



MORGANTOWN BOARD OF ZONING APPEALS

September 17, 2014
6:30 PM
City Council Chambers

Board Members:

Bernie Bossio, Chair
Leanne Cardoso, Vice-Chair
Bill Burton
George Papandreas
Jim Shaffer

STAFF REPORT

CASE NO: V14-24 / CA Student Living / 494 Spruce Street

REQUEST and LOCATION:

Request by Lisa Mardis of Project Management Services, on behalf of CA Student Living, for variance relief from Article 1351.01(I) as it relates to minimizing canyon effects created by structures taller than three (3) stories at 494 Spruce Street.

TAX MAP NUMBER(s) and ZONING DESCRIPTION:

Tax Map 26, Parcels 246 and 246; B-4, General Business District

SURROUNDING ZONING:

B-4, General Business District

BACKGROUND and ANALYSIS:

The petitioner seeks to redevelop the VFW Post 548 site at the corner of Spruce Street and Willey Street. The proposed development includes 89 dwelling units, 331 bedrooms, 4,042 square feet of leasable retail space, 158 parking spaces, 5 loading spaces, and 97 bicycle storage spaces. Addendum A of this report illustrates the location of the subject site.

Article 1351.01(I) provides that to minimize canyon effects created by tall structures, buildings taller than three (3) stories shall incorporate design elements that preserve adequate light and airflow to public spaces including streets and sidewalks. Desired design elements include, but are not limited to, one or a combination of recessing or "stepping back" upper floors, increase front and/or street side setbacks while incorporating measures to preserve the continuity of the predominant street wall, etc.

Site plan applications for buildings taller than three (3) stories must include an Air Flow Analysis and a Sunlight Distribution Analysis.

The petitioner's Air Flow Analysis maintains that resultant conditions do not warrant mitigating design elements. The petitioner's Sunlight Distribution Analysis illustrates that recessing portions of the upper most two levels of the building ensures that a shadow will not be cast onto properties on the opposite side of Willey Street during the summer months.

If the BZA agrees that said elements further desired mitigation design techniques, than it can rule accordingly. If the BZA does not agree that said elements meet desired mitigation design techniques, than it can determine whether or not to grant variance relief accordingly.

Development Services

Christopher Fletcher, AICP
Director

Planning Division

389 Spruce Street
Morgantown, WV 26505
304.284.7431



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STAFF RECOMMENDATION:

On 11 SEP 2014, the Planning Commission approved the related Development of Significant Impact Site Plan petition under Case No. S14-07-III with, among others, a condition that the Board must grant the variance relief requested herein.

Staff recommends the Board determine that, based on the Wind Flow Analysis and Sunlight Distribution Analysis submitted by the petitioner, no additional or further design elements are required to preserve adequate light and airflow to public spaces (i.e. streets and sidewalks) around the subject site.

Enclosures: Applications and accompanying exhibits

Development Services

Christopher Fletcher, AICP
Director

Planning Division

389 Spruce Street
Morgantown, WV 26505
304.284.7431

STAFF REPORT ADDENDUM A
V14-24 / CA Student Living / 494 Spruce Street





City of Morgantown, West Virginia

APPLICATION FOR VARIANCE PETITION

OFFICE USE	
CASE NO.	V14-24
RECEIVED:	8/8/14

OK 4713

(PLEASE TYPE OR PRINT IN BLACK INK)

Fee: \$75

0107

I. APPLICANT		Name:	CA Student Living		
Mailing Address:	161 N. Clark Suite 4900		Phone:	312-994-1871	
	Street	Chicago IL 60601	Mobile:	773-454-5780	
	City	State Zip	Email:	dhrankowsky@ca-studentliving.com	
II. PROPERTY		Street Address:	494 Spruce Street		
Owner:	VFW Post # 548		Zoning:	B-4	
Mailing Address:	494 Spruce Street		Tax Map No:	26	
	Street	Morgantown WV 26505	Parcel No:	245 & 246	
	City	State Zip	Phone:	304-292-3927	
III. NARRATIVE		Please describe the nature and extent of your variance request(s).			
Article 1351.01 (I) as it relates to canyon effects.					
V. ATTEST		I hereby certify that I am the owner of record of the named property, or that this application is authorized by the owner of record and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. The granting of a variance does not presume to give authority to violate or cancel the provisions of any other federal, state, or local law regulating construction or the performance of construction. I certify that the information submitted herein and attached hereto is true and accurate and understand that if found otherwise may result in the denial of this request or subsequent revocation of any and all related approvals. The undersigned has the power to authorize and does hereby authorize City of Morgantown representatives on official business to enter the subject property as necessary to process the application and enforce related approvals and conditions. I hereby authorize the Development Services Department to erect a notification sign on the subject property approximately 15 days prior to the BZA hearing. I further agree to maintain said signage and hereby accept responsibility in case of destruction or removal.			
Lisa Mardis				08/08/2014	
Type/Print Name of Applicant/Agent		Signature of Applicant/Agent		Date	

CITY OF MORGANTOWN
PLANNING DEPARTMENT
AUG 8 2014
RECEIVED

You or a representative **MUST** be present at the scheduled hearing to present the request and answer questions. Failure to appear at the hearing will result in your request being tabled.



APPLICATION FOR VARIANCE PETITION

OFFICE USE table with CASE NO. 114-24 and RECEIVED:

VI. SUPPLEMENTAL INFORMATION

Depending on the type of variance request and the scale and scope of the development proposal, supplemental information may be needed to assist the Board of Zoning Appeals in rendering a variance decision. Staff will check the appropriate boxes below that must be addressed.

- Land Use Characteristics (complete only those that apply)
Residential, Single-Family Dwelling, Townhouse Dwelling, Two-Family Dwelling, Multi-Family Dwelling, Non-Residential or Mixed (checked)

- Structure Characteristics (complete only those that apply)
Total number of buildings: 1, Gross floor area of each building: 223,923 sq total
Estimated number of employees: TBT, No. of dwelling units: 89, No. of bedrooms: 331
Additional structure-related details:

- Additional Information (as required by Staff):
Lot coverage: 84.8%; 97 bike storage 97 spaces; FAR 5.82; 159,633 gross floor area without parking.

- Site Plan. A scaled site plan may be required to assist the Board in rendering a variance decision. The following features must be represented, as required by Staff.
Location, shape, exterior dimensions, and number of stories of each building on the site.
Standard yard setbacks for the applicable zoning district
Location, grade, and dimensions of paved surfaces, and all abutting streets
Existing and proposed contours, at an interval of at least two (2) feet
Complete traffic circulation plan showing dimensions, entrance/exit drives, planters, and similar improvements
Location of landscaped areas (to be detailed on landscape plan), fences, walls, and other screen required



**APPLICATION FOR
VARIANCE PETITION**

OFFICE USE	
CASE NO.	V14-24
RECEIVED:	

VII. FINDINGS OF FACT

COMPLETE THE FOLLOWING STATEMENTS IN THIRD PERSON.

The Board of Zoning Appeals may grant a variance request only if each of the following "Findings of Fact" criteria is determined to be in the positive. Applicants must give their own responses to the following criteria statements.

1. The variance will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents, because:

attached 8/8/14
ym

2. The variance arises from special conditions or attributes which pertain to the property for which a variance is sought and which were not created by the person seeking the variance, because:



City of Morgantown, West Virginia

**APPLICATION FOR
VARIANCE PETITION**

OFFICE USE	
CASE NO.	V14-24
RECEIVED:	

VII. FINDINGS OF FACT

COMPLETE THE FOLLOWING STATEMENTS IN THIRD PERSON.

3. The variance will eliminate an unnecessary hardship and permit a reasonable use of the land, because:

4. The variance will allow the intent of the zoning ordinance to be observed and substantial justice done, because:

FINDINGS OF FACT

CA Student Living / Canyon Effect / 494 Spruce Street

Variance relief from the Planning and Zoning Code, Article 1351.01.I as it relates to reducing the canyon effect for buildings taller than three (3) stories.

1. The Variance will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents because:

According to the Comprehensive Plan, downtown Morgantown buildings range from two to twelve stories and are located in close proximity to one another and the street. This residential mixed-use development is consistent with the overall development pattern and goals for the central business district. Improving this site will benefit adjoining and nearby properties, local businesses, and will enhance the City in general.

This lot creates many obstacles due to the twenty-three (23) foot elevation drop from corner to corner. Properties located to the north and northeast of the subject site are not located in the same zoning district; they are in a B-1 District which has a maximum height for a principal structure of forty (40) feet. Numerous buildings in the B-4 District, specifically those three-stories or taller, often maintain greater than 90% lot coverage with little or no setbacks and do not take into consideration any of the design elements to negate the canyon effect.

The design professionals, in attempts to minimize any potential canyon effects, created a building on this B-4 site that incorporates design elements that aid in preserving adequate light and airflow to public spaces, such as streets, sidewalks, and setbacks. The included Airflow and Sunlight Analysis indicates a decrease in the wind velocity at the pedestrian level.

WVDOT has acknowledged and conditionally approved the curb cut configuration and Traffic Impact Study for the proposed project.

