



A C O R N

ENGINEERING, INC.

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

October 10, 2017

Subject: 24 St. Lawrence Street – Fire Department Checklist
Section K of Application

On behalf of Kelly & Walter Williams, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of applicant

Kelly & Walter Williams
24 St. Lawrence Street
Portland, Maine 04101
(207) 671-1193

2. Name address, telephone number of architect

Port City Architecture
62 Newbury Street
Portland, Maine 04101
(207) 761-9000

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

NFPA: Apartments

IBC: R-2

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

Garage Level	2,823	sf
1 st Floor	2,160	sf
2 nd Floor	2,160	sf
3 rd Floor	1,808	sf
Total	8,951	sf

5. Elevation of all structures

The proposed building height is just under 45 feet which meets the zoning ordinance. See the 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 approximately 11 feet from the east corner of the proposed structure. 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 development will be serviced by the existing water main within St. Lawrence Street. 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]

Main access to the structure is provided on St. Lawrence Street. In the event of an emergency, additional access may be accessible to the west of the subject property via a paved driveway that abut the property line.

10. The Architect has provided a code summary (to be attached at a later date).

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:

- St. Lawrence Street: 50 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 depicted on the site plan, the proposed building layout provides a minimum of two paved access points to the structure: one from St. Lawrence Street directly as well as the northerly abutter's paved driveway.

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 layout has contemplated emergency access conditions and 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 St. Lawrence Street.

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

Response: Not applicable

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

Response: The elevators will be sized to accommodate an 80 x 24 stretcher, per the Architect's designs.

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.



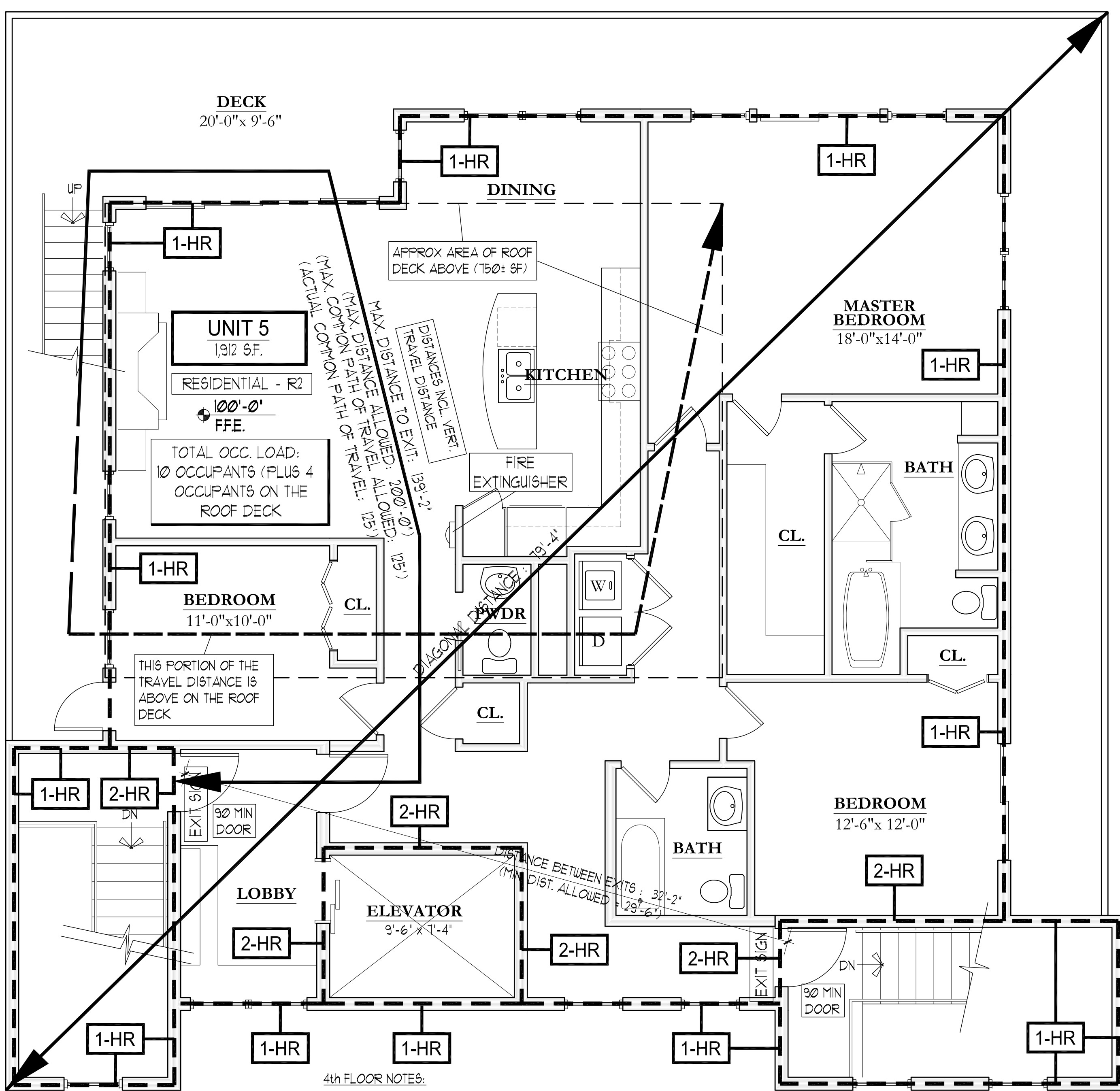
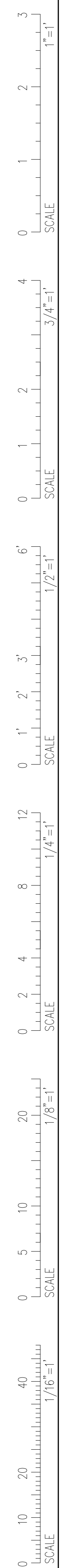
Please let me know if you have any additional questions or comments.

