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Draft

PART 3 BUILDING CODE COMPLIANCE

ALEXANDRA PARK REVITALIZATION – PHASE 1

BLOCK 11 TOWER

TORONTO, ONTARIO

Prepared For

Delnova Developments
4800 Dufferin Street
Entrance B
TORONTO ON M3H 5S9

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TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
1.1 GENERAL.....	1
1.2 CODE	1
1.3 PROJECT DESCRIPTION.....	2
2.0 OCCUPANCY CLASSIFICATION & BUILDING CONSTRUCTION.....	3
2.1 OCCUPANCY CLASSIFICATION	3
2.2 CONSTRUCTION REQUIREMENTS.....	3
2.2.1 <i>Building Area and Building Height</i>	3
2.2.2 <i>Construction Requirements: Group C - Residential</i>	3
2.3 UNDERGROUND PARKING GARAGE	4
3.0 FIRE DEPARTMENT ACCESS.....	5
3.1 GENERAL.....	5
3.2 MAIN ENTRANCE.....	5
3.3 FIRE HYDRANTS	5
3.4 FIRE DEPARTMENT CONNECTIONS	6
4.0 FIRE SEPARATIONS	7
4.1 FIRE-RATINGS	7
4.1.1 <i>General</i>	7
4.1.2 <i>Floor Assemblies</i>	9
4.1.3 <i>Wall Assemblies</i>	9
4.1.4 <i>Supporting Construction</i>	9
4.1.5 <i>Sprinklered Window Assembly</i>	10
4.2 FIRE-PROTECTION RATING OF CLOSURES.....	10
4.2.1 <i>Temperature Rise Labels</i>	10
4.3 HARDWARE REQUIREMENTS	11
5.0 FIRE ALARM & EMERGENCY VOICE COMMUNICATION SYSTEM	12
5.1 GENERAL DESCRIPTION	12
5.2 ACTIVATION DEVICES.....	12
5.3 AUDIBLE / VISUAL DEVICES.....	12
5.4 SMOKE ALARMS.....	13
5.5 EMERGENCY POWER	13
5.6 CENTRAL ALARM AND CONTROL FACILITY & ANNUNCIATOR(S)	14
5.7 FIRE ALARM CONTROL PANEL AND ZONE INDICATION.....	14
5.8 EMERGENCY VOICE COMMUNICATION	15
5.9 SEQUENCE OF OPERATION	15
5.10 SIGNAL SILENCING DEVICES	15
5.11 AUDIBLE DEVICE CIRCUITS	16
5.12 CARBON MONOXIDE DETECTORS	16
5.13 RISER LOCATION.....	17
5.14 ELEVATOR RECALL	18

TABLE OF CONTENTS (CONT'D)

	PAGE
5.14.1 <i>General</i>	18
5.14.2 <i>Elevator Recall Sequence</i>	18
5.14.3 <i>Fire Detection for Elevator Recall</i>	19
6.0 FIRE SUPPRESSION SYSTEMS	20
6.1 SPRINKLER SYSTEM	20
6.1.1 <i>Sprinklered Window Assemblies</i>	20
6.2 STANDPIPE SYSTEM.....	21
6.3 FIRE PUMP.....	22
6.4 PORTABLE FIRE EXTINGUISHERS	22
7.0 EXITS	23
7.1 GENERAL.....	23
7.2 EXTERIOR EXIT / EGRESS DISCHARGE PATHWAYS	23
7.3 MECHANICAL PENTHOUSE (ELEVATOR MACHINE ROOM) EGRESS	24
7.4 DISTANCE BETWEEN EXITS	24
7.5 TRAVEL DISTANCE.....	24
7.6 STAIR IDENTIFICATION	25
7.7 EXIT SIGNS.....	25
7.8 DEAD-END CORRIDORS.....	25
7.8.1 <i>General</i>	25
7.8.2 <i>9th Floor South End Corridor</i>	26
7.9 INTEGRITY OF EXITS	26
7.10 EXIT STAIR WIDTH.....	27
7.11 EXIT DOORWAY WIDTH.....	27
7.12 CROSS-OVER FLOORS.....	27
7.13 PANIC HARDWARE	27
7.14 OCCUPANT LOAD AND EXIT CAPACITY.....	28
7.15 EGRESS FROM A ROOM.....	28
7.16 EXIT / EGRESS DOOR SWING	28
8.0 LIGHTING & EMERGENCY POWER	29
8.1 LIGHTING	29
8.1.1 <i>Normal Lighting</i>	29
8.1.2 <i>Emergency Lighting</i>	29
8.2 EMERGENCY POWER	30
9.0 ADDITIONAL MEASURES FOR HIGH BUILDINGS	31
9.1 GENERAL.....	31
9.2 LIMITS TO SMOKE MOVEMENT	31
9.2.1 <i>General</i>	31
9.2.2 <i>Exit Stairs</i>	31
9.2.2.1 <i>Below-Grade Exit Stairs</i>	31
9.2.2.2 <i>Above-Grade Exit Stairs</i>	32

TABLE OF CONTENTS (CONDT'D)

	PAGE
9.2.3 Elevator Shafts	32
9.2.4 Vertical Service Spaces.....	32
9.2.5 Air Handling Systems.....	32
9.2.6 Central Alarm and Control Facility.....	33
9.3 SMOKE VENTING.....	33
9.4 ELEVATOR FOR USE BY FIREFIGHTERS.....	33
10.0 BARRIER-FREE ACCESS	35
10.1 GENERAL.....	35
10.2 ENTRANCE	36
10.3 WIDTH.....	36
10.4 WASHROOMS	36
10.5 ELEVATORS.....	36
10.6 DOORS.....	37
10.7 PROTECTION OF FLOOR AREAS HAVING A BARRIER-FREE PATH OF TRAVEL	38
11.0 SPATIAL SEPARATION	39
11.1 GENERAL.....	39
11.2 EXIT EXPOSURE	40
11.3 D _o EXPOSURE	40
12.0 INTERIOR FINISH.....	41
12.1 FLAME SPREAD RATINGS & SMOKE DEVELOPED CLASSIFICATIONS.....	41
12.2 COMBUSTIBLE FINISH.....	42
13.0 OTHER OBC DESIGN ISSUES.....	43
13.1 NATURAL LIGHTING.....	43
13.2 RESIDENTIAL ROOM AREAS.....	43
13.4 COOKING EQUIPMENT	45
13.5 GUARD HEIGHTS AT BALCONIES / TERRACES	45
13.6 WASHROOMS	45
14.0 FIRE SAFETY PLAN	46
15.0 SUMMARY.....	47

TABLE OF CONTENTS (CONT'D)

	PAGE
ATTACHMENT A	48
SITE PLAN	48
ATTACHMENT B	49
AMENITY AREA OCCUPANT LOAD CALCULATIONS	49
RESERVED	49
ATTACHMENT C	50
EXIT CAPACITY CALCULATIONS	50
ATTACHMENT D	51
SPATIAL SEPARATION CALCULATION.....	51

1.0 INTRODUCTION

1.1 General

This report addresses the Building Code concepts and the provision of the life safety systems for the proposed Block 11 tower of the Alexandra Park Revitalization (Phase 1) project to be located in Toronto, Ontario. The following items will be discussed:

- construction requirements,
- fire-resistance ratings,
- travel distance,
- spatial separation,
- fire department access,
- standpipe system,
- sprinkler protection,
- fire alarm system,
- siamese connections,
- fire hydrants,
- exits,
- emergency lighting,
- barrier-free accessibility,
- high-rise measures, and
- smoke control.

It is intended that this Part 3 Building Code Compliance Report will be submitted to the Toronto Building Department prior to or in conjunction with the submission of the drawings for building permit review.

1.2 Code

This report was prepared with respect to the life safety and fire protection requirements in Part 3 of the 2012 Ontario Building Code (OBC, O.Reg. 332/12 as amended to O.Reg. 151/13). Unless otherwise identified, all references in this report are with respect to Division B of the 2012 OBC. We understand that the complete building permit application is intended for Summer 2014.

This report addresses the overall general approach to Building Code compliance but does not summarize all applicable Code requirements.

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1.3 Project Description

This project consists of a 14 storey residential condominium tower with 2 levels of underground parking for use by the building's residents and their guests.

The Ground Floor of the proposed residential condominium tower consists of the main lobby area, two amenity spaces, bicycle storage room, loading area with moving room and garbage room, and townhouse style two storey residential suites with private terraces. An outdoor amenity terrace is also located along the West building face.

The 2nd through 14th Floor Levels contain residential suites served by public corridors, with residential storage locker rooms on the 2nd through 4th Floor Levels (at the North end). An outdoor amenity terrace is located at the South end of 9th Floor Level.

An elevator machine room is located above the 14th Floor Level.

The building will have a building area of approximately 1,896 m², **TEEPLE ARCHITECTS (TA) TO CONFIRM FINAL BUILDING AREA** and will face Cameron Street to the East.

The municipal address for the building is _____Cameron Street. **TA/DELTERA TO CONFIRM MUNICIPAL ADDRESS FOR THE BUILDING.**

A site plan is included as Attachment A.

