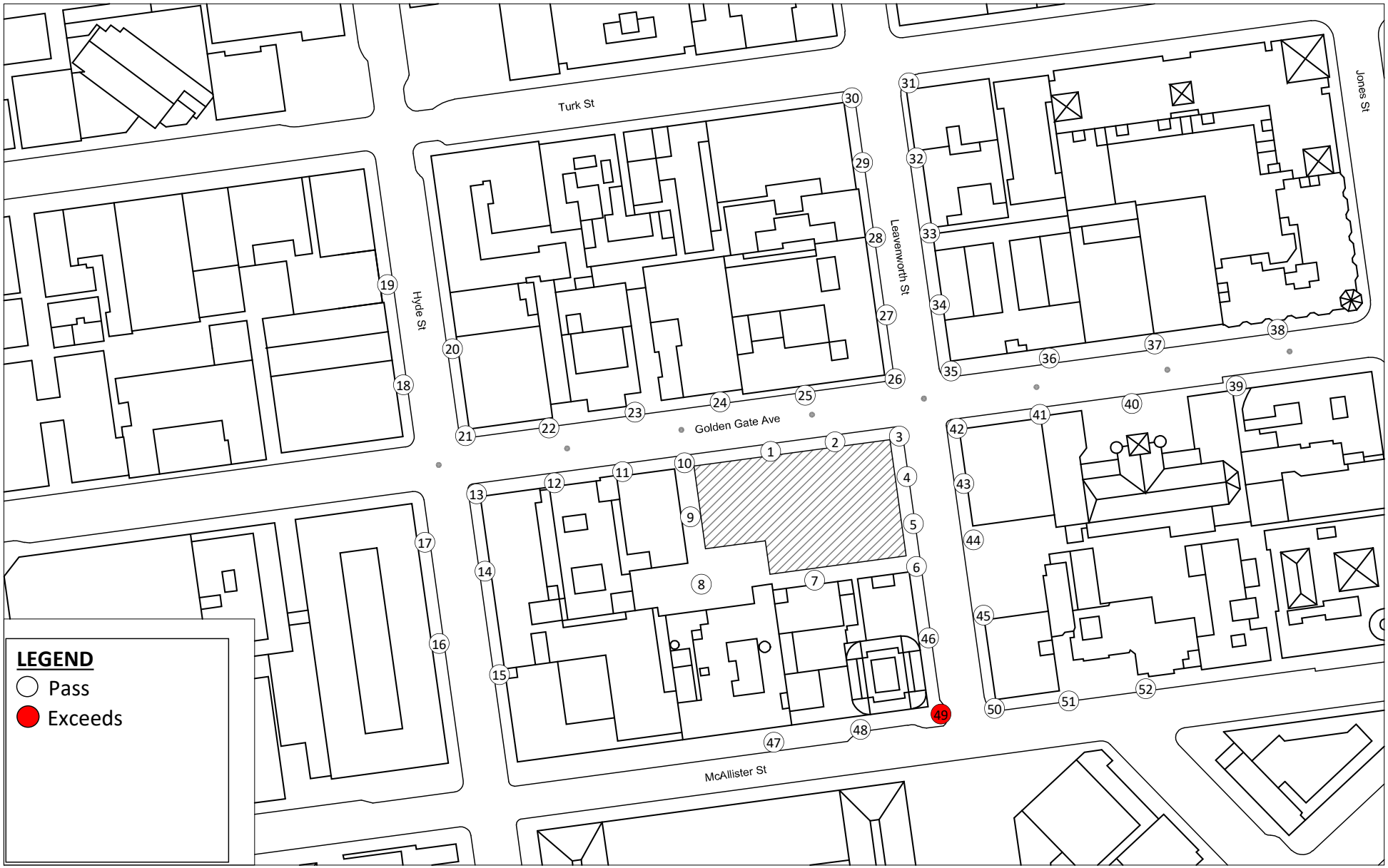
North

Figure: 1E

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022



PEDESTRIAN WIND SAFETY CONDITIONS

Annual (January to December, All Hours)

Existing Configuration

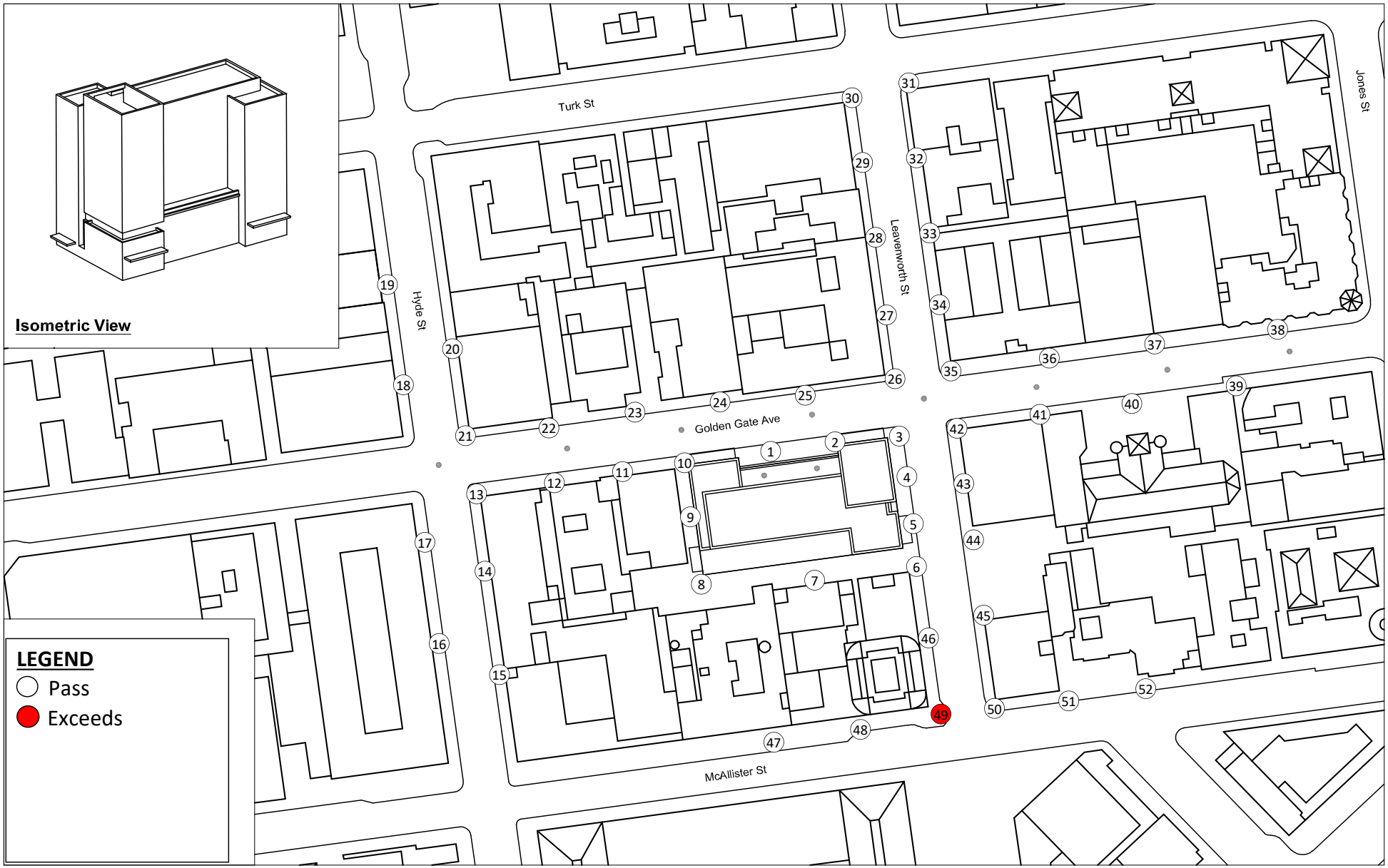
North

Figure: 2A

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022



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PEDESTRIAN WIND SAFETY CONDITIONS