Sincerely,



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





- 4th FLOOR NOTES:**
1. THIS LEVEL IS RESIDENTIAL (R-2).
 2. THE BUILDING IS FULLY SPRINKLED WITH AN NFPA 13 SYSTEM.
 3. THE EXTERIOR WALLS ARE REQUIRED TO BE 1-HR PER IBC TABLE 601 (CONSTRUCTION TYPE 5A).
 4. TWO EXITS ARE REQUIRED AS THE BUILDING EXCEEDS THE VALUES IN IBC TABLE 1021.2. EXITS TO BE SPACED $\frac{1}{3}$ OF THE DIAGONAL DUE TO THE SPRINKLER SYSTEM.
 5. A 2-HR SEPARATION IS REQUIRED TO SEPARATE THE ELEVATOR AND STAIR SHAFTS FROM THE REMAINDER OF THE BUILDING AS THEY CONNECT 4 STORIES (IBC SECTION 1004.4).
 6. ONE EXIT IS REQUIRED OUT OF EACH UNIT (SPACE) PER 1015.1.
 7. THE HORIZONTAL AND VERTICAL DWELLING UNIT SEPARATIONS ARE 1-HR RATED AS THEY ARE ALSO BEARING (CONSTRUCTION TYPE 5A).
 8. ANY BEARING WALLS WITHIN THIS UNIT ARE REQUIRED TO BE 1-HOUR RATED.