2.0 OCCUPANCY CLASSIFICATION & BUILDING CONSTRUCTION

2.1 Occupancy Classification

This project will consist of residential condominium units (Group C residential major occupancy) on the Ground through 14th Floor Levels.

Amenity uses will be located on the Ground Floor and 9th Floor (outdoor amenity terrace only). These will be considered to be subsidiary assembly occupancies as they are for use by the residents and their guests.

The 2 levels of underground parking garage will be considered as a Group F, Division 3 low hazard industrial subsidiary occupancy as they will be used by the building's residents and their guests.

2.2 Construction Requirements

2.2.1 Building Area and Building Height

The building will have a "building area" of approximately 1,896 m² **(TEEPLE ARCHITECTS (TA) TO CONFIRM FINAL BUILDING AREA)** and a "building height" of 14 storeys.

The mechanical penthouse level (used only as an elevator machine room) is not considered a storey for the purposes of calculating "building height" (3.2.1.1.(1)).

2.2.2 Construction Requirements: Group C - Residential

Article 3.2.2.42 of the OBC requires residential buildings of any height and any area to be constructed as follows:

- automatic sprinkler protection,
- noncombustible construction,
- 2 h floor assemblies (fire separation) ⁽¹⁾,
- 1 h mezzanines (fire-resistance ratings), and
- load-bearing elements provided with the same fire-resistance rating as the supported assembly.

2.2.2 Construction Requirements: Group C – Residential (Cont'd)

These requirements will be applied to the entire residential building.

Note (1): 2 h fire separation is required for occupied roofs and terraces (e.g. 9th Floor outdoor amenity terrace – 3.2.2.13).

2.3 Underground Parking Garage

The floors of the basement parking garage will be a 2 h fire separation and will be sprinklered (3.2.2.15.(2)).

Vehicular ramps that penetrate horizontal fire separations are not required to be protected with closures (3.2.8.2.(2)).

3.0 FIRE DEPARTMENT ACCESS

3.1 General

Fire department access is provided to the site via Cameron Street to the East. A private driveway (also accessed off Cameron Street) provides access to the loading dock and vehicular ramp serving the underground parking garage, and is situated along the North building face (this driveway does not form part of fire access to the site).

The municipal address for the building is _____ Cameron Street. **TA/DELTERA TO CONFIRM MUNICIPAL ADDRESS FOR THE BUILDING AS SEVERAL ADDRESSES ARE LISTED ON DRAWING A000.**

The building will be located so the principal entrance is located not less than 3 m and not more than 15 m from the closest portion of Cameron Street measured horizontally from the face of the building (3.2.5.5.(1)).

Since the building is sprinklered, access openings for firefighting are not required.

3.2 Main Entrance

The main entrance to the residential condominium is on the East building face within 3 to 15 m of Cameron Street.

3.3 Fire Hydrants

Fire hydrants are to be located within 90 m of every building face required to face a street and within 45 m of the building's fire department connections (3.2.5.7.(2) and 3.2.5.16).

3.4 Fire Department Connections

Fire department connections for sprinkler and standpipe systems are required to be located within 45 m of a fire hydrant in accordance with Article 3.2.5.16. Fire department connections are not permitted to be obstructed.

Fire department connections are required to be located adjacent to a fire department access route or street, mounted not less than 300 mm and not more than 900 mm above ground level. Fire department connections are required to be provided with two 65 mm hose connections with female swivel hose couplings (3.2.5.16.(3)).

The fire department connections are required to be identified at the exterior of the building to indicate which fire department connection serves which system (i.e., sprinkler system, standpipe system).

The location of the fire department connection(s) are illustrated in Attachment A.

4.0 FIRE SEPARATIONS

4.1 Fire-Ratings

4.1.1 General

The following are the required fire-resistance ratings for the fire separations within the building. Where two adjacent spaces require fire separations of different fire-resistance ratings, the fire separation between them is required to be not less than the greater of the two required fire-resistance ratings.

DESCRIPTION OF FIRE SEPARATIONS	FIRE-RESISTANCE RATING	OBC REFERENCE
Exit Stairs	2 h	3.4.4.1.(1)
Firefighters Elevator Shaft	2 h	3.2.6, 3.2.7.9 & 3.5.3.1.(1)
Electrical Closet containing equipment required to be in a service room by the Ontario Electrical Code	1 h ⁽¹⁾	3.6.2.1.(6)
Electrical Closet containing emergency life safety circuits / equipment	2 h	3.2.7.8.(3) & 3.2.7.9
Vertical Service Spaces	1 h ⁽¹⁾	3.6.3.1.(1)
Janitor's Room	0 h	3.3.1.20.(3)
Electrical Equipment Vault (within P2 Level)	2 h	3.6.2.7.(1)
Suite-to-Suite Fire Separation, including Suite to Corridor Fire Separation (Group C Single and Two Storey Suites)	1 h	3.3.4.2.(1)
Storage / Locker Rooms for Residents	1 h	3.3.4.3.(2)
Fire Pump Room	2 h	3.2.6 & NFPA 20
Type G Loading Area (Ground Floor Level)	1.5 h	3.2.3.18.(1)

4.1.1 General (Cont'd)

DESCRIPTION OF FIRE SEPARATIONS	FIRE-RESISTANCE RATING	OBC REFERENCE
Residential Public Corridor (2 nd through 14 th Floor Levels)	1 h ⁽²⁾	3.3.1.4.(1), 3.3.4.2.(1), 3.2.6.5.(3)(c) & 3.1.8.17.(1)(a)
Ground Floor Residential Public Corridor	N/R ⁽³⁾	3.3.1.4.(4)(a), 3.4.2.4.(2) & 3.4.2.5.(1)(c)
Floor Separations (Group C)	2 h	3.2.2.42
Parking Garage to any Other Occupancy	1.5 h	3.3.5.6.(1)
Garbage Chute Intake Room	1 h	3.6.3.3.(5), 3.3.1.4.(1) & 3.3.4.2.(1)
Garbage Chute Discharge Room	2 h	3.6.3.3.(9)
Garbage Chute Shaft	2 h ⁽⁴⁾	3.6.3.3.(2)
Central Alarm and Control Facility	2 h	3.2.6.7, & 3.2.7.8
Emergency Generator Room	2 h	3.2.7.8.(3)
Service Rooms - containing emergency life safety circuits / equipment	2 h	3.2.7.8
Service Rooms - With Fuel Fired Equipment	1 h	3.6.2.1.(1)
Below-Grade Elevator Lobbies (Measure A)	2 h ⁽⁵⁾	SB-4, Measure A (5)

4.1.1 General (Cont'd)

Notes:

- (1) 2 h if housing emergency life safety circuits / equipment.
- (2) for firefighters' elevator protection and to waive temperature-rise labels on exit stair doors (3.2.6.5.(3)(c) and 3.1.8.17.(1)).
- (3) fire separations not required since the maximum permitted 45 m travel distance is achieved to at least one exit door from all points of the floor area (3.3.1.4.(4)(a) and 3.4.2.4.(2)).
- (4) without closure at chute outlet into Discharge Room (1 h otherwise).
- (5) below-grade elevator lobbies to also be designed as carbon monoxide airlocks in accordance with OBC Sentence 3.3.5.7.(3), for compliance with OBC Sentence 3.3.5.4.(1).

4.1.2 Floor Assemblies

The 2 h fire-rating required for floor assemblies identified in Section 4.1 of this report can be achieved by constructing the concrete floor assembly in accordance with Section 2.2 of Supplementary Standard SB-2, "Fire Performance Ratings" to the 2012 Ontario Building Code (SB-2).

Service penetrations (plumbing pipes, ductwork, electrical cables, etc.) through the floor assemblies that are required to be fire separated are to be protected by a ULC listed firestop system.

4.1.3 Wall Assemblies

The 1 h and 2 h fire-ratings required for wall assemblies identified in Section 4.1 of this report can be achieved by constructing the wall assemblies in accordance with listed wall assemblies or materials as permitted by SB-2 to the 2012 OBC.

Penetrations through wall assemblies are required to be protected by a listed firestop system.

4.1.4 Supporting Construction

Loadbearing walls, columns and arches that are supporting floor assemblies are required to be provided with a 2 h fire-resistance rating using listed assemblies or materials as permitted by SB-2 to the 2006 OBC. The 2 h fire-resistance rating is not required to be applied to construction elements that are supporting only roofs that do not support an occupancy (3.2.2.42, 3.2.2.13).

4.1.5 Sprinklered Window Assembly

Glazing that is within a fire separation or exterior walls required to have a fire-resistance rating **(E.G. GLAZING TO BELOW-GRADE ELEVATOR LOBBIES AND SOUTH FACING FIRE COMPARTMENTS DIRECTLY ADJACENT TO THE PROPERTY LINE)** will be protected by a sprinkler protected glazed wall assembly constructed in accordance with ULC/ORD C263.1, "Sprinkler-Protected Window Systems" to maintain the required 2 h floor-to-floor fire separation (3.1.8.18). **TA / NOVATREND / DELTERA TO CONFIRM AND IDENTIFY THE LOCATIONS OF THE SPRINKLERED WINDOW ASSEMBLIES ON THE DRAWINGS BASED ON THE COMMENTS IN OUR MARCH 19, 2013 DRAWING REVIEW MEMO.**

4.2 Fire-Protection Rating of Closures

The following are the required fire-protection ratings for the doors and closures within the fire separations (3.1.8.4.(2)).