Annual (January to December, All Hours)

Project (Academic Light) Configuration

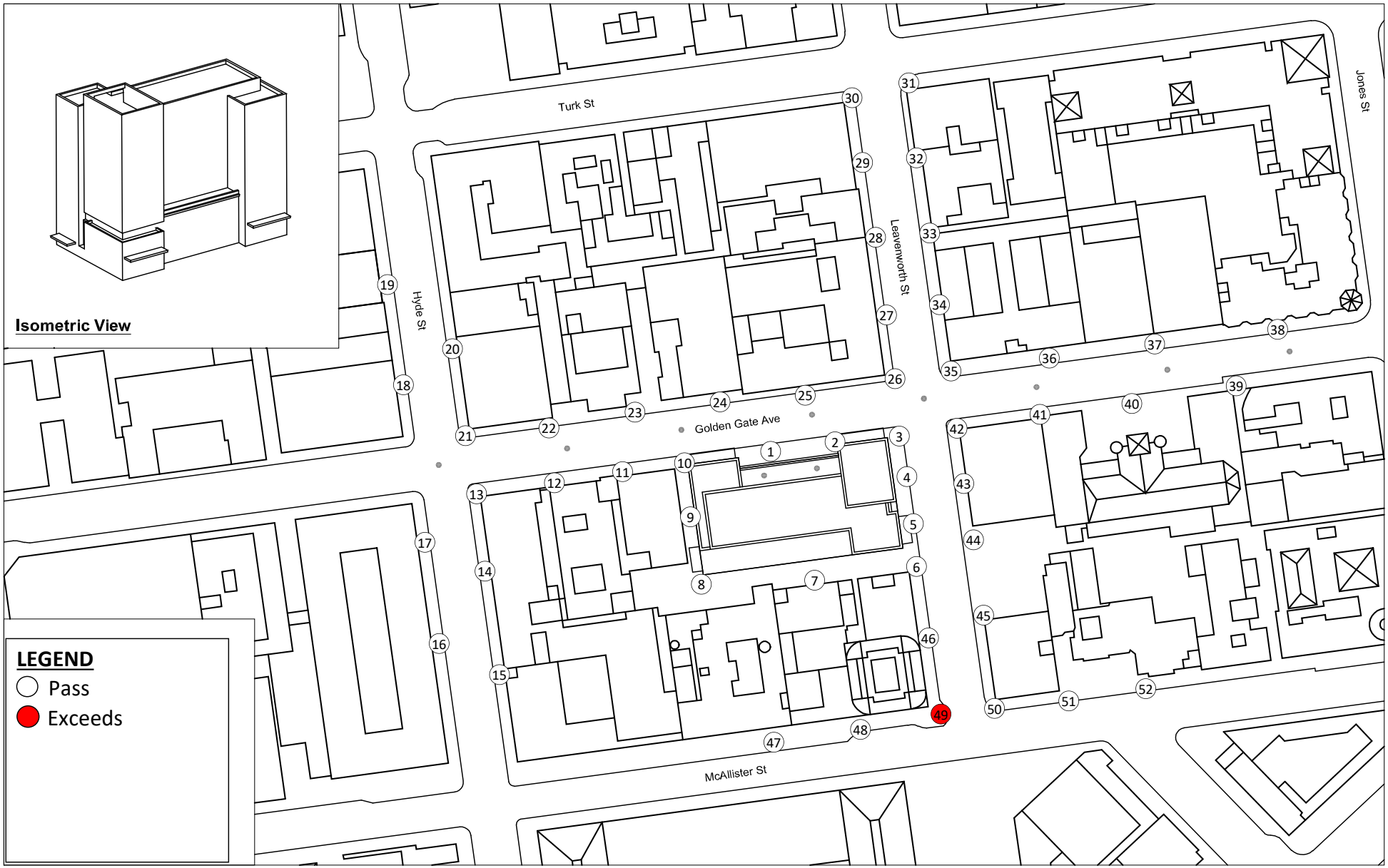
North

Figure: 2B

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022



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PEDESTRIAN WIND SAFETY CONDITIONS

Annual (January to December, All Hours)

Cumulative (Academic Light) Configuration

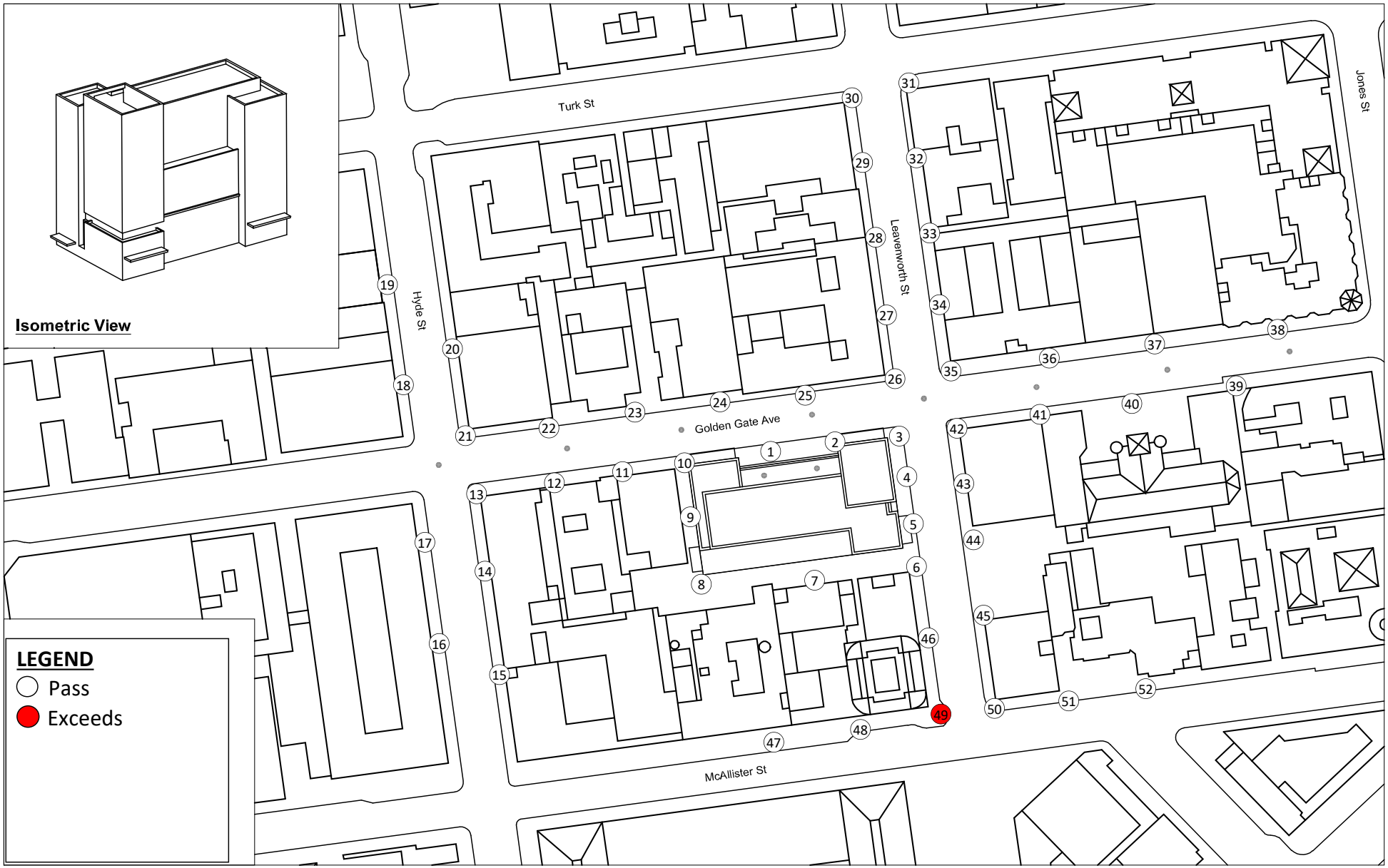
North

Figure: 2C

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022



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PEDESTRIAN WIND SAFETY CONDITIONS

