BELL HALL

BELL HALL – RESIDENTIAL CONVERSION
MECHANICAL & ELECTRICAL DESIGN BRIEF

JANUARY 06, 2025

DRAFT

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TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE

This brief outlines the general scope, building systems and standards proposed to be used as the basis for developing the mechanical and electrical schematic, design development and construction documents for the retrofit of Bell Hall. The building is a three storey former student residence located at 15 Campus Drive, Kemptville, which is being converted to an apartment building consisting of studio (bachelor), one bedroom, two bedroom units and shared amenity spaces. Additionally, this brief aims to confirm with the design team and Owner the mechanical and electrical design, systems and materials that will best meet the project requirements.

1.2 REFERENCE CODES AND STANDARDS

All systems will be based on the latest editions of the following Codes and Standards as a minimum:

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- Ontario Fire Code
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- National Fire Protection Association (NFPA) Standard 10, “Standard for Portable Fire Extinguishers”
- CSA B149.1, “Natural Gas and Propane Installation Code”
- ANSI/ASHRAE 55, “Thermal Environmental Conditions for Human Occupancy”
- ANSI/ASHRAE 62.1, “Ventilation for Acceptable Indoor Air Quality”
- ANSI/ASHRAE 90.1-2013, “Energy Standard for Buildings Except Low-Rise Residential Buildings”
- ASHRAE Handbooks

1.3 DESIGN CRITERIA

1.3.1 OUTDOOR DESIGN CONDITIONS

The outdoor design conditions for Ottawa (Airport), Ontario, as defined in Ontario Building Code Supplementary Standard SB-1, are as follows:

- Winter (1%): -27^{0}C
- Summer (2.5%): 30 DB/23^{0}C WB

1.3.2 INDOOR DESIGN CONDITIONS

All spaces within the building will be conditioned to meet the Design Indoor Air Temperatures mandated by the Ontario Building Code. OBC requires an indoor air temperature of 22°C for residential occupancies.

Although cooling is not required by OBC, it is a client requirement. Indoor air temperature will be maintained at 24°C during the summer months.

All areas shall meet the fresh ventilation air and exhaust requirements defined in ANSI/ASHRAE Standard 62.1.

1.4 BUILDING LOADS

All indoor areas will be assessed using the Carrier's Hourly Analysis Program (HAP) to determine interior and exterior energy loads and the energy required to adequately heat, cool and dehumidify/humidify the spaces to ensure occupant comfort.

2 FIRE PROTECTION

2.1 INTRODUCTION & REQUIREMENTS

As per the Ontario Building Code (OBC), sprinkler protection is required for the building based on the proposed construction, building area and occupancy.

The OBC does not require the building to have a standpipe system as per Section 3.2.9, “Standpipe”, since the building will not exceed three stories in height, will be less than 14 m high measured between grade and the ceiling of the top storey and will be sprinklered.

The Ontario Fire Code (OFC) requires portable fire extinguishers in all buildings.

Given the above requirements, the fire protection systems proposed for the new installation include a full sprinkler system, and portable fire extinguishers. Based on the water pressure at the building’s water entry, a fire pump may be required, although it is unlikely as the water pressure should be suitable. All fire protection systems shall be designed to comply with the requirements of the OBC, OFC, NFPA 10, NFPA 13, NFPA 14, NFPA 20 and local bylaws.

The water supply currently enters at the mechanical room 126, located on the ground floor in the south west corner of the building. The main fire protection header for the building is currently located in this room.

In both scenarios the fire department connection for the sprinkler system is proposed to be located on the first floor in the vicinity of the access route for firefighting and piped to the fire protection header. A double check valve backflow prevention assembly is required on the incoming fire water supply.

It is proposed that the building be divided into one sprinkler zone per floor. Each sprinkler zone will be complete with an alarm flow switch, electrically supervised isolating butterfly valve and inspector's test connection. Flow of sprinkler water to any of the above noted zones will be detected by the fire alarm system and indicated on the fire alarm panel.

The sprinkler occupancy classification for the building is generally light hazard. The mechanical and storage rooms will be classified as ordinary hazard (group 1). Upright, sidewall or pendant heads will be used.

Fire extinguishers will be located throughout the building in accordance with OFC Part 6. Fire extinguishers will be installed in fire hose cabinets in the general areas and surface mounted within mechanical & electrical rooms and other service spaces.