2. The variance arises from special conditions or attributes which pertain to the property for which a variance is sought and which were not created by the person seeking the variance because:

The Design Professionals diligently worked to provide a viable pattern of development that supports vibrant environments, as well as providing a unique sense of place and community while designing a new structure to replace the functionally obsolete and underutilized structure at 494 Spruce Street. Special consideration was given to incorporating the goals, strategies, and principles of the Comprehensive Plan while designing a new structure to replace VFW Post #548. According to the Comprehensive Plan, downtown buildings range from two to twelve stories and are located in close proximity to one another and the street.

The owner-developer seeks to provide a residential mixed-use project in accordance with bulk and density requirements that will replace an existing underutilized structure that will be an asset to the downtown and WVU main campus areas.

The design professionals, in attempts to minimize any potential canyon effects, created a building on this B-4 site that incorporates design elements that aid in preserving adequate light and airflow to public spaces, such as streets, sidewalks, and setbacks. The included Airflow and Sunlight Analysis indicates a decrease in the wind velocity at the pedestrian level.

Comprehensive Plan, the development integrates the mixed-use residential concept which uniquely intertwines with the existing urban fabric.

This lot creates many obstacles due to the twenty-three (23) foot elevation drop from corner to corner. Properties located to the north and northeast of the subject site are not located in the same zoning district; they are in a B-1 District which has a maximum height for a principal structure of forty (40) feet. As discussed in the Sunnyside Overlay District Standards of the Planning and Zoning Code, "building massing" should be greatest at two primary street corners.

A street canyon (also known as an urban canyon) by definition is a place where the street is flanked by tall buildings on both sides of a street creating a canyon-like environment. The canyon effect is manifested by streets cutting through dense blocks of tall structures, usually skyscrapers that form a street wall, similar to the Magnificent Mile in Chicago, the Canyon of Heroes in Manhattan, or Hong Kong's Kowloon and Central Districts.

The adjacent buildings across Spruce and Willey Streets include a 1-story bank on Spruce Street and (2) 2-story houses on Willey Street, both set back from the street. In addition to these findings, the design professionals, in attempts to minimize any potential canyon effects, created a building on this B-4 site that incorporates design elements that aid in preserving adequate light and airflow to public spaces, such as streets, sidewalks, and setbacks. The included Airflow and Sunlight Analysis indicates a decrease in the wind velocity at the pedestrian level.

According to the Zoning Code, building taller than (3) three stories shall incorporate design elements that preserve adequate light and airflow to public spaces including streets and sidewalks. Desired design elements include, but are not limited to, one or a combination of recessing or "stepping back" upper floors, and increased front and/or street side setbacks while incorporating measures to preserve the continuity of the predominant street wall, etc.

The proposed building at the street level frontage on Spruce Street has been stepped back (17) feet from the property line to ensure pedestrians have a sense of place in reference to the required commercial area which includes an area for related outdoor commercial. Along Willey Street the building steps back at the street level frontage between (5) feet and (11) feet to allow easier circulation from the lower commercial space to the residential entry. From the previous design, the building has also been located a greater distance from the side property line nearest the First Presbyterian Church. The elevations fronting Spruce and Willey Street include an unprecedented amount of transparency to help weld sidewalk activities to the built environment. Due to the significant grade change along Willey Street a unique commercial area is created by adding an area for bike storage and rental and/or repair facility. The area will include transparency as well as a living street wall, which will help mitigate automobile pollution.

According to a new study, vegetation in street canyons may reduce air-pollutant concentrations much more than previously reported and suggests innovative planting configurations to improve city pollution hot spots (Pugh TAM, et al. Effectiveness of green infrastructure for improvement of air quality in urban street canyons. Environ Sci Technol

46(14):7692–7699 (2012); <http://dx.doi.org/10.1021/es300826w>). The top of the building now includes a two-story “step back” to allow for increased light and air at the street level. This “step back” is recessed (9) feet along Willey Street and Spruce Street and (9) feet (4) inches along the south property line shared with the First Presbyterian Church. This two-story “step back” reduces the appearance of the overall height from street level perspectives and lessens the length of shadows cast throughout the year. This can be seen in the updated Sunlight Distribution Analysis sheet Z0.12. According to the submitted Air Flow Analysis, this new building design will slightly reduce the wind speeds at pedestrian levels as compared to the existing building.

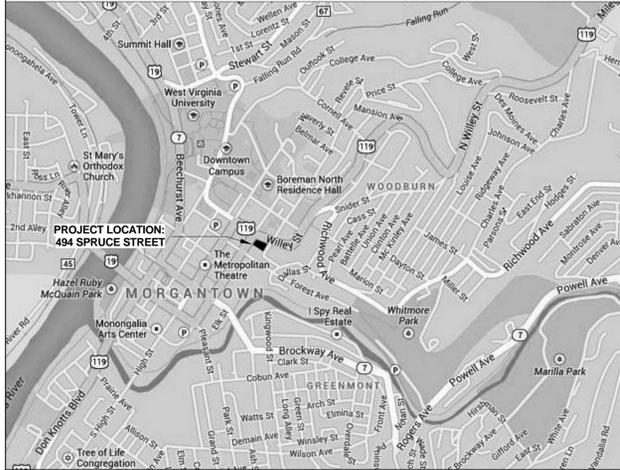
SYMBOLS

	ROOM NAME ROOM NUMBER
	ROOM NAME ROOM NUMBER
	ROOM WALL FINISH, UNO ROOM BASE FINISH, UNO ROOM FLOOR FINISH, UNO
	PROJECT KEYNOTE (BASED ON CSI FORMAT)
	PARTITION TYPE TAG
	DOOR NUMBER HARDWARE SET DOOR GROUP
	WINDOW TAG
	LOUVER TAG
	WORK POINT / DATUM

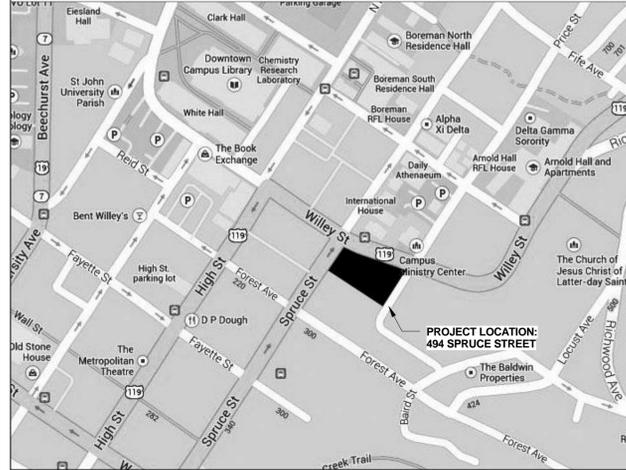
MATERIALS

	EXISTING		METAL
	COMPACTED EARTH/FILL		GYPSUM WALL BOARD
	GRAVEL		RIGID INSULATION
	CONCRETE		BATT INSULATION
	CONCRETE MASONRY UNIT		CONTINUOUS BLOCKING
	STONE		DISCONTINUOUS BLOCKING
	BRICK		PLYWOOD
	GROUT		FINISH WOOD

VICINITY MAP



LOCATION MAP



DRAWING INDEX

Sheet No.	Sheet Name
Z0.01	Cover Sheet
CIVIL	
SHEET 1	TITLE SHEET
SHEET 2	EXISTING SITE CONDITIONS
SHEET 3A	DEMOLITION PLAN
SHEET 3B	PROPOSED SITE CONDITIONS
SHEET 4	EROSION CONTROL PLAN
SHEET 6	DETAILS
SHEET 7	DETAILS
SHEET 8	DETAILS
LANDSCAPE	
L1.0	Landscape Plan and Details
ARCHITECTURAL	
Z0.02	Ground Floor Plans - Levels P0-01
Z0.03	Residential Floor Plans - Levels 02-09
Z0.04	Building Elevations
Z0.12	Perspectives & Transparency Study
Z0.13	Lighting Plans

Drawing Issue	Date
PC/BZA SUBMISSION	2014-04-04
PC/BZA SUBMISSION 2	2014-08-08

494 Spruce Street
Morgantown, WV

Client:

STUDENT LIVING
Campus Acquisitions Holdings, LLC
161 Clark Suite 2050
Chicago, IL 60601
312-994-1874

Landscape Architect:
RoofMeadow
7135 Germantown Avenue
2nd Flr
Philadelphia, PA 19119

MEP/FP/IT Engineer:
Environetics Design, Inc.
One Penn Center
1617 JFK Blvd, Suite 1600
Philadelphia, PA 19103

Structural Engineer:
O'Donnell & Naccarato
111 S. Independence Mall East
Suite 950
Philadelphia, PA 19106

Civil Engineer
Alpha Associates, Inc.
209 Prarie Avenue
Morgantown, WV 26501-5934

DAVID McHENRY, AIA LIC. # NO-4615
REGISTERED ARCHITECT - STATE OF WEST VIRGINIA

Architect: SCOTT A. ERDY, AIA
DAVID S. McHENRY, AIA
emArchitecture
Erdy McHenry Architecture, LLC
915 North Orianna Street
Philadelphia, Pennsylvania 19123
ph: 215.925.7000 fax: 215.925.1990
web: http://www.em-arc.com

