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CONDITION SURVEY AND RESERVE STUDY

DERBY LOFTS CONDOMINIUM
SALEM, MASSACHUSETTS

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TRANSITION INSPECTION AND RESERVE STUDY

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1.0 INTRODUCTION

Between December of 2007 and February of 2008, Noblin and Associates, L. L. C. performed a Transition Inspection and Reserve Study at the Derby Lofts Condominium in Salem, Massachusetts. The purpose of the Transition Inspection was to assess the condition of the existing Condominium structures and facilities and identify deficiencies in their design and/or construction. Areas of concern included materials or workmanship not meeting accepted building industry standards as well as violations of the applicable building codes. The purpose of the Reserve Study was to determine the funding requirements for anticipated replacement and refurbishment of the Condominium common facilities.

The first phase of our survey consisted of a review of the overall construction and maintenance history of the building with representatives of the Condominium Association. This included review of extensive documentation of testing and analysis performed on one Unit. Visual inspections were then made of all interior common area and exterior building and site facilities. Inspections of the existing roof systems were also made by direct access of the main roof. Various interior areas were also inspected in select Units to assess typical interior conditions.

Our findings have been included in this report along with recommendations for addressing any deficiencies noted during our survey. Our recommendations will be prioritized with safety issues or issues which could lead to significant deterioration of building or site components being the top priority, deficiencies which could lead to less significant deterioration of building or site components being the next priority, and aesthetic or other issues being the lowest priority.

2.0 GENERAL

The Derby Lofts Condominium consists of fifty-four residential and eight commercial units in a single condominium building. The building was converted to condominium Units between 2004 and 2006. This consisted of the conversion of two separate buildings, referred to as the “Brick Building” and the “North Building”, into a single structure. The original Brick Building consisted of a four story structure constructed around 1930, while the original North Building consisted of a four story structure constructed around 1900.

Residential Units consist of apartment style Units located on the second through sixth floors. Commercial Units are located at the first floor level. The construction would be classified as Residential Group R-2 Multiple Family and Business Group B. Roofs consist of low sloped single ply membrane systems. Exterior walls consist of a combination of solid brick masonry, brick masonry veneer, stone veneer and exterior insulation and finishing systems (EIFS). Some upper floor residential Units are provided with exterior balconies.

Common Condominium structures include interior hallways, mechanical rooms, storage areas and an enclosed drive-through parking area. The building is provided with city water and sewer facilities.

Since the completion of construction, the building has experienced various construction related problems. These include the following:

- Water and air infiltration and operational issues with residential Unit windows.
- Water infiltration through exterior walls in residential Units.
- Various operational issues with HVAC systems in both the individual Units and Common Areas.
- Various issues with odors and air quality in Common Areas.
- Cracks in interior gypsum finish materials.

Our investigation will address these specific areas of concern as well as the general condition of the existing construction.

3.0 STRUCTURAL

Review of the structural components of this building included inspection of all building exteriors, the interiors of all common areas and of Units 309, 406, 509 and 511, and review of photographic documentation of structural repairs/modifications performed during conversion.

3.1 Structural

The Architects for the condominium conversion were Winter Street Architects, of Salem, Massachusetts. The structural subconsultant for the conversion was Structures North, of Salem, Massachusetts.

The existing structural elements consist of a combination of reinforced concrete, structural steel and solid masonry construction. The available information indicates original first and second floor structural elements of the Brick Building were retained during conversion, and consist of reinforced concrete columns and floor systems with solid masonry wall infill. The reinforced concrete floor systems on the third and fourth floor levels were retained with new structural steel framing on the exterior walls only. The first through fourth story reinforced concrete floor systems on the North Building section appear to have been retained during conversion, with new structural steel columns. The fifth and sixth floor levels consist of new structural steel framing and concrete floors on both exterior and interior walls. It is also our understanding that significant seismic reinforcement of the original structural building frames (see Photograph #1) and augmentation of the original foundations was performed as part of the conversion.

Inspection of the exposed beams and columns throughout the building showed varying degrees of cracking in the concrete casings. Some of the most severe cracking was noted in two beams in the bedroom of Unit #309. These cracks have opened to approximately 1/8” in width, and in one location a section of concrete appears to have spalled on two sides and may be loose (see Photograph #2). Many of these beams were original to the building, and probably consist of reinforced concrete with internal steel rebar reinforcement. Corrosion and subsequent expansion of the internal steel reinforcement is a likely source of the cracking of these beams.

Cracks and other irregularities have been reported in gypsum finish materials and between gypsum finish materials and exposed structural members in a number of Units, including Units 210, 306, 308, 309, 410, 411 and 509. Cracking of gypsum finish materials, particularly at joints and intersections with dissimilar materials, is a relatively common occurrence in new construction. This is typically due to the curing of the joint compound used to finish joints and corners, as well as early settlement of building framing elements and support members. Other irregularities in the gypsum finish materials appear to be due to poor sanding and finishing of the wall or ceiling surfaces, including poor or inadequate priming/painting of these surfaces. Similar cracking/opening of interior trim was also noted in wooden baseboards in some common hallway areas.

Other problems reported with interior finishes include cracking of ceramic tile in bathroom walls and shower stalls. This cracking appears to be due to installation of this tile on insufficiently level or stable substrates. Tile on wall surfaces appears to be installed over gypsum wallboard, which is not uncommon but does not provide as stable a substrate as concrete backerboard manufactured specifically for use with ceramic tile.

These irregularities in interior finish materials do not appear to be due to structural problems in the building.

It appears that the floor levels between the original Brick and North Buildings were at slightly different levels. To make up for this difference in elevations, the hallway floors between these building sections are pitched slightly down to the east end of the building. The small bedroom of Unit 509 is adjacent to the pitched hallway area, and the floor in this room also pitches noticeably in this direction. Measurement with a level showed pitch in the floor varies from spot to spot, but at one end of the room is as much as 1/2” in two feet. While this amount of pitch is acceptable in the common hallway area, a floor out of level to this degree in an occupied room creates problems with furnishings being unstable or noticeably out of level.

4.0 BUILDING ENVELOPE

Inspection of the building exteriors consisted of visual inspection of all building walls from the ground and direct access of the main roof.

4.1 Windows and Doors

Windows in upper floor Residential Units consist of clad, wood framed double-hung and fixed units. Double-hung and some fixed windows were manufactured by Pella, while the largest fixed units were supplied by an alternate manufacturer. Balconies are accessed from the Unit interiors through wood framed out-swing doors. Commercial Units and ground floor entrances consist of solid wood window-wall assemblies, which appear to be original in the Commercial Unit areas.

The windows in Residential Units are relatively large, with operable double-hung sashes being almost four feet in width and over two feet in height, and fixed units being over seven feet in width and almost seven feet in height (see Photograph #7). Many of the double-hung windows are set in multiple unit openings, with mulled connections between individual window frames.