1 EGRESS / LIFE SAFETY PLAN - 4th FLOOR

SCALE: 1/4" = 1'-0"

Code Review - Title 5, Chapter 337: Maine Human Rights Act

Subchapter 4: Fair Housing (4582-C. Standards for Multifamily and Public Housing)
Section 1.C.(1) - This facility is a "Covered Multifamily Dwelling" as it contains four (5) units and an elevator.
Section 3.A.(1) - The public use and common use portions of the building are accessible.
Section 3.A.(2) - All doors are (or can be modified) to have 32" clear (in one unit, see Section 3.B.).
Section 3.A.(3) - In one of the units (see Section 3.B.), there is an accessible route, environmental controls under 48" maximum above the floor, blocking in the bathroom walls for future grab bars, and usable kitchens for persons in a wheelchair. The bathroom can be easily modified to provide ADA fixtures and the required maneuvering spaces (by removing the fixtures and installing an ADA shower and sink).
Section 3.B. - The above sections are applicable to a minimum of one (1) unit in this facility.

Code Review - NFPA 101 (Life Safety) 2009

Chapter 6 - Classification of Occupancy
Section 6.1.8 - The upper three stories of this building are classified as an "Apartment Building" per Section 6.1.8.1.5.
Section 6.1.13 - The lower story of this building (except for the exits) is classified as a "Storage" occupancy per Section 6.1.13.1.
Section 6.1.14.1 - This occupancy shall be classified as a "Multiple Occupancy" and further defined as a Separated Occupancy.
Section 6.1.14.4.1 - The requirements of a Separated Mixed-Use occupancy shall be utilized and the code requirements shall apply to each occupancy respectively.
Table 6.1.14.4.1(b) - The fire separation between Apartment Buildings and Storage Low and Ordinary Hazard is 2-HR, but is allowed to be reduced to 1-HR due to the sprinkler system (Section 6.1.14.4.3).
Section 6.2.2.3 - The contents of the garage area is defined as "Ordinary Hazard".
Chapter 7 - Means of Egress
Section 7.1.3.2.1(2) - The stair connects four (4) stories and shall have a 2-HR separation from the units. Note: The top flight of stairs to the roof deck is part of that unit, as the roof deck is accessible by that unit only.
Section 7.2.1.2.3.2(3) - Door openings in the means of egress are allowed to be 28" wide (34" minimum provided).
Section 7.2.1.4.2(1) - Doors are not required to swing in the direction of egress travel as they serve less than 50 occupants.
Section 7.2.1.4.3.1 - Doors in the means of egress shall not leave less than half of the required egress width clear during its swing.
Section 7.2.1.5.9.3 - The egress doors to the individual living units are allowed to have locking devices that comply with this section.
Table 7.2.2.1.1.(a) - The egress stair width shall be 36" minimum (per 7.2.2.1.2) with 7" risers maximum and 11" treads minimum.
Section 7.2.2.3.1 - Stairs shall have landings at all door openings at least 36" along the path of egress travel.
Section 7.2.2.4.1.1 - Stairs shall have handrails on both sides of the stair.
Table 7.3.1.2 - Occupant Load: see Egress Plans.
 Storage (Garage Bays): NA (defined as a Storage Occupancy per 6.1.13.1 and a Separated Mixed-Use)
 Note: Use the occupant load for Parking Garages in the IBC code.
 Residential: 1 person per 200 square feet
Section 7.5.1.3.3 - Exits shall be separated by a minimum of 1/3 the overall diagonal of each space due to the sprinkler system.
Section 7.5.4.1 - Accessible means of egress are not required as the dwelling units are not required to be accessible.
Table 7.6 - Residential Occupancy (Apartments / New / Sprinkled): Common Path Limit = 50'; Dead-End Limit = 50'; Travel Distance Limit = 325'. Storage Occupancy (Parking Structure, enclosed / Sprinkled): Common Path Limit = 50'; Dead-End Limit = 50'; Travel Distance Limit = 200'. Note: Common Path of Travel limits do not include travel within a unit per Section 30.2.5.3.2.
Section 7.10.2.1 - Exit signs shall be installed per this section as required by Chapters 30 and 42 (see Egress Plans).
Chapter 8 - Features of Fire Protection
Section 8.1.2 - Construction shall by Type V (111). Note: See the IBC code review other sections for the required fire-ratings (stair, between uses, and between dwelling units, bearing walls).
Table 8.3.4.2 - For any 1-hour vertical shafts, the openings shall be 1-HR rated. For the 2-HR vertical shafts, the openings shall be 90-minute rated.
Section 8.6.5(1) - The shaft enclosure for the stairs are 2-HR as they connect 4 stories.
 Note: Also see section 7.1.3.2.1(2)