Annual (January to December, All Hours)

Project (Academic Heavy) Configuration

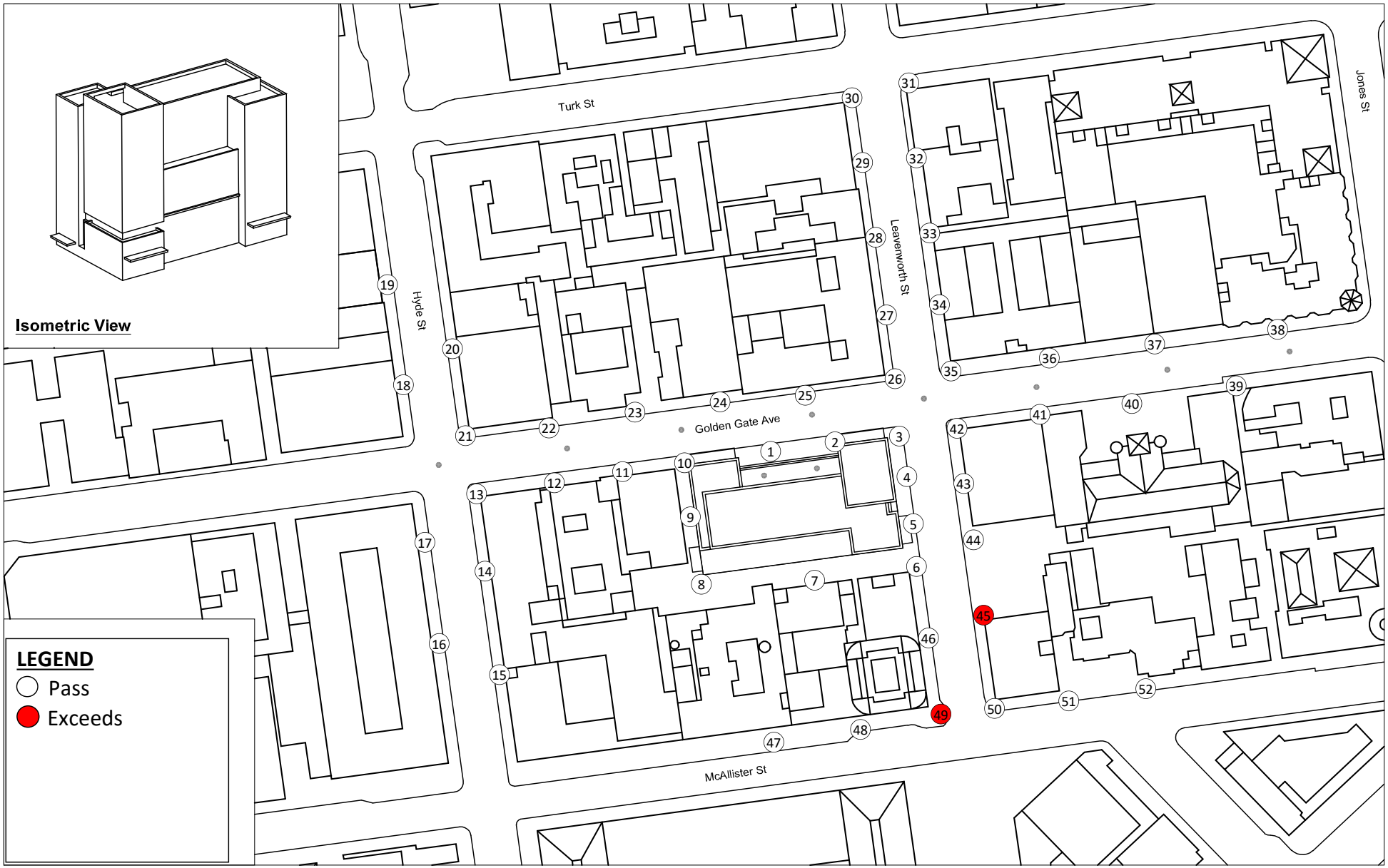
North

Figure: 2D

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022



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PEDESTRIAN WIND SAFETY CONDITIONS

Annual (January to December, All Hours)

Cumulative (Academic Heavy) Configuration

North

Figure: 2E

Project Name: 201-247 Golden Gate Ave EIR

Ref#: CPP-16223

Date: 16 December 2022

Table 1.1. Pedestrian Wind Comfort Results - Academic Light (Configurations A, B, C)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Academic Light)				Cumulative (Academic Light)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
1	9.6	5%		9.1	4%	-0.5		9.0	3%	-0.6	
2	10.2	7%		10.1	7%	-0.1		10.1	7%	-0.1	
3	9.8	6%		9.8	6%			9.8	6%		
4	8.7	4%		7.9	2%	-0.8		7.9	2%	-0.8	
5	8.3	3%		6.9	1%	-1.4		6.9	1%	-1.4	
6	13.9	24%	e	12.0	14%	-1.9	e	12.0	14%	-1.9	e
7	10.9	10%		6.7	2%	-4.2		6.5	2%	-4.4	
8	6.7	1%		8.3	3%	1.6		8.1	2%	1.4	
9	7.4	2%		6.7	2%	-0.7		6.5	2%	-0.9	
10	9.3	5%		10.3	8%	1.0		10.1	7%	0.8	
11	9.0	4%		8.5	3%	-0.5		8.1	3%	-0.9	
12	9.3	5%		8.2	3%	-1.1		7.9	2%	-1.4	
13	15.2	29%	e	15.1	29%	-0.1	e	15.1	28%	-0.1	e
14	12.6	17%	e	12.6	17%		e	12.7	18%	0.1	e
15	10.6	9%		10.7	9%	0.1		10.6	9%		
16	9.8	6%		9.8	6%			9.8	6%		
17	11.8	14%	e	11.7	13%	-0.1	e	11.7	13%	-0.1	e
18	10.5	9%		10.4	8%	-0.1		10.5	8%		
19	8.9	4%		8.9	4%			10.0	7%	1.1	
20	10.1	7%		10.0	7%	-0.1		10.6	9%	0.5	
21	14.3	24%	e	14.2	24%	-0.1	e	14.0	23%	-0.3	e
22	12.6	17%	e	12.6	17%		e	12.5	16%	-0.1	e
23	7.6	4%		7.3	3%	-0.3		7.3	3%	-0.3	
24	7.5	2%		8.5	3%	1.0		8.6	3%	1.1	
25	8.4	2%		9.0	4%	0.6		9.0	4%	0.6	
26	11.2	11%	e	9.1	4%	-2.1		9.2	4%	-2.0	
27	6.7			5.7		-1.0		5.4		-1.3	
28	6.8	1%		7.9	2%	1.1		7.7	1%	0.9	
29	6.8	1%		7.1	1%	0.3		6.9	1%	0.1	
30	10.0	6%		10.1	7%	0.1		9.8	5%	-0.2	
31	9.8	6%		10.0	6%	0.2		9.3	4%	-0.5	
32	10.8	10%		11.1	11%	0.3	e	10.5	8%	-0.3	
33	9.8	6%		9.9	6%	0.1		9.6	5%	-0.2	
34	9.1	5%		7.4	1%	-1.7		7.1	1%	-2.0	
35	10.9	10%		9.1	4%	-1.8		9.0	4%	-1.9	
36	10.7	9%		8.2	2%	-2.5		8.0	2%	-2.7	
37	11.0	10%	e	7.2	2%	-3.8		7.0	2%	-4.0	
38	9.5	5%		8.0	3%	-1.5		7.8	3%	-1.7	
39	8.4	3%		7.2	2%	-1.2		6.7	1%	-1.7	
40	9.3	5%		7.7	2%	-1.6		7.6	2%	-1.7	
41	9.8	6%		9.1	4%	-0.7		9.1	4%	-0.7	
42	14.2	24%	e	9.6	5%	-4.6		9.5	5%	-4.7	
43	10.8	9%		11.3	12%	0.5	e	11.0	10%	0.2	e
44	12.7	18%	e	11.8	14%	-0.9	e	11.7	13%	-1.0	e
45	14.1	24%	e	14.0	23%	-0.1	e	14.1	24%		e
46	11.1	11%	e	11.5	12%	0.4	e	11.5	12%	0.4	e
47	9.0	5%		9.4	5%	0.4		9.6	5%	0.6	