PLANNING AND ZONING CODE ANALYSIS SUMMARY

Reference	Permitted/Required	Actual/Proposed	Comments
ZONING DISTRICT	Official Zoning Map 1331.01 (A) B-4 General Business		
PERMITTED LAND USES	TABLE 1331.05.01 Dwelling, Mixed Use 1331.06 (26) (a) The commercial or office space shall not be less than 20 percent and not more than 60 percent of the ground floor area.	Mixed Use - Residential and Retail Ground Floor Area 15,601 SF Commercial or Office Space 7,310 SF 46.9%	
LOT PROVISIONS	1349.03 (D) Maximum lot coverage = 90% (Lot Area = 27,459 SF)	Lot Coverage 84.8% (23,354 SF)	
SETBACKS AND ENCROACHMENTS	1349.04 (A) (1) No minimum front or street side building setback is required. 1349.04 (A) (2) The maximum front and street side building setback may not exceed the average front yard depth of the nearest two (2) lots on either side of the subject lot or 10 feet, whichever is less. 1349.04 (A) (4) No interior side setbacks are required for the first floor. 1349.04 (A) (5) The minimum rear setback shall be ten percent (10%) of the lot depth or ten (10) feet, whichever is greater.	Min Front Setback 00'-0" Max Front Setback 10'-0" Min Side Setback 00'-0" Spruce Street Front 22'-6" (East Side)	
BUILDING HEIGHT	1349.05 (B) The maximum height of a principal structure shall not exceed 120 feet.	Building Height 110'-0"	Average Grade = 935 FT, Building Height = 1045 FT
FLOOR AREA RATIO (FAR)	1349.06 The maximum FAR for all development in this district is 7.0. Area designed, constructed, and utilized to provide parking structure facilities shall be exempt from the maximum FAR, provided such area does not exceed 115% of the minimum parking requirement. (Lot Area = 27,459 SF; Allowable Floor Area = 192,213 SF)	Total Floor Area 159,633 SF	(5.81 FAR)
LOT AREA PER DWELLING UNIT	1349.07 The minimum lot area per dwelling unit in this district is 300 square feet. (Lot Area = 27,459 SF; Allowable Number of Units = 92)	Number of Units 89	
SAFETY AND VISION	1363.02 Clear vision triangle of the area of the lot twenty-five (25) feet along the property line from the street right-of-way at intersections.		
PARKING AND LOADING STANDARDS	1349.08 (A) (1) Table 1365.04.01 Residential: Parking shall not be required for the first twenty-two (22) occupants. With the exception of the first twenty-two (22) occupants, the minimum number of parking spaces for permitted residential uses shall be one-half a space (0.5) per occupant, as determined by the West Virginia State Building Code and adopted and implemented by the City. Required Residential Parking = 155 Spaces 1349.08 (A) (1) Bicycle Storage: One (1) indoor, secured, sheltered bicycle storage space per dwelling unit (89 spaces required).	Parking Provided 158 Bicycle Spaces Provided 97	Based on 331 Bed Count
PERFORMANCE STANDARDS	1351.101 (J) (2) (b) All nonresidential floor space provided on the ground floor of a mixed-use building must contain at least 20 percent of the lot area on lots with 50 feet of street frontage or more. (Lot Area = 27,459 SF; Minimum Area = 5,492 SF) 1351.101 (K) (1) Transparency: Min (60%) of the streetfacing building façade between 3'-0" and 8'-0".	Lot Area Nonresidential Space 27,459 SF 7,310 SF 27% Transparency 64%	
LOADING REQUIREMENTS	1365.10 (b) For local pick-up and delivery trucks: 12'-0" w x 30'-0" l with 45'-0" maneuvering apron 12'-0" h clearance. Table 1365.10.01 Type II: 1 for each 20,000 above 100,000 5 Loading Spaces Required	Loading Spaces Provided 4 STANDARD LOADING + 1 TRUCK LOADING = 5 LOADING SPACES	

UNIT MIX & GSF SUMMARY

UNIT TYPES	4 x 4	4 x 2	4 x 4 Loft	3 x 2	2 x 2	Units / Floor	Beds / Floor
Level 09	3	1	0	0	5	9	26
Level 08	3	1	3	0	5	12	38
Level 07	8	3	0	1	0	12	47
Level 06	8	3	0	1	0	12	47
Level 05	8	3	0	1	0	12	47
Level 04	8	3	0	1	0	12	47
Level 03	8	3	0	1	0	12	47
Level 02	6	2	0	0	0	8	32
	52	19	3	5	10	89	331
%	59%	21%	3%	6%	11%		
AREA	1,137 SF	1,244 SF	1,552 SF	979 SF	813 SF		

PARKING	Size	Count
Level 01	UNIVERSAL SPACE	1
	STANDARD 9'-0"x18'-0"	21
	COMPACT 7'-0"x16'-0"	13
Level P2	STANDARD 9'-0"x18'-0"	37
	COMPACT 7'-0"x16'-0"	7
Level P1	STANDARD 9'-0"x18'-0"	17
	COMPACT 7'-0"x16'-0"	11
Level P0	STANDARD 9'-0"x18'-0"	46
	COMPACT 7'-0"x16'-0"	5
TOTAL PARKING SPACE		158
		161
		8 ACCESSIBLE SPACES AND 1 UNIVERSAL / VAN SPACE INCLUDED WITH MOTORCYCLE SPACES

STANDARD LOADING:	4
TRUCK LOADING ZONE:	1
TOTAL PARKING + LOADING:	166

RESIDENTIAL	NONRESI.	PARKING	TOTALS
Level 09	15,850 SF		15,850 SF
Level 08	15,777 SF		15,777 SF
Level 07	18,262 SF		18,262 SF
Level 06	18,262 SF		18,262 SF
Level 05	18,262 SF		18,262 SF
Level 04	18,262 SF		18,262 SF
Level 03	18,262 SF		18,262 SF
Level 02	16,929 SF		21,093 SF
Level 01	2,465 SF	2,185 SF	14,814 SF
Level P2	2,176 SF	1,082 SF	16,131 SF
Level P1	2,647 SF	4,042 SF	14,336 SF
Level P0	1,003 SF		19,009 SF
	148,158 SF	7,310 SF	64,290 SF
TOTAL GROSS AREA			223,923 SF
TOTAL GROSS AREA (excluding parking, FAR = 5.81)			159,633 SF

BICYCLE STORAGE	Type	Count	Comments
	Bike Storage Double Sided	76	
	Bike Storage Wall Mounted	21	
TOTAL BIKE STORAGE SPACE		97	

494 Spruce Street

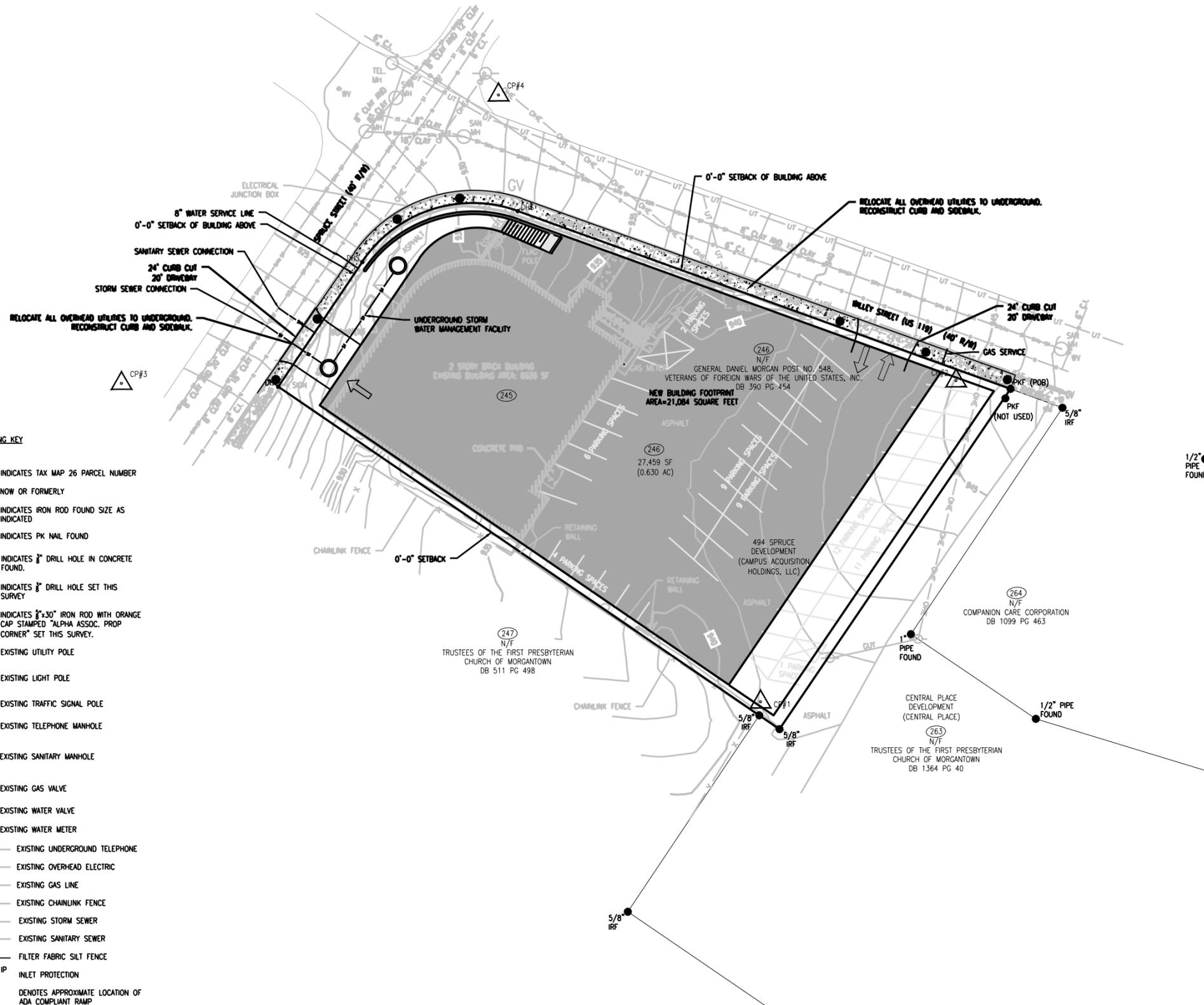
Cover Sheet

SCALE: 1/4" = 1'-0"	DATE: 06/11/2014
DRAWN BY: AR / LS	PROJECT NO: 1149.00

DRAWING NUMBER:

