

WIND ANALYSIS of I Ith & WASHINGTON TOWER

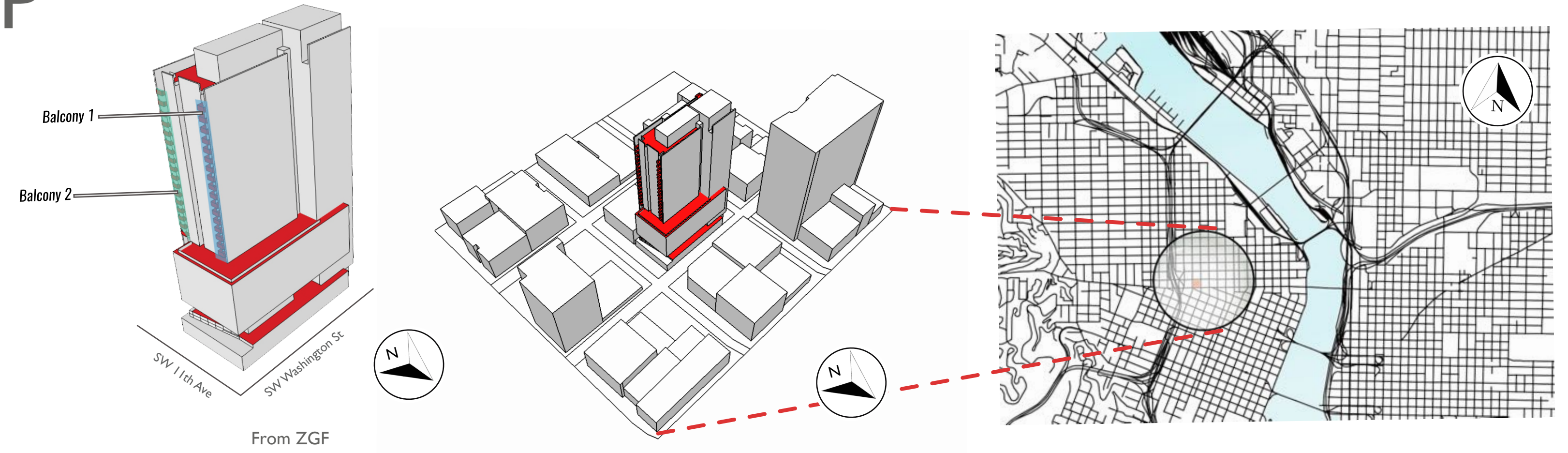
ZIMMER GUNSUL FRASCA ARCHITECTS LLP

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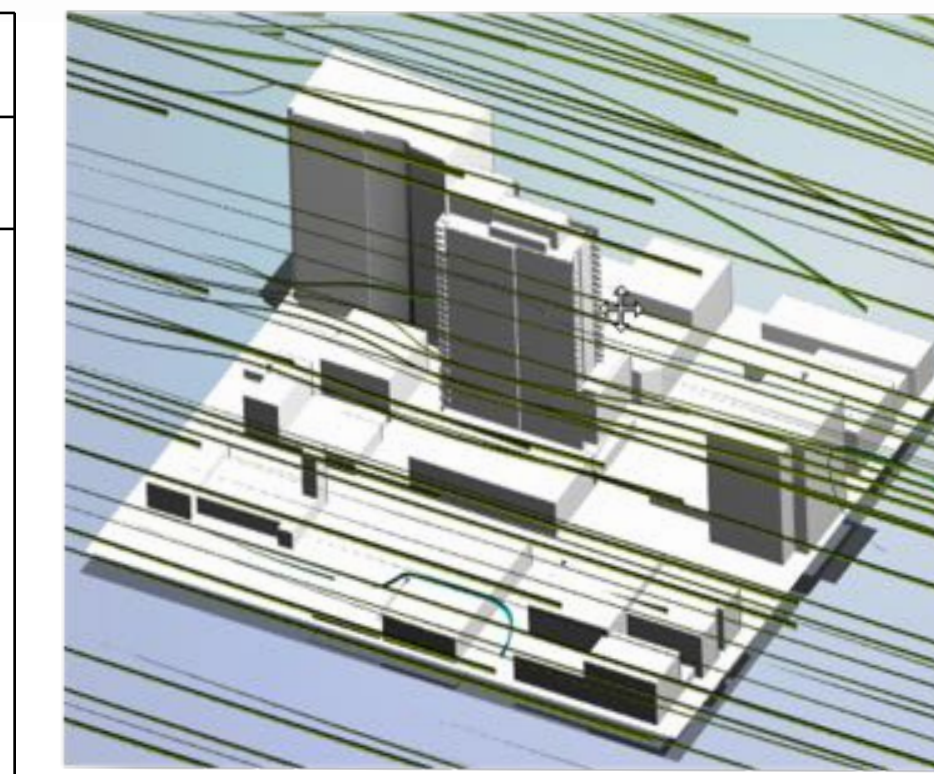
PROJECT OVERVIEW

This research focus on how wind impacts on IIW by ZGF architects. Located on SW 12th Ave and 11th Ave to the Washington in the SW side of the river, south of Burnside on downtown Portland, OR.