Chapter 30 - Apartment Buildings
Section 30.1.2.3(1)(2) - Due to the sprinkler system, and the separation between the residential units and the storage (garage) area, the residential units are allowed to be located over the non-residential occupancy.
Section 30.2.1.2 - Only one means of escape from the dwelling units is required due to the sprinkler system (also see 24.2.2.1.2).
Section 30.2.2.1.2 - Due to the sprinkler system, the exit enclosures are permitted to be 1-HR. However, due to the requirements of IBC, the stairway connects 4 stories is required to be 2-HR.
Section 30.2.4.4 - A single exit is permitted by this section (requirements 1-8). Note: Two exits are provided due to the requirements of IBC.
Section 30.2.5.3.2 - The common path of travel shall not exceed 50' (and does not include the travel within the units).
Section 30.2.5.4.2 - Dead-end corridors shall not exceed 50'.
Section 30.2.6.2 - Travel distance within a unit shall not exceed 125'.
Section 30.2.6.3.2 - The travel distance from the entrance door to a unit, to the exit shall not exceed 200'.
Section 30.2.8 - The means of egress are required to be illuminated per Section 7.8
Section 30.2.9 - Emergency lighting shall be provided.
Section 30.3.4.1.2 - A fire alarm system is required.
Section 30.3.4.5 - Smoke alarms are required in every sleeping area, outside every sleeping area, and on every level.
Section 30.3.5.2 - An automatic sprinkler system is required and is allowed to be a 13R system.
 Section 30.3.5.12 - Fire extinguishers are not required due to the sprinkler system. However, due to the requirements of IBC, fire extinguishers shall be provided (see Egress Plans for locations).
Section 30.3.7.2 - Dwelling units shall be separated from each other by 30-minute fire separation assemblies due to the sprinkler system. However, due to the requirements of IBC, 1-HR fire separations shall be provided.
Chapter 42 - Storage Occupancies
Section 42.2.4.1.(2) - A single means of egress is permitted provided the exit can be reached in 50' (per Table 42.2.5), however, due to section 42.8.2.4.1, two means of egress are required (parking structure).
Table 42.2.5 - Dead-end corridors: 100' / Common Path of Travel: 50' (parking structure, see 42.8.2.5.1).
Table 42.2.6 - Maximum travel distance to exit: 400'.
Section 42.2.8 - Means of egress shall be illuminated.
Section 42.2.9 - Emergency lighting shall be provided.
Section 42.2.10 - Exit signs shall be provided.
Section 42.3.4.1.2 - A fire alarm system is not required, but will be provided due to requirements elsewhere in this code.
Section 42.3.5 - There are no extinguishment requirements, however, the lower level will be sprinkled due to requirements elsewhere in this code and in the IBC code.
Section 42.8.1.2.2 - No repair facilities are located in this building.
Section 42.8.2.4.1 - Two means of egress out of the parking area are required.
Section 42.8.2.5.1 - Common path of travel = 50'.
Section 42.8.2.5.2 - Dead ends shall not exceed 50'.
Table 42.8.2.6.1 - Maximum travel distance to an exit = 200'.
Section 42.8.3.4.1.1 - A fire alarm system is not required per this section.

