

Complete Code Analysis

for 502 Deering Center at 502 Stevens Ave, Portland ME 04013

Revision #1 11/10/17, Revision #2 12/8/17, Revision #3 12/20/17, Revision #4 1/16/18

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Project Description

502 Deering Center - A new 3-story mixed-use building replaces existing single family residence. 1st floor is commercial, 2nd and 3rd floors each have 3 dwelling units (total 6).

Fire Department Checklist

1. Name, Address, Telephone Number of Applicant

502 Deering Center LLC
55 Hamblet Ave
Portland, ME 04103
207-831-8585

2. Name, Address, Telephone Number of Architect

Denis Lachman
Lachman Architects & Planners
58 Fore St. Bldg 30
Portland, ME 04101
207-831-8585

3. Proposed Uses of Any Structures [NFPA and IBC] & Classification of Occupancy

Separated Occupancy (NFPA6.1.14.2.3, multiple occupancy where the occupancies are separated by fire resistive-rated assemblies)

Floor 1 - Commercial Use

Business (Group B) (NFPA 6.1.10) (IBC 304.1)

Floor 2 & 3 - Residential Use

6 dwelling units, 3 per floor

Apartment Building - 3 or more dwelling units (NFPA 6.1.8.1.5)

Apartment House - Residential (Group R-2) (IBC 310)

4. Square Footage of All Structures [total and per story]

3rd Floor Residential Use	2,505 sf gross
2nd Floor Residential Use	2,639 sf gross
1st Floor Business Use	2,639 sf gross
Total	7,783 sf gross

5. Elevation of All Structures

3rd Floor	21'-7"
2nd Floor	11-8"
1st Floor	0'-0"

6. Proposed Fire Protection of All Structures

The structure is fully sprinkled to NFPA 13. (NFPA 9.7.1.1)

9. Hydrant Locations

Hydrant is directly across Stevens Ave on the north side of Hartley St. It is shown on documents submitted electronically: Existing Conditions Survey C 0.0, Site Plan C 2.0 and Utilities Plan C 5.0.

10. Water Main[S] Size and Location

Water mains are shown on shown on documents submitted electronically: Existing Conditions Survey C 0.0 and on Utilities Plan C 5.0

11. Access to All Structures [min. 2 sides]

Access is available on two sides, but depending on which truck, a third side may be possible.

Access to structure is shown on shown on documents submitted electronically: Site Plan C 2.0.

Separate Plans for (a) Suppression System and (b) Detection System

The suppression system will be designed by the licensed protection professional, and will be submitted by them as part of their permit. Smoke alarms as per Life Safety Plan.

Separate Life Safety Plan

Life Safety Plans showing fire barrier locations, travel distances and rated enclosures are shown on Sheet G1.

Elevators & Lifts

None

Complete Life Safety & Building Code Review

Applicable Codes:

IBC, 2009 Edition; NFPA 101, 2009 Edition

Classification of Occupancy:

Separated Occupancy (NFPA 6.1.14.2.3, multiple occupancy where the occupancies are separated by fire resistive-rated assemblies)

Floor 1 - Commercial Use

Business (Group B) (NFPA 6.1.11) (IBC 304.1)

Floor 2 & 3 - Residential Use

6 dwelling units, 3 per floor

Apartment Building - 3 or more dwelling units (NFPA 6.1.8.1.5)

Apartment House - Residential (Group R-2) (IBC 310)

Construction Type:

Floor, walls, and roof framing are of wood materials and structure is sprinklered to NFPA 13.

Type V(B) Construction (IBC 602.5)

Type V(000) Construction (NFPA 8.2.1.2)

Fire Rating Required of Building Elements: (IBC Table 601), (NFPA 8.2.1.2)

Structural Frame:	0 hours
Bearing Walls [Interior]:	0 hours
Bearing Walls [Exterior]:	0 hours
Non Bearing Walls [Interior]:	0 hours
Floor Construction:	0 hours
Roof:	0 hours