3 PLUMBING & DRAINAGE

3.1 FIXTURES

Plumbing fixtures will be provided throughout the residence to suit the architectural layout and to meet the requirements of the Ontario Building Code. Fixtures selected will be as follows:

- Water closets are proposed to be vitreous china, floor mounted, elongated bowl, insulated flush tank, with open front seats, 4.2 litre per flush, manual flush.
- Lavatories are proposed to be counter-mounted vitreous china, with manual faucets.
- Showers are proposed to be hand shower type with adjustable height bars, low flow.
- Exterior non-freeze hosebibbs with lockable cabinets will be located around the building perimeter for washing and watering purposes.
- Floor drains will be located in public washrooms and mechanical spaces.
- Drinking fountains are proposed to be refrigerated combination bottle-fill type equivalent to Elkay model LZSTL8WSSP.

3.2 DOMESTIC COLD & HOT WATER

The domestic cold water entry will remain in the ground Level Water Entry Room located in the South West corner of the building. There will be a municipal water meter on the incoming water supply at this location.

It is proposed to provide dedicated electric domestic hot water generation system to meet the hot water demands of the residence and to meet increased energy efficiency requirements. The domestic hot water generation system shall be located within the ground level Water Entry Room. It is proposed to distribute the domestic hot water at a higher temperature of 60^0C and to use point of use thermostatic mixing valves to mix down to a maximum temperature of 46^0C at the fixtures. A domestic hot water recirculation system is proposed to maintain this hot water distribution temperature at all points in the system. Refer to Appendix A for preliminary equipment selections, and Appendix B for preliminary layout sketches.

3.3 SANITARY SYSTEM

The above grade sanitary distribution piping is proposed to be copper and cast iron. All piping above grade must meet OBC requirements for flame spread and smoke developed. All plastic piping passing through fire-rated wall or floor assemblies must be equipped with ULC Listed fire stopping systems. Underground sanitary piping is proposed to be a combination of plastic PVC piping with gasketed joints on 100mm and larger piping and solvent joints for the smaller diameter piping. Sanitary piping will drain by gravity to a main serving the site.

3.4 BACKFLOW PREVENTION

New backflow prevention devices will be provided as per the Ontario Building Code and CSA B64.10. Backflow preventers will be provided at a minimum at the following locations:

- Premise isolation
- Fire protection system

3.5 STORM SYSTEM

The new storm distribution is proposed to cast iron. All piping above grade must meet OBC requirements for flame spread and smoke developed. All plastic piping passing through fire-rated wall or floor assemblies must be equipped with ULC listed fire-stopping systems. The storm water system will drain by gravity to a storm main serving the site. Roof drains are to be controlled-flow type. All aboveground storm piping will be fully-insulated to avoid possibility of condensation.

4 HEATING, VENTILATION & AIR-CONDITIONING

4.1 GENERAL

Mechanical systems must simultaneously:

- Provide a high level of occupant comfort and indoor air quality for residents.
- Take advantage of modern technologies and design techniques to meet the project's sustainability goals and to reduce operating costs. As a minimum, per Ontario Building Code clause 12.2.1.2, the energy efficiency of the building must conform to the requirements of MMAH Supplementary Standard SB-10, "Energy Efficiency Requirements" Divisions 1 and 3.
- Fit within project budgets
- Be efficiently and cost-effectively maintained by available personnel

To meet these criteria multiple systems were explored, with a variable refrigerant flow (VRF) system being selected for its multitude of benefits highlighted below.

4.2 SUITES - HVAC

For the heating and cooling of the individual suites a VRF system has been selected.

A VRF system allows for simultaneous heating and cooling of individual spaces, while transferring heat to spaces that need it, or rejecting the heat through a rooftop condenser. The ability to move the load around the building provides operating cost benefits. The ability to heat and cool regardless of time of the year also provides the occupants with ultimate individual space temperature control. As VRF systems are unable to provide adequate heating on a design day in Ottawa/Kemptville, auxiliary electric heat will be provided to make-up the additional heating load.

Each suite will be equipped with a vertical VRF unit that draws air from the space, conditions it, then discharges it throughout the suite through ductwork concealed in bulkheads. Refer to Appendix A for preliminary equipment selections, and Appendix B for preliminary layout sketches.

The VRF system will have centralized risers running vertically through the entire building to the roof. Each floor will have branch piping distribution to the units located within the suites.

Ventilation for the suites will be provided by ceiling mounted ERVs located in the ceiling space of the suite washrooms. These units will exhaust air from the washroom, extract the energy from the exhaust air stream and transfer it to the incoming outdoor air supply, which will be delivered into the return of the VRF unit, so it can be further conditioned by the VRF unit to provide the required supply air temperature to the dwelling.

