ACORN ENGINEERING, INC.

Chief Keith Gautreau
City of Portland Fire Department
380 Congress St.
Portland, ME 04101

October 11, 2018

Subject: 145 Washington Ave – Fire Department Checklist
Section M of Application

On behalf of Akasha 155 LLC, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of applicant

   Akasha 155 LLC
   asher.woodworth@gmail.com
   (207) 332-4911

2. Name address, telephone number of architect

   Kiel Moe & Decentralized Design Lab
   kielmoe@gmail.com
   (617) 843-5435

3. Proposed uses of any structures [NFPA and IBC classification]

   NFPA: Business & Residential / IBC: B & R-2

4. Square footage of all structures, including decks [total and per story]

The existing 2-story single-family building was recently demolished to facilitate the redevelopment.

Proposed Building		
1st Floor	4,355*	sf
2nd Floor	2,021**	sf
Total	6,376	**sf**

*The 1st floor area includes the courtyards which are enclosed by walls, but do not have a roof above.

** The 2nd floor area includes the roof deck.

5. Elevation of all structures

   Based upon the average grade plane defined by the IBC, the proposed building height is 23.3 feet. This height is below the allowable 45 feet within the B-1 zone. Please refer to the building elevations provided by the Architect for additional information.

6. Proposed fire protection of all structures

   The building will have a sprinkler system with additional protection per code. Fire flows and requirements for system storage or booster pumping are subject to the fire professional design which will be performed prior the request for a building permit.

7. Hydrant locations

   An existing hydrant is located across the street, approximately 115 feet from the corner of the proposed building. Hydrant flow data from the Portland Water District once received may be made available to the Fire Department upon request.

8. Water main size and location

   The redevelopment will be serviced by the existing water main within Washington Avenue. A 4" fire service line will extend from the existing water main to the building fire suppression system. The building is expected to have internal sprinkler risers and a Fire Department pump connection on the street side of the building.

9. Access to all structures [min. 2 sides]

   Access to the structure is provided directly on Washington Avenue. Per discussions in the pre-application meeting on May 2, 2018, the access on 2 sides would not be feasible given the parcel's geometry and the minimal street frontage (27.5'). However, providing a sprinkled building was recommended to compensate for only one side of access. As such, the building has been designed with a sprinkler system.

   It should also be noted that in the event of an emergency, the north side of the building would likely be accessible from the adjoining property at 151 Washington Ave.

10. The Architect has provided code summaries (attached).

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The project site is located in a densely developed area and is fronted by a public street. The following pavement street width is currently available:

- Washington Avenue: 44 feet

Per NFPA 1 – Chapter 18.2.3.3.1, there will be public street access within 50 feet of at least one exterior door. Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 feet from a Fire Department access road.

City of Portland Technical Manual – Section 3 Public Safety
3.4.1 Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).
Response: Not applicable

3.4.2 Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Response: As outlined in #9, the parcel's geometry does not allow for two sides of access due to the minimal street frontage. However, the building will be sprinkled upon request at the pre-application meeting.

3.4.3 Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height.*
- *Building Occupancy.*
- *Construction Type.*
- *Impediments to the Structures.*
- *Safety Features Provided.*

Response: The proposed development provides for safe and efficient access along the public street for emergency vehicles.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Response: The building will be provided with exterior doors that will be within 50' of a Fire Department access route, namely Washington Avenue.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Response: There is no vehicle access to the site; however, the building will be directly on the front property line, accessible from Washington Avenue.

3.4.6. Elevators shall be sized to accommodate an 80 x 24-inch stretcher.

Response: There are no proposed elevators.

3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Response: The applicant will work with the City's Public Works Division to assign street addresses and numbering to meet City Standards.

Thank you for your review. Please let me know if you have any additional questions or comments.

Sincerely,

William H. Savage, P.E.
Principal
Acorn Engineering, Inc.

