CODE SUMMARY

Applicable Codes
- MUBEC - Maine Uniform Building and Energy Code
  2009 International Building Code - IBC (except chapters 11 and 30)
  2009 IECC: International Energy Conservation Code
- NFPA 101 Life Safety

Accessibility Codes
- UFAS Fair Housing Act Section 504

PROJECT SUMMARY:
New construction of (4) four-story buildings on an urban infill site in Portland. 7 townhouse dwelling units. Wood-framed construction. Two-car garage at each. Site amenities include parking and landscaping.

Fully sprinkled with NFPA 13R system.

Square Footages:

Footprint =	BUILDING A - 1,398 SF	
	BUILDING B - 1,325 SF	
	BUILDING C - 1,325 SF	
	BUILDING D - 687 SF	
Total floor area	BUILDING A - 5,075 SF	
	BUILDING B - 4,881 SF	
	BUILDING C - 4,881 SF	
	BUILDING D - 2,517 SF	

Unit Count:
7 Units

CODE SUMMARY :
Chapter 3- Use and Occupancy Classification Mixed Use)

310.1 Residential Group R-3 Townhouses (buildings with no more than (2) dwelling units)

420 Group R-3
420.2 Separation Walls-Walls separating Dwelling Units from Dwelling Units and from other occupancies are Fire Partitions in accordance with Section 709 (1 hour rated).

420.3 Horizontal Separation- Floor Assemblies separating Dwelling Units from Dwelling Units and from other occupancies are Horizontal Assemblies in accordance with Section 712 (1 hour).

Chapter 5- General Building Heights and Areas

Table 503 Allowable Heights and Areas

Residential Group R-3	Type 5A Construction -	3 stories, 50 feet UL sf
	Proposed:	BUILDING A - 4 stories, 5,075 sf
		BUILDING B - 4 stories, 4,881 sf
		BUILDING C - 4 stories, 4,881 sf
		BUILDING D - 4 stories, 2,517 sf

504.2 Automatic Sprinkler System Increase (Building Height)
In buildings equipped with an NFPA 13 automatic sprinkler system, the maximum
building height is increased by 20 feet and the maximum number of stories is increased by one. For Group R buildings equipped with an NFPA 13R automatic sprinkler system the building height may be increased by 20 feet and the maximum number of stories is increased by one (1) but shall not exceed 60 feet or four (4) stories respectively.

Construction Type 5A
Group R-3 (buildings with no more than 2 dwelling units): 4 stories

See also Section 508.2.3 *for Accessory Occupancies*

Chapter 6- Types of Construction
Table 601 - Fire Resistance Ratings for Building Elements

Building Element	Type 5A
Primary Structural Frame	1 hour
Bearing Walls	
Exterior Walls	1 hours
Interior Walls	1 hour
Non-Bearing Walls and Partitions, Exterior	(See Table 602)
Non-Bearing Walls and Partitions, Interior	0 hour
Floor Construction and Secondary Members	1 hour
Roof Construction and Secondary Members	1 hour

Table 602- Fire Resistance Rating Requirements For Exterior Walls Based on Fire Separation Distance (non-loadbearing walls)

Fire Separation Dist.	Construction Type	Group R
x < 5'	All	1 hour
5' ≤ x <10'	Type 5A	1 hour
10' ≤ x < 30'	Type 5A	1 hour
x ≥ 30'	All	0 hour

602.5 Type V Construction
Type V construction is that type of construction in which the structural elements, *exterior walls* and interior walls are of any materials permitted by this code.

Chapter 7- Fire and Smoke Protection Features
704 Fire Rating of Structural Members
704.3 Primary Structural Frame
Supporting more than 2 floors, and required to have a fire resistance rating, or supporting a load bearing wall, shall be provided with individual encasement protection on all sides.
Exception: Individual encasement on all exposed sides provided protection is in accordance with fire resistance rating, as determined in Section 703.

704.4 Secondary Structural Members
If required to be fire resistant rated, secondary members shall be protected by individual encasement when supporting more than 2 floors. Membrane protection is permissible if supporting 2 floors or less.

705 Exterior Walls

705.2.2 Projections from walls of Type V construction shall be of any approved materials.

705.5 Fire Resistance Ratings
Fire Seperation Distance of greater than 10 feet, at exterior walls, shall be rated
for exposure from the inside. Fire separation less than 10' shall be rated for fire exposure from both sides.