In suite kitchen exhaust will be discharged directly outdoor through a standard kitchen exhaust hood.

4.3 COMMON SPACES - HVAC

The remainder of the occupiable spaces will be heated and cooled by the same VRF system that serves the suites.

Ventilation for the common spaces will be provided through a dedicated make-up air (MAU) located in the penthouse of the building. This system will provide ventilation air to pressurize the corridors, as well as ventilation air for the amenity spaces, and other shared spaces.

A general exhaust system will be provided to exhaust air from amenity and other shared spaces such as storage rooms and bathrooms. This general exhaust air will go through a heat recovery device to reduce the cooling or

heating load on the MAU.

4.4 BUILDING AUTOMATION SYSTEM

To control the various heating, ventilation, air conditioning and lighting systems it is proposed to use a building automation system (BAS). This system would enable an operator at a workstation to change heating and cooling setpoints. Room and zone thermostats will be equipped with overrides to permit the individual occupants control over the heating and cooling setpoints.

The BAS would use the BACnet protocol. The system will be equipped with remote monitoring capabilities such that maintenance staff stationed at a different site can monitor operations.

5 ELECTRICAL

5.1 PROJECT DESCRIPTION

This project consists of retrofitting an existing 3-storey plus penthouse former student residence into a residential apartments. The building is located on 15 Campus Drive, Kemptville, Ontario. The new layout will have a total of 133 units, which will be a mix of 14 2-bedroom units, 57 1-bedroom units and 62 cottage units (without kitchen) - and falls under the group C residential major occupancy category according to the OBC.

5.2 STANDARDS AND COMPLIANCE

OBC 2012 including Jan.1, 2020 amendment on smoke alarms

OESC 2021

CAN/ULC-S534, CAN/ULC-S537

CSA C282-

5.3 ELECTRICAL POWER SERVICE & DISTRIBUTION

The electrical service will be provided via an existing exterior Hydro-owned medium voltage switchgear at Riverside Drive, which serves the existing building at 2865 Riverside Drive. A new Hydro-owned pad-mount 750kVA 13200-600/347V transformer will be provided between the existing exterior switchgear and the main electrical room, with transformer base, cover, primary & secondary concrete-encased duct banks and secondary wiring. The above shall be confirmed with the utility, Hydro Ottawa Limited.

A utility meter will be provided for the main incoming electrical service; however, suites will not be separately metered. Suite sub-metering was not required.

Preliminary loading and electrical distribution equipment capacities stated are to be confirmed once all equipment power requirements are determined.

Actual equipment ampere interrupting capacity (KAIC rating) will match on short circuit study and to requirements of coordination study provider. Estimated KAIC ratings will be shown on the single line diagram in the preliminary design.

For suite distribution, the 1000A, 347/600V main service entrance switchboard in the basement will feed two 120/208V distribution panelboards via two dry-type step-down transformers located on the 2nd & 5th floor electrical closets. From these, more 120/208V distribution panelboards will be provided so that each sub-electrical room has a 120/208V distribution panelboard; from each sub-electrical room, branch circuiting will extend to 120/240V panelboards located in each suite of the floor. Panelboards located in suites shall be recessed in walls.

For public spaces distribution, the main service entrance switchboard will feed three 347/600V distribution panelboards and 120/208V distribution panelboards via dry-type step-down transformers located on the 1st, 4th & penthouse sub-electrical room. From these,120/208V branch panelboards will be provided so that each sub-electrical room has a 120/208V panelboard for public loads.

For emergency distribution, a switchboard tied to the generator will be provided in the penthouse and will feed 347/600V and 120/208V panelboards via dry-type step-down transformers, so that each sub-electrical rooms has a branch panelboard for emergency loads. Emergency power will be provided to maintain the following life-safety systems (use MI cable): emergency lighting and exit signs, fire alarm control panel and annunciator panel, firefighter's elevator, corridor pressurisation HVAC unit and stairwell pressurisation fans, Tunnel services electrical panel, natural gas monitoring system where gas-fired appliances are used, and any other equipment required to be on emergency power for life-safety purposes.

The 347/600V natural gas stand-by generator will sized for 2-hr runtime minimum and come complete with all standard components including batteries & charger, and with mechanical components for fuel, exhaust, ventilation,

as defined in the mechanical design and shall meet TSSA & MOE requirements. The generator will meet UL & CSA standards and come with required seismic certification.