FIRE SEPARATION	FIRE-PROTECTION RATING
2 h	1.5 h
1.5 h	1 h
1 h	45 min*

* Note: Doors to residential suites from 1 h public corridors are permitted to have a 20 min fire-protection rating (3.1.8.10.(1)(a)(i)).

4.2.1 Temperature Rise Labels

Temperature-rise labels indicating a maximum temperature-rise of 250 C after 1 h are required to be provided for the doors to all exit stairs from the P1 and P2 underground parking garage levels (3.1.8.15.(1) and Table 3.1.8.15).

Temperature-rise labels are waived for the exit stair doors on the typical residential floors (i.e. 2nd through 14th Floor Levels) as the residential public corridors achieve a 1 h fire-resistance rating, contain no occupancy, and do not contain wired glass or glass block within 3 m of the exit stair doors (3.1.8.17.(1)). However, a temperature-rise label conforming to OBC Table 3.1.8.15 is required to be provided on the door to the South exit stair from the 9th Floor Level (off the outdoor amenity terrace).

As the stair from the mechanical penthouse (elevator machine room) is an egress stair, temperature-rise is not required to be provided on the door leading into this stair (3.1.8.15.(1)).

4.3 Hardware Requirements

All doors in fire separations are required to have a self-closing device and a positive latch (3.1.8.11.(1), 3.1.8.13).

Where door viewers are provided in suite entry doors, they are required to be listed.

Section 7.13 of this report identifies panic hardware requirements within this building.

5.0 FIRE ALARM & EMERGENCY VOICE COMMUNICATION SYSTEM

5.1 General Description

A single-stage fire alarm system will be provided throughout the building in conformance with OBC Subsection 3.2.4.

The fire alarm system will be monitored in accordance with the requirements of CAN/ULC-S561 by a ULC-S561 listed central station.

5.2 Activation Devices

Devices for the fire alarm system will include:

- manual pull stations at exits,
- sprinkler flow and tamper switches,
- sprinkler and standpipe valve supervisory devices,
- smoke detectors in exit stair shafts,
- smoke detectors in public corridors,
- smoke detectors at the top of elevator shafts,
- heat detectors in elevator pits,
- duct smoke detectors in recirculating air handling systems serving more than one storey, and
- duct smoke detectors in pressurization fan ductwork (i.e. below-grade stair pressurization).

5.3 Audible / Visual Devices

The fire alarm audible devices for the building are required to provide a sound pressure level of not less than 75 dBA within the sleeping rooms with all intervening doors closed (3.2.4.20.(5)).

The fire alarm audible signal devices in the remainder of the dwelling unit, the garage and the Group A, Division 2 amenity occupancies shall not be less than 10 dBA above the ambient noise level with a minimum value of not less than 65 dBA (3.2.4.20.(6)).

5.3 Audible / Visual Devices (Cont'd)

Fire alarm visual signal devices are required to be installed within amenity areas where the ambient noise level may exceed 100 dBA, and any service rooms / service spaces where the ambient noise level may exceed 87 dBA (3.2.4.20.(7) and (8)).

Visual signal devices are also required to be installed in any public corridor which serves a Group A (amenity) occupancy (3.2.4.19.(4)(b)).

5.4 Smoke Alarms

120 V smoke alarms are required to be provided in each residential suite between the sleeping room and the remainder of the residential suite as well as within each sleeping room of the residential suite in accordance with Article 3.2.4.22 of the OBC. All smoke alarms within the suite shall activate upon actuation of any one smoke alarm.

Smoke alarms are required to be installed in accordance with CAN / ULC-S553, "Installation of Smoke Alarms" (3.2.4.22.(9))

5.5 Emergency Power

The fire alarm system will be connected to an emergency power supply (i.e., generator and batteries) for the building to operate for a minimum period of 2 h after operating under supervisory conditions for 24 hours (3.2.7.8.(3)(b)(i)).

5.6 Central Alarm and Control Facility & Annunciator(s)

The main fire alarm control panel will be located within the central alarm and control facility (CACF) on the Ground Floor level accessed from the main residential lobby / reception area from Cameron Street. The CACF is required to contain the following controls as outlined in OBC Sentence 3.2.6.7.(2):

- means to indicate audibly and visually alert and alarm signals,
- means to indicate visually that elevators are on emergency recall,
- means to transmit alert signal to the fire department,
- means to release hold-open devices
- means to manually actuate alarm signals,
- means to silence alarm signals,
- means to communicate with every elevator car,
- means to indicate visually individual sprinkler system waterflow signals, and
- a switch to silence the audible portion of a supervisory signal or a trouble signal.

5.6 Central Alarm and Control Facility & Annunciator(s) (Cont'd)

A remote fire alarm annunciator is required to be installed in the East main entrance vestibule accessed from Cameron Street (fire access route). **TA/NOVATREND/TRIDEL/RBA TO DISCUSS VISIBILITY OF CACF ROOM FROM ENTRANCE VESTIBULE TO AVOID FA ANNUNCIATOR.**

5.7 Fire Alarm Control Panel and Zone Indication

The fire alarm control panel is required to have separate zone indication of the actuation of the alarm initiating devices in each (3.2.4.9.(2)):

- floor area where the area of coverage for each zone is not more than 1 storey or not more than the system area limits as specified in NFPA 13, "Installation of Sprinkler Systems" (2007 edition),
- shaft required to be equipped with smoke detectors,
- air handling system required to be equipped with smoke detectors, and
- fire compartment required to be separated by vertical fire separations having a fire-resistance rating of not less than 2 h, other than dwelling units.

5.8 Emergency Voice Communication

The fire alarm system will be equipped with an emergency voice communication feature consisting of two-way firefighter handsets and one-way selective and all-call zone paging (since the building is 41.7 m in height measured from the Ground Floor Level to the floor level of the highest residential storey). Control of this system will be provided at the central alarm and control facility in accordance with Article 3.2.4.23. As well, fire alarm system speakers operated from the CACF will be designed and located so that the audible signals and messages transmitted over the communication system are clearly heard throughout the building.

5.9 Sequence of Operation

It is proposed that a single stage fire alarm system will be provided for the building. A detailed sequence of operation is the responsibility of the electrical engineer designing the fire alarm system.

5.10 Signal Silencing Devices

Each residential suite will be provided with a switch to silence the audible devices within that suite for a maximum period of 10 minutes (3.2.4.20.(9)). The device is required to reactivate if a subsequent alarm is initiated in the building.

OR

Audible devices located within suites are wired on separate signal circuits than audible devices serving the public corridors. As such, the fire alarm system will be provided with an automatic dwelling unit signal silence feature. This feature will silence the audible devices within dwelling units outside of the zone of alarm initiation only (corridor devices to remain sounding) after a minimum of 60 seconds of operation.

(TRIDEL/NOVATREND TO CONFIRM WIRING METHODOLOGY)

Subsequent alarms elsewhere in the building will reactivate silenced devices. The devices will also reactivate if the alarm is not acknowledged after a period of ten minutes. The voice communication system is required to override the silenced devices to permit voice messages to be transmitted to silenced dwelling units.

5.11 Audible Device Circuits

In-suite fire alarm audible devices within the building are required to be connected to the fire alarm system in a manner such that an open circuit at one device (i.e., disconnection or damage) will not interfere with the ability of other devices in other dwelling units, public corridors or suites to sound an alarm (3.2.4.20.(10)). These fire alarm audible devices are permitted to be connected to the fire alarm system via Class A wiring, or via Class B wiring with signal circuit isolators located outside of the suites (A-3.2.4.20.(10)).

Alternatively, the in-suite devices may be connected to the fire alarm system on separate signal circuits that are not connected to the devices in any other dwelling unit, public corridor, or suites of residential occupancy.

Audible signal devices are also required to be wired on separate circuits on each floor area. Audible signal devices serving dwelling units or suites of residential occupancy are required to be wired on a separate circuit from those devices not within suites of residential occupancy or dwelling units (3.2.4.20.(11)).

5.12 Carbon Monoxide Detectors

Carbon monoxide detectors are required within the following areas in conformance with OBC Subsection 6.2.12:

- service rooms that contain a fuel burning appliance,
- adjacent to each sleeping area within residential occupancies that contain fuel burning appliances or are located adjacent to service rooms that contain fuel burning appliances, and
- adjacent to each sleeping area within residential occupancies that are located adjacent to storage garages (i.e. parking garages).

The Ministry of Municipal Affairs and Housing confirmed that the meaning of the word “adjacent” includes all residential suites located horizontally, above and below service rooms which contain fuel burning appliances and storage garages.

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5.13 Riser Location

The fire alarm system riser circuits and fire alarm system circuits connecting fire alarm system transponders and annunciator(s) to central processing units located in different fire compartments or to another transponder are required to be protected against fire exposure for a period of 2 h.

This protection can be achieved by using 2 h rated cables / conductors including a hose stream test or by locating the conductors in a service space that contains no other combustible materials that is separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h (3.2.7.10.(6)). TRIDEL/**NOVATREND TO CONFIRM.**

Fire alarm system branch circuits within a storey that connect transponders to individual devices need not be protected against fire exposure.

