CONTENTS

6. ADA Issues: ADA-1 to ADA-9
7. Mechanical/Plumbing/Electrical: MEP-1 to MEP-4
8. Swimming Pool: SW-1 to SW-8
9. Thermographic Survey of Exterior Walls: TH-1 to TH-9

I. EXECUTIVE SUMMARY

In general, the façade and interiors have not been maintained well and are in fair to poor condition. Facades are generally not watertight; rain and moisture enters the exterior wall cavities through open sealant joints and cracks and damages interior walls and insulation. This in turn causes wall insulation to degrade and lose its insulating properties.

Other parts of the facades, such as windows, have passed their lifespan and are in need of replacement. Windows display numerous instances of deterioration and typically allow water and air to infiltrate the exterior envelope. This contributes to the need for additional heaters in the winter and air conditioning in the summer, in turn causing an overload on the electrical load.

Concrete elements at the facades, panels around windows and concrete ledges, have deteriorated and in many areas are at risk of falling off the building. These areas should be repaired immediately.

There are instances of fire hazards at apartments which should be addressed immediately. Though the building was built to comply with New York State code, there are egress issues complying with The Building Code of the City of New York that should be undertaken in good faith for the safety of the building occupants.

Elevators, mechanical and plumbing systems are also in need of maintenance and modernization. There are elevator building department violations, which should be addressed in the near future.

The pool building is unusable and requires total rehabilitation. The pool structure, roof, solar panels, interiors, pool equipment and mechanical system are beyond repair. The structure is salvageable.

The roofs of the apartment buildings have been recently replaced and are in good condition.

II. INTRODUCTION

LZA Technology was retained by Island House Tenant Association Inc. to provide a due diligence condition assessment of the buildings at 555 Main Street. The purpose of this assignment is to determine the physical condition of the building structure, elevators, building envelope (façade & roofing), various interior elements including a general overview of building-related ADA accessibility issues, and the property site/grounds. The buildings are currently rental apartments, and the Island House Tenant Association is considering conversion to a coop or condominium. LZA's assessment was limited to visual observations of accessible areas and components. No physical probes of materials were performed. Infrared testing of the exterior walls was performed. This report does not constitute a Local Law 11 survey.

Partial sets of the following drawings were available for review:

- Architectural drawings, by John M. Johansen Architects, dated February 21, 1973.
- Condition Assessment Report, by Building Conservation Group, dated August 1, 1994.
- Plumbing drawings, by Dalton & Dunne, dated August 15, 1972.
- Site drawings, by Sert Jackson and Associates Architects, dated April 1, 1976.
- Exterior wall repair drawings, by Feld, Kaminetzky & Cohen PC, dated February 21, 2003.

The following definitions of terms are used in this report:

- GOOD is understood to mean in adequate condition, considering the building age, and essentially requires little or no repair.
- FAIR is understood to mean less than adequate condition, considering the building age, and essentially requires repair.
- POOR is understood to mean considerably less than adequate, considering the building age, and requires repair or replacement.

It is our understanding that the complex was building under the New York State Building Code (State Code) in effect at the time of construction, as the property is "State" property, not under the Building Code of the City of New York. It is not known whether there is an agreement in place or a legal interpretation of which specific set of codes applies to the building today and what code applies to renovations which have occurred or will occur in the future. Any renovations that are undertaken in future must comply with the current Building Code of the city of New York.

III. BUILDING DESCRIPTION

A. General

555 Main Street is a "U" shaped complex is comprised of six rectangular-shaped buildings (551, 555 and 575 Main Street), including two nineteen story and two thirteen story apartment structures, one single story swimming pool structure and one two story administration building. The complex is located on Roosevelt Island in New York City, New York. The buildings are oriented in an east-west direction and are situated immediately west of Main Street, which runs north-south. See Photos G-1, G-2. The swimming pool structure is located fronts the shoreline to the west. The complex is surrounded by buildings of similar height and mass. There is a small church immediately to the south of the complex.

There are no surface or subsurface parking areas on the site, though a large parking garage is located north of the property. There are paved and landscaped courtyards at the complex, with multi-level pedestrian paths and sitting areas.

The buildings were constructed under the Mitchell Lama Law, and under the sponsorship of the New York State Urban Development Corporation. The complex was built in the mid 1970's and is approximately thirty years old.

The buildings were designed by the architectural firm of John M. Johansen. Severund & Associates were the structural engineers. Dalton & Dunne Engineers designed the mechanical, electrical and plumbing systems. Severund & Associates was the structural engineer and Lawrence Halprin & Associates was the landscape architect. The architectural style of the building can be characterized as the "brut concrete" style. The complex is surrounded by buildings of similar height and use.

There are 400 apartment units in the complex. Floor-to-floor heights at the apartments are approximately 10'-0" high.

The complex has one basement level, which contains mechanical, laundry, storage and garbage rooms. The ground floor houses retail stores, including a deli, a drycleaner and a restaurant. There are three laundry rooms.

There are two banks of elevators, with two elevators in each bank. There are no freight or service elevators. There are a total of four exit stairs in the complex.

Each apartment building consists of a centralized corridor with apartments at both sides, and exit stairs at the ends. The buildings are interconnected by centralized corridors.

The main entrance to the complex is from Main Street. There is a lobby with a receiving desk, equipped with security monitors. Security cameras monitor all exterior doors. There are additional entrances to the south and north of the buildings. All three entrances have stairs, and the north and south entrances have wheelchair ramps. See Photo G-3.

B. Structural Systems

1. Base Structure

The structure of the apartment buildings consists of poured concrete foundation and reinforced cast in place concrete floor slabs. Concrete slabs span to reinforced concrete beams and columns. Foundation walls are poured in place concrete. Facades have partial areas of exposed concrete floor slabs.