5.4 RECEPTACLES AND BRANCH WIRING

General receptacles will be specification grade 15 ampere, 125 volts duplex. All receptacles within suites and public areas will be tamper resistant type. Ground fault interrupting receptacles will be used near sinks & showers in suites, janitor rooms, and public washrooms. 20A T-Slot heavy duty receptacles in corridors and common areas for cleaning equipment and /or housekeeping. Receptacles for household appliances will be provided, such as range, dishwasher, microwave, washer and dryer. Weatherproof while-in-use covers and 20A T-slot GFI receptacles will be used in outdoor areas including balconies. Public washrooms will be barrier-free and will meet requirements for universal washrooms and emergency notification.

5.5 LIGHTING

Final fixture selections will be dependant on ceiling types and Architect & Owner's approval. Lighting fixtures within suites will be selected by an interior designer chosen by the owner. Lamp lumen output will be task-dependant and selected to meet IES. A photometric study will be completed for public areas.

Exterior building mounted lighting fixtures will be LED, outdoor rated. Fixtures will be full cut-off type and positioned to comply with Municipal by-laws restricting light trespass to adjacent properties and approved by the Dark Sky association. Exterior lighting will be automatically controlled by photocell providing on control function and time clock providing off control function and in compliance with SB-10 (ASHRAE 90.1). Existing pole mounted lighting fixtures which are found in conflict with the new building footprint will be relocated.

Interior lighting fixtures for public corridors will be LED recessed rectangular fixtures, recessed in t-bar ceiling or drywall. Pot lights will be provided at the elevator Lobbies. Service and storage area lighting will be LED source linear fixtures with diffuse lens.

Lighting in public areas will be controlled via occupancy sensors. Lighting in suites will be controlled via wall switches. Balconies will have switched exterior wall mounted light fixture with screw-in LED lamp.

5.6 EMERGENCY LIGHTING

Emergency lighting will be provided at exits, exiting routes, public corridors and in the tunnel via emergency panels connected to the Life Safety generator, and these lighting fixtures will remain on at all times. Emergency lighting will meet average and minimum illumination requirements per the OBC.

Battery-operated emergency lighting will be provided in the Generator Room and Main Electrical Rooms as secondary back-up.

Exit signs will be internally illuminated with pictogram "running man" style pictogram and will remain on at all times. Exit signs will be installed at each exit. Exit signs with arrows shall be provided where no exit is visible from a public corridor.

5.7 FIRE ALARM SYSTEM

A multiplexed, single stage, addressable, zoned fire alarm system will be provided to meet the minimum OBC requirements and to suit high building requirements of the OBC. The fire alarm system will be compliant with the OBC and ULC requirements. Emergency power to the fire alarm system will be supplied from the life-safety generator and batteries, which will provide minimum 24 hours supervisory power, and 2 hours minimum under full load. The main control panel will be located in the ground floor electrical room, and an annunciator panel will be located at the building's main/fire fighter's entrance vestibule.

The new building will be fully sprinklered and will have a standpipe. All required water entry valves and sprinkler & standpipe valves & switches will be supervised by the fire alarm system, as well as other devices requiring to be supervised per the OBC, including the existing fire pump. The fire alarm will monitor trouble notifications from the

life-safety generator. All equipment which is part of the life-safety will be powered via 2 hours fire rated conductors. Wiring between fire alarm panels to be fire rated 2 hours. Fire alarm tie-in to elevator controller and coordinate TSSA recall requirements with the elevator consultant. Any HVAC equipment serving two or more floors will be shutdown by the fire alarm system in the event of a fire. Any automatic door opener will be de-energized in the event of a fire alarm.

Smoke detectors will be installed in all public corridors, exit stair shaft, elevator lobbies, elevator machine room, elevator shaft and cab. Smoke detectors and Fire do not enter signs will be installed in the tunnel at each extremity. Smoke alarms will be installed in the suites in each sleeping room.

Pull stations will be installed near the principal entrance to the building and near each required exit.

Combined audible/visual devices will be installed throughout the building to suit audible level requirements. Audible signal devices shall be on separate circuits for each floor, and audible signal devices within suites will also be on separate circuits. Automatic audible signal silencing for suites shall be possible after the first 60 seconds and reactivated if a second alarm is activated in the building. The audible signal shall be restored after 10 minutes in the event that alarm has not been acknowledged.

The owner will be required to engage the services of an approved ULC listed/approved central fire alarm monitoring company to monitor the fire alarm system to satisfy building occupancy requirements.