705.6 Exterior walls shall have sufficient structural stability to remain in place for duration of the time required by the fire resistance rating.
- Supporting elements must be fire resistance rated
- Band joist, or supporting beam, must be fire rated
- Only the structural element within the floor system that supports the vertical load of the wall must be fire resistance rated construction

Table 705.8 Maximum Area of Wall Openings Based on Fire Separation Distance and Degree of Opening Protection

Fire Separation Dist.	Degree of Opening Protection	Allowable Area
0' to less than 3'	Unprotected, Non-sprinklered	Not Permitted
3' to less than 5'	Unprotected, Non-sprinklered	Not Permitted
5' to less than 10'	Unprotected, Non-sprinklered	10%
10' to less than 15'	Unprotected, Non-sprinklered	15%
15' to less than 20'	Unprotected, Non-sprinklered	25%
20' to less than 25'	Unprotected, Non-sprinklered	45%
25' to less than 30'	Unprotected, Non-sprinklered	70%
30' or greater	Unprotected, Non-sprinklered	No Limit

705.8.5 Vertical Separation of openings
Not Required, Exception no. 2, Automatic Sprinkler System in Accordance with 903.3.1.1 or 903.3.1.2

705.11 Parapets
Not required on exterior walls per Exception No. 5 where the wall is permitted to have at least 25% of the exterior wall areas containing unprotected openings per Table 705.8, and Exception No.5 where the entire building is covered with a class C roof covering, the exterior wall shall be allowed to terminate at the underside of the roof sheathing or deck in Type III, IV, or V construction provided the roof sheathing or deck is constructed of approved fire retardant treated wood for a distance of 4 '.

CODE SUMMARY IECC 2009:

CLIMATE ZONE 6, GROUP RCLIMATE ZONE 6, GROUP R

TABLE 502.1.2(1) BUILDING ENVELOPE REQUIREMENTS - OPAQUE ASSEMBLIES

Roofs: Insulation entirely above deck: R20ci (R30ci provided)

Walls, Above Grade: Wood framed and other: R-13+R-7.5ci (R-15+R10ci provided)

Slab-on-Grade Floors: Unheated slabs: R-15 for 24" below (R-15 provided)

Opaque Doors: U-0.50

TABLE 502.3 BUILDING ENVELOPE REQUIREMENTS: FENESTRATION

Vertical fenestration (40% maximum of above-grade wall)

Framing materials other than metal with or without metal reinforcement or cladding *U*-factor: 0.35

SHGC-all frame types
SHGC: PF<.25 = .40

707 Fire Barriers (shafts, exit and floor opening enclosures)
707.3.1 Shaft enclosures shall comply with Section 708.4 (2 hours)

707.3.6 Incidental Accessory Occupancies Fire barriers separating incidental accessory occupancies shall have a fire resistance rating of not loss than that indicated in Table 508.2.5.

707.5 Fire barriers shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above.

707.5.1 Supporting construction shall be protected to required fire resistance rating of the fire barrier supported (fireblocking is required in cavities if shaft extends through the floor level at every floor level).

708.2 Fire barrier construction not required at piping, conduits, etc. penetrations if protected per Section 712.4

709 Fire Partitions (exit access corridors, dwelling unit separations, etc.)

709.3 Fire Resistance Ratings
Fire partitions shall have a fire resistance rating of not less than 1 hour.
- Walls Separating Dwelling Units (420.2) One hour

709.4 Continuity: Fire partitions shall extend from floor below to underside of floor/roof sheathing above. Supporting structure shall be protected simliarly to wall. Fire blocking is not required if equipped with automatic sprinkler system and sprinklers are installed within combustible floor/ceiling and roof/ceiling spaces.

709.5 Where exterior walls serve as part of the required fire resistance rating separation, walls shall comply with Section 705 Exterior Walls and fire resistance rated requirements shall not apply.

712.3 Horizontal assemblies separating dwelling units shall be a minimum of 1 hour fire resistance rated construction.

713.1.1 Penetrations of fire resistance rated walls by ducts (not protected by dampers): Sleeves through walls, in cavity construction, shall be securely fastened (a fire stop assembly is required between sleeve and pipe/duct).