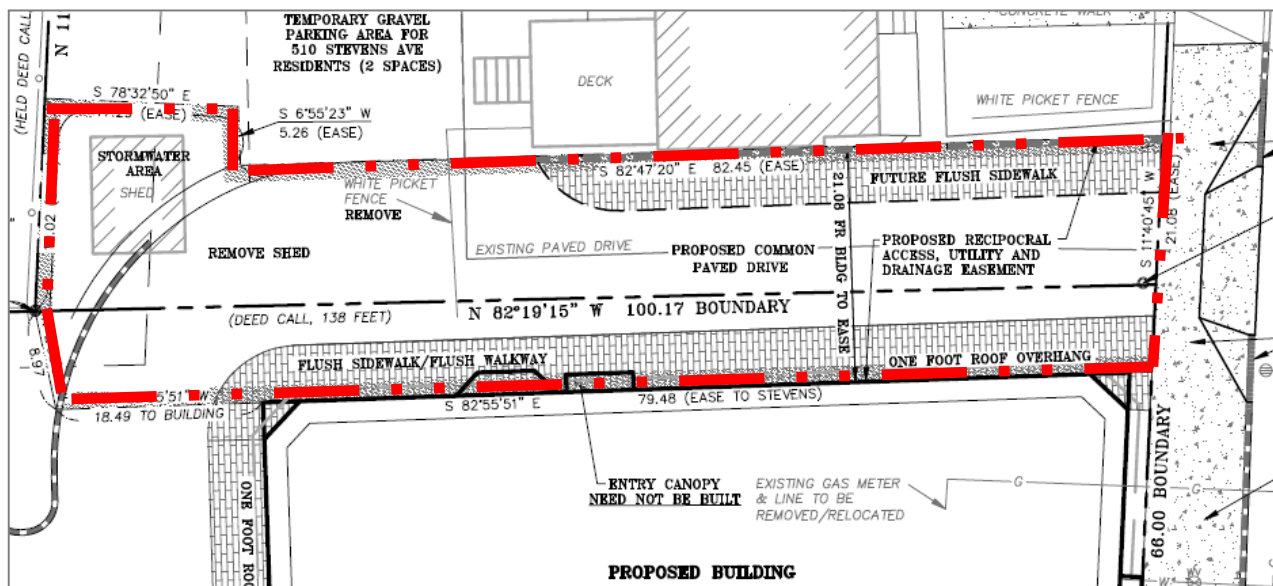
Fire Resistive Rating Required of Exterior Walls and Roof Between 5' to 10' of Property Boundary
(IBC Table 602)

Facade	Distance to Property Boundary	Fire Resistive Rating for Exterior Walls Based on Separation
East Front Wall & Roof	2' to Stevens Ave public ROW	NA
South Side Wall & Roof	10' – 30'	0 hr for Type VB Construction
West Rear Wall & Roof	> 30'	0 hr for all
North Side Wall & Roof	5' – 10'	1 hr for Group B & R Occupancy Fire resistive rating of exterior walls < 10' rated both side of wall (IBC 705.5). See commentary below.

The rating requirement for the North Side Wall & Roof is not applicable because the North property boundary is inside a 21' wide easement area, jointly used by 502 Stevens Ave (this property) and 510 Stevens Ave (abutting property), and permanently dedicated for Access, Utility and Drainage. Because this permanent reciprocal easement provides the only access to the Residential entry and the only access to parking at the rear for both properties, as well as utility and storm drainage, no structure can ever be built within the easement area, and consequently no structure within 10' of the North wall and roof. See the following excerpt from the Level III Site Plan and Subdivision Approval and excerpt from the C3 Subdivision Plan showing the easement.

B. SUBDIVISION. On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the planning board report for the public hearing on March 28, 2017 for application 2016-290 relevant to the subdivision regulations;the plan is in conformance with the subdivision standards of the land use code, subject to the following conditions of approval, which must be met prior to the signing of the plat:

- i. Requiring that the revised recording plat be submitted for review and approval by the Planning Authority, Department of Public Works and Associate Corporation Counsel.
- ii. The applicant shall provide finalized easements for shared site access for review and approval by Planning Authority, Department of Public Works and Associate Corporation Counsel.



	Distance to Property Boundary	Fire Restive Rating Based on Separation
Roof Hatch/Access Doors	26' to closest Property Boundary	>10' so NA. However Access doors shall be permitted in ...roof/ceiling assemblies, provided such doors are tested in accordance with ASTM E119 or UL 263 as horizontal assemblies... (NFPA 712.1.3.2)

Maximum Openings of Exterior Walls Based on Fire Separation Distance (IBC Table 705.8)

North Side, 5' – 10', 1 hr for Group B & R Occupancy, < 25%				
	Wall Area	Opening Area	% Opng to Wall	
3 rd Flr	785 sf	110 sf	14%	< 25% OK
2 nd flr	785 sf	110 sf	14%	< 25% OK
1 st Flr	882 sf	188 sf	21%	< 25% OK

Sprinkled:

To NFPA 13. (NFPA 9.7.1)

Allowable Area: (IBC; Table 503)

Business (B) use of Type V(B) construction has an allowable area of 18,000 sf and a maximum allowable height of 3 stories.