5.8 TELEPHONE/CATV SYSTEMS

Two (2) underground empty, rigid PVC conduits will be provided to the property line for extension of Telephone service and CATV service from utility companies to the main systems to be terminated in the Comms-Security Room located at the basement level. A shared plywood backboard will be provided on selected floors within the electrical closet and will include vertical sleeves between floors and horizontal distribution of empty conduit systems and outlets to each Suite and selected areas. Wiring, terminations, and equipment are outside the scope of this contract.

A shared multi-media box will be provided at each apartment to serve as a termination point for apartment conduits/terminations related to Telephone/Data and Cablevision. Placement of outlets will be as coordinated with owner & architect.

5.9 SECURITY SYSTEM

The owner will retain the services of a Security Consultant to review the security infrastructure requirements. Security system equipment, wiring, and terminations are outside the scope of this contract.

Infrastructure provisions such as empty boxes, power outlets/supplies, empty conduits including sizes, routing and grouping will be shown on electrical documents based on information and direction provided by the Owner and/or Security Consultant.

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- Fire protection system

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4 HEATING, VENTILATION & AIR-CONDITIONING

4.1 GENERAL

Mechanical systems must simultaneously:

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- Take advantage of modern technologies and design techniques to meet the project's sustainability goals and to reduce operating costs. As a minimum, per Ontario Building Code clause 12.2.1.2, the energy efficiency of the building must conform to the requirements of MMAH Supplementary Standard SB-10, "Energy Efficiency Requirements" Divisions 1 and 3.
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Preliminary loading and electrical distribution equipment capacities stated are to be confirmed once all equipment power requirements are determined.

Actual equipment ampere interrupting capacity (KAIC rating) will match on short circuit study and to requirements of coordination study provider. Estimated KAIC ratings will be shown on the single line diagram in the preliminary design.

For suite distribution, the 1000A, 347/600V main service entrance switchboard in the basement will feed two 120/208V distribution panelboards via two dry-type step-down transformers located on the 2nd & 5th floor electrical closets. From these, more 120/208V distribution panelboards will be provided so that each sub-electrical room has a 120/208V distribution panelboard; from each sub-electrical room, branch circuiting will extend to 120/240V panelboards located in each suite of the floor. Panelboards located in suites shall be recessed in walls.

For public spaces distribution, the main service entrance switchboard will feed three 347/600V distribution panelboards and 120/208V distribution panelboards via dry-type step-down transformers located on the 1st, 4th & penthouse sub-electrical room. From these,120/208V branch panelboards will be provided so that each sub-electrical room has a 120/208V panelboard for public loads.

For emergency distribution, a switchboard tied to the generator will be provided in the penthouse and will feed 347/600V and 120/208V panelboards via dry-type step-down transformers, so that each sub-electrical rooms has a branch panelboard for emergency loads. Emergency power will be provided to maintain the following life-safety systems (use MI cable): emergency lighting and exit signs, fire alarm control panel and annunciator panel, firefighter's elevator, corridor pressurisation HVAC unit and stairwell pressurisation fans, Tunnel services electrical panel, natural gas monitoring system where gas-fired appliances are used, and any other equipment required to be on emergency power for life-safety purposes.

The 347/600V natural gas stand-by generator will sized for 2-hr runtime minimum and come complete with all standard components including batteries & charger, and with mechanical components for fuel, exhaust, ventilation,

as defined in the mechanical design and shall meet TSSA & MOE requirements. The generator will meet UL & CSA standards and come with required seismic certification.

5.4 RECEPTACLES AND BRANCH WIRING

General receptacles will be specification grade 15 ampere, 125 volts duplex. All receptacles within suites and public areas will be tamper resistant type. Ground fault interrupting receptacles will be used near sinks & showers in suites, janitor rooms, and public washrooms. 20A T-Slot heavy duty receptacles in corridors and common areas for cleaning equipment and /or housekeeping. Receptacles for household appliances will be provided, such as range, dishwasher, microwave, washer and dryer. Weatherproof while-in-use covers and 20A T-slot GFI receptacles will be used in outdoor areas including balconies. Public washrooms will be barrier-free and will meet requirements for universal washrooms and emergency notification.

5.5 LIGHTING

Final fixture selections will be dependant on ceiling types and Architect & Owner's approval. Lighting fixtures within suites will be selected by an interior designer chosen by the owner. Lamp lumen output will be task-dependant and selected to meet IES. A photometric study will be completed for public areas.