Manufacturers of various types of windows have established rating systems for their products. These rating systems typically categorize the windows as light, medium or heavy grade, based on standardized performance tests. The most current such window rating system is AAMA /NWWDA 101/I.S.2, National Standard for Windows and Doors, a standardized rating system established jointly by the National Wood Window & Door Association (NWWDA) and the American Architectural Manufacturer's Association (AAMA). This standard includes five basic grades of window, Residential (R), Light Commercial (LC), Commercial (C), Heavy Commercial (HC) and Architectural (AW). Residential windows are a light grade and are generally intended for smaller window openings with less severe exposures. Light Commercial and Commercial windows are a medium grade and are generally intended for moderate exposures. Heavy Commercial and Architectural windows are intended for larger openings with more severe exposures, such as those for this building.

Windows conforming to ANSI/AAMA standards must be manufactured in accordance with minimum requirements for frame size and thickness, hardware performance and other design criteria. In addition, sample windows must be tested and meet minimum standards for various criteria based on specified wind and weather conditions. These criteria include frame deflection, air infiltration, and water infiltration. Windows meeting these criteria are provided with a label indicating their AAMA grade and performance rating. The performance rating is indicated by a number after the grade designation (i.e. HC50). The number indicates the test pressure at which the sample window performed adequately, with higher numbers indicating higher test pressures and a better level of performance.

Owner surveys indicate water infiltration through the windows and water damage to the interior gypsum finish around the windows is a problem in up to 22 of the 54 Units in the building. In addition, air infiltration and operational difficulties were also commonly reported. Several Owners also reported excessive deflection in the large fixed window glass. The existing double-hung sashes have been provided with what appear to be retrofitted braces, which may have been necessary due to the relatively large size of the sashes for the window's operating hardware (see Photograph #6). In addition, some operable sashes have reportedly been fixed in place due to water/air infiltration and operational issues.

Water infiltration may be occurring from a number of sources around these window openings. These include, water infiltration directly through the sashes, water penetrating the window frames and water penetrating improperly sealed joints around the window perimeters. Water staining was noted on the interior window frame surfaces in several Units (see Photograph #4). The joints and openings in the frames of this type of window can be a significant source of water infiltration. These frames are constructed of multiple members. Openings and some degree of water infiltration should be anticipated in virtually any window frame after several years of service (see Photograph #3), even if the frame is generally sound and functioning properly.

To prevent this type of water infiltration, flashings should be installed below the window frame itself. These flashings should prevent any water infiltrating joints or other openings in the frames from reaching the underlying wall areas and entering the building. Review of photographs from the conversion construction shows asphaltic waterproofing membrane was applied to window openings in some locations, however the exact details of these waterproofing membrane installations is not known. Furthermore, inspection of the exterior walls below the window sills shows no evidence of weep openings or other drainage facilities for flashings below the windows. Without proper drainage, water penetrating the window frames will enter the wall assemblies.

Information provided by members of the Condominium Association documents testing and remedial work performed to address water infiltration and associated problems in Unit 301. This testing was performed by Thompson & Lichtner between July and August of 2007. During water tests performed at this time, leakage was reportedly produced through joints in window frames and mullions, which entered wall cavities below the windows.

4.2 Exterior Sealant

The various exterior wall systems on this building include sealant joints in a number of locations, including:

- Joints on window/door frame perimeters;
- Joints on EIFS panel perimeters;
- Joints on the aluminum clad belts in EIFS wall areas and metal caps on roof parapets (see Photograph #9);
- Joints between cast stone elements.

In addition, what appear to be sealant repairs were noted on various joints in window frames and mullion covers between window units.

The joints are sealed with what appears to be a silicone or urethane sealant. The existing sealant materials were noted to be failed in various areas with loss of adhesion to the underlying substrates. Some of the worst failure was noted on joints on the aluminum clad belts in EIFS wall areas, metal caps on roof parapets and around various window frames.

Representatives of the Condominium Association report much of the sealant work was done during relatively cold weather in 2005. Due to premature failure of some of these materials, various joints were resealed in 2007. It should be noted that proper preparation of joint substrates and application during dry, suitably warm temperatures are critical to the performance of these sealant materials. Application during wet or cold conditions may lead to premature failure of these materials. The testing performed by Thompson & Lichtner in 2007 reportedly produced water infiltration through failed sealant joints on and above Unit 301.

4.3 Exterior Walls

Solid Masonry

Exterior walls at the first and second floor level of the Brick Building section consist of the original solid clay brick masonry construction with cast stone architectural elements.

Inspection of the solid masonry walls revealed red clay brick set in a Common bond pattern with flemish header courses approximately every eight courses. Mortar joints are tooled in a "raked" profile, with the mortar recessed approximately ½" from the face of the brick. It should be noted that, this type of joint exposes significant horizontal surfaces of the brick, which tend to catch and hold moisture during wind driven rains. This increased exposure to moisture can accelerate further deterioration of the masonry surfaces.

Moderate cracking and spalling of the brick surfaces was noted in several areas, particularly at building corners. This type of damage is typically due to moisture penetrating the masonry and freezing, which creates significant expansive pressures within the masonry. Water entering the wall through minor deficiencies will freeze, creating larger cracks and deficiencies and progressively greater water infiltration and damage. Minor to moderate voids in the mortar joints were also observed in various areas, a condition which can allow moisture into the wall assembly potentially resulting in damage during colder months.

Areas of spot repointing or other repairs were noted in several locations on these walls. The mortar used for these repairs appears to be a newer Portland cement mortar mix, while the older mortar is probably a softer lime based mortar mix. It should be noted that masonry walls should be able to absorb flexural movement from thermal stress, wind loads, etc., by slight compression and expansion of the mortar joints. For this reason, masonry mortar should be softer than the surrounding bricks, to allow the mortar joints to be compressed without overstressing the bricks. If newer, harder mortar mixtures are applied to older walls with relatively soft brick, flexural movement in the wall can cause the face of the brick to spall away as it is stressed by the compressed mortar joints.

Masonry Veneer

Masonry veneer wall sections on the third, fourth and fifth floor levels of the Brick Building section consist of red clay brick veneer set in a running bond pattern. Mortar joints are tooled in a raked profile to match the joints on the original masonry walls. Masonry cavity wall systems of this type typically consist of the exterior brick masonry veneer, an air cavity and an interior wall of light gauge metal framing, CMU block or other structural back-up system. Exterior gypsum sheathing is located on the outer face of the metal stud wall and interior gypsum wall board on the interior face.

The structural loads from the masonry veneer are supported by the building foundation, and lintels over doors, windows and other penetrations. In taller structures, support for masonry veneer is also provided with steel relieving angles fastened to the building frame at various levels. On this building, relieving angles were noted at the floor levels of the masonry veneer walls. Lateral support for the masonry veneer is provided by metal anchors set in the masonry mortar joints and fastened to the interior wall system. The overall rigidity of the interior wall system is critical to minimize flexure of the masonry veneer and prevent cracking of mortar joints and other deterioration due to flexural movement.

It should be noted that this type of masonry construction is relatively porous, particularly the mortar joints, and will absorb significant amounts of moisture. Proper masonry wall design and construction must account for this moisture infiltration and include waterproofing and/or flashing systems to control water within the wall and prevent moisture infiltration into the interior wall components and building interior.

To provide adequate waterproofing, this type of masonry veneer wall is designed with an internal cavity between the exterior veneer and interior wall. Any water penetrating the masonry is caught by through-wall flashings at critical levels within the wall and drained to the exterior through weepholes in the brick. These flashings are typically located at regular intervals and at through-wall components which tend to trap moisture running down the cavity. These components include relieving angles, structural lintels, doors, windows, air conditioners, etc.