713.3.2 Membrane penetrations shall be limited to 16 square inches each and an aggregate of 100 square inches/100 sf of wall
- Offset boxes by 24" on opposite sides of wall
- Not required at sprinklers with escutcheon plate

715.4 Fire Door and Shutter Assemblies
Table 715.4

Type of Assembly Assembly	Required Assembly Rating	Min Door Rating (hrs)
Fire Walls	3 hours	3 hours
Fire Barriers (2 Hr)	2 hours	1-1/2 hours
Other Fire Barriers	1 hour	3/4 hour
Fire Partitions		
Corridor walls	1 hour/.5 hour	1/3 hour
Other fire partitions	1 hour	3/4 hour
Exterior Walls	2 hours	1 1/2 hours
Smoke Barriers	1 hour	1/3 hour

717 Concealed Spaces
717.2 In combustible construction fire barriers shall be installed to cut off concealed draft openings and form a barrier between floors. Fireblocklng required at:
- Mineral wool allowed in double stud walls
  - Vertically at floors and ceilings
  - Horizontal spacing not exceeding 10 feet
- Connections between horizontal and vertical spaces (soffits, dropped ceilings, etc.)
- Stairways at top and bottom of run between stringers
- Piping, vents, etc.

717.2.5 Double Stud Walls Batts or blankets of mineral or glass fiber insulation shall be allowed as fire blocking in walls constructed using parallel rows of studs or staggered studs.

717.2.2 Concealed Wall Spaces Fire blocking shall be provided in concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs as follows:
1. Vertically at ceiling and floor levels
2. Horizontally at intervals not exceeding 10'.

706 FIRE WALLS

706.1 General. Eash portion of a building separated by one or more fire walls that comply with the provisions of this section shall be considered a separate building.

706.4 Fire-resistance rating. Fire walls shall have a fire resistance rating of not less than 2 hours.

706.5 Horizontal Continuity (EX. 2) Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding, or other exterior noncombustible finish extends a horizontal distance of at least 4 feet on both sides of the fire wall.

706.5.1 Exterior Walls. Where the fire wall intersects exterior walls, the fire-resistance rating and opening protection of the exterior walls shall comply with one of the following:
1. The exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4-hour protection where opening protection is required by Section 705.8. The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet on each side of the intersection of the fire wall to exterior wall. Exterior wall intersections at firewalls that form an angle equal to or greater than 180 degrees do not need exterior wall protection.

706.6 Vertical Continuity.
(Ex.1) Stepped buildings in accordance with Section 706.6.1

706.6.1 Stepped Buildings.
Exception: Where the fire wall terminates at the underside of roof sheathing, deck or slab of the lower roof, provided:

1. The lower roof assembly within 10 feet of the wall has not less than a 1-hour fire resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour

2. Openings in the lower roof shall not be located within 10 feet of the fire wall.

907.2.9.2 Smoke alarms shall be installed per Section 907.2.11 (within sleeping units)

907.2.11.2 Group R-2: Smoke alarms shall be installed outside each sleeping area and within each room used for sleeping.

907.5.2.3.4 Group R-2: All dwelling and sleeping units shall be capable of supporting visual alarm notification and extended to the unit smoke detectors.

912.2.1 Fire Department Connections: Locations as approved by fire chief so vehicles and hose lines will not interfere with building access (visible location on street side of building).

Chapter 10- Means of Egress

1004 Occupant Load
Table 1004.1 Maximum Floor Area Allowances per Occupant
Residential 200 gross sf

1005 Egress Width

Function of Space	Location	Floor Area	Occupants	Req'd Egress Width (1005.1)
Residential	Each Unit	2,407 sf	/200 = 12	N/A Stair and Door widths determined by code minimums

1008 Doors, Gates and Turnstiles
1008.1.1 Size of Doors- Minimum Clear width = 32", maximum leaf width 48"
Exception no. 1- Minimum and maximum widths do not apply to door openings not part of the required means of egress in Group R-2 or R-3 occupancies.

1008.1.5 Provide a level landing on each side of door, except at exterior locations with 2% slope pitch for drainage.
Exceptions: 1. Doors serving individual dwelling units in Groups R-2 and R-3 where the following apply: 1.1. A door is permitted to open at the top step of an interior flight of stairs, provided the door does not swing over the top step. 1.2. Screen doors and storm doors are permitted to swing over stairs or landings.