Table 1.1. Pedestrian Wind Comfort Results - Academic Light (Configurations A, B, C)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Academic Light)				Cumulative (Academic Light)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
48	9.3	5%		9.5	5%	0.2		9.6	5%	0.3	
49	14.4	26%	e	13.6	22%	-0.8	e	13.5	21%	-0.9	e
50	13.2	20%	e	12.7	18%	-0.5	e	12.5	17%	-0.7	e
51	10.8	9%		10.9	10%	0.1		11.2	11%	0.4	e
52	13.1	19%	e	13.1	19%		e	13.2	20%	0.1	e
	Average Wind Speed (mph)	**Average % of Time Exceeding**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**	**Average Wind Speed (mph)**	**Average % of Time Exceeding**	**Speed Change (mph)**	**Total**
	10.3	9%	15 of 52	9.8	8%	-0.5	14 of 52	9.7	8%	-0.6	14 of 52

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = U_{Mean} x (2TI + 0.7)).

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 1.2. Pedestrian Wind Comfort Results - Academic Heavy (Configurations A, D, E)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Academic Heavy)				Cumulative (Academic Heavy)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
1	9.6	5%		8.9	3%	-0.7		8.7	3%	-0.9	
2	10.2	7%		10.2	7%			10.1	7%	-0.1	
3	9.8	6%		9.8	6%			10.0	7%	0.2	
4	8.7	4%		7.9	2%	-0.8		8.0	2%	-0.7	
5	8.3	3%		6.9	1%	-1.4		7.0	1%	-1.3	
6	13.9	24%	e	11.9	14%	-2.0	e	12.1	15%	-1.8	e
7	10.9	10%		6.7	2%	-4.2		6.9	2%	-4.0	
8	6.7	1%		8.1	2%	1.4		8.2	2%	1.5	
9	7.4	2%		6.7	2%	-0.7		6.6	2%	-0.8	
10	9.3	5%		10.2	7%	0.9		10.4	8%	1.1	
11	9.0	4%		8.5	3%	-0.5		8.2	3%	-0.8	
12	9.3	5%		8.4	3%	-0.9		8.1	2%	-1.2	
13	15.2	29%	e	15.2	29%		e	15.2	29%		e
14	12.6	17%	e	12.6	17%		e	12.7	18%	0.1	e
15	10.6	9%		10.6	8%			10.7	9%	0.1	
16	9.8	6%		9.8	6%			9.9	6%	0.1	
17	11.8	14%	e	11.8	14%		e	11.8	14%		e
18	10.5	9%		10.5	8%			10.6	9%	0.1	
19	8.9	4%		9.0	4%	0.1		10.1	7%	1.2	
20	10.1	7%		10.2	7%	0.1		10.5	8%	0.4	
21	14.3	24%	e	14.3	24%		e	14.3	24%		e
22	12.6	17%	e	12.6	17%		e	12.6	17%		e
23	7.6	4%		7.0	3%	-0.6		7.2	3%	-0.4	
24	7.5	2%		8.3	3%	0.8		8.4	3%	0.9	
25	8.4	2%		8.9	3%	0.5		8.9	4%	0.5	
26	11.2	11%	e	9.0	4%	-2.2		9.1	4%	-2.1	
27	6.7			5.5		-1.2		5.8		-0.9	
28	6.8	1%		7.8	1%	1.0		7.8	2%	1.0	
29	6.8	1%		6.9	1%	0.1		7.0	1%	0.2	
30	10.0	6%		10.1	6%	0.1		9.9	6%	-0.1	
31	9.8	6%		10.0	6%	0.2		9.4	4%	-0.4	
32	10.8	10%		11.0	10%	0.2	e	10.7	9%	-0.1	
33	9.8	6%		9.9	6%	0.1		9.9	6%	0.1	
34	9.1	5%		7.4	1%	-1.7		7.3	1%	-1.8	
35	10.9	10%		9.2	4%	-1.7		9.2	4%	-1.7	
36	10.7	9%		8.3	3%	-2.4		8.1	2%	-2.6	
37	11.0	10%	e	7.5	2%	-3.5		7.0	2%	-4.0	
38	9.5	5%		8.1	3%	-1.4		7.9	3%	-1.6	
39	8.4	3%		7.2	2%	-1.2		7.1	2%	-1.3	
40	9.3	5%		8.1	2%	-1.2		7.7	2%	-1.6	
41	9.8	6%		9.3	5%	-0.5		9.4	5%	-0.4	
42	14.2	24%	e	9.8	6%	-4.4		9.8	6%	-4.4	
43	10.8	9%		11.3	11%	0.5	e	11.4	12%	0.6	e
44	12.7	18%	e	11.8	14%	-0.9	e	12.0	14%	-0.7	e
45	14.1	24%	e	14.1	24%		e	14.0	23%	-0.1	e
46	11.1	11%	e	11.4	12%	0.3	e	11.8	14%	0.7	e
47	9.0	5%		9.4	5%	0.4		9.5	5%	0.5	

Table 1.2. Pedestrian Wind Comfort Results - Academic Heavy (Configurations A, D, E)

Criterion wind speed = 11 mph

Test Location	Existing			Project (Academic Heavy)				Cumulative (Academic Heavy)			
	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 10% of time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance
48	9.3	5%		9.6	5%	0.3		9.6	5%	0.3	
49	14.4	26%	e	13.6	22%	-0.8	e	13.4	21%	-1.0	e
50	13.2	20%	e	12.9	18%	-0.3	e	12.5	16%	-0.7	e
51	10.8	9%		11.3	11%	0.5	e	11.0	10%	0.2	e
52	13.1	19%	e	13.3	20%	0.2	e	13.2	20%	0.1	e

Average Wind Speed (mph)	Average % of Time Exceeding	Total	Average Wind Speed (mph)	Average % of Time Exceeding	Speed Change (mph)	Total	Average Wind Speed (mph)	Average % of Time Exceeding	Speed Change (mph)	Total
10.3	9%	15 of 52	9.8	8%	-0.5	15 of 52	9.8	8%	-0.5	14 of 52

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = U_{Mean} x (2TI + 0.7)).