Maintaining a clear cavity over the weepholes is essential for the following reasons:

- `To allow the unimpeded flow of moisture to the building exterior and minimize the amount of moisture building up in the wall. Minimizing the level of moisture within the wall will minimize the potential for water infiltration over flashings or through deficiencies in flashings.

- `The most significant water infiltration occurs during periods of wind driven rain when wind pressure on the exterior face of the wall drives moisture through the masonry veneer. Properly open weepholes and wall cavities allow the pressure within the wall cavity to increase as wind pressure develops on the exterior face of the wall. The higher pressure within the cavity reduces the potential for moisture to be driven into the wall.

Inspection of the exterior wall areas revealed weep openings and what appeared to be lead coated copper (LCC) through wall flashings along the base of the veneer walls at the third floor level (see Photograph #11). Weep openings in these areas consist of open head joints between every third brick or approximately every 24”. Weep openings set at similar spacings are also located above steel lintels spanning the window openings. Review of photographs from the conversion construction shows the back-up walls in the areas of new masonry veneer were provided with what appears to be an asphaltic waterproofing membrane in some areas, including at the levels of through wall flashings.

Moderate efflorescence was observed on masonry veneer surfaces in several areas. Efflorescence is caused when water and carbon dioxide within the wall structure mix to form a mild acid, which will then react with the lime in masonry mortar to form calcium carbonate, the white efflorescence noted on the masonry surfaces. The key to this reaction is typically excessive moisture within the walls, which initiates the reactions. The problem may be more pronounced during winter months due to more severe weather conditions and increased moisture infiltration into the walls. Water vapor being driven from the relatively warm building interior to the exterior of the masonry walls may also be contributing to the problem during cold weather.

The masonry walls are broken by vertical control joints in various locations. These control joints consist of a continuous break in the masonry veneer which is sealed with a soft sealant material. These joints are installed in masonry walls to allow settlement or movement due to variations in temperature and moisture in the masonry. The movement in the masonry materials is concentrated at the soft control joint, thereby relieving stresses and preventing damage to the masonry materials. These joints are typically provided in long wall sections which will experience significant overall expansion and contraction, at locations where the thickness or height of the wall changes, at control joints in the underlying structural frame of the building, and other locations where stresses will be concentrated in the masonry. One section of control joint at a window corner was noted to be missing sealant materials on the Derby Street elevation (see Photograph #12).

Stone Elements

The lower five floors of the building include various decorative stone elements, including cut stone watertables and window opening keys on the original masonry walls, and cast stone vertical columns, balcony parapet caps and watertables on new masonry and EIFS wall sections (see Photograph #8). In addition, the Lafayette Street elevation of the North Building includes cut stone veneer on the first floor.

The cut stone elements on the original masonry walls appear to be in generally fair condition, with minor cracking of stones noted in some areas. Joints between these stones are sealed with mortar materials. These joints are in poor condition in many areas with cracking and deterioration of the mortar. The stone veneer on the North Building is in poor condition, with significant cracking of the joints and stones.

The cast stone elements on the newer masonry walls appear to be in generally good condition. Joints between these stones are sealed with what appears to be a urethane or silicone sealant.

EIFS

Exterior wall sections in most areas of the third through sixth floor levels are provided with exterior insulation and finishing systems (EIFS). EIFS wall sections include aluminum clad bands along the sixth floor level. This system consists of an exterior base coat of cementitious stucco applied over rigid insulation, typically expanded polystyrene. The cementitious base coat is finished with a waterproofing coat and reinforced with fiberglass mesh. The various system components, including the finish coat, base coat and rigid insulation, are adhered over the structural back-up wall system. Typical back-up materials include exterior gypsum sheathing over light gauge metal studs or CMU masonry.

EIFS walls are considered “barrier” wall systems. This type of construction is intended to form a complete waterproof skin to prevent water infiltration beyond the exterior surface of the wall. No additional flashings or other provisions to control water penetrating the wall surface are provided in these systems. Other wall systems, such as masonry cavity walls, are designed to allow some water infiltration into the wall system, which is intended to be controlled and drained back to the exterior before it can enter the building.

Once water begins to infiltrate an EIFS wall system, it can cause rapid deterioration of the assembly by causing delamination of the various adhered components. Migration of moisture through the wall system can cause widespread damage from relatively small deficiencies in the EIFS system. This is particularly true for walls which include components which are themselves susceptible to deterioration when exposed to moisture, such as gypsum sheathing back-up and expanded polystyrene insulation. This type of deterioration is particularly problematic in areas which experience frequent freeze/thaw cycles, such as the New England area.

Inspection of the existing EIFS surfaces revealed moderate damage to the EIFS, specifically on the Unit 610 balcony and at the base of the sixth floor windows in the rear lightwell. Significant cracking of the EIFS was also noted at the corners of many window openings where control joints were not continuous for the full height of the wall (see Photographs #13 & #14). In addition to cracks and other deficiencies in the existing EIFS surfaces, several potential sources of water infiltration into the EIFS wall systems were noted, including the following:

- Failed sealant materials on joints between window/door frames and EIFS materials.

- Failed sealant materials on joints between metal clad bands and EIFS materials.

- Unsealed joints between roof/balcony scupper flashings projecting through EIFS wall sections (see Photograph #17).

- Unsealed sprinkler heads projecting through the EIFS wall sections on the north face of the building (see Photograph #18).

In addition to the aforementioned problems with deterioration of the EIFS materials themselves, water infiltration and accumulation in wall cavities and other concealed areas may lead to mold infestations and other related problems. The previous investigation of Unit 301 reportedly identified significant mold infestation in wall cavities and other interior spaces. Mold infestations were also reportedly found in hallway walls outside Unit 407, which were apparently caused by an appliance leak in a Unit above. Although this source of moisture has been addressed and some contaminated wall materials were replaced, occupants still report "musty" smells in this area. The Owners of Unit 509 also report two instances of ant infestations in their Unit. While this is a fairly atypical problem for a building of this type, latent moisture accumulation and deterioration may create conditions which would promote this type of problem.

Fiber-Cement Siding

Exterior wall areas on the main roof penthouses and interior faces of lower balcony parapets are covered with fiber-cement panels (see Photograph #15). It should be noted that these are relatively new products in the New England area, and basically unproven. Therefore, we would consider the long-term durability of these materials to be a significant concern. It is our experience that these products may be prone to deterioration in this environment.

Inspection of the exposed fiber-cement panels showed open panel joints and unsealed fastener heads in areas, particularly on the rooftop penthouses (see Photograph #16). Review of photographs from the conversion construction shows the back-up materials on these walls to consist of asphaltic waterproofing membrane and plywood sheathing. If these waterproofing materials are properly installed, water infiltration through the siding materials should not be a significant problem. However, water infiltration through open joints and fastener holes may accelerate deterioration of the fiber-cement panels themselves.

4.4 Roof

The main roof on this building consists of a fully adhered EPDM single ply membrane system manufactured by Carlisle Syntec Systems (see Photograph #20). EPDM roof systems consist of individual sheets of single ply membrane bonded together with adhered seams to form a continuous roof system. The membrane in a fully adhered system is adhered to rigid insulation which is fastened with screws and stress plates to the structural roof deck. Waterproofing systems on lower level balconies also consist of EPDM membrane systems. These appear to be loose laid under wooden deck platforms which hold them in place.