Code Review - IBC 2012

Chapter 3 - Use and Occupancy Classification
Section 310.1 - The majority (2nd, 3rd, and 4th floors) of this building is classified as Use Group R-2 (Residential).
Section 312.1 - The first level parking area is classified as Use Group U (Utility - Private Garage).
 Note: Due to the intermingling of the uses, this will be a Mixed-Use, Separated building. See Section 508.4.
Chapter 4 - Special Detailed Requirements Based on Use and Occupancy
Section 406.1.2 - The parking level is allowed to be Use Group U as it is under 3,000 square feet.
Section 406.1.4 - The separation between the parking level and the dwelling units is allowed to be $\frac{5}{8}$ " Type X, with solid core wood or honeycomb steel doors. However, it will be 1-HR due to the requirements of the Type 5A Construction Type.
Chapter 5 - General Building Heights and Areas
Table 503 - This building is classified under Type V (A) construction type. For the R-2 classification this building is limited to three (3) stories and 50' above the grade plane, and 12,000 square feet per floor. For the U classification, two (2) stories above the grade plane is allowed and 9,000 square feet per story. Since this is a separated mixed-use, the requirements of this Table shall apply to the respective areas of this building.
 Note: The height of the R-2 area will be increased due to a NFPA 13R sprinkler system (Garage is also sprinkled as building is required to be fully sprinkled).
Section 504.2 - The building height for the R-2 portion of the building shall be increased by 20' and 1 additional story above the grade plane due to the NFPA 13R sprinkler system (4 stories and 70' in height are allowed, also see Section 903.3.1.2).
Section 506.3 - The building area is allowed to be increased due to the sprinkler system, but increases are not necessary.
Section 508.4.1 - The requirements of this section to be utilized for this building to allow each occupancy to be individually classified.
Table 508.4 - The separation between the R-2 and the U occupancies is not required to be fire-rated, but will meet the requirements for 1-HR due to the 5A Construction Type.
 Note: Footnote C references Section 406.1.4 that allows $\frac{5}{8}$ " Type X between the two occupancies with solid core wood or honeycomb steel $1\frac{3}{8}$ " steel doors.
Chapter 6 - Types of Construction
Table 601 - The construction type shall be Type V (A).
Table 602 - The requirements of the Construction Type specify this section as the exterior walls are rated 1-HR.
Chapter 7 - Fire and Smoke Protection Features
Table 705.8 - The fire separation distances vary on this building from 5' to over 20'. The amount of unprotected openings (sprinkled) are as follows:
 5' to 10' (unprotected, sprinkled) = 25%
 10' to 15' (unprotected, sprinkled) = 45%
 15' to 20' (unprotected, sprinkled) = 75%
 over 20' = no limit
 Note: See the elevations for the individual elevation opening calculations.
Section 708.4 - The stair connects 4 stories and is required to be 2-hr. The elevator also connects 4 stories and is required to be 2-hr rated.
Section 708.6 - The exterior walls that are part of the stair enclosures are required to be 1-HR due to the requirements for the construction type.
Section 708.1.4.(4) - An enclosed elevator lobby is not required due to the sprinkler system.
Section 709.3 - 30 minute fire partitions are required between dwelling units (per Exception 2). However, due to the Type 5A construction type, the separations are also bearing walls and will be 1-HR rated.
Section 713 - At this time the extent and amount of penetrations through the horizontal and vertical fire-separation assemblies is unknown. The HVAC, plumbing, and electrical will be design-build. The rated penetration assemblies will be submitted at that time.
Table 715.4 - Doors in the 2-HR shaft/exit enclosures shall be 90-min. rated. Doors in the 1-HR exterior walls are not required to be 45-min rated per this Table, as the openings are allowed to be unprotected per Table 705.8.2 (also see Elevations for calculations of unprotected openings).
Section 717.2 - Fireblocking shall be installed per this section.