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 2.1. Pedestrian Wind Hazard Results - Academic Light (Configurations A, B, C)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Academic Light)				Cumulative (Academic Light)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	24.2	0		21.5	0	0		21.3	0	0	
2	23.3	0		25.3	0	0		24.8	0	0	
3	26.8	0		25.3	0	0		25.0	0	0	
4	24.5	0		21.3	0	0		21.1	0	0	
5	24.9	0		21.2	0	0		20.9	0	0	
6	28.9	0		30.0	0	0		30.3	0	0	
7	21.8	0		22.2	0	0		22.3	0	0	
8	19.5	0		20.0	0	0		19.9	0	0	
9	21.7	0		23.3	0	0		23.6	0	0	
10	24.8	0		23.8	0	0		23.1	0	0	
11	24.0	0		23.3	0	0		22.7	0	0	
12	23.2	0		21.5	0	0		21.3	0	0	
13	33.9	0		33.1	0	0		33.3	0	0	
14	27.1	0		27.3	0	0		27.9	0	0	
15	25.4	0		25.2	0	0		25.4	0	0	
16	21.7	0		21.8	0	0		22.0	0	0	
17	25.1	0		25.2	0	0		25.4	0	0	
18	26.3	0		25.7	0	0		25.8	0	0	
19	23.9	0		23.5	0	0		25.2	0	0	
20	29.0	0		29.2	0	0		29.8	0	0	
21	34.0	0		33.6	0	0		33.3	0	0	
22	32.6	0		32.3	0	0		32.6	0	0	
23	27.0	0		25.3	0	0		25.6	0	0	
24	24.6	0		23.6	0	0		23.6	0	0	
25	22.7	0		26.8	0	0		26.4	0	0	
26	34.7	0		25.3	0	0		24.8	0	0	
27	20.3	0		18.3	0	0		18.4	0	0	
28	19.9	0		20.2	0	0		20.5	0	0	
29	20.4	0		20.0	0	0		20.1	0	0	
30	22.0	0		21.1	0	0		21.3	0	0	
31	20.4	0		20.3	0	0		20.1	0	0	
32	22.5	0		22.0	0	0		20.4	0	0	
33	23.3	0		20.5	0	0		20.2	0	0	
34	35.0	0		18.3	0	0		19.6	0	0	
35	30.1	0		22.0	0	0		22.4	0	0	
36	28.6	0		23.1	0	0		23.3	0	0	
37	26.2	0		23.2	0	0		23.2	0	0	
38	27.4	0		26.9	0	0		27.0	0	0	
39	22.7	0		22.2	0	0		22.6	0	0	
40	23.4	0		19.8	0	0		20.0	0	0	
41	21.8	0		21.7	0	0		22.5	0	0	
42	28.4	0		23.3	0	0		23.3	0	0	
43	26.0	0		28.0	0	0		28.3	0	0	
44	26.8	0		27.3	0	0		27.6	0	0	
45	35.9	0		35.5	0	0		35.8	0	0	
46	29.5	0		28.7	0	0		28.6	0	0	
47	28.1	0		27.5	0	0		27.7	0	0	

Table 2.1. Pedestrian Wind Hazard Results - Academic Light (Configurations A, B, C)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Academic Light)				Cumulative (Academic Light)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
48	25.3	0		25.3	0	0		25.7	0	0	
49	36.8	1	e	36.1	1	0	e	36.2	1	0	e
50	31.6	0		31.2	0	0		31.4	0	0	
51	24.5	0		24.7	0	0		24.8	0	0	
52	26.9	0		26.9	0	0		27.0	0	0	

Average Wind Speed (mph)	Total Hours	Total	Average Wind Speed (mph)	Total Hours	Hours Change	Total	Average Wind Speed (mph)	Total Hours	Hours Change	Total
26.1	1	1 of 52	24.8	1	0	1 of 52	24.9	1	0	1 of 52

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = U_{Mean} x (2TI + 0.7)).

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 2.2. Pedestrian Wind Hazard Results - Academic Heavy (Configurations A, D, E)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Academic Heavy)				Cumulative (Academic Heavy)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
1	24.2	0		20.6	0	0		20.5	0	0	
2	23.3	0		25.0	0	0		25.0	0	0	
3	26.8	0		25.6	0	0		25.8	0	0	
4	24.5	0		21.1	0	0		21.5	0	0	
5	24.9	0		21.0	0	0		21.3	0	0	
6	28.9	0		29.9	0	0		30.4	0	0	
7	21.8	0		22.6	0	0		23.1	0	0	
8	19.5	0		20.3	0	0		20.5	0	0	
9	21.7	0		23.7	0	0		24.0	0	0	
10	24.8	0		23.8	0	0		23.9	0	0	
11	24.0	0		23.3	0	0		23.0	0	0	
12	23.2	0		21.5	0	0		21.4	0	0	
13	33.9	0		33.5	0	0		33.5	0	0	
14	27.1	0		27.4	0	0		28.1	0	0	
15	25.4	0		25.2	0	0		25.5	0	0	
16	21.7	0		22.0	0	0		21.8	0	0	
17	25.1	0		25.5	0	0		25.4	0	0	
18	26.3	0		26.0	0	0		25.8	0	0	
19	23.9	0		23.1	0	0		25.1	0	0	
20	29.0	0		28.9	0	0		29.5	0	0	
21	34.0	0		33.9	0	0		33.5	0	0	
22	32.6	0		32.4	0	0		32.6	0	0	
23	27.0	0		23.2	0	0		23.3	0	0	
24	24.6	0		22.6	0	0		23.2	0	0	
25	22.7	0		26.6	0	0		27.2	0	0	
26	34.7	0		25.0	0	0		25.2	0	0	
27	20.3	0		18.3	0	0		18.9	0	0	
28	19.9	0		20.5	0	0		20.9	0	0	
29	20.4	0		20.3	0	0		20.5	0	0	
30	22.0	0		21.1	0	0		21.4	0	0	
31	20.4	0		20.5	0	0		19.9	0	0	
32	22.5	0		22.2	0	0		20.7	0	0	
33	23.3	0		20.2	0	0		20.6	0	0	
34	35.0	0		18.3	0	0		19.5	0	0	
35	30.1	0		22.1	0	0		22.7	0	0	
36	28.6	0		23.2	0	0		23.6	0	0	
37	26.2	0		23.4	0	0		23.6	0	0	
38	27.4	0		27.1	0	0		27.6	0	0	
39	22.7	0		22.1	0	0		22.9	0	0	
40	23.4	0		20.0	0	0		20.3	0	0	
41	21.8	0		22.2	0	0		22.8	0	0	
42	28.4	0		23.8	0	0		23.9	0	0	
43	26.0	0		28.0	0	0		28.1	0	0	
44	26.8	0		27.2	0	0		27.7	0	0	
45	35.9	0		35.5	0	0		36.1	1	1	e
46	29.5	0		28.7	0	0		28.9	0	0	
47	28.1	0		27.8	0	0		27.8	0	0	

Table 2.2. Pedestrian Wind Hazard Results - Academic Heavy (Configurations A, D, E)

Criterion wind speed = 36 mph

Test Location	Existing			Project (Academic Heavy)				Cumulative (Academic Heavy)			
	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/yr Exceeding Criterion	Hours Change	Exceedance
48	25.3	0		25.6	0	0		25.7	0	0	
49	36.8	1	e	36.4	1	0	e	36.7	1	0	e
50	31.6	0		31.9	0	0		31.8	0	0	
51	24.5	0		24.8	0	0		25.1	0	0	
52	26.9	0		27.2	0	0		27.4	0	0	

Average Wind Speed (mph)	Total Hours	Total	Average Wind Speed (mph)	Total Hours	Hours Change	Total	Average Wind Speed (mph)	Total Hours	Hours Change	Total
26.1	1	1 of 52	24.8	1	0	1 of 52	25.1	2	1	2 of 52

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = U_{Mean} x (2TI + 0.7)).