The main roof is bordered by solid parapet walls approximately four feet in height. Drainage from the roof surface is provided by internal drains located in tapered sumps at regular intervals. Tapered insulation crickets are located between the internal drains to direct accumulated water towards the drains (see Photograph #19). Overflow scuppers, set several inches above the membrane surface, are located in the parapet walls at various locations. Scupper openings of this type are intended to allow ponded water, which may accumulate on the roof surface due to clogged drains or other conditions, to flow to the exterior. Scuppers are flashed to the parapet membrane with uncured strip flashings. Lead coated copper scupper outlets are provided at the openings in the exterior parapet walls.

The existing EPDM membrane materials were noted to be in generally good condition at the time of inspection. Field seams between individual membrane sheets have been made with 3” seam tape. Joints between factory seams and field seams (T-joints) in most areas have been provided with uncured membrane covers.

The field membrane has been extended up the interior surface of the parapet wall to the level of the aluminum coping (see Photograph #21). Inspection of corner sections indicated that the field membrane was not extended over the top of the parapet. Aluminum copings in place on the top surface of the parapet walls appeared to be in generally good condition at the time of inspection, although sealant materials between coping sections have begun to fail in some areas (see Photograph #10).

Penetrations in the membrane surface include pitch pockets, vent pipes, curb mounted skylights, self flashing mechanical units and field wrapped metal vents. Several heat pumps and mechanical units set on wood sleepers and rigid insulation are also located on the roof surface. Most sleepers have been provided with EPDM slipsheets between the wood and the field membrane, although several were noted to be missing slipsheets, a condition which could lead to damage of the field membrane.

The area around the central rooftop penthouse is provided with a wooden deck platform consisting of 5/4 x 6 hardwood decking on 2 x 6 pressure treated sleepers. This deck extends around the penthouse on three sides. Similar deck platforms are located on lower balconies accessed from individual Units.

The rooftop deck platform appears to be in generally satisfactory condition. The deck boards are fairly faded and show moderate cracking and checking. Both the fading and checking are typical for wood materials with direct exposure to the sun. Deck platforms on lower balconies show less fading and checking (see Photograph

#22). This is presumably due to individual Owners treating the exposed wood surfaces with waterproofing or water repellent stain. It should be noted that various wood stains and water repellents contain solvents which are incompatible with EPDM membrane and/or membrane seams, and may cause significant damage to these membrane systems.

5.0 BUILDING UTILITIES

As part of our study, a survey of the building was performed by MacRitchie Engineering, a mechanical/electrical engineering subconsultant, for the purpose of evaluating the building's electrical, mechanical and fire protection systems. A summary of the findings from this survey is included below.

5.1 Mechanical

The HVAC systems for individual Units consist of a high efficiency, gas fired domestic hot water heater that is oversized to provide not only domestic hot water, but also hot water for space heating via a fan coil unit. The hot water fan coil unit is ducted to each room and includes a direct expansion cooling coil for air conditioning. The remote air cooled condensing unit is located on the roof. The existing system is a compromise that provides both heating and cooling at a reasonable price. Hot water baseboard heat registers would likely be more comfortable in very cold weather, but would have resulted in much higher construction costs.

One common complaint from individual Unit Owners was the inadequacy of the heating and cooling systems. Units on the Derby Street side of the building, with greater exposure to direct sunlight, reportedly experience excessive heat. Unit 507 reports having to run the cooling system even during January winter conditions. Units with less exposure to direct sunlight, including Unit 511, reportedly experience inadequate heat, particularly during windy, cold weather.

Based on our inspections of the existing systems, there appear to be several possible sources for these reported operational issues, including:

- The HVAC system is undersized.
- The hot water heater's water temperature needs to be increased.
- Air flows are not properly balanced from one air register to another.
- The building envelope is not as air tight or thermally tight as the designers intended.

As noted above, the existing construction of the exterior walls may be contributing to HVAC issues in the building. Heating from air supplied through elevated ductwork is generally acceptable in well insulated buildings with small to medium sized windows. With very large windows (such as those in this building) or poorly insulated exterior walls, down drafts can occur along the exterior wall. Radiation heating installed under windows will counteract these down drafts for a more comfortable installation.

General guidelines for acceptable levels of heat loss in buildings heated with elevated ductwork are as follows:

- With a heat loss of less than 200 BTUH per linear foot of exterior wall, typical building occupants will find heating through elevated ductwork acceptable.

- Between 200 and 400 BTUH heat loss per linear foot, a significant percentage of typical building occupants will find heating through elevated ductwork unacceptable.

- Above 400 BTUH heat loss per linear foot, nearly all typical building occupants will find heating through elevated ductwork unacceptable.

Most modern (or refurbished) buildings have a heat loss of between 250 to 350 BTUH per linear foot on a "design" day (outside air temperature below 10°F). The large, relatively drafty windows in this building will increase heat loss through the walls. Given the existing heat distribution system, complaints of inadequate heat in the building should be expected. In addition, solar gain through the large windows on the Derby Street and other sunny elevations appears to be contributing to the excessive heating of these areas.

The existing hot water heaters are made by the "American Water Heater Company", and have a 34 gallon storage capacity and 100,000 BTU gas input. These are not typical "off the shelf" units. A typical 30 to 40 gallon water heater has a capacity of about 30,000 to 35,000 BTUH.

The existing water heaters have not been set in drained pans, which is typically a Code requirement. It appears that this was allowed due to the fact that the heaters are set in the utility rooms which have been provided with drained floors (see Photograph #24).

5.2 Electrical

Primary power enters the basement on the Derby Street side of the building and is transformed to 208/120 volt, three phase, 60 cycle with floor mounted transformers located in a basement Utility Company vault. The vault is ventilated via a large steel grate in the sidewalk and exhausted via a ducted fan in the rear of the vault. The area directly under the sidewalk grate is segregated from the main transformer vault area by a low concrete curb and drained with a sump pump. However, leaves and other debris reportedly collect in the sump pit and need to be periodically removed. During periods of heavy rain, water runs into the vault and potentially could damage or put the transformers out of service, particularly if the sump pit is not kept clear.

Electrical panels and meters for all Units are located in the main electrical room on the first floor. The electrical renovation of the building appears to have been generally properly designed and installed. However, inspection of some work subsequently completed in individual Units appears to be improper, and not in compliance with applicable Code requirements. This includes electrical work in the utility room of Unit 509, where a wall mounted light has been wired into the shut-off switch for the hot water heater, and capped wires have been left exposed outside of the wall mounted box (see Photograph #23).

Emergency power for the building is provided by a 250 Kw emergency generator located on the main roof.