Electrical power conductors serving the fire alarm system are also required to be protected against fire exposure for a period of 2 h. This fire rating is required for cables extending from the source of emergency power to the equipment served or the distribution equipment supplying power to the equipment served if both are in the same room. This protection can be achieved by using 2 h fire rated cable or located the conductors in a service space that contains no other combustible materials that is separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h. TRIDEL/**NOVATREND TO CONFIRM.**

5.14 Elevator Recall

5.14.1 General

Elevator recall is to comply with the requirements of the 2006 Ontario Building Code, CSA-B44-07, "Safety Code for Elevators and Escalators" and the revisions in the Technical Standards & Safety Authority (TSSA) "Elevating Devices Code Adoption Document – Amendment Rev. No. 3", dated March 2, 2009.

Above and beyond the requirements of the Ontario Building Code, the CSA-B44-07 Standard requires that all elevators be provided with Phase 1 Emergency Recall Operation, except where the elevator hoistway or portion thereof is not required to be fire rated construction, the rise of the elevator does not exceed 2.0 m, and the hoistway does not penetrate a floor.

Phase 1 Emergency Recall Operation is required by the CSA-B44-07 Standard regardless of the requirements of the Ontario Building Code to provide a fire alarm system within the building.

As such, Primary and Alternate Floor Recall will be provided for the elevators. The Primary Floor Recall Level is to be the Ground Floor, as it is the level of fire department response. The Alternate Floor Recall Level is to be the 2nd Floor. TRIDEL/**ELEVATOR CONSULTANT TO CONFIRM.**

5.14.2 Elevator Recall Sequence

Initiation of the fire alarm on any floor area, other than the Primary Recall Level, will cause the elevators to recall to the Primary Recall Level. Activation of a fire alarm on the Primary Recall Level will cause the elevators to recall to the Alternate Recall Level, unless elevator recall is already initiated.

For fire alarms originating at the top of the elevator shaft, or at the bottom of the elevator shaft, the elevators will recall to the Recall Floor Level furthest away from the source of the alarm. To achieve these recall requirements, elevator control relays are to be provided.

Separate recall signals are provided for fire alarms originating in the elevator control room, elevator machine room, elevator control space, at the top of the elevator shaft, or at the bottom of the elevator shaft to provide separate signals to the elevator controller for initiation of the flashing in-car recall signal.

5.14.3 Fire Detection for Elevator Recall

Automatic fire detectors (smoke detectors or heat detectors) are to be provided to initiate a signal to the elevator controller to initiate the Phase 1 Emergency Recall Operation. These fire detectors are to be installed in the following locations:

- at each floor served by the elevator, and
- in the associated elevator machine room, control space, or control room.

Fire detectors are to be installed in accordance with the requirements of the Ontario Building Code. As the building is fully sprinklered, with an electrically supervised sprinkler system, no additional fire detectors are required except for the fire detectors located in the elevator machine room, elevator control space, or elevator control room.

As noted in Section 2.27.3.2.2.(c) of the TSSA Code Adoption Document fire alarm system manual stations are not permitted to be used to initiate Phase 1 Emergency Recall Operation. Activation of elevator recall is to be by automatic fire detection only.

For fire detection (smoke detectors and/or heat detectors) installed for elevator recall in an elevator control room, elevator control space, or elevator machine room, the automatic fire detectors are not be installed on the same circuit as manual stations, unless the fire alarm system can differentiate between fire detectors and manual stations (i.e., addressable field devices).

For detailed information on the elevator requirements for this project, guidance is to be sought from the project elevator consultant and/or elevator contractor.

6.0 FIRE SUPPRESSION SYSTEMS

6.1 Sprinkler System

The building will be protected by an electrically supervised automatic sprinkler system monitored by the building's fire alarm system in accordance with NFPA 13 (2007 Edition).

Identification signs are required to be provided at each sprinkler valve, including the window sprinklers, to indicate the valves' function and which area it serves (NFPA 13, 8.16.1.1.8).

Regarding the sprinklers within the storage locker rooms, a means to maintain a clearance of at least 18 inches between storage and the sprinkler deflectors will be provided by using a metal cage-type ceiling (NFPA 13, 8.5.6.1).

Sprinklers are required to be provided at the top and at alternate floor levels in the garbage chute (3.6.3.3.(6)).

6.1.1 Sprinklered Window Assemblies

Sprinklered window assemblies that are proposed within this building **(E.G. GLAZING TO BELOW-GRADE ELEVATOR LOBBIES AND SOUTH FACING FIRE COMPARTMENTS DIRECTLY ADJACENT TO THE PROPERTY LINE - FINAL LOCATIONS TO BE REVIEWED AND CONFIRMED AND IDENTIFIED ON THE DRAWINGS)** are required to be designed and installed in conformance with ULC/ORD C263.1 (3.1.8.18.(1)). The ULC/ORD C263.1 sprinkler protected glazed wall assembly requires the following:

- non-operable tempered or heat-resistant glass in metal frames limited to a maximum height of 3 960 mm and a minimum thickness of 6 mm,
- horizontal mullions are not permitted,
- Model WS horizontal sidewall or pendant vertical sidewall sprinklers with deflectors oriented to ensure that the entire window surface is sprayed with water. The temperature rating for the sprinklers are to be either 68°C (155°F) or 93°C (200°F), and
- the horizontal sidewall, if installed, is to be located within 12.5 mm to 100 mm away from the glass and 25 mm to 50 mm down from the lintel, or
- the vertical sidewall, if installed, is to be located within 100 mm to 300 mm away from the glass and 50 mm to 100 mm down from the lintel.

6.1.1 Sprinklered Window Assemblies (Cont'd)

Special identification signs for the fire department connection serving the sprinklered window assembly is required to be provided.

Sprinklered window assemblies are required to be installed in fire-rated construction. Fire-rated construction is required to be provided between glazing protected by window sprinklers and fire-protection rated doors and their frames.

6.2 Standpipe System

Since the building exceeds three storeys in height, a standpipe and hose system is required to be provided for the building (3.2.9.1.(1)).

Each fire hose cabinet will contain 30 m of lined 38 mm fire hose with a combination fog / straight stream nozzle and a 38 mm hose connection (3.2.9.3.(1) and 3.2.9.4.(2)). A valved 65 mm hose connection is required to be provided within each cabinet as the building is more than 25 m high (actual height is 45.15 m) measured between grade (Ground Floor Level) and the ceiling level of the top storey (3.2.9.3.(2)).

Fire hose cabinets are required to be located on all floors such that every portion of the building can be reached by a 30 m hose with a 3 m hose stream (3.2.9.4.(5)(a)).

Fire hose cabinets are required to be located within 5 m of each exit on all floors other than the Ground Floor (3.2.9.4.(5)(b)).

A standpipe riser is required to be located in an exit stair shaft or in a service space (3.2.9.2.(9)). The service space requires a 1 h fire separation from the remainder of the floor area.

THE FIRE HOSE CABINETS ARE ILLUSTRATED ON LEVELS 2 THROUGH 14, HOWEVER, THE FIRE HOSE CABINETS ARE NOT ILLUSTRATED ON THE GROUND AND BELOW-GRADE LEVELS, THEREFORE, THE FIRE HOSE CABINETS ARE ALSO LITERALLY REQUIRED TO BE PROVIDED UNDER THE 2012 OBC AND TO BE IDENTIFIED ON THE ARCHITECTURAL DRAWINGS FOR THESE LEVELS.

6.3 Fire Pump

A fire pump will be provided for both the standpipe and hose system and the sprinkler system. The fire pump will be connected to the emergency generator via cable protected from fire for a period of 2 h (3.2.6, NFPA 20).

The fire pump is required to be located in a service room having a 2 h fire separation (3.2.6, NFPA 20).

6.4 Portable Fire Extinguishers

Portable fire extinguishers will be provided in conformance with Article 3.2.5.17 of the OBC and Part 6 of Division B of the 2007 Ontario Fire Code (OFC, O.Reg. 213/07).

6.5 Water Supply

The building is permitted to be served by a single fire protection water supply since the height of the building measured between grade and the ceiling level of the top storey does not exceed 84 m (3.2.9.7.(4)). The actual height is 45.15 m.

7.0 EXITS

7.1 General

Exit stairs for this building are to be separated from the remainder of the building by a 2 h fire separation.

Each exit stair will discharge directly to the building's exterior.

The above and below-grade exit stairs will be physically separated from each other and from the remainder of the building by a 2 h fire separation.

NOTE - TA to dimension 1100mm paths to exits stair (specifically at SW corner of Garage)

7.2 Exterior Exit/Egress Discharge Pathways

Exit discharge paths / exterior stairs are required to be maintained in good repair and kept free of ice and snow accumulations in accordance with the 2007 Ontario Fire Code (OFC, 2.7.1.8.(1)).