CONTROL POINTS				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP#1	412310.74	1841054.80	941.06	PK NAIL
CP#2	412429.44	1841127.35	945.05	PK NAIL
CP#3	412428.47	1840817.51	921.64	PK NAIL
CP#4	412535.10	1840957.48	930.81	PK NAIL

HORIZONTAL DATUM: NAD 83 WEST VIRGINIA NORTH STATE PLANE
 VERTICAL DATUM: NGVD 29
 NOTE: THE LOCATION, TYPE, AND SIZES OF POTABLE WATERLINES, STORM SEWERS,
 AND SANITARY SEWERS ARE APPROXIMATE, BASED ON SYSTEM MAPS PROVIDED
 BY THE MORGANTOWN UTILITY BOARD.



DRAWING KEY

- XXX INDICATES TAX MAP 26 PARCEL NUMBER
- N/F NOW OR FORMERLY
- IRF INDICATES IRON ROD FOUND SIZE AS INDICATED
- PKF INDICATES PK NAIL FOUND
- DHF INDICATES 1/2" DRILL HOLE IN CONCRETE FOUND.
- DHS INDICATES 1/2" DRILL HOLE SET THIS SURVEY
- IRS INDICATES 1/2"x30" IRON ROD WITH ORANGE CAP STAMPED "ALPHA ASSOC. PROP CORNER" SET THIS SURVEY.
- EXISTING UTILITY POLE
- LP EXISTING LIGHT POLE
- TSP EXISTING TRAFFIC SIGNAL POLE
- TEL MH EXISTING TELEPHONE MANHOLE
- SAN MH EXISTING SANITARY MANHOLE
- GV EXISTING GAS VALVE
- WV EXISTING WATER VALVE
- WM EXISTING WATER METER
- EXISTING UNDERGROUND TELEPHONE
- E EXISTING OVERHEAD ELECTRIC
- GAS EXISTING GAS LINE
- EXISTING CHAINLINK FENCE
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- FILTER FABRIC SILT FENCE
- IP INLET PROTECTION
- DENOTES APPROXIMATE LOCATION OF ADA COMPLIANT RAMP

494 SPRUCE STREET
 FOR
 CAMPUS ACQUISITIONS HOLDINGS, LLC
 MORGANTOWN, WEST VIRGINIA

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REVISIONS	
ITEM	DATE

ALPHA ASSOCIATES, INC.
 209 PRAIRIE AVENUE
 MORGANTOWN, WV 26501
 PHONE/FAX: 304-294-8214
 TOLL FREE: 800-440-8214
 www.thinkALPHAfirst.com

SCALE: 0 20'

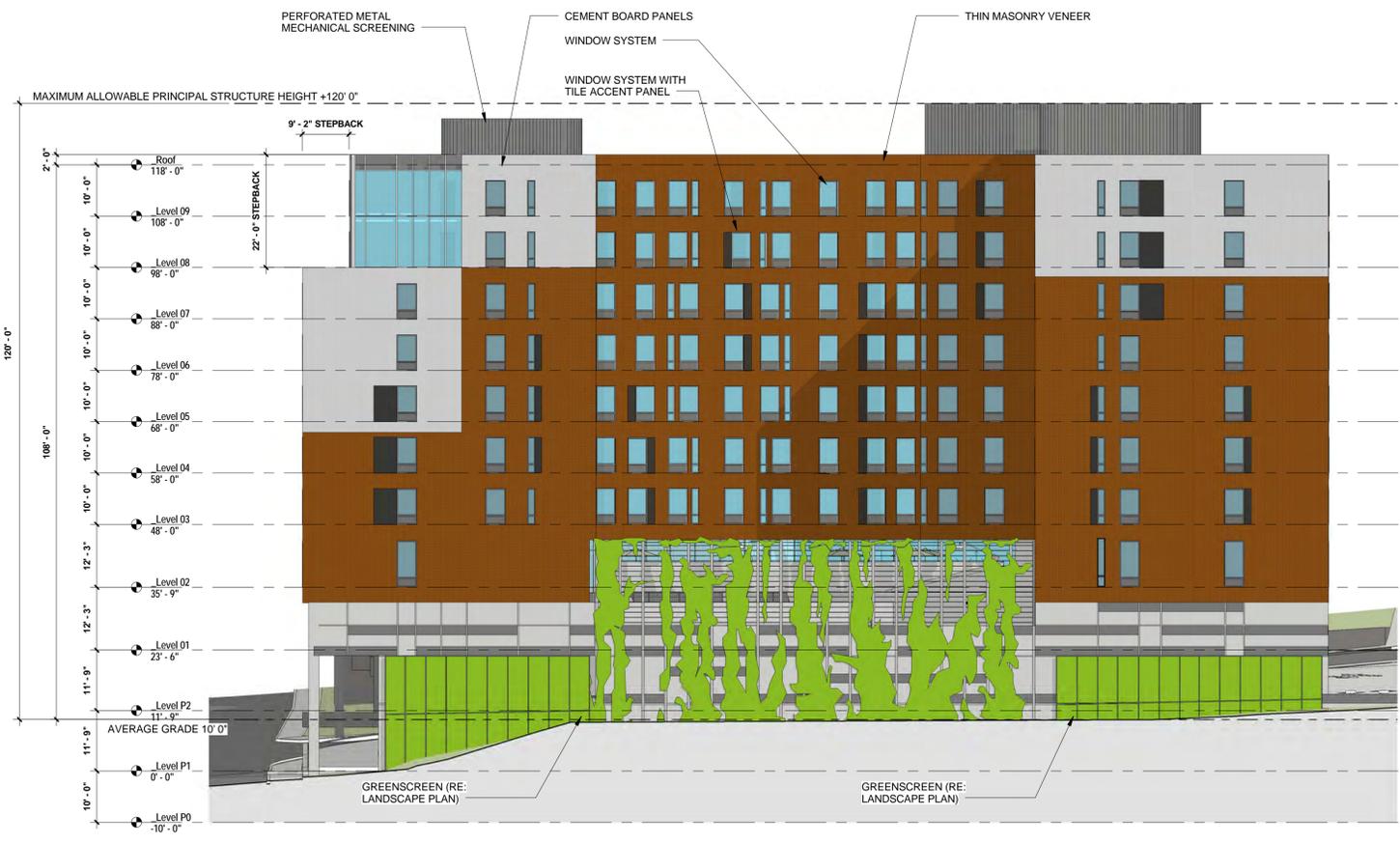
PROPOSED SITE CONDITIONS

PROJ. NO.: 1310125.01
 DATE: 08/06/2014
 SHEET NO.:

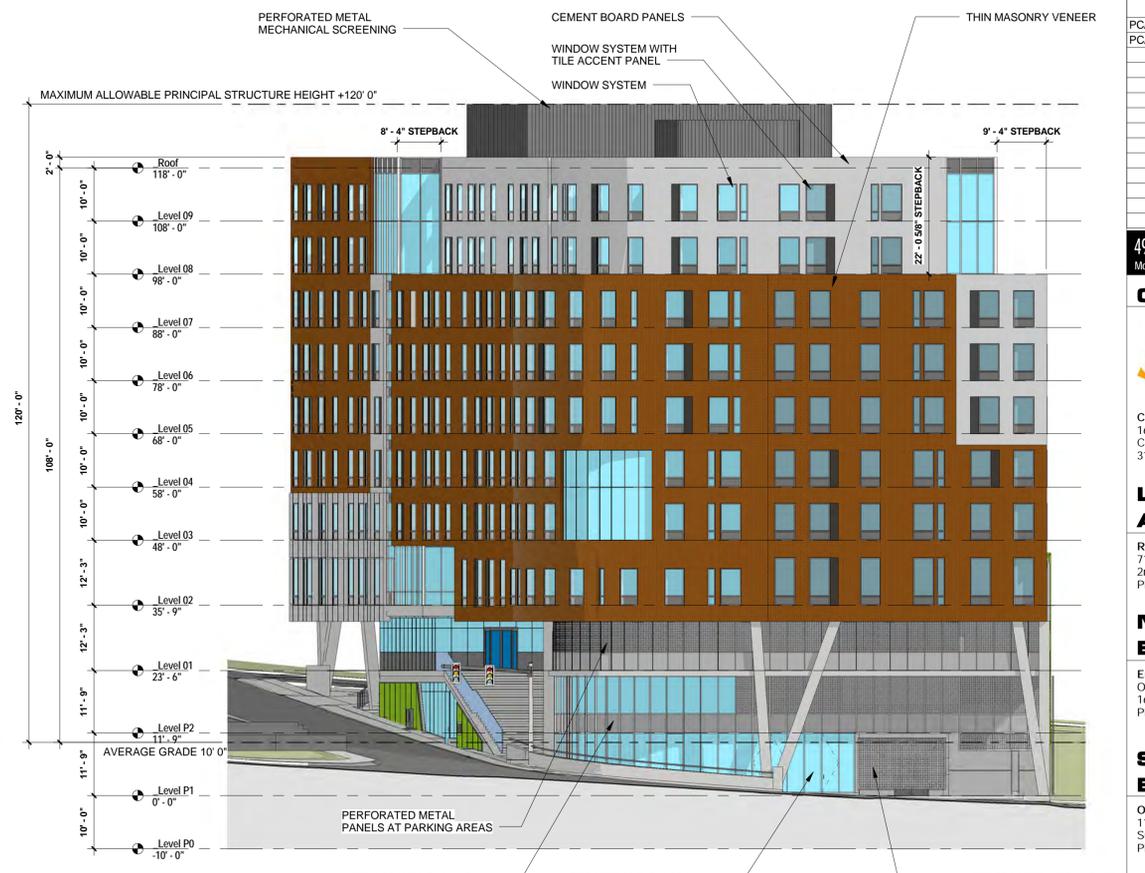
3B

ISSUED FOR: SCHEMATIC DESIGN

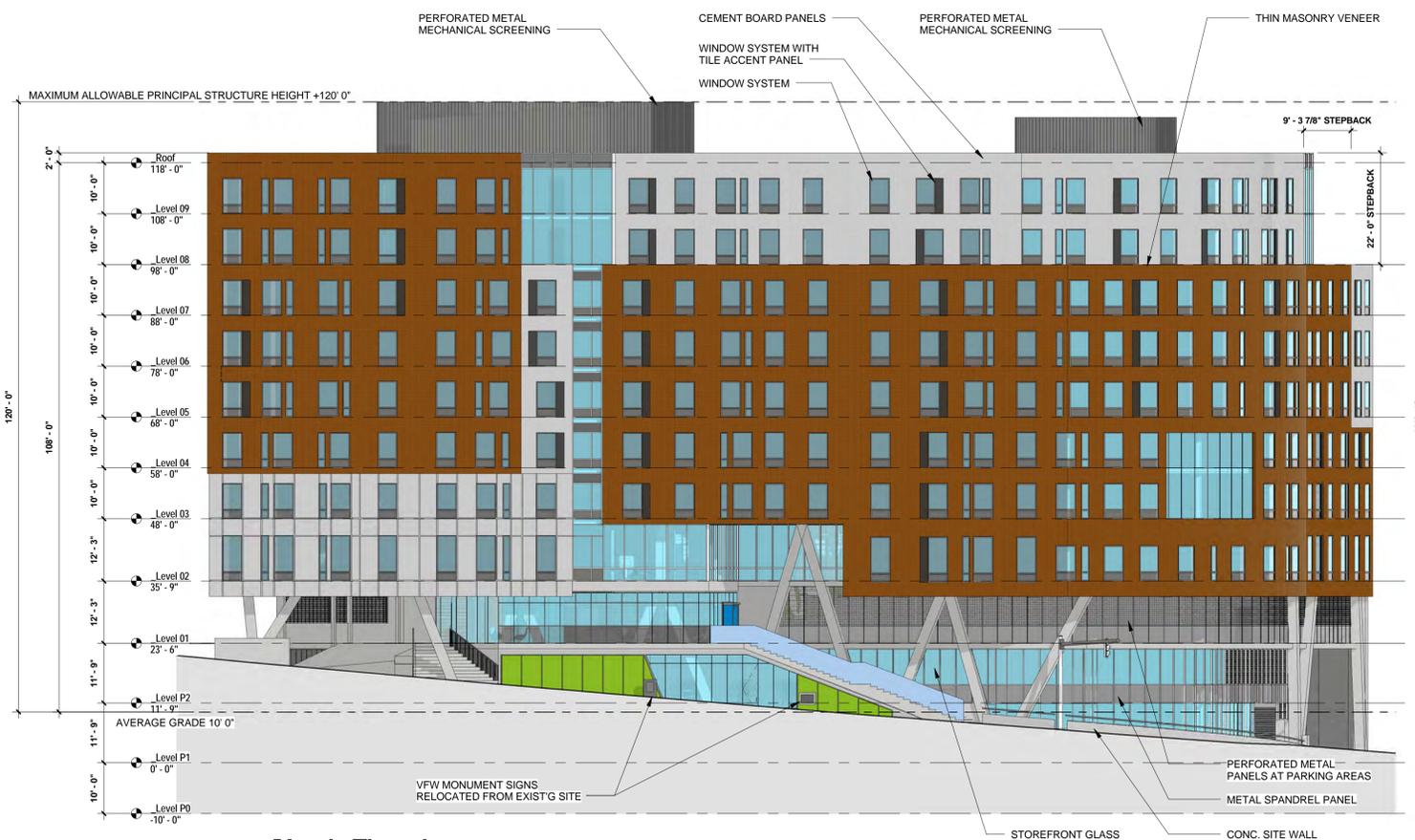
Z:\Projects\2013_Jobs\131012501\Drawings\Civil\Current\Construction\3B.dwg, PROPOSED SITE CONDITIONS, 8/7/2014 9:16:05 AM



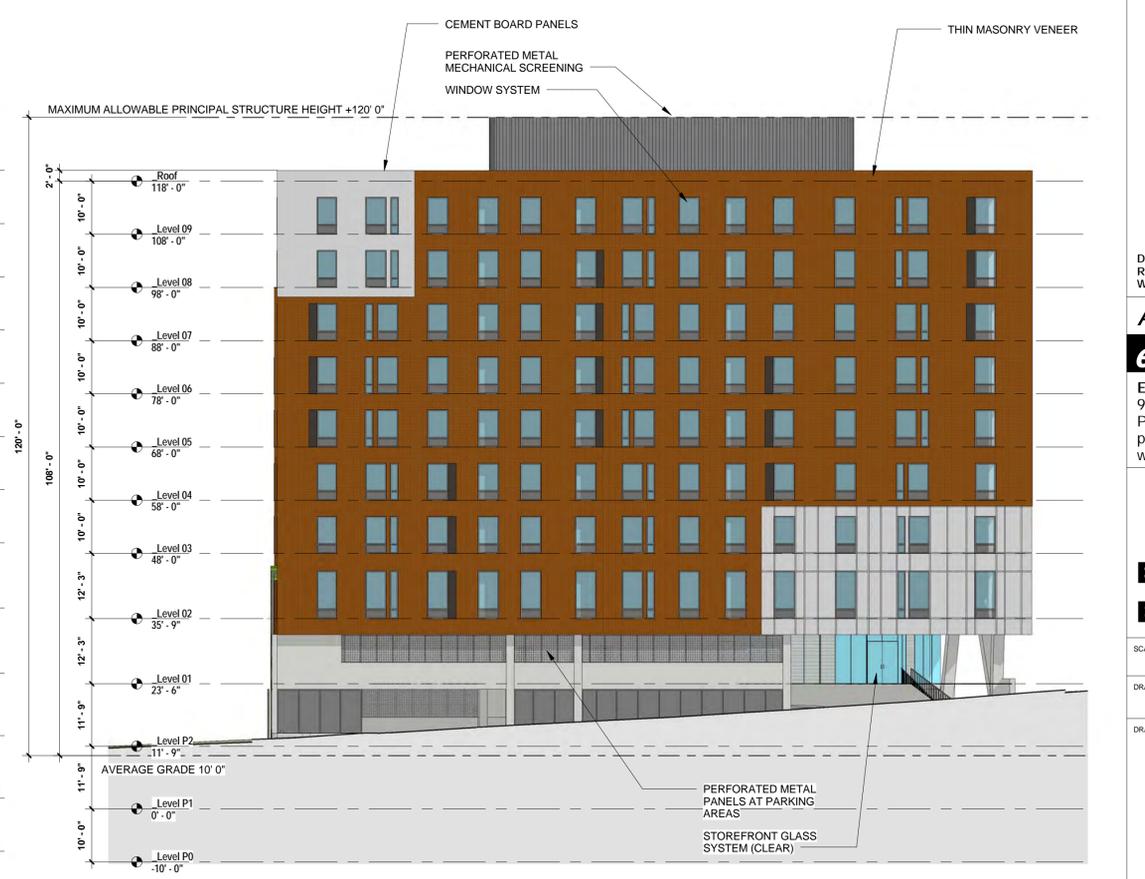
4 South Elevation
Scale: 1/16" = 1'-0"



2 West Elevation
Scale: 1/16" = 1'-0"



3 North Elevation
Scale: 1/16" = 1'-0"



1 East Building Elevation
Scale: 1/16" = 1'-0"

Drawing Issue	Date
PC/BZA SUBMISSION	2014-04-04
PC/BZA SUBMISSION 2	2014-08-08

494 Spruce Street
Morgantown, WV

Client:
CA STUDENT LIVING
Campus Acquisitions Holdings, LLC
161 N Clark Suite 2050
Chicago, IL 60601
312-994-1874