Exterior building mounted lighting fixtures will be LED, outdoor rated. Fixtures will be full cut-off type and positioned to comply with Municipal by-laws restricting light trespass to adjacent properties and approved by the Dark Sky association. Exterior lighting will be automatically controlled by photocell providing on control function and time clock providing off control function and in compliance with SB-10 (ASHRAE 90.1). Existing pole mounted lighting fixtures which are found in conflict with the new building footprint will be relocated.

Interior lighting fixtures for public corridors will be LED recessed rectangular fixtures, recessed in t-bar ceiling or drywall. Pot lights will be provided at the elevator Lobbies. Service and storage area lighting will be LED source linear fixtures with diffuse lens.

Lighting in public areas will be controlled via occupancy sensors. Lighting in suites will be controlled via wall switches. Balconies will have switched exterior wall mounted light fixture with screw-in LED lamp.

5.6 EMERGENCY LIGHTING

Emergency lighting will be provided at exits, exiting routes, public corridors and in the tunnel via emergency panels connected to the Life Safety generator, and these lighting fixtures will remain on at all times. Emergency lighting will meet average and minimum illumination requirements per the OBC.

Battery-operated emergency lighting will be provided in the Generator Room and Main Electrical Rooms as secondary back-up.

Exit signs will be internally illuminated with pictogram "running man" style pictogram and will remain on at all times. Exit signs will be installed at each exit. Exit signs with arrows shall be provided where no exit is visible from a public corridor.

5.7 FIRE ALARM SYSTEM

A multiplexed, single stage, addressable, zoned fire alarm system will be provided to meet the minimum OBC requirements and to suit high building requirements of the OBC. The fire alarm system will be compliant with the OBC and ULC requirements. Emergency power to the fire alarm system will be supplied from the life-safety generator and batteries, which will provide minimum 24 hours supervisory power, and 2 hours minimum under full load. The main control panel will be located in the ground floor electrical room, and an annunciator panel will be located at the building's main/fire fighter's entrance vestibule.

The new building will be fully sprinklered and will have a standpipe. All required water entry valves and sprinkler & standpipe valves & switches will be supervised by the fire alarm system, as well as other devices requiring to be supervised per the OBC, including the existing fire pump. The fire alarm will monitor trouble notifications from the

life-safety generator. All equipment which is part of the life-safety will be powered via 2 hours fire rated conductors. Wiring between fire alarm panels to be fire rated 2 hours. Fire alarm tie-in to elevator controller and coordinate TSSA recall requirements with the elevator consultant. Any HVAC equipment serving two or more floors will be shutdown by the fire alarm system in the event of a fire. Any automatic door opener will be de-energized in the event of a fire alarm.

Smoke detectors will be installed in all public corridors, exit stair shaft, elevator lobbies, elevator machine room, elevator shaft and cab. Smoke detectors and Fire do not enter signs will be installed in the tunnel at each extremity. Smoke alarms will be installed in the suites in each sleeping room.

Pull stations will be installed near the principal entrance to the building and near each required exit.

Combined audible/visual devices will be installed throughout the building to suit audible level requirements. Audible signal devices shall be on separate circuits for each floor, and audible signal devices within suites will also be on separate circuits. Automatic audible signal silencing for suites shall be possible after the first 60 seconds and reactivated if a second alarm is activated in the building. The audible signal shall be restored after 10 minutes in the event that alarm has not been acknowledged.

The owner will be required to engage the services of an approved ULC listed/approved central fire alarm monitoring company to monitor the fire alarm system to satisfy building occupancy requirements.

5.8 TELEPHONE/CATV SYSTEMS

Two (2) underground empty, rigid PVC conduits will be provided to the property line for extension of Telephone service and CATV service from utility companies to the main systems to be terminated in the Comms-Security Room located at the basement level. A shared plywood backboard will be provided on selected floors within the electrical closet and will include vertical sleeves between floors and horizontal distribution of empty conduit systems and outlets to each Suite and selected areas. Wiring, terminations, and equipment are outside the scope of this contract.

A shared multi-media box will be provided at each apartment to serve as a termination point for apartment conduits/terminations related to Telephone/Data and Cablevision. Placement of outlets will be as coordinated with owner & architect.

5.9 SECURITY SYSTEM

The owner will retain the services of a Security Consultant to review the security infrastructure requirements. Security system equipment, wiring, and terminations are outside the scope of this contract.

Infrastructure provisions such as empty boxes, power outlets/supplies, empty conduits including sizes, routing and grouping will be shown on electrical documents based on information and direction provided by the Owner and/or Security Consultant.