The structure of the swimming pool enclosure is cast in place reinforced concrete beams and columns, with reinforced concrete roof and floor slabs.

C. Architectural

1. Façade

The facade of the apartment buildings consists of prefabricated exterior asbestos-impregnated concrete panels, with UFFI (poly urea formaldehyde foam insulation) panel insulation, metal studs and interior gypsum board. Each panel is separated by control joints, which have PVC filler and a urethane-type sealant material. Panels are attached to the concrete slabs with steel angles. See Photo G-4. Asbestos-impregnated concrete panels are interspersed with exposed concrete walls at building setbacks. See Photo G-5.

Windows are typically either sliding glass windows or fixed framed curtainwall windows with painted metal spandrel panels. Both window types have clear anodized aluminum frame mullions and insulating clear glazed lites. Gaskets are dry, dense neoprene. Perimeter sealant at the windows appears to be a urethane material. Windows are original construction. Windows typically have aluminum sill and head flashing.

PTAC (Packaged Terminal Air Conditioner) unit sleeves are located at the curtainwall windows. PTAC sleeves are caulked to the exterior stucco with a urethane-type material. PTAC sleeves are supported by decorative concrete ledges that project approximately 18" off the exterior face of the stucco. The building maintenance staff reports that PTAC units have been replaced periodically as part of an on-going maintenance program, but PTAC sleeves and surrounding interior and exterior sealant are original construction. See Photo G-6.

Lobby facades consist of storefront framing, with clear anodized aluminum mullions and insulating clear glazed lites. Storefront glass runs from floor to ceiling. Gaskets are dry, dense neoprene. Lobby entrance doors are clear anodized aluminum storefront doors. Lobby doors and storefronts are original construction.

2. Roofing

The roofs of the six apartment buildings, stair and elevator bulkheads and all parapets were replaced in 2003, and are under warranty. Roof assemblies consist of low-sloped, hot-mopped, modified bitumen membranes on tapered insulation on concrete roof slabs. Mod bit membranes are surfaced with gravel. Roof drains discharge storm water runoff to interior risers which are connected to the municipal water collection system. Roof penetrations have built-up flashing, and while mechanical equipment dunnage (supporting steel) has pitch pockets through the roof. Parapet walls are approximately four feet high, and are faced with metal panels and metal parapet caps. There are lightning protection rods at the roofs. See Photo G-7.

The roof of the pool building is comprised of concrete pavers on an inverted roof assembly (IRMA). See Photo G-8. The building maintenance staff indicated that the roof of the pool building was replaced approximately six years ago.

3. Interior

The lobbies of the apartment buildings are original construction. Lobby finishes consist of ceramic tile floors and painted gypsum board walls, with glass storefronts. See Photo G-9. Ceilings are painted gypsum board.

Tenant interiors and corridors are typically finished with painted gypsum board walls, vinyl base and carpeted floors. Egress stairwells have painted concrete and CMU walls on the tenant floors, with painted metal handrails. Elevator cab finishes consist of wood-grain plastic laminate wall panels and vinyl tile flooring. Basement finishes are vinyl tile, vinyl base, painted concrete masonry unit walls, and exposed concrete slab ceilings.

The basement is fully sprinkled, and is equipped with lighted exit signs and smoke detectors. The apartment floors are not sprinklered, but have fire-rated, self-closing exit doors. Doors to mechanical rooms in the basement are fire-rated and self-closing.

4. Site/Grounds

The main façade of the complex fronts Main Street, with secondary walkways and pedestrian patios to the north, south and west of the buildings. Paving at the Main Street sidewalk is comprised of brick and large concrete entrance stairs provide access to the building lobby. Pedestrian walkways are poured concrete intermixed with brick pavers. An asphalt surfaced pedestrian walkway is located at the west edge of the complex along the East River. Curbs are generally concrete.

Storm drainage is provided with trench drains and catch basins, which connect into the public storm drainage system under Main Street. There are exterior light fixtures at all building entrances.

The building management indicated that there is no maintenance program in place for cleaning the exterior facades of the building.

Landscaping is located around the site and at the water's edge. Large trees and shrubbery are interspersed at the patio areas. See Photo G-10.

D. Mechanical/Plumbing/Electrical Systems

1. Base Systems

The mechanical system for the apartment units are electrically-powered radiant heat from baseboard heaters. Air conditioning is provided with electrically-powered through-wall PTAC units (Packaged Terminal Air Conditioner). Common spaces are also heated with baseboard heaters and are cooled with split-unit air conditioners. The heating system consists of two oil-fired boilers, installed in 1986. Fuel oil is supplied by a storage tank, which is original to the building. Ventilation for the complex is comprised of roof mounted exhaust fans.

Mechanical equipment for the ground floor drycleaners and restaurant are located in the apartment building basement. These systems are independent of the apartment building's systems but occupy space within the basement of the apartments.

The plumbing system of the complex appears to consist of cast iron piping for sanitary and storm drainage, copper and galvanized pipe for hot and cold water supply and return.

The main electrical room is located in the basement of the complex and has breaker-type connectors. There are 12 additional electrical rooms at the complex. Each apartment has a circuit box panel.

The mechanical system for the swimming pool building is variable air volume.

E. Swimming Pool

1. Base System

The swimming pool consists of two in-ground pools: one small wading pool and one large diving pool. The pool building contains changing rooms and rest rooms. Pool equipment is located in an adjoining room within the basement of the building. The pools are original construction. See Photo G-11.

Both pools are constructed of aluminum pans, with UFFI insulation and wood formwork beneath. The pan of the larger pool is coated with a waterproofing membrane and successive coats of paint.