Landscape Architect:
RoofMeadow
7135 Germantown Avenue
2nd Flr
Philadelphia, PA 19119

MEP/FP/IT Engineer:
Environetics Design, Inc.
One Penn Center
1617 JFK Blvd, Suite 1600
Philadelphia, PA 19103

Structural Engineer:
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DAVID MCHENRY, AIA LIC. # NO-4615
REGISTERED ARCHITECT - STATE OF WEST VIRGINIA

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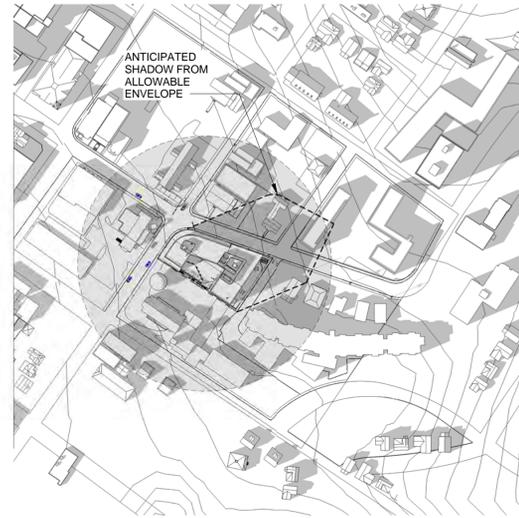
Building Elevations

SCALE: 1/16" = 1'-0"	DATE: 06/11/2014
DRAWN BY: AR / LS	PROJECT NO: 1149.00

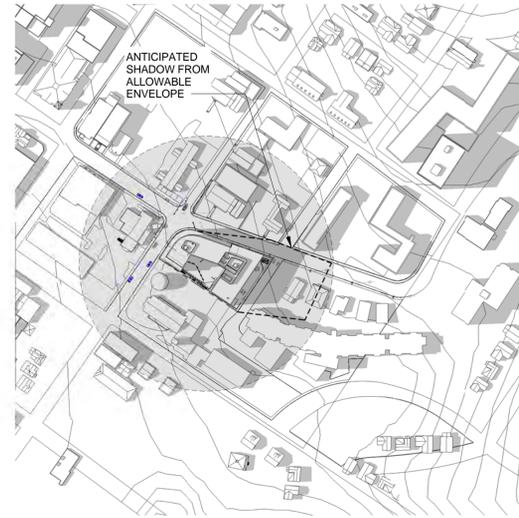
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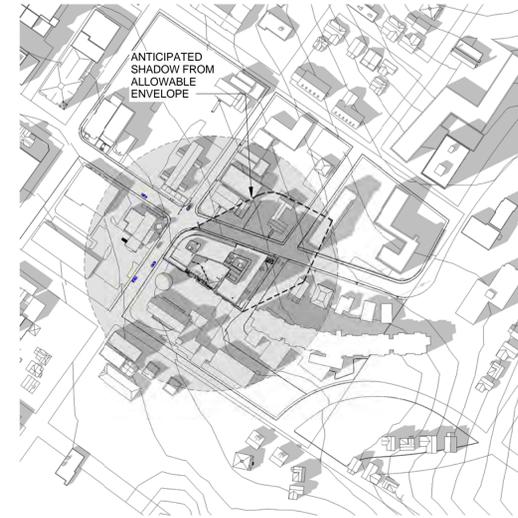
12 Sun Study_ Winter - 4pm
Scale: 1" = 200'-0"



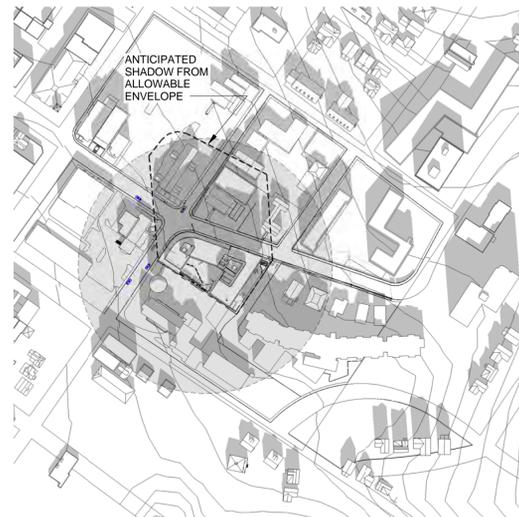
9 Sun Study_ Autumn - 4pm
Scale: 1" = 200'-0"



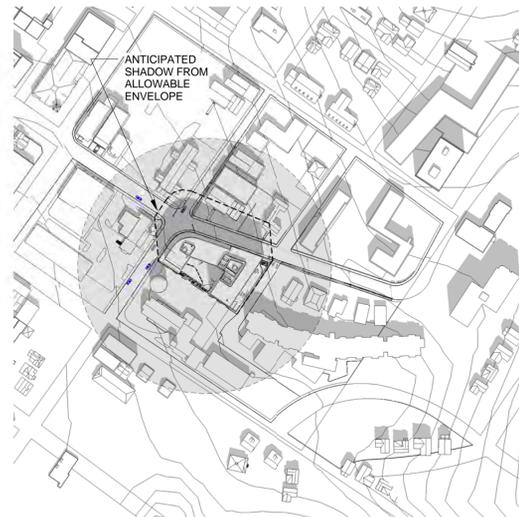
6 Sun Study_ Summer - 4pm
Scale: 1" = 200'-0"



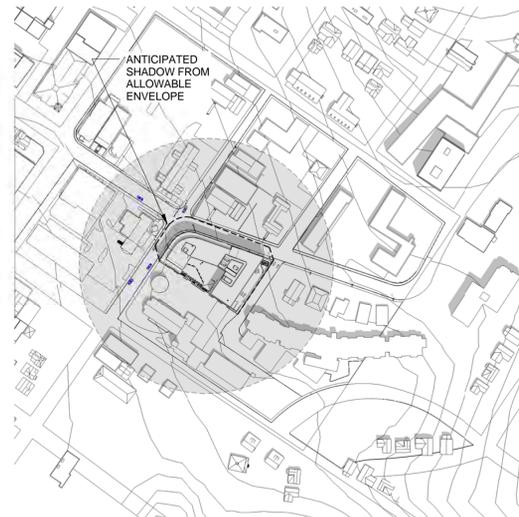
3 Sun Study_ Spring - 4pm
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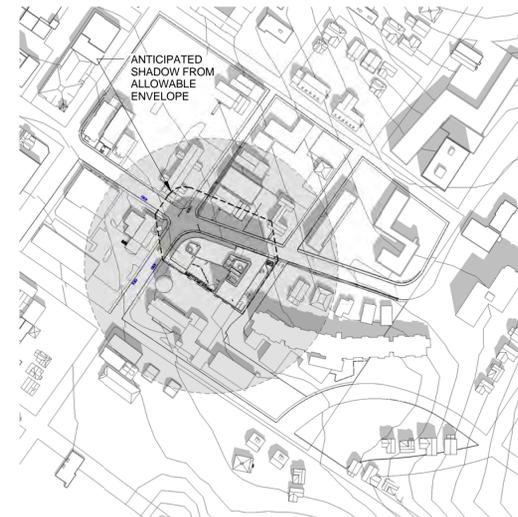
11 Sun Study_ Winter - 12pm
Scale: 1" = 200'-0"



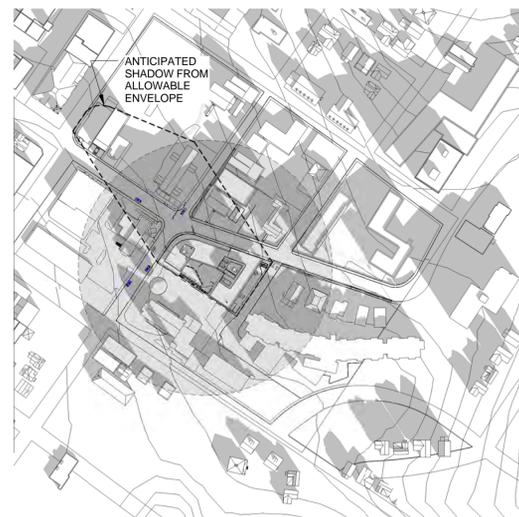
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Scale: 1" = 200'-0"



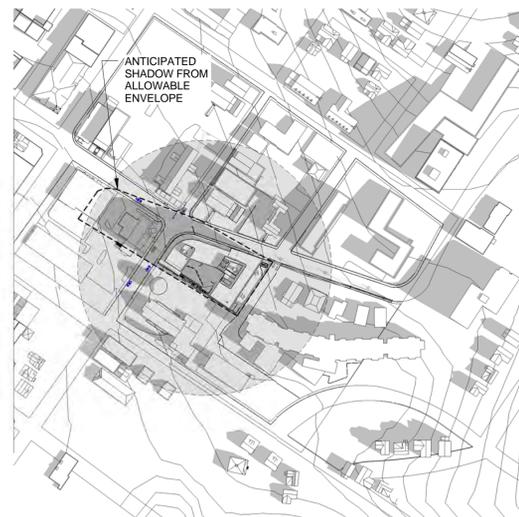
5 Sun Study_ Summer - 12pm
Scale: 1" = 200'-0"