Residential (R-2) use of Type V(B) construction has an allowable area of 12,000 sf and a maximum allowable height of 3 stories.

Total building area = 7,783 sf gross. Building height is 3 stories.

Number of Exits, Arrangement of Means of Egress and Occupant Load (IBC Table 1021.2, Stories With One Exit Allowed (IBC Table 1004.1.1) (NFPA 30.2.4.4)

Single Exit - Buildings up to (3) stories in height allowed a single exit in accordance with IBC Table 1021.2 and NFPA 30.2.4.4. A single exit is permitted where the total number of stories does not exceed 4, and (1) 4 or fewer dwelling units per story, (2) the building is sprinkled, (3) exit stairway does not serve more than 1/2 story below discharge (NA because there is no storey below exit discharge) (4) travel distance from entrance door to exit enclosure does not exceed 35', (5) the exit enclosure is completely separated from rest of building by fire barriers having a minimum 1 hour, (6) all doors 1 hours with self closing, (7) all corridors (NA because no corridors this building, all units exit directly into the exit stair enclosure), (8) horizontal & vertical fire separation between units is minimum 1/2 hour.

Arrangement of Means of Egress: (NFPA 7.5.1.1.3)

Requirements of 7.5.1.1.1 (not less than 2 exits) and 7.5.1.5 (dead end corridors) shall not apply where a single exit is permitted. There are no dead end corridors.

Maximum Travel Distance with (1) means of egress per unit is 50' (IBC 1021.2) Maximum 35' travel from apartment door to an exit. Maximum travel distance within unit 125', from unit door to exit 200' (NFPA 31.2.4.4, Table A31.1). All travel distances within the building comply with the above requirements. See Life Safety Plan for travel distances within the building.

3rd Floor Residential R-2	3 dwelling units– (1) enclosed fire stair is continuous from the point of entry into the exit enclosure to the exit discharge at exterior grade. Maximum travel distance within the units to entering the exit stairway enclosure does not exceed 50 ft. Maximum travel distance from unit door to exit < 200'.	<4 DU + <50' + <200' so OK
	2,644 sf gross / Occupant Load 200 = Occupancy = 14	

2nd Floor Residential R-2	3 dwelling units. – (1) enclosed fire stair is continuous from the point of entry into the exit enclosure to the exit discharge at exterior grade. Maximum travel distance within the units to entering the exit stairway enclosure does not exceed 50 ft. Maximum travel distance from unit door to exit < 200'.	<4 DU + <50' + <200' so OK
	2,644 sf gross / Occupant Load 200 = Occupancy = 14	

Total residential occupant load served by 1 hour rated exit stair discharging directly to exterior at grade = 28 (3rd flr 14 + 2nd flr 14)

1 st Floor Tenant 1A Business B	(1) exit discharges directly to the exterior at grade. Maximum travel distance to exit discharge does not exceed 75 ft.	<75' so OK
1 st Floor Tenant 1B Business B	(1) exit discharges directly to the exterior at grade. Maximum travel distance to exit discharge does not exceed 75 ft.	<75' so OK
1 st Floor Tenant 1C Business B	(1) exit discharges directly to the exterior at grade. Maximum travel distance to exit discharge does not exceed 75 ft.	<75' so OK

Occupant Load IBC: (IBC Table 1004.1.1)

Activity	IBC Function of Space	Area/SF	Load Factor	Occupant Load
Tenant 1A - Bakery				
Furniture Seating (milling around, no fixed, max 9 seats)	Assembly without fixed seats, Unconcentrated (tables & chairs)	120 sf	15	8
Customer Service (self serve, circulation to bathroom etc)	Mercantile, grade floor areas	170 sf	30	6
Front Work/Prep	Kitchens, commercial	230	200	2
Rear Storage (back of house)	Mercantile, storage	100 sf	200	1
Bathroom Shared w 1B (single user, not counted because occupants come from others areas already counted)		44 sf	0	0
Subtotal 1A		664 sf		17

Tenant 1B				
No Tenant Improvement at this time, vacant for now.				