IV. OBSERVATIONS, CONCLUSIONS & RECOMMENDATIONS

LZA visited the site on April 28, May 11, 18 and 19, 2005. LZA personnel were escorted throughout the building on April 28 by the building Engineer, Mark Zeltser and Amrah Cardoza. LZA was escorted though the building on May 11 by Hariet Lieber. Representing LZA Technology were Sharon Lobo, R.A., Ron Bielinski, R.A., P.E, Damon Baumann, Jane Raba and Pauline Stefan.

A. Structural Systems

1. Base Structure

Foundation walls of the complex were observed from the interior of the basement and are in fair condition. Hairline cracks were noted in general, but these conditions are normal to concrete of this age. See Photo S-1. At one area at the east foundation wall near the exit door, a large horizontal crack was observed. See Photo S-2. In the Garbage Room, another large crack was noted. These cracked areas could possibly be indicative of building stress and should be repaired within 1-5 years.

The structures of the apartment buildings were observed at several areas, at which the finished ceilings were removed. The beams and columns appear to be in good condition, as observed at the second floor slab. See Photos S-3, S-4. At several floors, expansion joints in the corridors were observed. These joints appear to have shifted due to building settlement, causing cosmetic cracks at the wall joints. See Photos S-5, S-6. The structural walls appear to be in good condition and do not require remediation at this time.

The structure of the pool building is in fair condition. The underside of the concrete roof slab was investigated through areas where the existing hung acoustic tile ceiling has been deteriorated or previously removed. There are several areas where efflorescence and delamination of the concrete roof slab was visible, indicative of roof leaks. See Photo S-

7, S-8. Efflorescence was noted at beams spanning across the main swimming pool. See Photo S-9. There is one area where concrete spalling has taken place and steel rebar is exposed at a balcony edge. See Photo S-10. There is water leakage and damage at the east exterior wall at the base of the glass solar panels. See Photo S-11. Though these instances of deterioration appear to be the result of the roof leaks and lack of maintenance, these items can be repaired. These conditions should be repaired within 1-5 years.

B. Architectural

1. Façade

Apartment Buildings

There are numerous instances of concrete deterioration at the ledges, around windows and at exposed concrete walls. Concrete ledges and window sills at exposed concrete walls display wide cracks, which lead to loose concrete or spalls. See Photos BE-1, BE-2, BE-3. Cracks have also appeared at concrete walls along the edges of walls at the building expansion joints. See Photos BE-4, BE-5. These areas have deteriorated due to long-term exposure to weathering and lack of maintenance.

Asphalt-impregnated exterior wall panels also display cracks and are generally dirt-laden. This also is attributed to general deterioration and lack of maintenance. See Photo BE-6.

As part of our survey, LZAT has reviewed exterior façade repair drawings produced by Feld, Kaminetzky & Cohen PC, dated February 21, 2003. It appears that this work was partially performed and additional deterioration has subsequently developed. Additional deterioration includes spalling of concrete ledges, cracks at window sills and open sealant joints.

Cracked and loose concrete from ledges and window sills may potentially fall off the building in the near future, causing safety hazards to pedestrians. The repair work outlined in the Feld Kaminetzky drawings as well as the additional deterioration should be repaired immediately.

LZA includes this for informational purposes only:
The New York City department of buildings Local Law 11 requires all building facades be inspected by a licensed engineer and a report of this inspection to be filed with the building department. This inspection is to be performed every five years. Unsafe conditions are to be repaired upon discovery. Local Law 11 is currently in its sixth cycle, and building owners have until September 2005 to perform and file their inspections. It is unknown if this building, as state property, falls under the jurisdiction of the Local Law 11 and if any remediation is required by the city.

Exterior sealant around PTAC units, windows and between each exterior wall panel is in poor condition and requires replacement. Sealant at these joints was observed as cracking, displaying both adhesive (separating from the substrate) and cohesive (separating within the material) failure. See Photo BE-7. At many locations, exterior wall panels appear to have moved out of the vertical plane, causing sealant between the panels to stretch and become open joints. See Photo BE-8. The cause for the panel movement is unknown at this time, but may be attributable to normal building settlement. Sealant at all exterior locations must be maintained as a watertight seal in order to prevent water from entering the exterior wall assembly. Water damage was noted at the interiors at the window heads, sills and PTAC units (see Interiors section), indicating that sealant joints have failed.

Water stains were observed as emanating from PTAC units, underneath concrete ledges to window frames at the floor below. See Photo BE-9. This indicates that water travels from floor to floor and penetrates the wall assembly at open sealant joints. Corrosion (rust) was observed at the window frame heads, indicating historic water leakage and

corrosion of the shelf angle above the frames. See Photo BE-10. Exterior sealant joints should be replaced within 1-5 years.

Windows generally display gasket deterioration; shrunken, dried, and displaced gaskets were noted at the majority of the windows. See Photos BE-11, BE-12. Gaskets are watertight seals that hold the glass in place inside the aluminum mullion window frames. Gaskets must remain in place in order to prevent water, moisture and air infiltration through the window assembly. Air drafts were felt at many windows during our survey (see Interiors section). Gaskets display this type of deterioration due to age, exposure to UV rays and temperature. Gaskets are in poor condition and should be replaced.

Aluminum window frame mullions observed from the interiors felt cold to the touch, and mullions do not appear to be thermally broken. The windows are original to the building, and thermally broken frames were not commonplace in window construction at that time.

Windows at several apartments were noted as difficult to operate. Window stops have been haphazardly installed, thus damaging the frames. In some windows, screens are damaged or do not fit into the window frame. In still other windows, screens are missing entirely.

Several windows were observed as having a cloudy film inside the insulating glass lite. This indicates that the argon gas inside the glass lite has escaped. See Photo BE-13. Argon gas is a clear gas that is installed inside the insulating glass lite to increase energy efficiency of the window. When the gas escapes, the window develops a “cloudy” appearance. This condition cannot be repaired, and the window should be replaced.