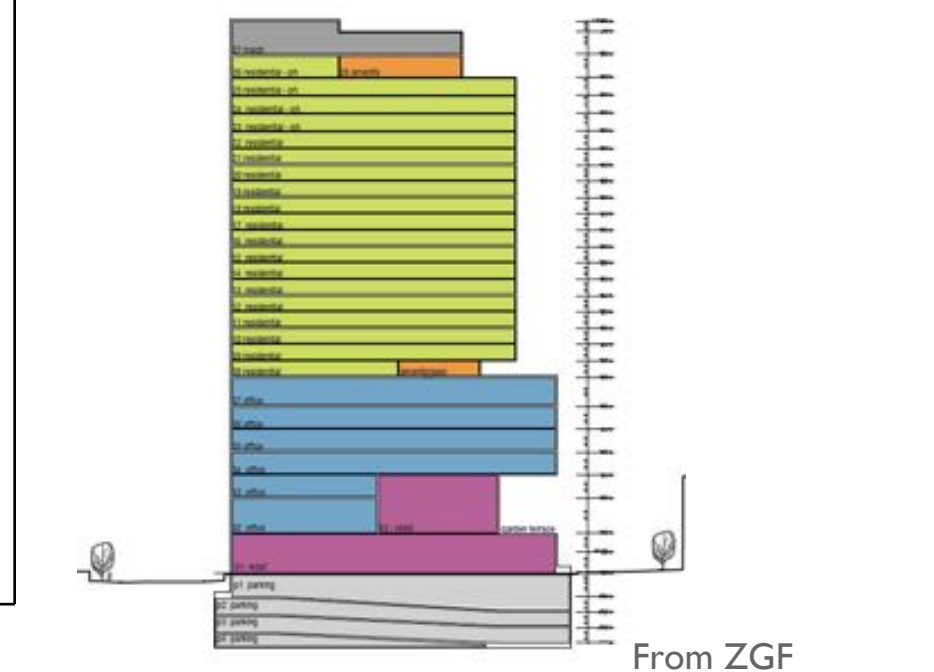
The aim of the study is to find how wind can impact the balconies, 2nd level roof deck, 8th level roof deck, and 26th floor roof deck. The tests were conducted with Sketch up and Autodesk Flow Design analysis tool. In the beginning, we analyzed a cube as a baseline and studied the impact cuts in the building form had in the simulation. The primary analysis variables are depth and width of the notches. Then we make hypothesis for IIW.



From ZGF



WIND AROUND IIW SITE



WIND COMFORT STUDIES

Extended Land Beaufort Scale showing wind effects on people.

Beaufort Number	Description	Wind Speed at 1.75m height (m/s)	Effect on people
0	Calm	0.0-0.1	No noticeable wind
1	Light air	0.2-1.0	Wind felt on face
2	Light breeze	1.1-2.3	Hair disturbed, clothing flaps, newspaper difficult to read
3	Gentle breeze	2.4-3.8	Raises dust and loose paper, hair disarranged
4	Moderate breeze	3.9-5.5	Force of wind felt on body, danger of stumbling when entering a windy zone
5	Fresh breeze	5.6-7.5	Umbrellas used with difficulty, hairblown straight, difficult to walk steadily, sideways wind force about equal to forwards walking force, wind noise on ears unpleasant
6	Strong breeze	7.6-9.7	
7	Near gale	9.8-12.0	Inconvenience felt when walking
8	Gale	12.1-14	Generally impedes progress, great difficulty with balance in gusts
9	Strong gale	14.6-17.1	People blown over

Our wind analysis research has lead us to the conclusion. That the wind analysis table, 2nd roof deck has negative wind pressure. We should design fewer doors on the 2nd deck. On the 8th roof deck, it's comfortable place that means wind felt on face. On the 26th roof deck, it's a comfortable palce except the northwest corner which has negative wind pressure. We may set a cover on the west corner to protect from wind. And both balcony 1 and balcony 2 have high wind pressure. We can make close balcony to protect from high wind pressure.

We learned that Autodesk Flow Design is a quick wind analysis in the earlier process But we can not get accurate date from it.

Project Timeline II WIND ANALYSIS

01 START
October 4th First brief introductory meeting with ZGF. Learned about their goals and vision for 4W building. We learned that they use ES digital CFD model.
October 11th Discussed different softwares to use for wind analysis. We agreed for a meeting every Tuesday for a briefing.

02 RESEARCH
October 11th Possible software and determine which will be used for analysis.
 Started researching the software ES but found out wasn't available for students. We decided to go with Autodesk Flow Design to analyze wind effects on different size of notches in buildings.

03 DESIGN
October 18th Learned software and developed methodology for the analysis process.
 Developed different SketchUp Running models on computer to test wind analysis using Autodesk program.
October 25th Submitted the first test result and discussed with ZGF the possibility of 10 different running models for tests for the coming weeks for more precision.

04 SKILL BUILDING
October 27th Meeting with David Poada for project update.
November 1st Met and discussed the test results with ZGF to understand Autodesk flow design possibilities.

05 ANALYSIS
November 5th Complete and organize the analysis findings for presentation.
November 8th Continue to analyze wind effects on different depth and width, and discussed the results of Autodesk Flow Design to find out which design better fits their goal.

06 DEVELOPMENT
November 10th Midterm Presentation of Progress.
November 15th Met with team ZGF. Share our collected data and finalize the report. Start assigning IIW building wind analysis.

06 COMPILATION
November 22 Met with team ZGF. Shared our results and discussed with them.
December 6 Talked about final poster and PPT.

07 PRESENTATION
December 8 Revised the final based on their feedbacks. Presentation of Findings.