5.3 Fire Protection

Due to the Building's height (70 feet from mean grade to the top of the building), it is classified a "High Rise" as defined by the Massachusetts State Building Code. Consequently, the building is equipped with mechanical and electrical systems required in high rise buildings, including:

- The entire building must be "fully" sprinklered
- Fire pump
- Pressurized stairwells (in case of fire)
- Smoke evacuation system
- Emergency generator

Rows of piping run along the ceiling of the main electrical room are a violation of the electrical code and an indicator of poor design and/or coordination among the building trades during design and construction. It appears that to address this situation, a large field fabricated copper drain pan was installed under the piping. The sprinkler heads for most of the room are above the copper drain pan, leaving the room largely unsprinklered, and not in compliance with the requirement for a "fully" sprinklered building.

Previously, electrical inspectors requested sprinklers in electrical rooms such as this be removed and smoke detectors installed. This was a typical conflict between the electrical inspector and fire department, with the strongest personality prevailing. However, high level rulings from approximately six to ten years ago now require automatic fire sprinklers in electrical rooms in "fully sprinklered" buildings.

The emergency ventilation systems (including smoke exhaust, stairwell pressurization, etc.) appear to be installed in accordance with applicable Code requirements.

5.4 Ventilation

A bakery is located on the rear corner of the first floor of the building. The bakery backs ups to and uses the rear stairwell of the upper residential portion of the building. The existing stairwell pressurization system operates only if activated by other fire detection systems and is intended to positively supply air (positive pressure) to keep smoke out and protect the path of egress. Due to either the inadequate exhaust from the bakery and/or the "chimney" effect of the unpressurized stairwell, bakery smells enter the stairwell and rise up and into the upper floor common areas.

The ventilation in the bakery appears to be adequate. Better exhaust from the bakery might help, but a bakery is always going to smell like a bakery. It was noted that the bakery exhaust comes out through the building face, but is not ducted down towards the sidewalk. This is not a Code violation, but it would be preferable to run the ductwork through the roof.

The restaurant located on the Derby/Lafayette corner of the first floor has its main exhaust under an awning, discharging down towards the sidewalk. This is a code violation, and the owners have reportedly been told by the Salem Building Department to correct the situation. The recent renovation reportedly provided a shaft for restaurant exhaust to the roof, which would address this situation.

After renovation of the building, there were reportedly operational problems with the new elevator due to excessive heat build-up in the elevator machine room. To address this situation, an exhaust fan was installed in the emergency electrical closet adjacent to the machine room to remove excess heat. This has reportedly addressed the issues with the elevator, but the new fan is very noisy. This new exhaust fan is a direct drive fan with vibration isolators in the hanger rods, but the ductwork is hard connected to the fan. The relatively high RPM's of the existing fan and the hard ductwork connection appear to be the source of the excessive noise.

6.0 RECOMMENDATIONS

To address the existing conditions and noted deficiencies at the Derby Lofts Condominium, we have prepared the following recommendations. It should be noted that the estimated costs included with these recommendations are based on preliminary scopes and quantities of work. Some of these items may be combined under single contracts, thereby reducing the overall costs. Other items should be performed on a time and materials basis. Typical labor rates for a qualified contractor, including overhead and profit, could be between Seventy and Ninety dollars per hour ($70.00-$90.00/hr.). Standard material costs should include a contractor's mark-up of Twenty to Thirty per cent (20% - 30%).

6.1 STRUCTURAL

To address potential safety hazards posed by loose concrete such as that noted in the two beams in the bedroom of Unit #309, loose concrete materials should be removed. After these materials are removed, the underlying structure should be examined to better determine the cause of the cracking. Appropriate repair procedures can then be determined. This work should be considered a #1 Priority. This work should be performed on a time and materials basis.

Other irregularities noted in interior finishes, including cracking and irregularities in gypsum finish materials, painting irregularities, cracking of ceramic tile floors and shower stalls and opening of trim joints appear to be due to a combination of poor workmanship (gypsum/painting irregularities), inadequate substrates (cracking tile) and typical settlement of the building components (opening trim joints). These deficiencies appear to be aesthetic issues, and not structural or safety concerns. Addressing these items should be considered a #3 Priority, and should be done on a time and materials basis.

Floors in Units which are severely out of level, such as that in the small bedroom of Unit 509, should be leveled by repouring the floor with a leveling compound. This will require removal and replacement of trim and other finish materials at the floor level. This work should be considered a #2 Priority. We would recommend a preliminary budget allowance of $3,000.00 - $5,000.00 for this work in Unit 509.

6.2 BUILDING ENVELOPE

<u>Windows and Doors</u>

Due to the potential for water infiltration into wall cavities and other building assemblies through the unflashed window and door openings, as well as the reported operational problems with the double-hung windows, we anticipate that replacement of the existing windows will ultimately be necessary.

Window replacement should include complete removal of the existing units to the structural rough openings to allow the new units to be installed with sill flashings below the frames. These flashings should be turned up behind the backs and ends of the sills and drained to the building exterior. These flashings should prevent any water infiltrating joints or other openings in the frames from reaching the underlying wall areas and entering the building. This work should be considered a #1 Priority. The final cost of this work will depend on the final selection of windows and other details. However, we would recommend a preliminary budget allowance of $800,000.00 to $1,200,000.00 for this work.

A less expensive alternative to complete window replacement would be removal, flashing and reinstallation of the existing window units. It should be noted that while removal and reinstallation of the existing windows should be possible, some damage to the existing units should be expected. We would estimate a budget allowance of $400,000.00 to $600,000.00 for this work.

As an interim measure to reduce water infiltration, sealing exterior joints on and around the existing window frames should be including in the sealant replacement work outlined below. It should be kept in mind that exterior sealant will reduce water infiltration, but will not be as effective as proper flashings within the wall systems.

Exterior Sealant

Resealing of exterior sealant joints should be included as a regular maintenance item in the overall maintenance program for the building. These joints should be scheduled for resealing every seven to ten years. This work should include removal of the existing materials and preparation of the underlying substrates to provide a proper bonding surface for the new materials. High quality sealant and the recommended primers should then be applied during dry, clear weather conditions in accordance with the manufacturer’s recommendations. This work should be considered a #1 Priority. We would recommend a budget allowance of $80,000.00 to $120,000.00 for this work.

Masonry Walls

Periodic inspection, spot repointing and repair of the masonry should be incorporated into regular maintenance work for the building. All repointing work should include cutting the existing materials out of the joint to provide a sound substrate for the new mortar. The new mortar should be installed in multiple layers. All cracked, spalled or otherwise damaged brick or stone elements should be removed and replaced. This work should be considered a #2 Priority. We would recommend a budget allowance of $10,000.00 to $20,000.00 for this work.

EIFS

To prevent accelerated deterioration and reduce water infiltration through the existing EIFS materials, inspection and repair of the wall surfaces should be included in the regular maintenance program for the building. This should include the following:

- Repair of all cracks, holes and other deficiencies.
- Resecurement of all loose insulation materials.
- Sealing of all wall penetrations, window perimeter joints and other joints in the EIFS surfaces.
- Periodic coating of the wall surfaces with an elastomeric coating designed for these wall systems.

This work should be considered a #1 Priority. We would recommend a preliminary budget allowance of $100,000.00 to $150,000.00 for this work.

We would anticipate that the existing EIFS materials will eventually need to be replaced with exterior wall systems which can provide long term, weathertight assemblies. A more weathertight stucco system with complete waterproofing back-up and flashings could be considered. Some alternate wall systems would include masonry veneer, metal panels, or combinations of these systems. The final replacement options may depend on the structural capacity of the existing wall systems, which may preclude heavier systems such as masonry veneer. This work should be considered a #2 Priority. The final cost of this work will depend on the actual replacement system. We would recommend a preliminary budget allowance of $1,000,000.00 to $1,500,000.00 for this work.