Window glass and screens are generally dirt-laden. The building superintendent reported that no maintenance program is in place for window cleaning.

Due to the combined deterioration and defects noted at the windows, window units, exterior sealant and shelf angles are generally in poor condition and should be replaced within 1-5 years.

Pool Building

The glass solar panels at the north, west and south facades of the pool building are in poor condition and require complete replacement. There are nine broken glass lites at present. Rubber gaskets, which hold the glass lites in place in the aluminum frame, are either missing or deteriorated. Bolts, which hold the frame together, are also missing or deteriorated. Sealant is missing at the base of the glazed window walls. Several aluminum frame cap pieces are missing at the west façade. In one location, rusting screws are holding the glass lite in place. The finish of the aluminum mullions are generally worn and deteriorated due to extended exposure to salty, brackish water and air. Mullions display pitting (worn off finish). Aluminum frames have also been vandalized in localized areas. See Photos BE-14, BE-15, BE-16, BE-17, BE-18.

The remaining exterior walls of the pool building are concrete with a wood formwork finish. At one area a large crack was noted at the exterior concrete. See Photo BE-19. This should be repaired within 1-5 years.

2. Roofing

The roofs of the apartment buildings are in good condition and are currently under warranty. See Photos BE-20, BE-21. No repair recommendations are recommended at this time.

The roof of the pool structure is in fair to poor condition, with several large areas in need of repair. Concrete pavers were lifted, and in several areas 1" of standing water was observed underneath. Pavers were generally dry, but when walked upon, water seeped up

through the joints between pavers. Algae was observed growing between pavers. Perimeter walls have cracked at the base. When a paver was lifted, evidence of long-term water was observed. See Photos BE-22, BE-23. These conditions indicate the presence of water on the pool roof. The pool roof should be replaced within 5-10 years.

3. Interiors

Apartments N311, S1005, S1107, N604, N914, N1807, N1808 and S510 were visually observed. In addition, 112 additional apartments answered a survey conducted by the Island House Tenants Association, regarding windows, mechanical, plumbing, electrical and interiors issues. Tenant responses were of a similar nature and indicate systemic deterioration and lack of maintenance of the building systems. The following are issues common to most apartments:

- Lack of odor and/or smoke barrier between floors. There have apparently been numerous instances of odor and smoke transfer between floors in apartments, particularly at bathroom areas. (see MEP Section D).

- No access to corridor from lower level of duplex apartments. Duplex apartments in the complex have an interior stairwell that connects two floor levels. There is currently no means of exiting the lower level other than at the upper level. Though a complete building code review is not part of the scope of our survey, this issue appears to be a fire hazard. This issue should be addressed immediately. The lower level of each duplex can be redesigned by an architect to provide access to a central corridor and the exit stairs.

- Water infiltration at window heads and sills. Water damage was noted at window heads and sills, and at ceilings along the exterior walls. See Photos I-1, I-2, I-3. Water damage to interior finishes is largely located along the exterior walls and

near windows. Finishes are generally in fair to poor condition and should be repaired within 1-5 years.

- Air draft at windows. Air drafts were felt at both the gaskets and the perimeter sealant of the windows. Building maintenance staff has placed additional insulation against the windows. Windows are in poor condition and should be replaced within 1-5 years.

- Deteriorated sealant around windows and PTACS. Adhesive and cohesive sealant failure was noted at the perimeter of the PTAC sleeves, resulting in water damage at the surrounding gypsum board walls. Tenants have installed tape around the PTAC units to slow air infiltration at these areas. See Photo I-4. Interior sealant has failed at PTAC perimeters and should be replaced within 1-5 years.

- Lack of sound insulation inside walls between rooms in apartments. Minor probes at interior walls were performed at unoccupied apartment S510, to confirm the existence of and investigate the condition of sound insulation within the walls. Three probes were taken in interior walls of Unit S510. At a bedroom wall between two rooms in the apartment, a probe was taken in the sheetrock. A 2"x4" opening was made in the sheetrock and the wall is comprised of a single layer of ½" gypsum board. No insulation was observed inside the wall at this location.

  Two probes were taken at an interior wall between two apartments. Probes were taken at the top and bottom of the wall. The wall is comprised of two layers of ½" gypsum board. Batt (sound) insulation was observed inside this wall. We concluded that there is batt insulation at walls between apartments, but no insulation was observed at walls within apartments. This accounts for the transfer of sound between rooms inside apartments.

- Finish ceiling and wall cracks. Finish ceiling and wall cracks are likely the result of building settlement. Ceilings and walls are generally in fair condition, with isolated areas in need of repair within 1-5 years. See Photo I-5.

- Poorly installed kitchen cabinets. Cabinet doors do not close fully, and doors are not level. See Photo I-6.

- Warped wood parquet floors. Many areas of floors are noticeably warped. These are isolated conditions which should be addressed as part of an on-going maintenance program. These items should be repaired within 1-5 years. See Photo I-7.

- Lack of thermal insulation at exterior walls. (see Thermographic Survey Section G).

- Toilet clogs and backups (see MEP Section D).

- Electrical brownouts (see MEP Section D).

- Transfer of odors from the Ground floor restaurant to apartments above. (see MEP Section D).

Corridors and the lobby are not well lit and should have higher levels of lighting for occupants' safety. See Photo I-8. Entrance vestibule doors were observed as having poor weatherstripping rubber seals at the outer double doors. Broken seals were noted at the door jambs, and air flow was felt at the door perimeters. Weatherstripping is meant to function as an air and water barrier. Due to age and wear and tear, the weatherstripping has deteriorated and should be replaced. See Photo I-9.