1009 Stairways
1009.1 Stairway width- Minimum required width of 44" is provided.
Exception 1. Stairways serving an occupant load of less than 50 shall have a width of not less than 36 inches.

1009.6.3 Enclosures under stairways - The walls and soffits within enclosed usable spaces under enclosed and unenclosed stairways shall be protected by 1-hour fire-resistance-rated construction or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed space shall not be directly from within the stair enclosure.
Exception: Spaces under stairways serving and contained within a single residential dwelling unit in Group R-2 or R-3 shall be permitted to be protected on the enclosed side with 1/2-inch gypsum board.

1009.12 Handrails required on each side of stair.
Exception 2. Stairways within dwelling units are permitted to have a handrail on one side only.

1013.1 Guard (rails) are required at stairs more than 30" above the floor and within 36" horizontally to the edge of the open side.

1013.2 Height - Required guards shall be not less than 42 inches (1067 mm) high, measured vertically above the adjacent walking surfaces, or the line connecting the leading edges of the treads.
Exceptions: 1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards on the open sides of stairs shall have a height not less than 34 inches measured vertically from a line connecting the leading edges of the treads. 2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be less than 34 inches and not more than 38 inches measured vertically from a line connecting the leading edges of the treads.

1015- Exit and Exit Access Doorways
1015.1 Two exits required from any space except as permited by Table 1015.1
Exception: In Group R-2 and R-3 occupancies, ***one means of egress is permitted*** within and from individual dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

1016 Exit Access Travel Distance
Table 1016.1 Exit Access Travel Distance

Occupancy	Max. Distance Sprinklered
R3 -Residential	250'

Chapter 8- Interior Finishes

Table 803.9 Interior Wall and Ceiling Finish Requirements By Occupancy- Sprinklered

Group	Exit Enclosures	Corridors	Rooms and Enclosed Spaces
R-3	Class C	Class C	Class C

Chapter 9- Fire Protection Systems

Table 903.2 Occupancy Related Automatic Sprinkler Requirements

Threshold	Occupant Load	Comment
R-3 Sprinklers required	Any level	-

903.3.1.2 NFPA 13R sprinkler systems. Automatic sprinkler systems in Group R occupancies up to and including four stories in height shall be permitted to be installed throughout in accordance with NFPA 13R.

903.3.2 Quick response or residential automatic sprinklers shall be installed in dwelling units.

903.4 Valve controlling water supply for automatic sprinkler system shall be electronically supervised by a fire alarm control unit.

905 Standpipe Systems
905.3 Required installations. Exception: Standpipe systems are not required in Group R-3 occupancies.

907 Fire Alarm and Detection Systems
907.2 Where Required-New Buildings and Structures
Fire Alarm and detection system not required.

CODE SUMMARY NFPA 101 LIFE SAFETY 2009:

SPRINKLED WITH NFPA 13R

NFPA 6.1.8.1.5
OCCUPANCY - RESIDENTIAL (ONE- AND TWO-FAMILY DWELLING UNIT)

NFPA TABLE A.8.2.1.2
CONSTRUCTION TYPE 5A - V(111)

7.2.2.3.1.2 STAIR MATERIALS SAME AS BUILDING CONSTRUCTION

24.2.1 CHAPTER 7 SHALL NOT APPLY TO MEANS OF ESCAPE
24.2.2.1.2 (2) SECONDARY MEANS OF ESCAPE NOT REQUIRED WHEN DWELLING UNIT IS PROTECTED THROUGHOUT BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH 24.3.5.
24.2.2.2 THE PRIMARY MEANS OF ESCAPE SHALL BE A DOOR, STAIRWAY, OR RAMP PROVIDING A MEANS OF UNOBSTRUCTED TRAVEL TO THE OUTSIDE OF THE DWELLING UNIT AT STREET OR THE FINISHED GROUND LEVEL.

7.2.2.4.4.1 NEW HANDRAILS: NOT < 34 IN. AND NOT > 38 IN.
7.2.2.4.4.5 NEW HANDRAILS PROVIDE MIN. 2-1/4 IN. MIN. CLEARANCE BETWEEN RAIL AND WALL

LICENSED ARCHITECT DAVID LLOYD NO. 936 STATE OF MAINE

Reviewed for Code Compliance Inspections Division Approved as Noted Date: 07/05/17

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CODE SUMMARY

AC0.1