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
1	Existing	9.6	5%	-		24.2	0	-	
	Project (Academic Light)	9.1	4%	-0.5		21.5	0	0	
	Cumulative (Academic Light)	9.0	3%	-0.6		21.3	0	0	
	Project (Academic Heavy)	8.9	3%	-0.7		20.6	0	0	
	Cumulative (Academic Heavy)	8.7	3%	-0.9		20.5	0	0	
2	Existing	10.2	7%	-		23.3	0	-	
	Project (Academic Light)	10.1	7%	-0.1		25.3	0	0	
	Cumulative (Academic Light)	10.1	7%	-0.1		24.8	0	0	
	Project (Academic Heavy)	10.2	7%	0.0		25.0	0	0	
	Cumulative (Academic Heavy)	10.1	7%	-0.1		25.0	0	0	
3	Existing	9.8	6%	-		26.8	0	-	
	Project (Academic Light)	9.8	6%	0.0		25.3	0	0	
	Cumulative (Academic Light)	9.8	6%	0.0		25.0	0	0	
	Project (Academic Heavy)	9.8	6%	0.0		25.6	0	0	
	Cumulative (Academic Heavy)	10.0	7%	0.2		25.8	0	0	
4	Existing	8.7	4%	-		24.5	0	-	
	Project (Academic Light)	7.9	2%	-0.8		21.3	0	0	
	Cumulative (Academic Light)	7.9	2%	-0.8		21.1	0	0	
	Project (Academic Heavy)	7.9	2%	-0.8		21.1	0	0	
	Cumulative (Academic Heavy)	8.0	2%	-0.7		21.5	0	0	
5	Existing	8.3	3%	-		24.9	0	-	
	Project (Academic Light)	6.9	1%	-1.4		21.2	0	0	
	Cumulative (Academic Light)	6.9	1%	-1.4		20.9	0	0	
	Project (Academic Heavy)	6.9	1%	-1.4		21.0	0	0	
	Cumulative (Academic Heavy)	7.0	1%	-1.3		21.3	0	0	
6	Existing	13.9	24%	-	e	28.9	0	-	
	Project (Academic Light)	12.0	14%	-1.9	e	30.0	0	0	
	Cumulative (Academic Light)	12.0	14%	-1.9	e	30.3	0	0	
	Project (Academic Heavy)	11.9	14%	-2.0	e	29.9	0	0	
	Cumulative (Academic Heavy)	12.1	15%	-1.8	e	30.4	0	0	
7	Existing	10.9	10%	-		21.8	0	-	
	Project (Academic Light)	6.7	2%	-4.2		22.2	0	0	
	Cumulative (Academic Light)	6.5	2%	-4.4		22.3	0	0	
	Project (Academic Heavy)	6.7	2%	-4.2		22.6	0	0	
	Cumulative (Academic Heavy)	6.9	2%	-4.0		23.1	0	0	
8	Existing	6.7	1%	-		19.5	0	-	
	Project (Academic Light)	8.3	3%	1.6		20.0	0	0	
	Cumulative (Academic Light)	8.1	2%	1.4		19.9	0	0	
	Project (Academic Heavy)	8.1	2%	1.4		20.3	0	0	
	Cumulative (Academic Heavy)	8.2	2%	1.5		20.5	0	0	

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
9	Existing	7.4	2%	-		21.7	0	-	
	Project (Academic Light)	6.7	2%	-0.7		23.3	0	0	
	Cumulative (Academic Light)	6.5	2%	-0.9		23.6	0	0	
	Project (Academic Heavy)	6.7	2%	-0.7		23.7	0	0	
	Cumulative (Academic Heavy)	6.6	2%	-0.8		24.0	0	0	
10	Existing	9.3	5%	-		24.8	0	-	
	Project (Academic Light)	10.3	8%	1.0		23.8	0	0	
	Cumulative (Academic Light)	10.1	7%	0.8		23.1	0	0	
	Project (Academic Heavy)	10.2	7%	0.9		23.8	0	0	
	Cumulative (Academic Heavy)	10.4	8%	1.1		23.9	0	0	
11	Existing	9.0	4%	-		24.0	0	-	
	Project (Academic Light)	8.5	3%	-0.5		23.3	0	0	
	Cumulative (Academic Light)	8.1	3%	-0.9		22.7	0	0	
	Project (Academic Heavy)	8.5	3%	-0.5		23.3	0	0	
	Cumulative (Academic Heavy)	8.2	3%	-0.8		23.0	0	0	
12	Existing	9.3	5%	-		23.2	0	-	
	Project (Academic Light)	8.2	3%	-1.1		21.5	0	0	
	Cumulative (Academic Light)	7.9	2%	-1.4		21.3	0	0	
	Project (Academic Heavy)	8.4	3%	-0.9		21.5	0	0	
	Cumulative (Academic Heavy)	8.1	2%	-1.2		21.4	0	0	
13	Existing	15.2	29%	-	e	33.9	0	-	
	Project (Academic Light)	15.1	29%	-0.1	e	33.1	0	0	
	Cumulative (Academic Light)	15.1	28%	-0.1	e	33.3	0	0	
	Project (Academic Heavy)	15.2	29%	0.0	e	33.5	0	0	
	Cumulative (Academic Heavy)	15.2	29%	0.0	e	33.5	0	0	
14	Existing	12.6	17%	-	e	27.1	0	-	
	Project (Academic Light)	12.6	17%	0.0	e	27.3	0	0	
	Cumulative (Academic Light)	12.7	18%	0.1	e	27.9	0	0	
	Project (Academic Heavy)	12.6	17%	0.0	e	27.4	0	0	
	Cumulative (Academic Heavy)	12.7	18%	0.1	e	28.1	0	0	
15	Existing	10.6	9%	-		25.4	0	-	
	Project (Academic Light)	10.7	9%	0.1		25.2	0	0	
	Cumulative (Academic Light)	10.6	9%	0.0		25.4	0	0	
	Project (Academic Heavy)	10.6	8%	0.0		25.2	0	0	
	Cumulative (Academic Heavy)	10.7	9%	0.1		25.5	0	0	
16	Existing	9.8	6%	-		21.7	0	-	
	Project (Academic Light)	9.8	6%	0.0		21.8	0	0	
	Cumulative (Academic Light)	9.8	6%	0.0		22.0	0	0	
	Project (Academic Heavy)	9.8	6%	0.0		22.0	0	0	
	Cumulative (Academic Heavy)	9.9	6%	0.1		21.8	0	0	