Fiber-Cement Siding

To help maintain the integrity of the existing fiber-cement siding materials, all exposed joints and fastener heads should be sealed as part of the aforementioned sealant replacement program for the building. This is particularly important on the roof penthouse walls.

Roofs

Annual inspection of the EPDM roof and repair as necessary should be incorporated into regular maintenance work for the building. This should include inspection and repair of all membrane and flashing seams, clearing of drains, replacement of missing slip sheets and removal of any debris on the roof. This work should be considered a #2 Priority.

To help extend the service life of the wooden deck platforms, the exposed wood surfaces should be treated with an approved water repellent. This should be a material approved for contact with EPDM materials.

6.3 BUILDING UTILITIES

Mechanical

To maximize the performance of the existing HVAC systems, a qualified technician should perform a thorough inspection and tune-up to ensure the system is set to the proper water temperature and all ductwork is properly balanced.

To further address problems with the size and heat distribution of the existing systems would require major modification or replacement of the system. However, the reported problems with heating of Units should be included along with other considerations related to window replacement. A more energy efficient window should reduce the potential for down drafts and could improve the level of comfort provided by the existing HVAC system.

Any window replacement should also include provisions to reduce solar gain in areas where this appears to be creating cooling problems in the building. Properly designed window treatments or coatings could also be considered for the existing windows to help alleviate this problem.

Because the existing domestic hot water heaters are not an “off the shelf” item, and because the normal life expectancy is less than ten years with replacement often needed without warning, we would recommend the Association keep several hot water heaters in stock. A discussion regarding warrantee should take place with the supplier, or perhaps the supplier will agree to keep several in stock specifically for this building.

Although it does not appear that pans were required for installation of the existing hot water heaters, we would recommend that any replacement of these units include new pans provided with proper drains into the existing building plumbing lines.

Electrical

To reduce the potential for water infiltration into the vault and associated damage to the transformers, we would recommend the following modifications:

- The area of the grate on Derby Street should be reduced and the grate should be set at a high point on the sidewalk.
- Redundant sump pumps, wired into the emergency generator, should be installed in the vault.
- The transformers should be mounted on 4" to 6" concrete pads.

These modifications will need to be coordinated with the Utility Company. This work should be considered a #1 Priority. The final cost of this work will depend on the final scope of modifications.

All electrical work completed in individual Units after the main renovation of the building should be inspected and any work found not to comply with applicable Code requirements should be properly completed. This work should be considered a #1 Priority and completed on a time and materials basis.

Fire Protection

To meet the requirement for a "fully sprinklered" building, a second layer of sprinkler heads should be installed under the drain pan in the main electrical room. This work should be considered a #1 Priority and completed on a time and materials basis.

As part of regular maintenance on the building, the fire pump should be tested annually and the emergency generator exercised on a regular basis to ensure they are in proper working order.

Ventilation

As part of regular maintenance on the building, the existing smoke evacuation systems and stairwell pressurization systems should be tested annually to ensure they are in proper working order.

If the bakery does not use the rear stairwell on a regular basis, proper weather stripping of the doors at all levels and making sure the stairwell is as air tight as possible should prevent the bakery smells from entering each floor. This work should be considered a #3 Priority and completed on a time and materials basis. Exhausting air from the stairwell is not a viable option, since it would be both energy wasteful and could attract smoke in case of a fire.

The exhaust from the restaurant located on the Derby/Lafayette corner should be ducted to the roof through the available shaft. This work should be considered a #2 Priority and completed on a time and materials basis.

The existing exhaust fan for the elevator machine room should be replaced with a larger, slower turning (fewer RPM) fan. The new fan should have vibration isolators and flexible connections to the ductwork. This work should be considered a #3 Priority. We would recommend a budget allowance of $600.00 to $800.00 for this work.

7.0 RESERVE BUDGET ANALYSIS

The purpose of the Reserve Study portion of our survey was to determine the funding requirements for anticipated replacement and refurbishment of the Condominium common facilities. Reserve items to be included as part of this analysis are major building and site components with an expected useful life of thirty years or less. Items with an expected useful life of over thirty years, such as foundations, structural framing, etc., are not considered part of this Reserve Study. Maintenance items, such as painting, snow removal, etc., are not considered Reserve Items and are not included in this Reserve Study.

Review of the overall maintenance history of the building included the available Condominium documents, which provide a general description of the Condominium facilities and Unit boundaries. These boundaries are used to differentiate between common areas, which the Condominium Association is responsible for maintaining, and individual Units, which Unit Owners are responsible for maintaining.

Review of the available Condominium documents indicates the Unit boundaries are as follows:

Floors:	The Upper Surface of the Subflooring.
Ceilings:	The Underside of the Slab of the Floor Above.
Exterior Walls:	The Exterior Surface of the Exterior Wall.
Interior Walls:	The Centerline of the Wall Between Units and Between Units and the Common Areas and Facilities.
Windows & Doors:	The Unit Owner Shall Be Responsible For the Maintenance, Repair and Replacement of All Windows, Glazed Doors and Other Glazing Areas, and Unglazed Doors, in Interior and Exterior Walls of the Unit Including But Not Limited To Those Which Open From the Unit.

Unit Owners are responsible for maintaining all building elements within these boundaries.

Funding calculations, using current dollar values, are listed in Appendix A. The Existing Reserves have been distributed between the various common elements for the purpose of these calculations. The required annual contribution for each element is calculated by dividing the Required Funds (Replacement Cost less Existing Reserves) by the Remaining Life. Based on these calculations, the total recommended Annual Contribution is $230,948.00. It should be noted that, a substantial portion of this contribution is due to anticipated replacement of major items in the relatively near future. The required Annual Contribution should decrease as these items are replaced.

Replacement costs include estimated material and labor costs and are based on the conditions noted during our survey, our experience with similar construction and assumed levels of maintenance.

Replacement of the original elements with matching materials has been assumed with the exception of items where obvious deficiencies have been noted. Replacement costs for any such deficient items include the costs for upgrading the original elements as noted. For items where specific conditions, replacement costs and remaining service lives can not be determined (i.e. underground utilities, etc.), a reasonable allowance has been assumed.

It should be noted that interest and inflation have not been factored into our funding calculations. This is due to the fact that interest and inflation rates will fluctuate, tending to rise and fall concurrently. As long as they do so, they tend to cancel out each other.

It should be noted that, this study includes various estimated values, including replacement costs, service lives, etc. These estimated values are used to provide a realistic model of the anticipated maintenance requirements for this building. Actual replacement schedules for the various elements included in this study must be determined as part of the on-going maintenance program for the building. Actual costs must be determined from actual bid prices for the work. As this information becomes available, it should be incorporated into updated versions of this study. We recommend updating this study on a regular basis, typically every one to three years. We also recommend that this study be reviewed by the Association's legal and financial professionals, particularly with regard to any tax implications.