PEDESTRIAN EASEMENTS OVER THE WEST PROPERTY LINE (ON THE PROPERTY CONTAINING THE FUTURE TCHC TOWNHOUSES) SHOULD BE CONSIDERED/REVIEWED SINCE AS DESIGNED ALL EXIT STAIRS SERVING THE TOWER ARE DISCHSRGING TO THE WEST OF THE SITE AND FORCED ALONG THE SAME DRIVE AILE AT THE NORTH. A REASEMENT WOULD ALSO ALLOW ACCESS TO VANAULEY STREET.

7.3 Mechanical Penthouse (Elevator Machine Room) Egress

The mechanical penthouse (elevator machine room) is permitted to be served by a single means of egress as its area is below 200 m² (actual areas is approximately 38 m² - 3.3.1.3.(5) and (6)). As permitted by OBC Sentence 3.3.1.3.(5), the mechanical penthouse is served by a stairway down to the 14th Floor Level public corridor, from which access can be gained to the two scissor exit stairs.

7.4 Distance Between Exits

The minimum required distance (measured along the path of smoke travel, assuming that smoke will not penetrate an intervening fire separation) is required to be 9 m (3.4.2.3.(1) and (3)).

For floor areas that do not contain public corridors, the least distance between two required exits from a floor area is required to be one half of the maximum diagonal distance of the floor area, but not less than 9 m (3.4.2.3.(1)(b)).

For floor areas that do contain public corridors, the least distance between two required exits from a floor area is required to be one-half the maximum diagonal dimension of the floor area but not more than 9 m (3.4.2.3.(1)(a)).

7.5 Travel Distance

Clause 3.4.2.5.(1)(c) permits a 45 m travel distance in floor areas that are sprinklered. On floors served by a public corridor, the 45 m travel distance is permitted to be measured from the fire separated suite entrance door to the nearest exit (3.4.2.4.(2)).

TA - PLEASE REFER TO ITEMS 2.2.15 AND 2.3.3 OF OUR DRAWING REVIEW MEMO FOR TRAVEL DISTANCE DEFICIENCIES (AND RECOMMENDATIONS TO ADDRESS THESE ISSUES) ON THE UNDERGROUND PARKING GARAGE LEVELS. TA TO CONFIRM TRAVEL DISTANCES FOR THESE AREAS ON THE SPA DRAWINGS.

7.6 Stair Identification

Sentence 3.4.6.19.(1) requires that each floor level be numbered using Arabic numerals and each stair shaft be identified using uppercase lettering. **TA TO ASSIGN ALPHABETICAL DESIGNATIONS FOR ALL EXIT STAIRS. THE "ISSUE FOR SPA DRAWING DATED 2014/01/10 DO NOT IDENTIFY STAIR LABELS.**

Arabic numerals indicating the assigned floor number and uppercase lettering indicating the stair shaft designation are required to (3.4.6.18.(2)):

- be permanently mounted on each side of doors to stair shafts,
- be not less than 60 mm high, raised approximately 0.7 mm above the surface,
- be located 1 500 mm from the finished floor,
- be contrasting in colour with the surface to which they are applied.

7.7 Exit Signs

Exit signs are required to be provided above every exit and the main entrance in conformance with Subsection 3.4.5. Directional exit signs will be provided as necessary. These exit signs will be connected to the emergency power supply to provide power for a minimum of 2 h (3.2.7.4.(1)(b)(i)).

7.8 Dead-End Corridors

7.8.1 General

Dead-end public corridors are not permitted to be longer than 6 m in residential public corridors (3.3.1.9.(9)) when measured to the end wall of the corridor.

Dead-end corridors are permitted in low hazard industrial occupancies (3.3.1.9.(13)) where the dead-end corridor serves an occupant load of not more than 30 people, is not more than 9 m long and is provided with doors having self-closing devices, or if there is a second and separate means of egress not leading into the dead-end corridor.

Dead-end corridors are not permitted to serve an assembly occupancy unless each room or suite has a second and separate means of egress that does not lead into a dead-end corridor (3.3.1.9.(8)).

7.8 Dead-End Corridors (Cont'd)

TA- AS IDENTIFIED IN OUR DRAWING REVIEW MEMO, THE FOLLOWING DEAD-END CONDITIONS ARE NOT COMPLIANT:

- **10TH AND 11TH FLOORS: SOUTH DEAD-END CORRIDOR SLIGHTLY EXCEEDS 6 M (ACTUAL DISTANCE IS APPROXIMATELY 6.4 M), (IT IS RECOMMENDED TO DIMENSION THE DEAD-END CORRIDOR TO CONFIRM IT DOES EXCEED 6 M) AND**

7.8.2 9th Floor South End Corridor

To alleviate the potential dead-end corridor condition on the 9th Floor (South end leading onto the outdoor amenity terrace), an 1 100 mm wide heat traced and illuminated path will be provided on the outdoor amenity terrace, to the South exit stair.

With this approach, egress can be achieved to the South exit stair via the heat traced path (and dead-end conditions are addressed – 3.3.1.9.(1) and (9)). **TA / DELTERA TO CONFIRM THIS APPROACH WILL BE PURSUED. ALSO REFER TO SECTION 8 FOR EXIT SIGN AND EMERGENCY LIGHTING REQUIREMENTS. TA TO ILLUSTRATE A CLEAR PATH TO THE SOUTH EXIT STAIRS ON THE DRAWING.**

7.9 Integrity of Exits

Fire separations that separate exits from the remainder of the building are not permitted to have openings within them except for electrical wires and cables, totally enclosed noncombustible raceways and noncombustible piping that serve only the exit in which it is located, or sprinkler piping (3.4.4.4.(1)). Building services other than those that penetrate an exit fire separation are required to be fire separated from the exit via an approved 2 h horizontal shaft wall assembly or other fire-rated fire separation.

Storage rooms, washrooms, laundry rooms and similar ancillary rooms are not permitted to open directly into an exit (3.4.4.4.(8)). As well, service rooms and service spaces are not permitted to open directly into an exit (3.4.4.4.(7) and (9)).

Fuel-fired appliances are not permitted to be installed within an exit (3.4.4.4.(4)).

Exits are not permitted to be used as a plenum for HVAC equipment (3.4.4.4.(5)).

7.10 Exit Stair Width

The exit stairs serving the building are required to have a minimum width of 1100 mm (3.4.3.2.(7)(c)).

7.11 Exit Doorway Width

The exit doorways serving the building are required to have a minimum clear width of 790 mm (3.4.3.2.(7)(g)).

7.12 Cross-Over Floors

Since the building is greater than six storeys in building height doors providing access to floor areas from exit stairs are not permitted to have locking devices (other than electromagnetic locking devices installed in conformance with OBC Sentence 3.4.6.16.(4)) which prevent occupants from entering (3.4.6.17.(1)):

- any floor area designated as an area of refuge,
- floor areas located at intervals of five storeys or less, and
- at least one of the three highest storeys.

The doors into the floor areas stated above are required to be identified by a sign on the stairway side which indicates that the door is operable from the stairway side (3.4.6.18.(1)(b)). **IT IS PROPOSED THAT THE 5TH FLOOR, AND THE 9TH THROUGH 14TH FLOORS BE CONSIDERED AS CROSS-OVER FLOORS.**

A master key to fit all door locking devices that are intended to prevent entry into a floor area from an exit stair is required to be provided in a designated location that is accessible to firefighters (i.e., central alarm and control facility) (3.4.6.18.(1)(c)).

7.13 Panic Hardware

The doors to the exterior from the exit stairs are required to be provided with panic hardware (3.4.6.16.(2)).

Any exit doors and any latched egress doors within a means of egress from the Ground amenity spaces are required to be equipped with panic hardware (3.4.6.16.(2)(a) and 3.3.2.6.(1)).

7.14 Occupant Load and Exit Capacity

Occupant load and exit capacity calculations for assembly areas are included in Attachments B and C respectively. **RESERVED - TA/DELTERA - THE INTERIOR LAYOUTS FOR THE AMENITY SPACES ARE REQUIRED TO BE CONFIRMED IN ORDER TO PERFORM ACCURATE OCCUPANT LOAD CALCULATIONS FOR THESE AREAS. THE 2014/01/10 SPA DRAWINGS DO NOT INDICATE INTERIOR PARTITIONS FOR THE AMENITY SPACES.**

7.15 Egress from a Room

Rooms within the building are required to be provided with at least two remotely located egress doors if the area of the room and travel distance exceed the maximum permitted area values outlined in OBC Table 3.3.1.5.B (sprinklered floor area), if the occupant load of the room exceeds 60 persons or the travel distance to a single egress doorway from a room is more than 25 m (3.3.1.5.(1)(c) and (d)).

The egress requirements for non-sprinklered rooms literally apply to the outdoor terraces (3.3.1.3.(2)).