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
17	Existing	11.8	14%	-	e	25.1	0	-	
	Project (Academic Light)	11.7	13%	-0.1	e	25.2	0	0	
	Cumulative (Academic Light)	11.7	13%	-0.1	e	25.4	0	0	
	Project (Academic Heavy)	11.8	14%	0.0	e	25.5	0	0	
	Cumulative (Academic Heavy)	11.8	14%	0.0	e	25.4	0	0	
18	Existing	10.5	9%	-		26.3	0	-	
	Project (Academic Light)	10.4	8%	-0.1		25.7	0	0	
	Cumulative (Academic Light)	10.5	8%	0.0		25.8	0	0	
	Project (Academic Heavy)	10.5	8%	0.0		26.0	0	0	
	Cumulative (Academic Heavy)	10.6	9%	0.1		25.8	0	0	
19	Existing	8.9	4%	-		23.9	0	-	
	Project (Academic Light)	8.9	4%	0.0		23.5	0	0	
	Cumulative (Academic Light)	10.0	7%	1.1		25.2	0	0	
	Project (Academic Heavy)	9.0	4%	0.1		23.1	0	0	
	Cumulative (Academic Heavy)	10.1	7%	1.2		25.1	0	0	
20	Existing	10.1	7%	-		29.0	0	-	
	Project (Academic Light)	10.0	7%	-0.1		29.2	0	0	
	Cumulative (Academic Light)	10.6	9%	0.5		29.8	0	0	
	Project (Academic Heavy)	10.2	7%	0.1		28.9	0	0	
	Cumulative (Academic Heavy)	10.5	8%	0.4		29.5	0	0	
21	Existing	14.3	24%	-	e	34.0	0	-	
	Project (Academic Light)	14.2	24%	-0.1	e	33.6	0	0	
	Cumulative (Academic Light)	14.0	23%	-0.3	e	33.3	0	0	
	Project (Academic Heavy)	14.3	24%	0.0	e	33.9	0	0	
	Cumulative (Academic Heavy)	14.3	24%	0.0	e	33.5	0	0	
22	Existing	12.6	17%	-	e	32.6	0	-	
	Project (Academic Light)	12.6	17%	0.0	e	32.3	0	0	
	Cumulative (Academic Light)	12.5	16%	-0.1	e	32.6	0	0	
	Project (Academic Heavy)	12.6	17%	0.0	e	32.4	0	0	
	Cumulative (Academic Heavy)	12.6	17%	0.0	e	32.6	0	0	
23	Existing	7.6	4%	-		27.0	0	-	
	Project (Academic Light)	7.3	3%	-0.3		25.3	0	0	
	Cumulative (Academic Light)	7.3	3%	-0.3		25.6	0	0	
	Project (Academic Heavy)	7.0	3%	-0.6		23.2	0	0	
	Cumulative (Academic Heavy)	7.2	3%	-0.4		23.3	0	0	
24	Existing	7.5	2%	-		24.6	0	-	
	Project (Academic Light)	8.5	3%	1.0		23.6	0	0	
	Cumulative (Academic Light)	8.6	3%	1.1		23.6	0	0	
	Project (Academic Heavy)	8.3	3%	0.8		22.6	0	0	
	Cumulative (Academic Heavy)	8.4	3%	0.9		23.2	0	0	

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
25	Existing	8.4	2%	-		22.7	0	-	
	Project (Academic Light)	9.0	4%	0.6		26.8	0	0	
	Cumulative (Academic Light)	9.0	4%	0.6		26.4	0	0	
	Project (Academic Heavy)	8.9	3%	0.5		26.6	0	0	
	Cumulative (Academic Heavy)	8.9	4%	0.5		27.2	0	0	
26	Existing	11.2	11%	-	e	34.7	0	-	
	Project (Academic Light)	9.1	4%	-2.1		25.3	0	0	
	Cumulative (Academic Light)	9.2	4%	-2.0		24.8	0	0	
	Project (Academic Heavy)	9.0	4%	-2.2		25.0	0	0	
	Cumulative (Academic Heavy)	9.1	4%	-2.1		25.2	0	0	
27	Existing	6.7	1%	-		20.3	0	-	
	Project (Academic Light)	5.7	0%	-1.0		18.3	0	0	
	Cumulative (Academic Light)	5.4	0%	-1.3		18.4	0	0	
	Project (Academic Heavy)	5.5	0%	-1.2		18.3	0	0	
	Cumulative (Academic Heavy)	5.8	0%	-0.9		18.9	0	0	
28	Existing	6.8	1%	-		19.9	0	-	
	Project (Academic Light)	7.9	2%	1.1		20.2	0	0	
	Cumulative (Academic Light)	7.7	1%	0.9		20.5	0	0	
	Project (Academic Heavy)	7.8	1%	1.0		20.5	0	0	
	Cumulative (Academic Heavy)	7.8	2%	1.0		20.9	0	0	
29	Existing	6.8	1%	-		20.4	0	-	
	Project (Academic Light)	7.1	1%	0.3		20.0	0	0	
	Cumulative (Academic Light)	6.9	1%	0.1		20.1	0	0	
	Project (Academic Heavy)	6.9	1%	0.1		20.3	0	0	
	Cumulative (Academic Heavy)	7.0	1%	0.2		20.5	0	0	
30	Existing	10.0	6%	-		22.0	0	-	
	Project (Academic Light)	10.1	7%	0.1		21.1	0	0	
	Cumulative (Academic Light)	9.8	5%	-0.2		21.3	0	0	
	Project (Academic Heavy)	10.1	6%	0.1		21.1	0	0	
	Cumulative (Academic Heavy)	9.9	6%	-0.1		21.4	0	0	
31	Existing	9.8	6%	-		20.4	0	-	
	Project (Academic Light)	10.0	6%	0.2		20.3	0	0	
	Cumulative (Academic Light)	9.3	4%	-0.5		20.1	0	0	
	Project (Academic Heavy)	10.0	6%	0.2		20.5	0	0	
	Cumulative (Academic Heavy)	9.4	4%	-0.4		19.9	0	0	
32	Existing	10.8	10%	-		22.5	0	-	
	Project (Academic Light)	11.1	11%	0.3	e	22.0	0	0	
	Cumulative (Academic Light)	10.5	8%	-0.3		20.4	0	0	
	Project (Academic Heavy)	11.0	10%	0.2	e	22.2	0	0	
	Cumulative (Academic Heavy)	10.7	9%	-0.1		20.7	0	0	

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
33	Existing	9.8	6%	-		23.3	0	-	
	Project (Academic Light)	9.9	6%	0.1		20.5	0	0	
	Cumulative (Academic Light)	9.6	5%	-0.2		20.2	0	0	
	Project (Academic Heavy)	9.9	6%	0.1		20.2	0	0	
	Cumulative (Academic Heavy)	9.9	6%	0.1		20.6	0	0	
34	Existing	9.1	5%	-		35.0	0	-	
	Project (Academic Light)	7.4	1%	-1.7		18.3	0	0	
	Cumulative (Academic Light)	7.1	1%	-2.0		19.6	0	0	
	Project (Academic Heavy)	7.4	1%	-1.7		18.3	0	0	
	Cumulative (Academic Heavy)	7.3	1%	-1.8		19.5	0	0	
35	Existing	10.9	10%	-		30.1	0	-	
	Project (Academic Light)	9.1	4%	-1.8		22.0	0	0	
	Cumulative (Academic Light)	9.0	4%	-1.9		22.4	0	0	
	Project (Academic Heavy)	9.2	4%	-1.7		22.1	0	0	
	Cumulative (Academic Heavy)	9.2	4%	-1.7		22.7	0	0	
36	Existing	10.7	9%	-		28.6	0	-	
	Project (Academic Light)	8.2	2%	-2.5		23.1	0	0	
	Cumulative (Academic Light)	8.0	2%	-2.7		23.3	0	0	
	Project (Academic Heavy)	8.3	3%	-2.4		23.2	0	0	
	Cumulative (Academic Heavy)	8.1	2%	-2.6		23.6	0	0	
37	Existing	11.0	10%	-	e	26.2	0	-	
	Project (Academic Light)	7.2	2%	-3.8		23.2	0	0	
	Cumulative (Academic Light)	7.0	2%	-4.0		23.2	0	0	
	Project (Academic Heavy)	7.5	2%	-3.5		23.4	0	0	
	Cumulative (Academic Heavy)	7.0	2%	-4.0		23.6	0	0	
38	Existing	9.5	5%	-		27.4	0	-	
	Project (Academic Light)	8.0	3%	-1.5		26.9	0	0	
	Cumulative (Academic Light)	7.8	3%	-1.7		27.0	0	0	
	Project (Academic Heavy)	8.1	3%	-1.4		27.1	0	0	
	Cumulative (Academic Heavy)	7.9	3%	-1.6		27.6	0	0	
39	Existing	8.4	3%	-		22.7	0	-	
	Project (Academic Light)	7.2	2%	-1.2		22.2	0	0	
	Cumulative (Academic Light)	6.7	1%	-1.7		22.6	0	0	
	Project (Academic Heavy)	7.2	2%	-1.2		22.1	0	0	
	Cumulative (Academic Heavy)	7.1	2%	-1.3		22.9	0	0	
40	Existing	9.3	5%	-		23.4	0	-	
	Project (Academic Light)	7.7	2%	-1.6		19.8	0	0	
	Cumulative (Academic Light)	7.6	2%	-1.7		20.0	0	0	
	Project (Academic Heavy)	8.1	2%	-1.2		20.0	0	0	
	Cumulative (Academic Heavy)	7.7	2%	-1.6		20.3	0	0	