Section 717.3.2 - Draftstopping within the floor/ceiling assembly is not needed as the 1-HR separation between Units 1 and 2, and 3 and 4, extends to the floor deck, and Units 5 comprises the entire floor.
Section 717.4.2 - Draftstopping in the attic is not required as the entire 4th floor contains one unit and the area of the attic is less than 3,000 square feet (also see Section 717.4.3).
Chapter 9 - Fire Protection Systems
Figure 903.2 - A sprinkler system is required in all Residential occupancies. A sprinkler system is also required in the parking level for the building to be considered "fully sprinkled".
Section 903.3.1.2 - A 13R sprinkler system can be used in the residential areas of the building per this section.
Section 906.1 - Portable fire extinguishers are required (see Egress plan for locations).
Table 906.3(1) - Extinguishers shall be rated 2-A with a maximum floor area of 3,000 square feet and a maximum travel distance to an extinguisher of 75'.
Section 907.2.9.1 - A manual fire alarm system is required (R-2) as there is a dwelling unit located 3 stories above the lowest level of exit discharge.
Section 907.2.9.2 - Smoke alarms are required.
Section 907.2.11.2 - Smoke detectors shall be installed in each sleeping room, outside of each sleeping room, and at least one on each floor of each dwelling unit.
Section 907.5.2.3.4 - All dwelling units and sleeping rooms shall be provided with the capability to support visible alarm notification appliances.
Chapter 10 - Means of Egress
Table 1004.1.1 - Occupant Load = 1 person per 200 square feet, see Egress plans.
Section 1005.2 - Doors in the egress stairs shall not reduce the egress width to less than half of the required width when open.
Section 1006.1 - The means of egress stairs and exit discharge shall be illuminated as they are not within the dwelling units.
Section 1006.3 - The illumination of the egress per 1006.1, shall have emergency power.
Section 1007.1 - An accessible means of egress is not required as none of the dwelling units are required to be accessible (usually this references Sections 1107.6.2.1.1 and 1107.6.2.1.2, however Maine has deleted Chapter 11 and defers to the Maine Human Rights Act).
Section 1008.1.1 - Doors serving in the means of egress shall have 32" clear width (minimum).
Section 1008.1.4.4 - The entrance doors and entrance doors to the units are allowed to have locking hardware that complies with this section.
Section 1009.1(1) - The exit stairways shall have a clear width of 36".
Section 109.4.2 - Riser height shall be 7" maximum and tread depths shall be 11" minimum.
Section 1011.1 - Exit signs will be provided within the egress stairs (not in the individual units per Exception 3). See Egress Plans for locations.
Section 1014.3 - Maine has deleted this section in lieu of NFPA Table A.7.6.
Section 1015.1 - All units are required to have two exits per the number of stories. The parking level is required to have two exits as the common path of travel (50' per NFPA A7.6) is exceeded. Also see 1021.1 for exits from "stories".
Section 1015.2.(2) - The exits shall be placed a minimum of 1/3 of the diagonal of each space due to the sprinkler system.
Table 1016.1 - The maximum exit travel distance (per this section) shall be 200' for the Residential areas, and 300' for the Parking (Utility) Areas. Note: The increase in distance for a sprinkler is only for a full 13 system. This building will have a 13R system, so the unsprinkled numbers must be used.
Section 1021.1 - The parking level is permitted to have one exit per Table 1021.2, however it is required to have two exits per 1015.1, and the requirements of NFPA. The residential units on the second, third and fourth levels are required to have two exits.
Section 1022.1 - The stair connects 4 stories and is required to be 2-HR rated.
Section 1029.1(1) - Emergency escape and rescue openings are not required due to the automatic sprinkler system (Exception 1).
Chapter 11 - Accessibility
 Note: Maine has deleted this chapter in lieu of the Maine Human Rights Act.



Consultants:

DESIGN DEVELOPMENT

WILLIAMS 5 UNIT RESIDENCE
 24 St Lawrence Street
 Portland, Maine

#	DATE	DESCRIPTION

Date Issued: JUNE 6, 2017
 Project Number: 16015
 Drawing Scale: 1/8" = 1'-0"

LIFE SAFETY / EGRESS PLAN

Drawn By: JAF, CG
 Checked By: MC

LS1.1