7.16 Exit/Egress Door Swing

Doors within a corridor or in a means of egress from a room are required to swing in the direction of exit travel if the room or space is intended for and occupant load exceeding 60 persons (3.3.1.10.(2) and 3.4.6.11.(1)). **TA - GROUND FLOOR WEST AMENITY AREA IS LIMITED TO AN OCCUPANT LOAD OF 60 PERSONS DUE TO THE SWING OF THE EGRESS DOORS LEADING TO THE LOBBY. THIS REMAINS ON THE 2014/01/10 SPA DRAWINGS.**

8.0 LIGHTING & EMERGENCY POWER

8.1 Lighting

8.1.1 Normal Lighting

Normal lighting levels are required to be provided for the building as indicated below (3.2.7.1):

Exits, Public Corridors and access to exits:	50 lx
Storage Rooms:	50 lx
Service Rooms:	200 lx
Garages:	50 lx
Public Water Closet Rooms:	100 lx
Elevator Machine Room:	100 lx
Food Preparation Areas (Amenity Areas):	500 lx

8.1.2 Emergency Lighting

Emergency lighting is required to be provided for this building with an average level of illumination of 10 lx and a minimum level of not less than 1 lx in accordance with Subsection 3.2.7 of the OBC. Emergency lighting will be provided in the following areas:

- exits,
- access to exits,
- floor areas within the parking garage levels,
- doors with an electromagnetic locking device **(INTENDED LOCATIONS TO BE CONFIRMED)**,
- Amenity areas which have an occupant load of more than 60 persons (e.g. Ground Floor interior and exterior amenity areas and 9th Floor indoor and outdoor amenity areas), and
- 9th Floor outdoor amenity terrace heat traced path (refer to discussion in Section 7.8.2).

The emergency lighting will be connected to the emergency power supply outlined in Section 8.2 of this report.

8.2 Emergency Power

An emergency generator will be provided for this building. It is to operate the following systems for a minimum of 2 h:

- fire alarm system (3.2.7.8),
- exit signs (3.4.5.1.(6)(b)),
- emergency lighting (3.2.7.4.(1)),
- fire pump (3.2.7.9.(4)),
- all passenger elevator(s) (3.2.7.9.(1)(a)),
- firefighter's elevator (3.2.7.9.(2)),
- smoke control systems (below-grade stair pressurization fans - 3.2.7.9.(1)(c)), and
- emergency voice communication (3.2.7.8.(1)).

The conductors for the power source for these systems will be protected for a 2 h duration (3.2.6.2 and 3.2.7.10).

9.0 ADDITIONAL MEASURES FOR HIGH BUILDINGS

9.1 General

The highest floor level in the building which contains a Group C major occupancy is 41.7 m above grade (Ground Floor Level). As this is more than 18 m above grade, the building is required to comply with the additional requirements in Subsection 3.2.6 of the OBC for high buildings.

9.2 Limits to Smoke Movement

9.2.1 General

In accordance with Sentence 3.2.6.2.(1) of the OBC, a building in which Subsection 3.2.6 applies is required to be designed to limit the danger to occupants and fire fighters from exposure to smoke in a building fire.

Measure A of Supplementary Standard SB-4 will be applied to the building in accordance with OBC Sentence 3.2.6.2.(1).

The following is an area-by-area review of the means to be provided of limiting smoke movement.

9.2.2 Exit Stairs

9.2.2.1 Below-Grade Exit Stairs

Below-grade exit stairs are required to be separated from above-grade exit stairs by 2 h fire separations.

Each below-grade exit stair shaft will be pressurized and will be provided with pressurization relief via a door discharging directly to the outside since the below-grade exit stairs are physically separated from the above-grade exit stairs by 2 h fire separations.

The supply of air required for the pressurization of the below-grade exit stairs is to be provided through a duct system which is located within a 2 h fire separated shaft from the point of fresh air intake to the bottom of the exit stair shaft. **TA - THE PRESSURIZATION SHAFT AND EQUIPMENT IS REQUIRED TO BE IDENTIFIED ON THE ARCHITECTURAL PLANS.**

The exterior doors provided for pressurization relief will automatically open to the exterior upon activation of the pressurization fans.

Since all below-grade exit stairs discharge directly to the exterior at grade level, airlocks are not required to be provided for any of the below-grade exit stair shafts (3.3.5.4.(1)).

9.2.2.2 Above-Grade Exit Stairs

Above-grade stairs, which are not required to be pressurized, will be provided with a vent or door to the exterior at or near the bottom of the stair shaft. This opening is required to have an openable area of 0.05 m² for every door between the stair shaft and a floor area, but not less than 1.8 m² (SB-4, Measure A, (4)).

The door / vent to the exterior is required to be manually operable and capable of remaining in the open position during a fire. **RBA ENGINEERING RECOMMENDS THAT THE DOORS BE PROVIDED WITH AUTO OPENERS CONTROLLED AT THE CACF.**

9.2.3 Elevator Shafts

As the elevator shaft for this building interconnects the above-and below-grade floors, each elevator lobby on the below-grade floors is required to be constructed as 2 h fire separations (SB-4, Measure A, (5)). The below-grade elevator lobbies are also required to be designed as carbon monoxide airlocks in accordance with OBC Sentence 3.3.5.7.(3), for compliance with OBC Sentence 3.3.5.4.(1).

Where glazing is intended to be installed in these below-grade elevator lobbies for security purposes, the glazing is required to be protected by a sprinklered window assembly or another listed wall assembly. **TA / NOVATREND / DELTERA - PLEASE CONFIRM METHOD OF PROTECTION FOR GLAZING PROPOSED IN BELOW-GRADE ELEVATOR LOBBIES. IDENTIFY INTENDED LOCATIONS FOR GLAZING ON THE SPA DRAWINGS.**

9.2.4 Vertical Service Spaces

Vertical service spaces (other than elevator shafts), which interconnect the above and below-grade floors, are required to be equipped with a tight fitting seal or fire stop at the floor level of the first floor below the level of exit discharge (i.e. P1 Level - SB-4, Measure A, (6)).

Alternatively, the vertical service space can be vented to the outdoors at the top in accordance with Sentence (10) of Measure F (**TO BE CONFIRMED BY NOVATREND**) (SB-4, Measure A, (6)).

9.2.5 Air Handling Systems

Air handling equipment that serves more than two storeys, except for emergency pressurization fans and exhaust fans from kitchens, washrooms and bathrooms in dwelling units, are to be equipped with a means of stopping the fan from the building's CACF (3.2.6.2.(5)).

9.2.6 Central Alarm and Control Facility

In addition to the requirements detailed in Section 5.7 of this report, the building's Central Alarm and Control Facility (CACF) is required to be equipped with the following additional controls:

- controls to stop air handling systems,
- controls to initiate emergency pressurization air supplies, and
- door opener controls for exterior above-grade exit stairs

9.3 Smoke Venting

Smoke venting of the residential floors and amenity areas will be provided by the use of openable exterior windows and doors (3.2.6.6.(1) and (4)).

For the Underground Parking Garage, smoke venting will be provided by the use of the garage exhaust fans which will be connected to emergency power with controls at the CACF (3.2.6.6.(1)).

9.4 Elevator for Use by Firefighters

One elevator for use by the firefighters conforming to Subsection 3.2.6 will be provided and accessed from the residential lobby.

Protection for the firefighter's elevator on the Ground Floor Level will be provided by 1 h fire-rated elevator doors and controls conforming to the requirements of OBC Clause 3.2.6.5.(3)(a). Protection for the typical residential floors (i.e. 2nd through 14th Floors) will be provided via a 1 h public corridor containing no occupancy (3.2.6.5.(3)(c)).

Protection on the below-grade parking garage levels will be provided by 2 h fire-rated elevator lobbies in accordance with Measure A as the elevator serves both the above-grade and the below-grade floors (see Section 9.2.3 of this report).

Key operated switches for emergency recall will be provided in a conspicuous location at each elevator lobby on the recall level and within the CACF (3.2.6.4.(2)). The keys for the emergency recall switches will be located within an identifiable box located on the outside of the elevator hoistway and at the CACF (3.2.6.4.(4)).

CAN/CSA-B44-07, "Safety Code for Elevators" Article 2.27.7.4 states that firefighter's elevators are required to be identified by a red firefighter's hat that is mounted on the firefighter's elevator entrance frame or adjacent to it on the emergency recall level and the alternate floor level.

9.4 Elevator for Use by Firefighters (Cont'd)

Since the firefighter's elevator is required to be provided with a telephone in accordance with the *Elevating Devices Act*, the CACF is required to have communication capabilities to this telephone (3.2.6.7.(2)(j)).

10.0 BARRIER-FREE ACCESS

10.1 General

Barrier-free access complying to Section 3.8 of the OBC will be provided as follows:

- into and throughout the main entrance and Ground Floor,
- into each residential suite,
- into and out of passenger elevators
- to and throughout outdoor amenity terraces (Ground and 9th Floors), and
- into and throughout all common areas (including amenity area washrooms, change rooms and showers)

In addition, 10% of the residential suites will be provided with a barrier free path of travel leading through the suite to at least one bedroom door and at least one bathroom door as follows (3.8.2.1.(4)):

- required 300 / 600 mm clearances on the latch side of the suite entry door (3.8.3.3.(10)),
- a minimum clearance equal to the clear door opening width plus the latch clearance but not more than 1 500 mm, measured perpendicular to the suite entry door is required to be provided (3.8.3.3.(13)) on the inside of the suite door,
- a barrier-free path of travel (1 100 mm wide) is required to be provided to at least one bedroom from the suite entry door (3.8.1.3.(1)), and
- a barrier-free path of travel (1 100 mm wide) is required to be provided from the suite entry door to a bathroom that is at least 4.5 m² in area.

Barrier-free access will not be provided into service rooms.