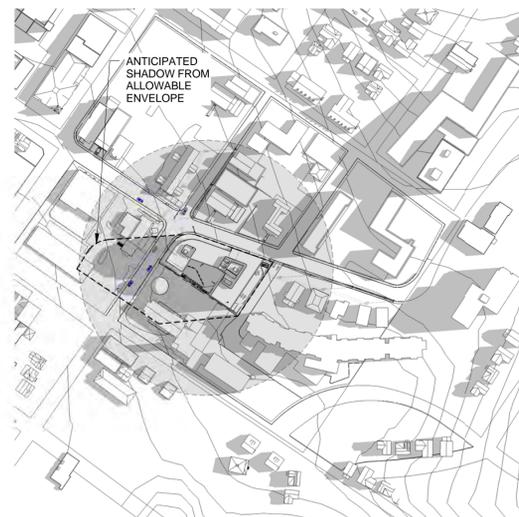
2 Sun Study_ Spring - 12pm
Scale: 1" = 200'-0"



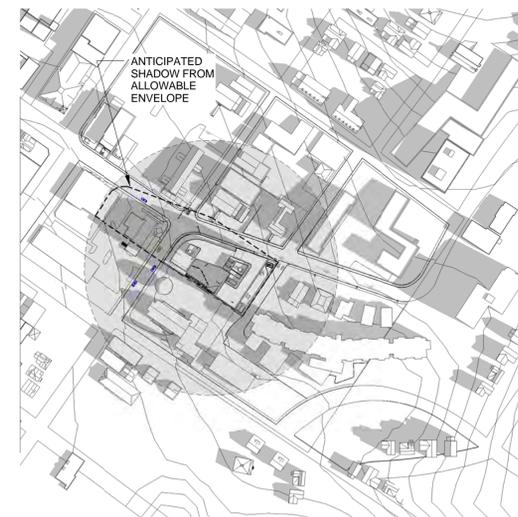
10 Sun Study_ Winter - 10am
Scale: 1" = 200'-0"



7 Sun Study_ Autumn - 9am
Scale: 1" = 200'-0"



4 Sun Study_ Summer - 8am
Scale: 1" = 200'-0"



1 Sun Study_ Spring - 9am
Scale: 1" = 200'-0"

Drawing Issue	Date
PCBZA SUBMISSION	2014-04-04
PCBZA SUBMISSION REVISIONS	2014-04-25
PCBZA SUBMISSION 2	2014-08-08

494 Spruce Street
Morgantown, WV

Client:
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Sun Studies

SCALE: 1" = 200'-0"	DATE: 06/11/2014
DRAWN BY: AR / LS	PROJECT NO: 1149.00
DRAWING NUMBER:	

494 Spruce Street
Morgantown, WV 26505

PEDESTRIAN WIND FLOW ANALYSIS REPORT

Submitted to: The City of Morgantown Planning and Zoning
389 Spruce Street
Morgantown, WV 26505



Figure 1 Site Location (source: google map)

Consultant: ISOENV Environmental Design Lab
2200 Benjamin Franklin Pkwy
Philadelphia, PA 19130

Jihun Kim, Principal Investigator
Registered Architect of Pennsylvania [RA405933]

SUMMARY

The objective of current research is to predict the change in wind condition at the pedestrian level. Computational wind tunnel analysis was conducted to understand impact of the proposed building on wind condition at its neighborhood. Only the immediate surrounding buildings are geometrically modeled because they have the most significant impact on wind flow. The purpose of the analysis is for the city of Morgantown to estimate the microclimate change caused by new construction compared to the existing condition.

Computational wind tunnel analysis has been validated and widely accepted in wind engineering and urban scale environmental analysis, replacing physical wind tunnel test that costs much more resources and time along with its own uncertainties, such as translation issue to real-life size from scale model in the test. The consultant used one of the most advanced wind simulation in the industry for high prediction accuracy: ANSYS Fluent v14. Please note that there will be a simplification process, as the general wind engineering approach, by selectively including geometries that are significant to wind speed and pattern in urban scale. For example, buildings are considered but street lights are not.

The climate data in use is 'Typical Meteorological Year' (TMY), which is available from the National Oceanic and Atmospheric Administration (www.noaa.gov). We use this data type because it is synthesized with 30 year period weather so that it would better represent the longevity of buildings. It is also generally acceptable in wind engineering and urban climate analysis. 'Morgantown Municipal Airport' is chosen, given it is the nearest available TMY data that is only 2.5 miles away from the site of interest.

As results, our statistical analyses with the simulation outcome showed the minor impact on pedestrian wind condition. Average 0.96% of wind velocity is reduced at +2m above ground of the entire neighborhood, as it is shown at Table 1. It is because larger foot print of the building allowed less wind on the narrower street so that more wind was pushed to the atmosphere, when comparing Figure 3 to Figure 4. Another reason is 'wind shade effect', which reduced overall wind speed behind the proposed building that is taller than the existing, comparing Figure 5 to 6. We came to conclude that the proposed building may reduce pedestrian wind speed with minor degree based on our prediction result.

Table 1 Wind speed analysis at pedestrian level

	maximum	minimum	average	median
proposed	5.39	0.00	1.29	0.98
existing	4.62	0.00	1.32	1.05

REGIONAL WIND ANALYSIS

Annual wind condition of Morgantown is graphically represented at Figure 2, which shows more than 35 % of time wind comes from southwest with average speed of 4.5 m/s. Therefore, with this high frequency, this condition constitutes prevailing wind, which will be used as the input values for wind flow analysis.