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
41	Existing	9.8	6%	-		21.8	0	-	
	Project (Academic Light)	9.1	4%	-0.7		21.7	0	0	
	Cumulative (Academic Light)	9.1	4%	-0.7		22.5	0	0	
	Project (Academic Heavy)	9.3	5%	-0.5		22.2	0	0	
	Cumulative (Academic Heavy)	9.4	5%	-0.4		22.8	0	0	
42	Existing	14.2	24%	-	e	28.4	0	-	
	Project (Academic Light)	9.6	5%	-4.6		23.3	0	0	
	Cumulative (Academic Light)	9.5	5%	-4.7		23.3	0	0	
	Project (Academic Heavy)	9.8	6%	-4.4		23.8	0	0	
	Cumulative (Academic Heavy)	9.8	6%	-4.4		23.9	0	0	
43	Existing	10.8	9%	-		26.0	0	-	
	Project (Academic Light)	11.3	12%	0.5	e	28.0	0	0	
	Cumulative (Academic Light)	11.0	10%	0.2	e	28.3	0	0	
	Project (Academic Heavy)	11.3	11%	0.5	e	28.0	0	0	
	Cumulative (Academic Heavy)	11.4	12%	0.6	e	28.1	0	0	
44	Existing	12.7	18%	-	e	26.8	0	-	
	Project (Academic Light)	11.8	14%	-0.9	e	27.3	0	0	
	Cumulative (Academic Light)	11.7	13%	-1.0	e	27.6	0	0	
	Project (Academic Heavy)	11.8	14%	-0.9	e	27.2	0	0	
	Cumulative (Academic Heavy)	12.0	14%	-0.7	e	27.7	0	0	
45	Existing	14.1	24%	-	e	35.9	0	-	
	Project (Academic Light)	14.0	23%	-0.1	e	35.5	0	0	
	Cumulative (Academic Light)	14.1	24%	0.0	e	35.8	0	0	
	Project (Academic Heavy)	14.1	24%	0.0	e	35.5	0	0	
	Cumulative (Academic Heavy)	14.0	23%	-0.1	e	36.1	1	1	e
46	Existing	11.1	11%	-	e	29.5	0	-	
	Project (Academic Light)	11.5	12%	0.4	e	28.7	0	0	
	Cumulative (Academic Light)	11.5	12%	0.4	e	28.6	0	0	
	Project (Academic Heavy)	11.4	12%	0.3	e	28.7	0	0	
	Cumulative (Academic Heavy)	11.8	14%	0.7	e	28.9	0	0	
47	Existing	9.0	5%	-		28.1	0	-	
	Project (Academic Light)	9.4	5%	0.4		27.5	0	0	
	Cumulative (Academic Light)	9.6	5%	0.6		27.7	0	0	
	Project (Academic Heavy)	9.4	5%	0.4		27.8	0	0	
	Cumulative (Academic Heavy)	9.5	5%	0.5		27.8	0	0	
48	Existing	9.3	5%	-		25.3	0	-	
	Project (Academic Light)	9.5	5%	0.2		25.3	0	0	
	Cumulative (Academic Light)	9.6	5%	0.3		25.7	0	0	
	Project (Academic Heavy)	9.6	5%	0.3		25.6	0	0	
	Cumulative (Academic Heavy)	9.6	5%	0.3		25.7	0	0	

Table 3. Pedestrian Wind Comfort and Hazard Results

#	Configuration	WIND COMFORT (Criterion wind speed = 11 mph)				WIND HAZARD (Criterion wind speed = 36 mph)			
		Wind Speed Exceeded 10% of Time (mph)	% of Time Exceeding Criterion	Speed Change (mph)	Exceedance	Wind Speed Exceeded 1 hour/year (mph)	Hours/year Exceeding Criterion	Hours Change	Exceedance
49	Existing	14.4	26%	-	e	36.8	1	-	e
	Project (Academic Light)	13.6	22%	-0.8	e	36.1	1	0	e
	Cumulative (Academic Light)	13.5	21%	-0.9	e	36.2	1	0	e
	Project (Academic Heavy)	13.6	22%	-0.8	e	36.4	1	0	e
	Cumulative (Academic Heavy)	13.4	21%	-1.0	e	36.7	1	0	e
50	Existing	13.2	20%	-	e	31.6	0	-	
	Project (Academic Light)	12.7	18%	-0.5	e	31.2	0	0	
	Cumulative (Academic Light)	12.5	17%	-0.7	e	31.4	0	0	
	Project (Academic Heavy)	12.9	18%	-0.3	e	31.9	0	0	
	Cumulative (Academic Heavy)	12.5	16%	-0.7	e	31.8	0	0	
51	Existing	10.8	9%	-		24.5	0	-	
	Project (Academic Light)	10.9	10%	0.1		24.7	0	0	
	Cumulative (Academic Light)	11.2	11%	0.4	e	24.8	0	0	
	Project (Academic Heavy)	11.3	11%	0.5	e	24.8	0	0	
	Cumulative (Academic Heavy)	11.0	10%	0.2	e	25.1	0	0	
52	Existing	13.1	19%	-	e	26.9	0	-	
	Project (Academic Light)	13.1	19%	0.0	e	26.9	0	0	
	Cumulative (Academic Light)	13.2	20%	0.1	e	27.0	0	0	
	Project (Academic Heavy)	13.3	20%	0.2	e	27.2	0	0	
	Cumulative (Academic Heavy)	13.2	20%	0.1	e	27.4	0	0	

Configuration		Average Wind Speed (mph)	Average % of Time Exceeding	Speed Change (mph)	Total	Average Wind Speed (mph)	Total Hours	Hours Change	Total
A	Existing	10.3	9%	-	15 / 52	26.1	1	-	1 / 52
B	Project (Academic Light)	9.8	8%	-0.5	14 / 52	24.8	1	0	1 / 52
C	Cumulative (Academic Light)	9.7	8%	-0.6	14 / 52	24.9	1	0	1 / 52
D	Project (Academic Heavy)	9.8	8%	-0.5	15 / 52	24.8	1	0	1 / 52
E	Cumulative (Academic Heavy)	9.8	8%	-0.5	14 / 52	25.1	2	1	2 / 52

Notes

1 Wind speeds listed are based on an Equivalent Wind Speed (EWS) (EWS = U_{Mean} x (2TI + 0.7)).

2 "Speed Change" values listed are relative to the "Existing" Configuration (or first configuration listed).

3 "Hours Change" values listed are relative to the "Existing" Configuration (or first configuration listed).