IBC 2015: CODE DATA

Code Inquiry	Design Response	Reference
Use Group Classification	Mixed Use (R-3 over B)	IBC 304;310
	Floor 1 = Business (3,936 ft2 gross enclosed)	
	Floor 2 = Residential Group R3: Single Dwelling Unit (2,021 ft2 gross enclosed)	
Type of Construction	Type IV: Cross-laminted Timber Walls and Horizontal Aseemblies, CMU Perimeter Walls	IBC 602
Proposed Building Area	5,957	Sq Ft Per IBC Definition: AREA, BUILDING. (Area within perimiter wall, excluding courts but including area under roof)
Net Usable Area (excluding courts)	4,927	Net Usable Area Excluding Courtyards levels 1+2; ft2
Net Usable Area (including courts)	6,153	Net Usable Area Including Courtyards levels 1+2; ft2
Building Footprint	4,892	ft2
Lot Area	7,168	ft2
Proposed Building Height (Stories / Feet)	2 stories; 27' top of parapet	
Building Area Limitation - Sq Ft	B occupancy = 36,000ft2; R-3 Occupancy =UL	Per IBC table 506.2
Buidling Height Limitation - Stories	B occupancy = 65'/6s; R-3 occupancy 60'/4s	Per IBC tables 504.3 + 504.4
Travel: Common Path Limit (Allowable / Actual)	75' allowable; 30' actual	Per IBC table 1006.2.1
Travel: Dead-end Limit (Allowable / Actual)	20' allowable/ none	Per IBC table 1020.4
Travel: Exit Access Travel Distance Limit (Allowable / Actual)	Allowable 200'/ Actual 90'	IBC - 1017.2
Fire Suppression System	NFPA 13	
Fire Alarm	NFPA 13	
Smoke and CO Detectors	NFPA 13	
Number of Required Exits	level 1, B occupancy - 2 exits; level 2, R-3 occupancy - 1 exit	1006.3.1.; 1006.3.2
Exit Access Fire Ratings		
Fire Walls / Barriers	3 hr	IBC table 706.4
Occupancy Separation	2 hr (B/R-3)	IBC table 508.4
Tenant Separation	2 hr (B/R-3)	IBC table 508.4
Party Walls	3hr	IBC table 706.4
Stair Enclosures	1hr	IBC 1005.3.2
Exit Access Corridors	1 hr	IBC 1020.1
Fire Protection of Structure		
Columns	HT	IBC 601; 602.4.3

Beams, Girders, Trusses, and Arches	HT	IBC 601; 602.4.4; 602.4.5
Load Bearing Walls - Exterior	3hours @ party wall; 2 hours other perimeter walls	IBC table 601
Load Bearing Walls - Interior	1 hours	IBC table 601
Non-load Bearing Walls - Exterior	2 hours	IBC 601; 602.4.8.2
Non-load Bearing Walls - Interior	1 hours	IBC 601; 602.4.8.1
Floor Construction	HT	IBC table 601, 602.4.6.2
Roof Construction	HT	IBC table 601, 602.4.5
Shaft Enclosures	2 hours	IBC 713.4
Unprotected Openings	There shall be no openings in the party wall; all other elevations shall comply with IBC table 705.8	IBC 705
Egress Stair	Occupant load <50; Min width 36"	IBC 1011.2
	Handrails shall project more than 4-1/2" into clear space	IBC 1014.8
Egress Corridors	B Occupancy min width 44"; R-3 Occupancy min width 36"	IBC table 1020.2
Ramps	Ramps used as part of a means of egress shall not have a slope > 1:12; 8%	IBC 1012.2
	Handrails shall project more than 4-1/2" into clear space	IBC 1014.8
Sound	Assemblies separating B & R-3 Occupancies shall a min STC rating of 50	IBC 1207.2
	Assemblies separating B & R-3 Occupancies shall a min IIC rating of 50	IBC 1207.3
Accessibility	B-Occupancy portion of the building shall be fully ADA accessible	
	The Building comply with chapter 11 of the IBC	IBC Chapter 11
Plumbing	4 water closets, 4 lavatories, 2 water fountains - required in B occupancy	IBC table 2902.1