There were also reports of the outer door spontaneously opening during inclement weather. Due to the configuration of the building complex and the entrance vestibule, a "wind tunnel" is created outside the vestibule on even fair weather days. This has an outward suction effect on the doors, causing them to fly open. The door has a closer, but it is loose and should be tightened. Door hardware is also taxed further by high use and age. Door hardware at the inner door of the vestibule appears to be in fair condition. See Photo I-10. The exterior door is in fair to poor condition, and this condition may pose a safety hazard to the building occupants. Weatherstripping and door hardware should therefore be repaired immediately.

a. Site/Grounds

Many instances of cracks in sidewalks, paved courtyards and exterior stairs at 555 Main Street were observed. See Photos GR-1, GR-2, GR-3, GR-4. The concrete walkway immediately south of the complex is apparently used as a vehicular driveway by the adjacent church. Cracked sidewalk sections are in fair condition and should be removed and replaced within 1-5 years before they become tripping hazards.

The site and grounds were observed at dusk to night, to observe the lighting levels and condition of the exterior lighting fixtures. In general, lighting fixtures are in good condition but the lighting level at the complex is poor. Fixtures do not appear to have missing components, but several fixtures had non-functioning luminaires (bulbs). Some areas were not well lit and others rely on adjacent property and/or street fixtures for lighting. Exit ramps at the south and north facades are well lit, but the areas at the base of the ramps are dark. At the south façade, lighting is provided by the adjacent church. Lighting is general unevenly balanced around the complex and is at insufficient levels. This condition should be addressed within 1-5 years. See Photos GR-5, GR-6.

Landscaping appears to be well maintained and does not require remediation at this time. See Photo GR-7.

b. ADA Accessibility

There are several accessibility issues at the building entrances and courtyard areas. There are no ramps at the main entrance at Main Street, but ramps are at the north and south entrances. These ramps are in violation of the ADA guidelines, as they protrude on stair landings. Ramps and stairs are required to have separate landings. See Photos ADA-1, ADA-2. Exterior ramps are of sufficient width and slope and are in good condition. The courtyard area has several levels, and there is no access from the lower to the upper patio level without taking a circuitous route around the complex. The ADA guidelines specify that a direct and simple route be available for wheelchair access. See Photo ADA-3. The exit door for the basement Laundry Room opens out onto a small courtyard that does not connect to any pedestrian walkway or street. See Photo ADA-4.

Handrails at exterior ramps are not of the required length and configuration. There are no concrete curbs, for toe protection, at ramps. See Photo ADA-5. Handrails at the exterior stairs at the west side of the complex do not extend far enough along the stair not divide the stair every 44 inches. See Photo ADA-6. Handrails at interior exit stairs are not continuous and do not extend beyond the base of the stairs. Railings are missing at some stair runs. See Photos ADA-7, ADA-8.

Exit signs should not be posted on the exit doors, but should be mounted from the corridor walls or ceilings and should be lit. See Photo ADA-9.

C. Microbial Investigation

There are currently no governmental regulations regarding what concentrations of microbial constituents are acceptable in habitable living spaces. The industry standard is to use documented governmental guidelines to help guide professionals in their determination of the level of microbial contamination as well as remediation and

sampling procedures. The New York City Department of Health and Mental Hygiene have put out a publication called Guidelines on Assessment and Remediation of Fungi in Indoor Environments. Within this publication it states that a visual inspection is the most important initial step in identify possible microbial contamination. It further goes on to state that air sampling should not be conducted as part of a routine assessment, because a "false negative" results using certain sampling techniques. Also bulk/surface sampling is not required if microbial growth is visible. Air sampling should be conducted however if mold is suspected based on visual signs, musty odors or complaints of respiratory distress associated with microbial constituents in the air. When conducting sampling, indoor and outdoor samples should be conducted as a comparison of contamination. Generally speaking microbial constituents found indoors should be of the same species and genre as those found outdoors but at a lesser concentration due to the filtering and humidity control of a central air conditioning system.

Viable mold spores and bacteria are ubiquitous in buildings but significant mold growth only occurs in water damaged and humid conditions, and bacteria growth only occurs in condensed water. Of particular concern are paper faced gypsum sheathing and wallboard which when saturated have poor drying properties, provide a good nutrient source for mold and are as a result associated with many of the documented mold problems within buildings today.

In sufficiently inhaled concentrations, exposure to mold spores can have both irritant and antigenic effects. Common symptoms can include runny nose, watery eyes, sneezing, and dry or sore throat. Antigenic properties may result in additional allergic like symptoms even in normally non-sensitive individuals.

Currently there are no federal rules or regulations regarding what constitutes acceptable levels of mold growth or even the remediation of mold itself. During our survey no visible mold or odors associated with microbial growth were observed. There have been reports from tenants that mold growth was observed and treated on previous occasions. It

has been reported to us that the building maintenance staff has cleaned these isolated instances of mold.

In the case of 555 Main Street there is no central air conditioning system, and operable windows allow the mixing of indoor and outdoor air within the apartment space. Further, since there are multiple instances of gaps in sealant joints at the exterior walls and windows, the exterior envelope has had the capacity to "breath", or vent, any spores that may have developed within the exterior wall cavities.

Being that no musty odors or visual mold growth was observed, nor respiratory illnesses reported to us, we feel confident microbial sampling was not warranted at the time of our building survey.

D. Mechanical/Plumbing/Electrical Systems

Corridors have registers which supply from some and exhaust from others. The NYC Code requires 0.5 CFM/SF of outdoor air. It is not known whether the building was designed with both supply and exhaust, or, the supply system is reverse flowing. Air flow is not consistent from floor to floor and from register to register though the floor area is equivalent; the mechanical system is not balanced.