Common Elements and assumptions included in our Reserve Study for this building include the following:

SECTION 04 - MASONRY

Masonry Repair/ - An allowance has been included for periodic repairs to the brick masonry. This work includes repointing of the mortar joints and repair of damaged brick.

Stone Repointing/ - Repair An allowance has been included for periodic repairs to the cast and cut stone architectural elements and cladding. This work includes repointing of the mortar joints between cast stone elements and repair of damaged stone.

SECTION 07 - BUILDING ENVELOPE

Membrane Roof - Reroofing with a single ply membrane (EPDM, PVC, etc.) system with thermal insulation underlayment has been assumed. Reroofing is assumed to include removal of the existing roof systems.

Note: Estimated service life is based on periodic inspections and maintenance to address any noted damage or deficiencies.

Balcony Decking/ - Membrane — Replacement of the balcony and rooftop wood decking has been assumed. It is assumed that replacement of membrane waterproofing on balconies accessed from individual Units will be coordinated with this work.

Fiber Cement Siding - Replacement of the fiber cement siding at the rooftop penthouse has been assumed.

Note: Estimated service life is based on periodic maintenance including repainting or staining and sealing siding joints, fastener heads etc.

EIFS Coating - An allowance has been included for the periodic reapplication of the finish weatherproofing coat on EIFS materials.

EIFS Replacement - Ultimate replacement of the EIFS materials has been factored into our calculations.

Sealant Joints - Preparation and resealing of the existing sealant joints has been assumed.

SECTION 08 - DOORS & WINDOWS

Exterior Doors - Replacement of exterior doors, including entrance doors, has been assumed.

Note: Estimated service life is based on periodic maintenance, including periodic refinishing of the doors.

Skylight - Replacement of the skylight has been assumed.

Parking Area Gate - Replacement of the parking area gate has been assumed.

Interior Doors - An allowance for miscellaneous repairs/hardware replacement has been assumed for the interior doors.

SECTION 09 - FINISHES

Interior hallways are finished with carpeted and wood floors with painted walls and ceilings. The first floor lobby areas are finished with concrete floors with painted walls in the main lobby, and vinyl floors and hung ceilings in utility areas.

Carpet - Replacement of carpeting in common areas has been assumed. These are relatively high traffic areas with heavy wear conditions.

Wood Flooring -	Replacement of wood flooring in common areas has been assumed. These are relatively high traffic areas with heavy wear conditions.
Vinyl Tile Flooring -	Replacement of vinyl tile flooring in common areas has been assumed.
Hung Ceiling -	Replacement of hung ceilings in common areas has been assumed.

SECTION 10 - SPECIALTIES

Fire Extinguishers -	Replacement of fire extinguishers on a regular basis has been assumed to ensure units will be in proper working order.
Mailboxes -	Replacement of mailboxes has been assumed. **Note**: It should be determined if the Post Office will assume the cost for mailbox replacement.
Bathrooms -	Replacement of common area sinks and toilets has been assumed.

SECTION 14 - CONVEYING

Elevators -	The building includes two six floor, two thousand five hundred pound capacity elevators. An allowance has been included for periodic refurbishment of the elevators. This typically includes refurbishment of cabs, doors, controls and miscellaneous mechanical components.

SECTION 15 - MECHANICAL

Building Utilities -	An allowance has been included for miscellaneous repairs to building system components servicing the common areas. Allowances have been included for the electrical, plumbing, intercom and fire protection systems. These allowances have been based on the overall floor space of the building. **Note**: This allowance should be periodically reviewed and adjusted according to the actual utility costs established for this building.
Common Area - HVAC	Replacement of the rooftop make-up air unit.
Emergency - Generator	Replacement of the emergency generator has been assumed. **Note**: The typical service life for an internal combustion engine of this type is less than ten years. Due to the fact that emergency generators are run on a very limited basis, the service life for this item has been extended considerably.

Rooftop Fans - Replacement of the rooftop exhaust fans has been assumed.

Fire Pump - Replacement of the fire and jockey pumps has been assumed.

Back Flow - Preventer Replacement of the back flow preventer has been assumed.

Sump Pumps - Replacement of basement sump pumps has been assumed.

SECTION 16 - ELECTRICAL

Street Clock - Replacement of the exterior clock on the corner of Derby/Lafayette Streets has been assumed.

Exterior Lighting - Replacement of exterior lighting in common areas has been assumed. This includes new fixtures. Reuse of site wiring has been assumed.

Interior Lighting - Replacement of interior lighting in common areas has been assumed. This includes new fixtures. Reuse of existing wiring has been assumed.

Electric Heaters - Replacement of electric heaters in common areas has been assumed. Reuse of existing wiring has been assumed.

Intercom Panel - Replacement of lobby intercom panels has been assumed. Reuse of existing wiring has been assumed.

Note: Replacement of components in individual Units has not been included due to the fact that these service one Unit and would therefore be considered Owner responsibility.

Fire Protection - Panel Replacement of lobby fire protection panels has been assumed. Reuse of existing wiring has been assumed. Replacement of heat detectors in individual Units has not been included due to the fact that these service one Unit and would therefore be considered Owner responsibility.