Tenant 1C - Yoga Studio				
Lobby (milling around)	Assembly without fixed seats, Unconcentrated (tables & chairs)	170 sf	7	25
Studio (Yoga)	Exercise Room	630 sf	50	13
Storage (props, cleaning etc)	Accessory storage areas	44 sf	0	0
Bathrooms (single user, not counted because occupants come from others areas already counted)		136 sf	0	0
Subtotal 1C		980 sf		38

Occupant Load NFPA: (NFPA Table 7.3.1.2)

Activity	NFPA Classification	Area/SF	Load Factor	Occupant Load
Tenant 1A - Bakery				
Furniture Seating (milling around, no fixed, max 9 seats)	Mercantile, restaurants < 50 persons. Class C, < 3000sf on one story only (36.1.4.2.1.3)	120 sf	15	8
Customer Service (self serve, circulation to bathroom etc)		170 sf	30	6
Front Work/Prep	Kitchen	230	100	3
Rear Storage (back of house)	Areas of floors not used for sales purposes, such as storage and not open to public shall not be counted (36.1.4.2.2.3)	100 sf	0	0
Bathroom Shared w 1B (single user, not counted because occupants come from others areas already counted)		44 sf	0	0
Subtotal 1A		664 sf		17

Tenant 1B				
No Tenant Improvement at this time, vacant for now.				

Tenant 1C - Yoga Studio				
Lobby (milling around)	Assembly without fixed seats, Unconcentrated (tables & chairs)	170 sf	7	25
Studio (Yoga on mats)	Exercise Room with fixed equipment	630 sf	50	13
Storage (props, cleaning etc)	Accessory storage areas	44 sf	0	0
Bathrooms (single user, not counted because occupants come from others areas already counted)		136 sf	0	0
Subtotal 1C		980 sf		38

Fire Resistive Assemblies

Horizontal & Vertical Fire Separation Between Dwelling Units = 1/2 hour

½ hr IBC (IBC 712.3 Fire-resistive rating, Horizontal assemblies separating dwelling units, 1 hr, Exception ½ hr for dwelling unit separation in VB when sprinkled)

1/2 hr NFPA (30.2.4.4 (8))

Horizontal & Vertical Fire Separation Between Business & Units = 1hr

1 hr IBC (IBC Table 508.4, 508.3.3 B to R Occupancy)

1 hr NFPA (2 hr Business to Apartment reduced by 1 hr when sprinkled, 6.1.14.4(b))

Fire Rating of Exit Corridors – NA. All units exit directly into the exit stair enclosure, so there are no exit corridors.

Fire Rating of Exit Stair Enclosure = 1 hr Completely separated from rest of building by fire barriers having a minimum:

1 hr IBC (IBC 1022.1, 1 hr when connecting less than 4 stories, not less than floor assembly penetrated, leads directly to the exterior)

1 hr NFPA (NFPA 31.2.4.4 (3)).

Exit Stair Doors = 90 min rating with self closing hinges (IBC Table 715.4) (NFPA 31.2.4.4 (6))

Tactile Signage (NFPA 30.2.10)

Tactile Signage is not required because exit signs are not required.

Fire Alarm System (NFPA 30.3.4.1.1)

This building is exempt from a Fire Alarm System because it is an Apartment Building with less than 4 stories and fewer than 11 dwelling units. Nevertheless, a Fire Alarm System is provided.

Emergency Escape & Rescue (IBC 1029.1.1) (NFPA 24.2.2.1.1)

Because the building is equipped with an approved automatic sprinkler system, secondary means of escape from sleeping rooms and living rooms are not required. Nevertheless, secondary means of escape is provided and conforms to IBC 1029.

...sleeping rooms below the 4th story above grade shall have at least one exterior emergency escape and rescue opening.... Exceptions: (1) In other than Group R-3 occupancies, buildings equipped with an approved automatic sprinkler system. (IBC 1029.1.1)

... every sleeping room and every living room shall have not less than one primary means of escape and one secondary means of escape. (NFPA 24.2.2.1.1) A secondary means of escape shall not be required when one of the following conditions is met: (2) The dwelling unit is protected throughout by an approved automatic sprinkler system.. (NFPA 24.2.2.1.2)

Portable Fire Extinguishers:

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Portland, Maine
Lachman Architects & Planners

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This building is equipped with an approved automatic sprinkler system and is therefore exempt from requiring portable fire extinguishers. (NFPA 31.3.5) Nonetheless, (1) portable fire extinguisher is provided in the commercial space at the 1st floor and (1) each floor landing on the 2nd and 3rd floors.