We recommend a mechanical contractor to inspect the fan systems and report as to the condition of the systems and prepare a list of required servicing, and an opinion as to the condition of the equipment for continued service. The ductwork and registers should be cleaned and inspected (using a remote camera) to determine if the systems are integral. After the exhaust / supply systems are evaluated and the systems are serviced, we recommend a balancing firm to adjust the systems to provide 0.5 CFM/SF of conditioned outdoor air. Common area exhausts are not required, nor desired, as they pull air from the apartments, bringing odors to the common area.

There is a lack of ventilation from ground floor restaurant. Cooking odors transfer from the restaurant exhaust vents to the apartment windows above. According to the Building Code of the City of New York, such restaurant vents should have a minimum of a ten foot separation from operable windows. Windows at this building are five feet away from the exhaust vents. The maintenance schedule for servicing the restaurant's HVAC system is not known but should be investigated. This condition should be addressed by the building maintenance within 1-5 years. See Photo MEP-1.

Electrical Systems

Though an electrical system evaluation was not part of our effort, we were consistently informed of power delivery problems in the form of "brownouts". Over the years, additional electrical baseboard radiators have been added, along with tenant-owned electric space heaters and other appliances, to add to the overall building load, which may be taxing the facility system.

We recommend a power survey be performed during the highest usage months (February and August) when heaters and air conditioners will be at their highest usage rate. The power survey will determine peak loads, power factors, mean, minimum and maximum voltage and amperage with time. From the test data, an electrical engineer can determine what power should be provided at the current usage scenario.

Firestopping / Fire Separation

There are many locations within the apartments, common areas and mechanical rooms where piping, electrical conduits and ductwork penetrate floor-to-floor and from fire-rated rooms to corridors where no sleeves are present (for piping and conduit) and no firestopping is present. "Rat patching", was observed at many piping penetrations. See Photo MEP-2. Rat patching, a cementitious material compacted into pipe penetrations to prevent rodents from entering them, was a common construction practice that was

employed before the development of modern firestopping materials. Rat patches generally appeared in fair to poor condition. In apartment linen closets, additional phone and electrical conduit penetrations were made in floors and sealed with unknown materials. See Photo MEP-3, MEP-4.

Though the facility may have been built to the New York State Code of the 1970's, firestopping and fire compartmentalization is not a new concept. It is meant to contain a fire, and prevent its spread by stopping it at the fire separation wall / barrier between rooms by either a physical stop (solid barrier) or a seal (fire stopping) or a mechanism (fire dampers for ductwork, magnetic release of fire doors, etc.). Though rat patching contains some firestopping properties, it is likely not sufficient due to its age and general deterioration. Pipe penetration seals observed in the apartment linen closets are also suspect and should be replaced. Reports of odor and smoke transfer between apartments are also likely caused by these penetration seals.

Several of the fire doors in the corridors did not close completely when released from the magnetic hold-on. The automatic door closers are worn out and require repair.

Pipe penetrations at fire-rated walls and floor slabs should be replaced with firestopping assemblies and materials immediately. Fire doors should be serviced within 1-5 years.

Plumbing

Toilets were replaced building-wide with low flush volume American Standard two-piece toilets within the last five years. Complaints of poor waste disposal efficiency and multiple flushings were typical of all apartment interviews.

The problems with the toilet flushing did not occur with the previous (original) toilets, and is therefore not a "system" or building problem, but rather, a "local" problem with the

specific brand and model of toilet fixture. The replacement toilets had a product deficiency that has since been remediated by the manufacturer.

Toilets should be replaced, again with low volume toilets, but with a design that can accommodate high load capacity. Several models have been recently developed, including fixtures by American Standard, which can demonstrate good evacuation from both "sinking" and "floating" waste products. Toilets are in poor condition typically and replaced within 1-5 years.

"Brown water" was noted in some apartments as the bathroom shower, sink or kitchen water faucets, on an occasional basis. It is not unusual for a facility of 30+ years to retain sediment and slough off the retained sediment on occasion. Based on the building's pipe configuration, some apartments may receive more sediment than others.

We recommend a plumbing system flush, to purge retained sediment, on a supply line by supply line basis. If portions of the water supply can be isolated (through valve closures / blanking), the pipe interiors can be inspected for the level of retained sediment. A plumbing contractor can be consulted as to the means and methods to perform the work. Plumbing pipes are in fair to poor condition and this inspection should be performed within 1-5 years.

AVAC System

Comments were made concerning the small openings for the trash chute at the disposal rooms. It is our understanding that all trash entering the chute is conveyed by air pressure to a central collection station off site.

The chute door size cannot be enlarged without changing the transport chute (duct) size also. The door size is designed to insure waste does not clog the transport chute.

Therefore no changes are possible without entire system modifications, which would be prohibitively disruptive at this time.

C. Swimming Pool

The swimming pool complex consists of a main pool with a diving board over a deep end, a wading pool, locker rooms / showers, and a mechanical room for the pool equipment. The pools' shell is coated aluminum, supported on an expanding foam base. From our site interviews, the pool complex has remained unused between 15 and 20 years.

All visible piping from the pool to the mechanical space is corroded beyond repair. See Photos SW-1, SW-2. The shells of the pools are corroded, perforated and deformed. The aluminum has been corroded from the underside from either or a combination of pool leaks and/or brackish ground water, turning the pool shell into aluminum salts. The foam base acted as a sponge, retaining the corrosive water at the shell's underside, until perforation occurred. See Photos SW-3, SW-4.

The pools' pumps, filters and chemical injection / balance systems have been removed. See Photos SW-5, SW-6. The shower and locker areas have severely corroded walls and accessories, and are unusable. It appears that a level of several feet of water enters these rooms at times. See Photos SW-7, SW-8.