10.2 *Entrance*

The building is required to be provided with 1 barrier-free entrance, designed in accordance with Article 3.8.3.3 (3.8.1.2.).

Barrier-free power door openers are required to be installed on the East main residential lobby doors (including interior vestibule doors) in conformance to the mounting and location requirements outlined in OBC Sentence 3.8.3.3.(17) (3.8.3.3.(4) and (5)).

10.3 *Width*

Each public corridor and corridor used by the public that is not more than 1 600 mm wide will be provided with a 1 600 mm by 1 600 mm handicapped turnaround at intervals not more than 30 m apart (3.8.1.3.(4)).

Every barrier-free path of travel is required to be provided with an unobstructed width of at least 1 100 mm for the passage of wheelchairs (3.8.1.3.(1)).

10.4 *Washrooms*

Barrier-free accessible washroom and shower facilities will be provided within the Group A Division 2 amenity areas on the Ground Floor, that will be designed in accordance with the applicable provisions in Article 3.8.3.8 and Article 3.8.3.13 of the OBC.

Reinforcement is required to be installed in the main bathroom of each dwelling unit to permit the future installation of grab bars on a wall adjacent to (3.3.4.9.(1)):

- a water closet in the locations required by Clause 3.8.3.8.(1)(d), and
- a shower or bathtub in the location required by Clause 3.8.3.13.(1)(f).

10.5 *Elevators*

At least one elevator cab will have the interior dimensions which will accommodate a stretcher 2 010 mm long and 610 mm wide in the prone position in accordance with Article 3.5.4.1 of the OBC.

All passenger elevators are required to be designed in accordance with Appendix E of ASME A17.1 / CSA-B44, “*Safety Code for Elevators and Escalators*” (3.5.2.2.(1)).

10.6 Doors

A 300 / 600 mm barrier-free accessible clearance will be provided on the latch side of each door located in a barrier-free path of travel that is not equipped with a power door operator. Only a 300 mm clearance will be provided on the corridor side on the latch side of the door into each residential unit (3.8.3.3.(10)). For the 10% of residential suites designed with a barrier-free path of travel to one bedroom and one bathroom, the 300 / 600 mm clearance is required on both sides of the suite entrance door.

A clear, level space is required to be provided on either side of a door located in a barrier-free path of travel. This space is required to have a width equal to the door plus the 300 / 600 mm latch clearance and a dimension perpendicular to the closed door not less than the width of the door plus the latch clearance but need not exceed 1 500 mm (3.8.3.3.(13)).

A 1.2 m clearance plus width of the door, when fully opened, will be provided between doors located in series (i.e., vestibule doors) (3.8.3.3.(11)).

A doorway into at least one bathroom and each bedroom that is at the same level as the entrance to the residential unit will be provided with a clear width of not less than (3.8.3.3.(2)):

- 760 mm (when the door is in the 90° open position), where the door is served by a corridor or space not less than 1 060 mm wide, and
- 810 mm (when the door is in the 90° open position), where the door is served by a corridor or space less than 1 060 mm wide.

As well, every doorway located in a barrier-free path of travel will be provided with a clear width of not less than 850 mm when the door is in the open position (3.8.3.3.(1)).

Lever-type door opening devices will be installed on every door located within a barrier-free path of travel (3.8.3.3.(3)).

Vision panels provided in doors in a barrier-free path of travel are required to be at least 75 mm in width and be located so that the bottom of the panel is not more than 900 mm above the finished floor. The edge of the panel closest to the latch is not permitted to be more than 250 mm from the latch side of the door (3.8.3.3.(14)).

10.6 Doors (Cont'd)

Glass doors located in a barrier-free path of travel are required to be marked with a continuous opaque strip that (3.8.3.3.(15)):

- is required to have a colour and brightness that is contrasted to the background of the door,
- is required to be at least 50 mm wide,
- is required to be located across the width of the door at a height of 1 350 mm to 1 500 mm above the finished floor, and
- may incorporate a logo or symbol provided such logo or symbol does not diminish
 - the opacity of the strip,
 - the width of the strip,
 - the colour and brightness contrast of the strip to the background of the door, and
 - the continuity of the strip across the width of the door.

10.7 Protection of Floor Areas Having a Barrier-Free Path of Travel

Protection of floor areas having a barrier-free path of travel is waived as automatic sprinkler protection is installed throughout the building in accordance with Sentence 3.3.1.7.(3) of the OBC.

11.0 SPATIAL SEPARATION

11.1 General

The following is a summary of the worst case limiting distances for each exposing building face of the proposed Block 11 residential condominium tower:

EXPOSING BUILDING FACE	ACTUAL LIMITING DISTANCE	MEASURED TO
North	9.16 m	North Property Line
South (Ground - 4 th Floors)	0 m	South Property Line
South (5 th - 8 th Floors)	7.8 m	South Property Line
South (9 th and above)	26.5	South Property Line
East	10.5	Centreline of Cameron St.
West	13 m	West Property Line

The entire building will be sprinklered in conformance with OBC Article 3.2.2.42. As such, a limiting distance of 9 m permits 100% unprotected openings for all fire compartments containing residential suites and amenity spaces (Table 3.2.3.1.C).

Exterior walls for compartments permitted to contain 100% unprotected openings are not required to be constructed with a fire-resistance rating for spatial separations purposes (structural requirements may still apply).

The South exposing building faces of the Ground through 4th Floor fire compartments have limiting distances of 0 m and are not permitted to have any unprotected openings (3.2.3.7.(1)). These exposing building faces are required to be constructed of noncombustible construction to achieve a fire-resistance rating of not less than 1 h, and be clad with noncombustible cladding (3.2.3.7.(1)). **TRANSLUCENT GLAZING IS ILLUSTRATED AT THE SOUTH END OF THE GROUND THROUGH 4TH FLOOR LEVELS, THESE GLAZING ARE REQUIRED TO BE PROTECTED BY FIRE SHUTTERS HAVING A 1 H OR WINDOW SPRINKLER ASSEMBLIES. AS WELL, VENTILATION IS TO BE REVIEWED BY THE MECHANICAL ENGINEER AS OPERABLE WINDOWS WILL NOT BE PERMITTED FROM THESE SUITES FOR THE SOUTH BUILDING FACE. RBA / TA / NOVATREND / DELTERA TO DISCUSS.**

11.1 General (Cont'd)

A sample spatial separation calculation (included in Attachment D) was performed for the largest fire compartment along the South building face, on the 5th – 8th Floor Levels. Based on the worst case scenario limiting distance of 7.8 m to the South property line (for suites located above the 4th Floor Level), all South facing fire compartments above the 4th Floor Level are permitted to contain 100% unprotected openings. Exterior walls for compartments permitted to contain 100% unprotected openings are not required to be constructed with a fire-resistance rating for spatial separations purposes (structural requirement may still apply).

11.2 Exit Exposure

Where an exterior exit door in one fire compartment is within 3 m horizontally of an opening in another fire compartment, and the exterior walls of these compartments intersect at an angle of less than 135°, the openings are required to be protected using glass block, georgian wired glass assembly, or a closure having a fire-protection rating of not less than 1.5 h (3.2.3.13.(3) and (4)).

11.3 D_o Exposure

As the building is sprinklered, the building is exempt from the wall to wall (D_o) exposure requirements of Article 3.2.3.14 (3.2.3.14.(3)).

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12.0 INTERIOR FINISH

12.1 Flame Spread Ratings & Smoke Developed Classifications

The interior wall, ceiling and floor finishes within the building’s common areas are required to conform to the flame-spread ratings and smoke developed classifications of Subsections 3.1.5 and 3.1.13 of the OBC when tested in accordance with CAN/ULC-S102 “Standard Method of Test for Surface Burning Materials and Assemblies” for the material’s surface and any surface exposed by cutting through the material.

The following Table 12.1-1 summarizes excerpts from OBC Subsection 3.1.13 relating to the maximum permitted flame-spread ratings and smoke developed classifications of interior finishes for convenience purposes:

Table 12.1-1

Flame-Spread Rating & Smoke Developed Classifications

Location / Element	Maximum Flame Spread			Maximum Smoke Developed Classification		
	Wall	Ceiling	Floor	Wall	Ceiling	Floor
Exits	25	25	---	---	---	---
Corridors	150	150	---	---	---	---
Elevator Cars & Vestibules	25	25	300	100	100	300
Service Spaces & Service Rooms	25	25	---	---	---	---
Bathrooms in Dwelling Units	200	200	---	---	---	---
Combustible Glazing & Skylights	75*	75*	75*	---	---	---

* 150 if the assemblies have an individual area of not more than 9 m² and meet 3.1.5.4.(1)(a).

12.2 Combustible Finish

Combustible interior finishes including paint and wallpaper that do not exceed 1 mm thickness are permitted in a building required to be of noncombustible construction (3.1.5.10.(1)).

Interior wall finishes, other than foamed plastics, are permitted to be combustible provided that they are not more than 25 mm thick and have a flame-spread rating not more than 150 on any exposed surface or surface that would be exposed by cutting through the material (3.1.5.10.(2)).