Emergency Lighting: Not Required (NFPA 30.2.9) (IBC 1006.3)

This building is not required to provide emergency lighting along the egress path being less than 4 stories in height and fewer than 12 units. Nevertheless, emergency lighting is provided.

Exit Signs: Not Required (NFPA 31.2.10) (IBC 1011.1)

This building is only required to have one exit, and thus is not required to have exit signs. Nevertheless, exit signs are provided.

Stairs: Dimensional Criteria

Width of Egress Path - exceeds 44" (IBC 1009.1) (NFPA 7.2.2.2.1.2(B))

Headroom along Egress Path - min 80" (IBC 1009.2) (NFPA 7.2.2.3.2.3)

Stair Rise/Run - max 7" rise, 11" run. (IBC 1009.4) (NFPA 7.2.2.2.1.2 (B))

Landings – exceeds min 36" x 36" (IBC 1009.5) (NFPA 7.2.2.3.2.3)

Handrails – 34" to 38" (IBC 1009.12) (NFPA 7.2.2.4.1.1)

Acoustics

(IBC 1207.2 & 3) Walls, partitions, floors between dwelling units or dwelling units and common areas STC not less than 50. Ceilings – resilient channel at underside of joists + 5/8" Type X GWB.

Walls - one (quiet) side = 5/8" Type X GWB; other (noisy) side = resilient channel with (2) 5/8" Type X GWB.