Occupant Load Calcuations

Floor 1; B occupancy

Total floor 1 occupant count = 116

Area (sf)	Name	Occupancy	OF	Occu. Load
662	COURTYARD	Outdoor	100	7
572	EXERCISE ROOM	Assemby	11	52
54	STORAGE ROOM 1	Storage	300	1
406	FRONT CIRCULATION	Circulation	100	5
318	LOBBY	Business	100	4

214	OFFICE & RECEPTION	Business	100	3
568	ENTRY COURT	Outdoor	100	6
146	MECH ROOM	Mechanical	300	1
151	WEST SAUNA	Sauna - 12	NA	12
151	EAST SAUNA	Sauna - 12	NA	12
440	EAST LOCKER ROOM	Business	100	5
440	WEST LOCKER ROOM	Business	100	5
130	BACK CIRCULATION	Circulation	100	2
105	STORAGE ROOM 2	Storage	300	1
4355				**116**

Floor 2; R-3 occupancy =

Total floor 2 occupant count = 9

Area (sf)	Name	Occupancy	OF	Occupant Load
1800	Residence	Residential	200	**9**

Floor 1 + Floor 2 occupancies =

Total Building = 125

NFPA 1, 101, 220, 221 - Code Data

Code Inquiry	Design Response	Reference
Use Group Classification	Level 1 - Rusiness; Level 2 - Residential	
Type of Construction	VI (2HH)	Type IV: Cross-laminted Timber Walls and Horizontal Aseemblies, CMU Perimeter Walls
Net Usable Area	6,153	Net Usable Area Including Courtyards; levels 1+2; ft2
Proposed Building Area	3,554	Sq Ft Per IBC Definition: AREA, BUILDING. (Area within perimiter wall, excluding courts but including area under roof)
Lot Area	7,168	ft2
Proposed Building Height (Stories / Feet)	2 stories/ 27'	
Travel: Common Path Limit (Allowable / Actual)	75'/30'	NFPA 101(a) - 38.2.5.3.2
Travel: Dead-end Limit (Allowable / Actual)	20'/none	NFPA 101(a) - 38.2.5.2.2
Trave: Exit Access Travel Distance Limit (Allowable / Actual)	200'/90'	NFPA 101(a) - 38.2.6.2
Fire Suppression System	NFPA 13	
Fire Alarm	NFPA 13	
Smoke and CO Detectors	NFPA 13	
Number of Required Exits	2 exits B-occupancy; 1 exit R-occupancy	NFPA 101(a) - 38.2.4.1
Exit Access Fire Ratings		
Fire Walls / Barriers	3hr	NFPA 220 - 4.1.1
Occupancy Separation	2hr	NFPA 1 - 6.1.14.4.1(b)
Tenant Separation	2hr	NFPA 1 - 6.1.14.4.1(b)
Party Walls	3hr	NFPA 221 - Chapter 6
Stair Enclosures	1hr	NFPA 101(b) - Chapter 5
Exit Access Corridors	1hr	NFPA 101(b) - 5.1.1.1
Fire Protection of Structure		
Columns	H	NFPA 220 - 4.1.1
Beams, Girders, Trusses, and Arches	H	NFPA 220 - 4.1.1
Load Bearing Walls - Exterior	3hr (type I); 2hr (type VI)	NFPA 220 - 4.1.1
Load Bearing Walls - Interior	2hr (type I); 1hr (type VI)	NFPA 220 - 4.1.1
Non-load Bearing Walls - Exterior	0hr	NFPA 220 - 4.1.1
Non-load Bearing Walls - Interior	0hr	NFPA 220 - 4.1.1
Floor Construction	H	NFPA 220 - 4.1.1
Roof Construction	H	NFPA 220 - 4.1.1