Interior ceiling finishes, excluding foamed plastics, are permitted to be combustible provided that they are not more than 25 mm thick (except for exposed fire-retardant wood battens) and have a flame-spread rating not more than 25 on any exposed surface or on any surface that would be exposed by cutting through the material (3.1.5.10.(3)). Alternatively, fire-retardant treated wood is permitted. Combustible interior ceiling finishes may have a flame-spread rating up to 150 provided that it does not exceed 10% of the ceiling area of the fire compartment.

With respect to millwork (e.g., mouldings, baseboard, doors and door frames, show windows together with their frames, aprons, backing, handrails, shelves, cabinets and counters), based on previous discussions with the Ministry of Municipal Affairs and Housing, these items are permitted within buildings required to be of noncombustible construction and are not required to meet the “through” flame-spread rating requirements or maximum thickness requirements identified in Article 3.1.5.10.

In all cases, millwork is required to meet the surface flame-spread rating requirements identified in Subsection 3.1.13.

13.0 OTHER OBC DESIGN ISSUES

13.1 Natural Lighting

Natural lighting will be provided for principal rooms in dwelling units in accordance with OBC Sentence 3.7.2.1.(1).

The OBC does not currently permit interior bedrooms (i.e., bedrooms inset from the exterior walls / windows of a residential suite) from a natural lighting perspective. However, the City of Toronto has been known to accept the concept of supplying borrowed lighting to these rooms to meet the intent of the OBC in order to permit the market-driven design of interior bedrooms, provided the following criteria are met:

- provide indirect lighting through an opening in an exterior wall that runs parallel or up to a maximum of a 30 degree deviation, to an exterior wall containing windows,
- ensure that a minimum 40% of the interior wall area of the interior bedroom is open or provided with clear glazing, not including glass blocks,
- ensure that the exterior wall glass area is not less than 10% of the combined area of the rooms to which the area provides natural lighting (direct and borrowed),
- supply mechanical ventilation or supply of air from a HVAC unit to the interior bedroom.

It is intended to apply the above-noted borrowed lighting concept to the interior bedrooms of this project.

TA - THE INTERIOR BEDROOMS ARE REQUIRED TO CONFORM TO THE NATURAL LIGHTING CRITERIA IN TORONTO POLICY B-26. TA TO CONFIRM.

13.2 Residential Room Areas

The following are the floor areas that are required to be provided within each residential suite:

BEDROOMS: 7 m² where built in cabinets are not provided or 6 m² where built-in cabinets are provided (9.5.7.1.(1)).

MASTER BEDROOMS: 9.8 m² where built-in cabinets are not provided or 8.8 m² where built-in cabinets are provided (9.5.7.2.(1)). This requirement applies to at least one bedroom within each residential unit unless the requirements of Subsection 9.5.7 are achieved.

DINING ROOMS OR SPACES: 3.25 m² in combination with other spaces or 7 m² if not combined with other spaces (9.5.5.1).

13.2 Residential Room Areas (Cont'd)

LIVING AREAS: Not less than 13.5 m² if living area is separate or in combination with other spaces (9.5.4.1.(1)). If the residential suite does not have sleeping accommodations for more than 2 persons, the living area is permitted to be combined with a kitchen and dining area provided the living area is not less than 11 m² (9.5.4.1.(2)).

KITCHEN AREA: Not less than 4.2 m² if the kitchen area is separate or in combination with other spaces. This area includes the area occupied by base cabinets. If the residential suite does not have sleeping accommodation for more than 2 persons, the minimum kitchen area is required to be at least 3.7 m² (9.5.6.1.(1)).

- Note
1. Closets within residential suites are considered as built-in cabinets.
 2. A combination room is defined as two or more areas where the dividing wall between the combined rooms occupies less than 60% of the separating plane (9.5.1.4.(1)).
 3. Subsection 9.5.8 of the OBC for combined spaces permits living, dining, bedroom and kitchen spaces to be combined within a dwelling unit provided the combined spaces are not less than 13.5 m² (145 ft²) and sleeping accommodation is provided for not more than 2 persons.

13.3 Range Protection

While literally not applicable to Part 3 buildings, clearance requirements for gas, propane and electric ranges in kitchens (outlined in OBC Subsection 9.10.22) will be met. These requirements include a minimum 450 mm clearance from the area where the range is located to combustible wall framing, finishes or cabinets unless the range is protected above the level of the heating elements / burners by material providing a fire-resistance rating of not less than that of 9.5 mm (3/8 in) in thickness of gypsum board. **TA/DELTERA TO CONFIRM.**

13.4 Cooking Equipment

Cooking equipment that is designed for use in residential suites (domestic) may be permitted to be installed in a building containing an assembly occupancy (amenity area) and may not be required to meet the requirements of NFPA 96, “Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations” provided the cooking equipment will be used in a manner that will not produce grease-laden vapours that are substantially more than that produced in a normal household environment (OBC, 3.3.1.2.(2)) & Appendix Note A-3.3.1.2.(2).

It is our understanding that the cooking equipment used at the kitchen within the Ground Floor amenity areas will not produce grease-laden vapours that are substantially more than that produced in a normal household environment, and will be primarily used for reheating food prepared elsewhere. As such, “domestic cooking equipment”, designed for use in a residential suite, is proposed to be used in the amenity room kitchens, and is not intended to be protected in accordance with the requirements of NFPA 96. **TA / DELTERA TO DISCUSS.**

13.5 Guard Heights at Balconies / Terraces

Guards are required to be a minimum of 1 070 mm high (3.3.1.17.(1)) and are to be designed with no climbable elements between 140 mm and 900 mm above the finished level, and such that they do not allow passage of a sphere with a diameter greater than 100 mm. All glass balcony guards are required to meet the criteria in Supplementary Standard SB-13 to the 2006 OBC.

13.6 Washrooms

The washrooms and showers that will be provided in the Ground Floor amenity areas are for convenience purposes only since the occupants using the areas (i.e. residents and their guests) will have access to the washrooms / showers within their individual suites.

14.0 FIRE SAFETY PLAN

A Fire Safety Plan for this building is required to be prepared and submitted to the Toronto Fire Services for approval prior to occupying the building in conformance with Section 2.8 of the 2007 Ontario Fire Code (OFC, O.Reg. 213/07) since the occupant load of this building exceeds 10 persons.

The Fire Safety Plan is required to be located within a Fire Safety Plan box installed in accordance with the City of Toronto's Fire Safety Boxes By-Law. The location of this box is required to be reviewed with, and approved by, the Toronto Fire Services.

15.0 SUMMARY

This report summarizes the life safety and fire protection requirements in Part 3 of the 2006 Ontario Building Code for the proposed Block 11 tower of the Alexandra Park Revitalization (Phase 1) project to be located in Toronto, Ontario.

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Attachments

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ATTACHMENT A

Site Plan

ATTACHMENT B

Amenity Area Occupant Load Calculations

RESERVED

ATTACHMENT C

Exit Capacity Calculations

EXIT / EGRESS CAPACITY CALCULATIONS

RBA Job No.: 13-066.1.2

Revised By: EP

Date: 3/6/2014

DRAFT

Alexandra Park Revitalization - Phase 1
Block 11 Tower - Carr Street and Cameron Street

Floor	Exit	Exit Width (mm)	Exit Value (mm/p)	Exit Capacity	Load Using Exit
Ground	East Amenity Area	1830	6.1	60	
	West Amenity Area	1830 x 3	6.1	60*	
9th	Outdoor Amenity Terrace - South Exit Stair	1100	9.2	119	119
9th	Outdoor Amenity Terrace - North Egress Door	915	6.1	119***	119
9th	Outdoor Amenity Terrace - Total			238	238
9th	Total Exit Capacity	1100 x 3	9.2	357	280****

NSU Non-Simultaneous Exit

* Load Limited to 60 due to door swing

** Load Limited to 60 due to single exit/ egress

*** One exit / egress door cannot contribute to more than half of the required exit width.

**** Total occupant load for 9th floor, including residential suites (based on a factor of 2 persons per sleeping room - 3.1.17.1.(1)(b)).

ATTACHMENT D

Spatial Separation Calculation

EXPOSURE CALCULATIONS

RBA Job No.: 13-066.1.2

Date: 3/6/2014

Revised By: EP

DRAFT

Alexandra Park - Phase 1
Block 11 Tower - Carr St. and Cameron St.

Suite	Building Face	AS*	Occupancy	Suite			Area of Openings (m ²)	% Actual Openings	Limiting Distance		% Unprotected Openings Permitted	Exterior Wall Construction Type
				L ⁽¹⁾ (m)	H (m)	A ⁽²⁾ (m)			Required (m)	Actual (m)		
Southwest Corner Suite (8th Floor)	S	Y	C	11	3.25	35.75	0	7.8	7.8	100	N/A	

⁽¹⁾ Length of exposing building face.

⁽²⁾ Area of exposing building face.

A = Noncombustible construction, noncombustible cladding and 1 h fire resistance rating.
 B = Noncombustible cladding and 1 h fire resistance
 C = 3/4 h fire resistance rating.
 N/A = Not Applicable

X = Noncombustible construction, noncombustible cladding and 2 h fire resistance rating.
 Y = Noncombustible cladding and 2 h fire resistance rating.
 Z = 1 h fire resistance rating.
 AS * = Automatic sprinkler