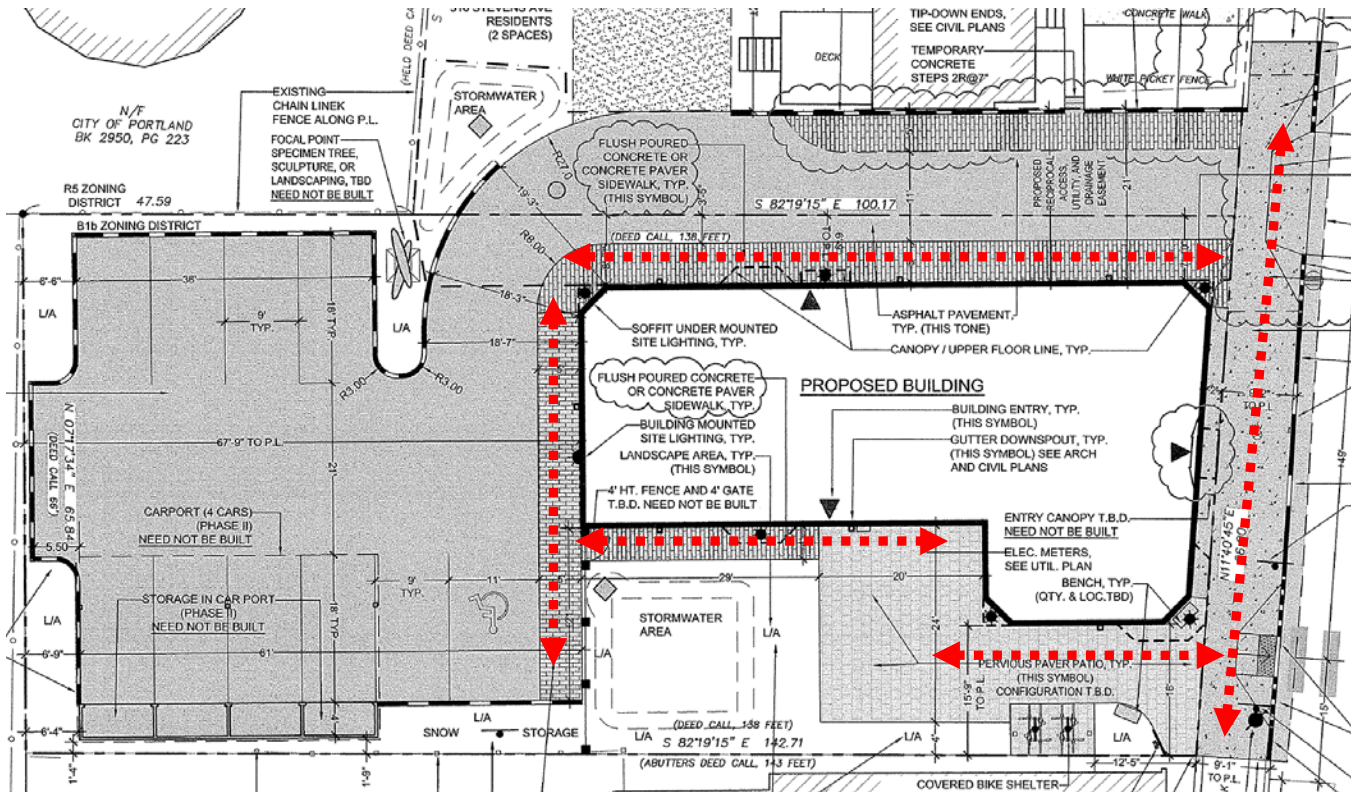
Interior Finishes

Per NFPA 36.3.3 and 38.3.3 interior finishes in residential units are Class A or B: GWB ceilings and walls, hardwood floors in common areas, tile in bathrooms and carpet in bedrooms. Interior floor finishes for Business occupancy shall be Class I or II.

ACCESSIBILITY SUMMARY

Accessible Route

The site is fully accessible. Walkways not exceeding 2% slope connect the sidewalk, parking and all entries into a fully accessible route, shown below. Level changes do not exceed 1/2" (IBC 1104).



Parking & Passenger Loading

There are 10 spaces onsite, including 1 accessible space, which is located closest to building entries and the accessible route. (IBC 1106).

Barrier-Free Permits

Please see attached State Fire Marshal Barrier Free Permit.

1st Floor Exterior & Interior Thresholds

Thresholds at doorways from exterior paving to interior floors, and from interior floor to interior floor, do not exceed ½”.

1st Floor Doors

All doorways exceed minimum 32” clear opening. Hardware must meet 4.13.9. Doors with closers must meet 4.13.10 for position and timing. Opening force must meet 4.13.11.

1st Floor Maneuvering Clearance at Doors. All doors meet clearance requirements.

Exterior Pull Side, Front Approach – 18” min at latch side

Interior Push Side - Front Approach – 12” min at latch side

Exterior Pull Side, Latch Side Approach – 24” min at latch side

1st Floor ADA Bathrooms

Bathrooms on the 1st floor are fully ADA compliant with required clear floor space for water closet, lavatory plus ADA compliant fixtures and grab bars.

Uniform Energy Code Summary (2009 IECC)

Insulation Levels: See Comcheck for complete energy information.

Unheated Slab on Grade – Continuous layer of 2” Extruded Polystyrene (XPS) rigid foam(R-10) under slab with all gaps and joints taped and sealed

Wood Framed Walls Above Grade – 4” of closed cell sprayfoam insulation (R25)

Ceiling/Roof – Rigid insulation above roof sheathing completely overlaps top plates to maintain full R value over wall (R-38, allowed)

Windows - 0.32 U Factor (.35 max allowed)

Doors - 0.45 U Factor (.55 max allowed)

Plumbing Fixture Count & Code Summary

Minimum Plumbing Facilities (UPC Table 4-1)

		WC	Bath Sink	Tub/Shower	Kitch Sink	
3 rd Flr	Residential, 3 units	4	4	4	3	
2 nd Floor	Residential, 3 units	4	4	4	3	
1 st Flr	Business	2	2			
	Total Fixture Count	10	10	8	6	

		WC	Urinals	Lavatories	Fountain
		M 1:1-100 F 1:1-25	M 0:1 - 25	M 1 per 2 WC. F 1 per 2 WC	0:1 -30
1 st Flr Business Tenant 1A	Combined sf = 1165 < 1500 sf. Therefore per 412.3 (3) only (1) toilet facility would be required for each, designed for 1 person at a time, serving customers and employees of both sexes.	1 required 1 provided = OK	0 required 0 provided	1 required 1 provided = OK	0 required 0 provided
1st Flr Tenant 1B (No tenant improvement at this time, vacant for now)					
1 st Flr Business Tenant 1C	Sf = 956 < 1500 sf. Therefore per 412.3 (3) only (1) toilet facility would be required for each, designed for 1 person at a time, serving customers and employees of both sexes.	1 required 2 provided = OK	0 required 0 provided	1 required 2 provided = OK	0 required 0 provided