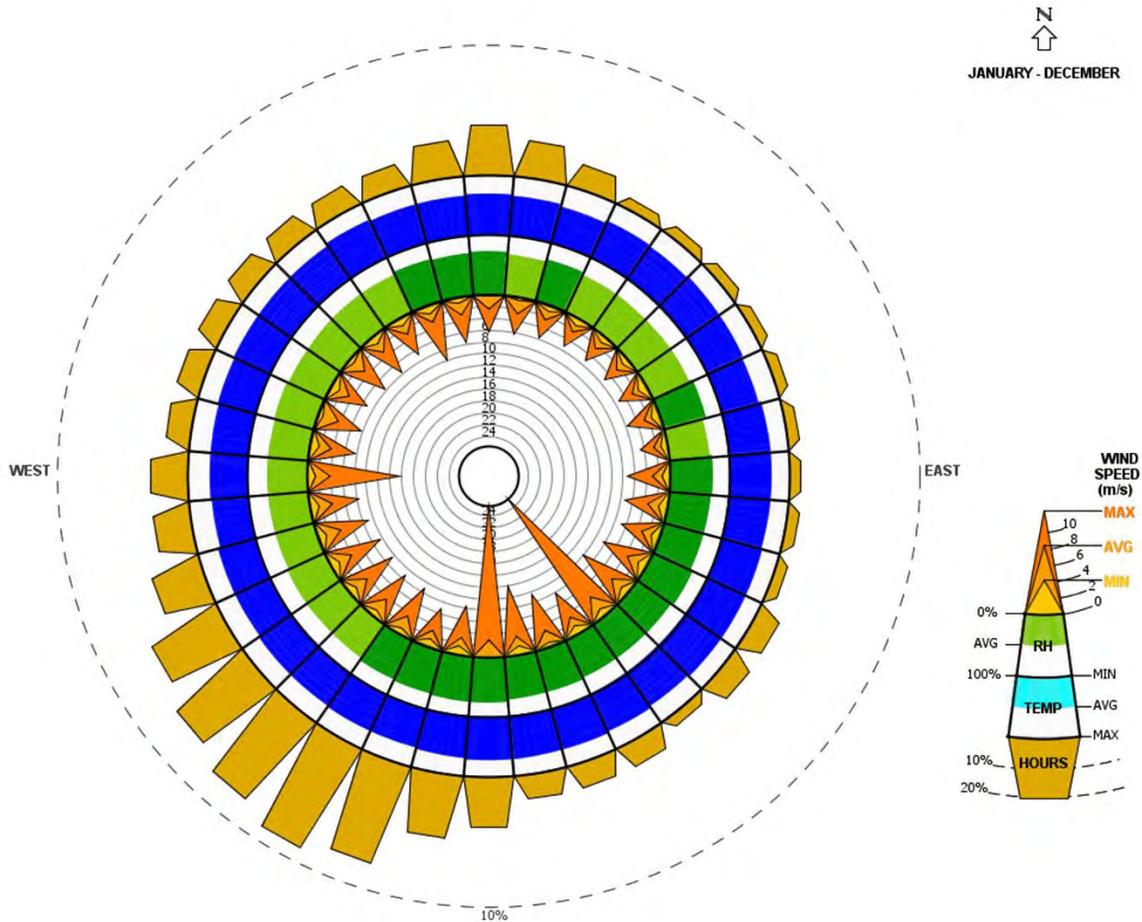


Figure 2 Annual Wind Rose

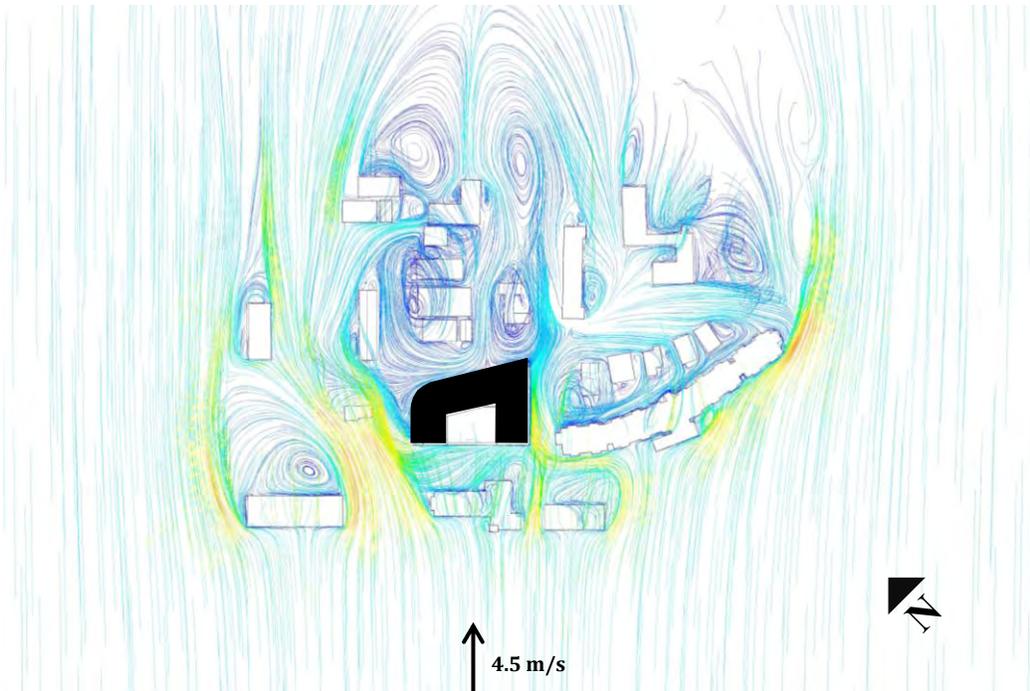


Figure 3 Proposed Building in Dark Shade - Wind Path lines at Pedestrian Level at +2m *

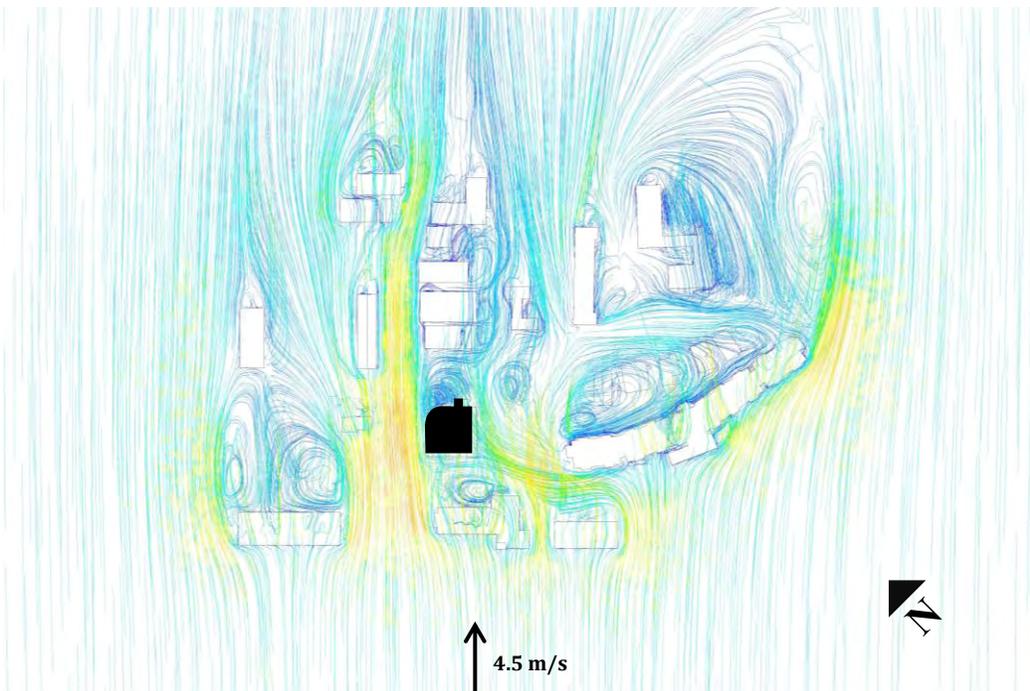


Figure 4 Existing Building in Dark Shade - Wind Path lines at Pedestrian Level at +2m *



* Color represents wind velocity and path lines represent the track of wind flow.

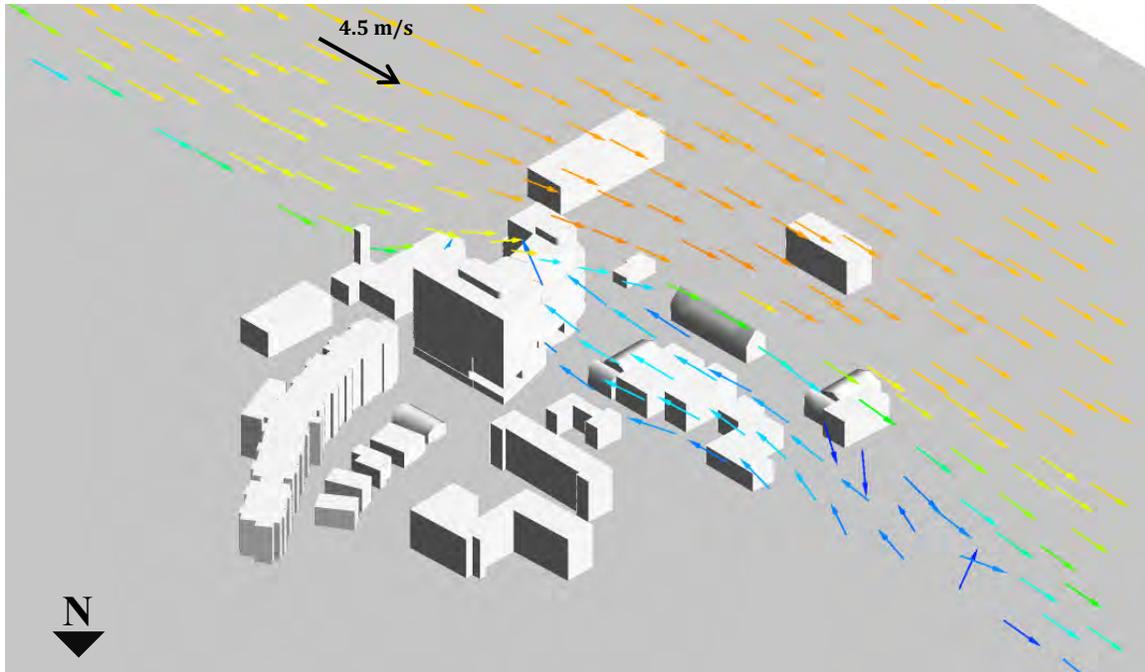


Figure 5 Proposed - Vector on Vertical Plane **

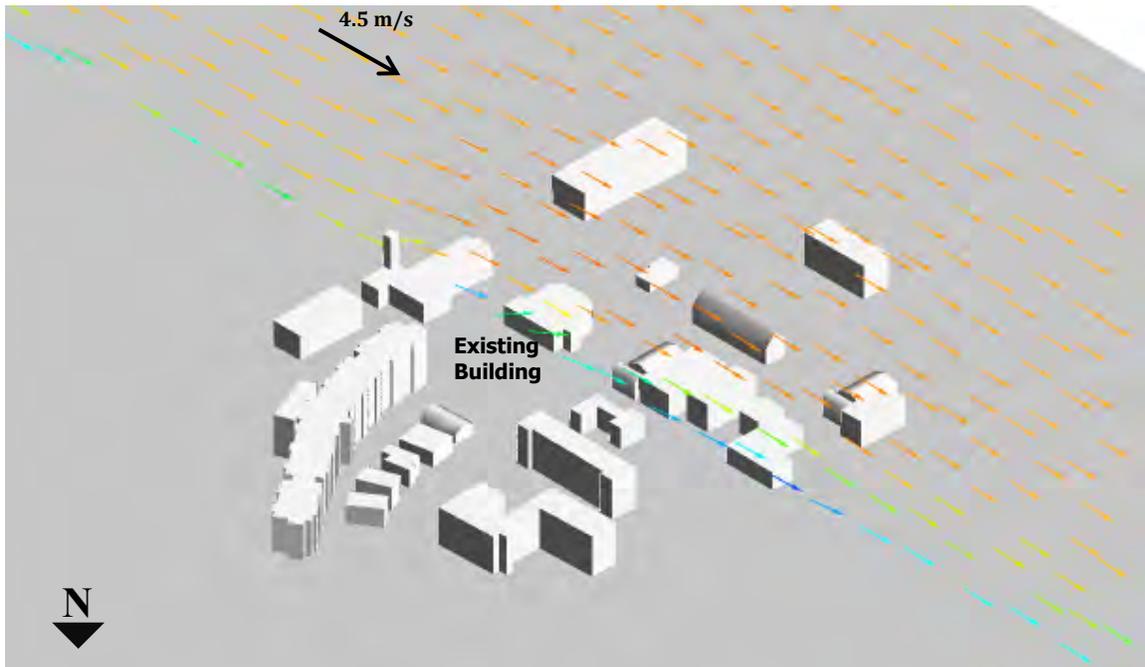


Figure 6 Existing - Vector on Vertical Plane **



** Arrow represents direction and color represents velocity