If a new swimming pool complex is desired, it would require a complete removal of the existing complex to the "bare structural walls", and begin anew. If a new pool without a deep end is desired (5 feet deep or less), it could be built at the same level as the existing pool. A deeper pool would most likely be built at a higher level, to avoid groundwater pressure and hydrostatic relief of groundwater into the pool.

Both pools, pool equipment, interiors, exterior walls and mechanical equipment are in poor condition and should be replaced within 5-10 years.

F. Thermographic Survey of Exterior Walls

As part on the building assessment survey conducted by LZA, causation of the insulating properties of the exterior walls at 555 Main Street was requested by the island House Tenant Association. Occupants stated that during the winter months the exterior walls are extremely cold to the touch. Enclosed unheated areas such as closets along these exterior walls are said to maintain temperatures close to those outdoors. According to one tenant, wall cavity that had been opened several years ago due to water damage and mold remediation exposed missing insulation.

Using a FLIR Systems ThermaCam B2 infrared camera LZA conducted a thermographic survey of the exterior walls of 8 individual apartments to determine the condition of the wall cavity insulation.

Apartment N311 Exterior Wall Living Room

- Distinct patterns of temperature variation were observed within insulated areas of the stud wall.
- Similar temperature was observed between metal studs and the insulated cavity in some areas. See Photo TH-1.

Apartment S1005 Exterior Wall Living Room

- Distinct patterns of temperature difference were observed between metal studs and insulated areas of the wall cavity.
- Some anomalies were observed at the base of insulating panel by a temperature variance. See Photo TH-2.

Apartment S1107 Exterior Wall Living Room

- Little to no distinction was observed between metal studs and insulated cavities. See Photo TH-3.

Apartment N604 Exterior Wall Living Room

- Little to no distinction was observed between metal studs and insulated cavities. See Photo TH-4.

Apartment N914 Exterior Wall Kitchen

- Little distinction was observed between metal studs and insulated cavities.
- Some anomalies were observed at base of insulated cavities visible by temperature variance. See Photo TH-5.

Apartment N914 Exterior wall 2nd Bedroom

- Distinct patterns of temperature variation were observed between metal studs and insulated areas of the wall cavity. See Photo TH-6.

Apartment N1807 Exterior wall Master Bedroom

- Slightly distinct patterns of temperature variation were observed between metal studs and insulated areas of the wall cavity.
- Anomalies were observed at head of upper insulated wall cavities visible by temperature variance. See Photo TH-7.

Apartment N1808 Exterior Wall

- Little to no distinction between metal studs and insulated cavities were observed. See Photo TH-8.

Apartment S510 Exterior wall

- Distinct patterns of temperature variation were observed between metal studs and insulated areas of the wall cavity.
- Anomalies were observed at head of upper insulated wall cavities visible by temperature variance.
- A probe taken in this area revealed deteriorating poly-urea formaldehyde insulation. See Photo TH-9.

Thermography is a technique in which an infrared camera is used to measure temperature variations within an object. When using thermography to assess heat loss or gain within a building it is important to understand the building construction to interpret any infrared images taken. In the case of 555 Main Street, the exterior wall of the building is of the cavity wall variety.

Sealant joints between the exterior façade concrete panels are experiencing both adhesive and cohesive failure. These failures are causing water to infiltrate behind the concrete panels wetting the exterior sheathing and bringing moisture into the wall cavity. Poly urea formaldehyde foam insulation is open cell type insulation and absorbs water. Over time this insulation when exposed to water will slump, deteriorate and ultimately lose its R-value or insulating properties.

Regardless of temperature variations between indoor and outdoor spaces, a properly insulated wall cavity should maintain a relatively uniform temperature throughout. However, metal studs within the wall cavity will still be affected by the outdoor to indoor temperature variances unless they are thermally broken, which is not general practice. A

wall such as this when photographed using an Infrared camera will show distinct separation between wall studs and insulated cavities. This distinction will increase as the temperature variance between indoor and outdoor spaces increases. An interior wall and to a lesser degree an uninsulated exterior wall will show little to no variation between wall components being that all components have assumed similar temperatures.

Infrared pictures taken of the exterior walls of the apartments surveyed revealed some anomalies in regards to the stud walls poly urea formaldehyde insulation in the form temperature variation. In some apartments tested (S1107, N604, N1808, N914) there was little to no distinction within the exterior wall cavities while others (N1311, S1005, N1807, S510) had very defined distinctions. Apartments N1311, N1807 and S510N also had very distinct patterns of temperature variances within the stud wall cavity. The patterns observed are evident of potential insulation deterioration and loss of R value. A wall cavity probe taken in Apartment S510 revealed disintegrating to the touch poly urea formaldehyde foam insulation. Tenant complaints of cold walls in the winter, hot walls in the summer, lack of insulation in areas where water damage had been remediated, examination of insulation at the wall probe taken in S510 as well as the examination of infrared generated images of exterior walls confirms our belief that the poly urea formaldehyde insulation is beyond its lifespan and has been compromised by water infiltration into the stud wall cavity from an improperly maintained exterior sealant joints.

Based on our thermographic survey, the stud wall cavity poly urea formaldehyde insulation foam in the exterior walls has been compromised. A loss of the R-value of this compromised insulation has lead to occupant complaints of extremely cold walls in the winter and warm walls in the summer. The exterior wall insulation is in poor to fair condition and should be replaced within 1-5 years.

V. BUDGET ESTIMATES

The following budget estimates are opinions of cost based on our experience with similar buildings and systems, industry-standard cost data, local cost data, and/or discussions with local contractors. Our opinion of costs are for budgeting purposes only and may vary due to weather and time of season, contractor schedules, unusual owner requirements, phasing, contractor or material availability and other factors beyond our control. These budget estimates do not include "soft costs" such as professional fees, permits, contingencies, etc.

The following recommendations generally relate to items that were observed and identified for remedial work or further investigation. Order-of-magnitude budget estimates accompany each recommendation as appropriate.

We recommend the following:

A. Architectural – Building Envelope (Façade, Roofing, Windows, Interiors, Elevators, Site/Grounds)

- **Install fire-rated firestopping at all slab and rated wall penetrations. Estimate includes demolition of existing interior drywall, demolition of existing "ratpatch" firestopping, cleaning and removal of demolished materials, installation of new fire-rated firestopping materials, installation of new drywall and refinishing interior walls. Estimate includes removal of construction debris. Assumes an average of (5) five firestopped penetrations per wall chase.** Immediate. Budget Estimate: $1,300,000.

- **Install exit routes at lower levels of duplex apartments. Estimate includes design of new corridors and exit routes from lower level of existing duplex apartments. Estimate includes demolition of existing walls and construction of new fire-rated drywall partitions, in order to form corridors that connect to lobbies. Estimate includes installation of new fire-rated doors, which open out to the new corridor, at each apartment. Estimate includes**

removal of debris, repainting and cleaning. Immediate. Budget Estimate: $600,000

- **Repair cracks at concrete ledges. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** Immediate. Budget Estimate: $25,000.

- **Repair spalls at concrete ledges. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** Immediate. Budget Estimate: $80,000.

- **Replace windows. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** 1-5 Year. Budget Estimate: $1,500,000.

- **Remove and replace sealant around window & PTAC perimeters, and at all exterior wall panels. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** 1-5 Year. Budget Estimate: $950,000

- **Re-insulate exterior walls with foam insulation.** 1-5 Year. Budget Estimate: $950,000.

- **Insulate interior walls with foam insulation.** 1-5 Year. Budget Estimate: $3,250,000.

- **Repair cracks at exterior panels. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** 1-5 Year. Budget Estimate: $10,000.

- **Repair spalls at concrete panels. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** 1-5 Year. Budget Estimate: $50,000.

- **Repair interior cracks.** 1-5 Year. Budget Estimate: $400,000.

- **Replace interior finishes at walls and ceilings.** 1-5 Year. Budget Estimate: $15,000.

- **Repair kitchen cabinets.** 1-5 Year. Budget Estimate: $100,000

- **Repair warped floors.** 1-5 Year. Budget Estimate: $75,000

- **Replace corridor and lobby lighting fixtures.** 1-5 Year. Budget Estimate: $30,000

- **Replace weatherstripping and repair door hardware at outer entrance vestibule door.** 1-5 Year. Budget Estimate: $200

- **Install additional exterior lighting around complex.** 1-5 Year. Budget Estimate: $20,000

- **ADA upgrades.** 1-5 Year. Budget Estimate: $50,000

- **Replace broken concrete pavers.** 1-5 Year. Budget Estimate: $10,000.

- **Powerwash building. Estimate does not include scaffolding or boom trucks, see scaffolding/boom truck estimate below.** 1-5 Year. Budget Estimate: $500,000.

- **Scaffolding/boom trucks required for powerwashing, sealant replacement and exterior panel repair.** 1-5 year. Budget Estimate: $350,000.

- **Perform a building code survey, to bring building up to current New York City Department of Buildings code.** 1-5 Year. Budget Allowance: $20,000.

B Structural

- **Repair foundation wall cracks. Estimate includes removal of debris, temporary protection of adjacent areas and cleaning after repairs. Estimate includes sealing cracks with a sealant material to prevent further cracking.** 1-5 Year. Budget Estimate: $10,000

- **Repair pool roof structural slab. Estimate includes removal of roofing membrane at areas of structural slab to be repaired. Estimate includes pole scaffolding constructed from inside pool house. Estimate includes removal of asbestos containing materials at roof. Estimate includes** 1-5 Year. Budget Estimate: $75,000

D. Mechanical/Electrical/Plumbing

- **Remove and replace toilets.** 1-5 Year. Budget Estimate: $500,000.

- **Monitoring and analyzing existing mechanical service to determine if building is underpowered. Estimate includes testing, repair recommendations and cost estimate for upgrades. Estimate includes installation of upgrades to the mechanical system.** 1-5 Year. Allowance: $100,000.

- **Monitoring and analyzing existing electrical service to determine if building is underpowered. Estimate includes testing, repair recommendations and cost estimate for upgrades. Estimate includes installation of upgrades to the electrical system.** 1-5 Year. Allowance: $150,000.

- **Monitoring and analyzing existing plumbing pressure. Estimate includes testing, repair recommendations and cost estimate for upgrades. Estimate includes installation of upgrades to the plumbing system.** 1-5 Year. Allowance: $150,000.

E. Swimming Pool

- **Remove and replace all items in the swimming pool building except structure. Includes new swimming pool pans, pool equipment, mechanical equipment, roof, interior walls and finishes, exterior solar glass panels, exterior walls, interior lighting.** 5-10 Year. Budget Estimate: $5,000,000.

F. Elevators

- **Repair elevators.** 1-5 Year. Budget Estimate: $520,000.

Summary Budget Estimates

Component Total	Immediate	1-5 Year	5-10 Year
Architectural	**2,005,000**	**8,280,200**	**0**
MEP	**0**	**900,000**	**0**
Structural	**0**	**85,000**	**0**
Swimming Pool	**0**	**0**	**$5,000,000**
Elevators	**0**	**520,000**	**0**
Totals	**$2,005,000**	**$9,785,200**	**$5,000,000**

LZA reserves the right to amend this report should additional information become available.

Sharon Lobo RA, AIA
Associate

Ron Bielinski, RA, PE, CIH
Vice President

APPENDIX A

VDA ELEVATOR REPORT

APPENDIX B

LZA PHOTOGRAPHS