APPENDIX A
RESERVE STUDY CALCULATIONS

DERBY LOFT CONDOMINIUM
COMMON ELEMENT COSTS & SERVICE LIVES

	ITEM	PRICE		QUANTITY	COST	AGE	REMAINING LIFE	EXISTING RESERVES	REQUIRED FUNDS	ANNUAL CONTRIBUTION
4-MASONRY	Masonry Repair/Pointing	$8,000.00	(lump sum)	1	$8,000	4	6	$95	$7,905	$1,317
	Stone Repair/Pointing	$2,000.00	(lump sum)	1	$10,000	4	1	$119	$9,881	$9,881
7-BUILDING ENVELOPE	Membrane Roof	$10.00	(per sf)	18,300 (sf)	$183,000	4	26	$2,177	$180,823	$6,955
	Balcony Deck/Membrane	$22.00	(per sf)	4,672 (sf)	$102,784	4	21	$1,223	$101,561	$4,836
	Fiber Cement Siding	$10.00	(per sf)	830 (sf)	$8,300	4	16	$99	$8,201	$513
	EIFS Coating	$5.00	(per sf)	28,000 (sf)	$140,000	4	4	$1,665	$138,335	$34,584
	EIFS Replacement	$35.00	(per sf)	28,000 (sf)	$980,000	4	20	$11,658	$968,342	$48,417
	Sealant Joints	$8.00	(per lf)	12,650 (lf)	$101,200	4		$1,204	$99,996	$99,996
8-DOORS & WINDOWS	Entrance Doors	$3,000.00	(per unit)	3	$9,000	4	26	$107	$8,893	$342
	Trash Room Doors	$1,000.00	(per unit)	1	$1,000	4	21	$12	$988	$47
	Rooftop Doors	$600.00	(per unit)	2	$1,200	4	16	$14	$1,186	$74
	Skylight	$100.00	(per sf)	165 (sf)	$16,500	4	18	$196	$16,304	$906
	Parking Area Gate	$2,700.00	(per unit)	2	$5,400	4	16	$64	$5,336	$333
	Interior Doors	$40.00	(per unit)	40	$1,600	4	16	$19	$1,581	$99
9-FINISHES	Carpeting	$4.25	(per sf)	5,600 (sf)	$23,800	4	16	$283	$23,517	$1,470
	Wood Flooring	$7.00	(per sf)	1,400 (sf)	$9,800	4	16	$117	$9,683	$605
	Vinyl Tile Flooring	$3.00	(per sf)	320 (sf)	$960	4	26	$11	$949	$36
	Hung Ceiling	$3.00	(per sf)	520 (sf)	$1,560	4	26	$19	$1,541	$59
10-SPECIALTIES	Fire Exting.	$200.00	(per unit)	25	$5,000	4	6	$59	$4,941	$823
	Mailboxes	$75.00	(per unit)	50	$3,750	4	26	$45	$3,705	$143
	Water Closet	$300.00	(per unit)	2	$600	4	14	$7	$593	$42
	Bath Lavatory	$450.00	(per unit)	2	$900	4	14	$11	$889	$64
14-CONVEYING	Elevator	$30,000.00	(lump sum)	2	$60,000	4	16	$714	$59,286	$3,705
15-MECHANICAL	Building Utilities	$4,000.00	(lump sum)	1	$4,000			$48	$3,952	$3,952
	Common Area Heating	$16,500.00	(lump sum)	1	$16,500	4	11	$196	$16,304	$1,482
	Emergency Generator	$95,000.00	(lump sum)	1	$95,000	4	21	$1,130	$93,870	$4,470
	Rooftop Stair/Smoke Far	$7,600.00	(per unit)	3	$22,800	4	21	$271	$22,529	$1,073
	Rooftop Exhaust Fan	$300.00	(per unit)	26	$7,800	4	16	$93	$7,707	$482
	Elevator Rm Fan	$650.00	(lump sum)	1	$650	4	16	$8	$642	$40
	Fire Pump	$22,000.00	(lump sum)	1	$22,000	4	26	$262	$21,738	$836
	Jockey Pump	$4,200.00	(lump sum)	1	$4,200	4	11	$50	$4,150	$377
	Back Flow Preventer	$7,000.00	(lump sum)	1	$7,000	4	21	$83	$6,917	$329
	Sump Pumps	$250.00	(per unit)	3	$750	4	6	$9	$741	$124
16-ELECTRICAL (Exterior)	Street Clock	$1,000.00	(lump sum)	1	$1,000	4	16	$12	$988	$62
	Street Level Lights	$500.00	(per unit)	13	$6,500	4	20	$77	$6,423	$321
	Rooftop Wall Fixtures	$100.00	(per unit)	9	$900	4	16	$11	$889	$56
16-ELECTRICAL (Interior)	Ceiling Fixtures	$100.00	(per unit)	4	$400	4	26	$5	$395	$15
	Recessed Lights	$100.00	(per unit)	46	$4,600	4	26	$55	$4,545	$175
	Hall Wall Lights	$100.00	(per unit)	132	$13,200	4	26	$157	$13,043	$502
	4' Flor. Fixtures	$150.00	(per unit)	49	$7,350	4	21	$87	$7,263	$346
	8' Flor. Fixtures	$200.00	(per unit)	11	$2,200	4	21	$26	$2,174	$104
	2' x 2' Flor. Fixtures	$180.00	(per unit)	12	$2,160	4	21	$26	$2,134	$102
	Exit Signs	$100.00	(per unit)	41	$4,100	4	21	$49	$4,051	$193
	Electric Heater	$600.00	(per unit)	6	$3,600	4	11	$43	$3,557	$323
	Intercom Panel	$1,000.00	(lump sum)	2	$2,000	4	11	$24	$1,976	$180
	Fire Protection Panel	$1,750.00	(lump sum)	1	$1,750	4	11	$21	$1,729	$157
Totals:					$1,904,814			$22,659	$1,882,155	$230,948

Updated: **4/24/08**

Notes:

(1) Funding and maintenance based on this study will be assumed to begin in: 2008

(2) The Reserve Fund Balance is: $22,659 as of November 2007

APPENDIX B
PHOTOGRAPHS

Photograph #1 – Steel Braces Installed As Part Of Condominium Conversion

Photograph #2 – Cracking Of Concrete Beam In Unit 309

Photograph #3 – Corner Joint In Fixed Window Frame

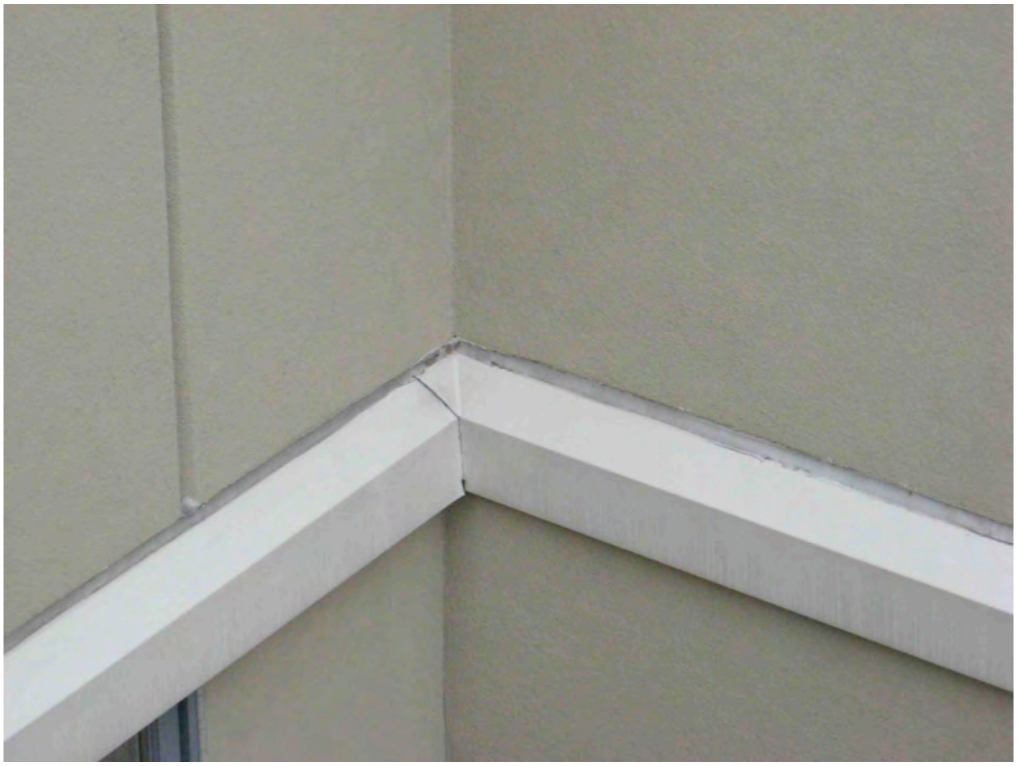
Photograph #4 – Water Staining On Interior Face Of Fixed Window

Photograph #5 – Sealant Applied To Exposed End Of Window Frame

Photograph #6 – Brace Added To Operable Sash Of Double-Hung Window

Photograph #7 – Large Fixed Window Unit

Photograph #8 – Original Cut Stone Element (Lower) And Cast Stone Column (Upper)



Photograph #9 – Sealant Joint On Metal Band In EIFS Wall Section

Photograph #10 – Sealant Materials On Rooftop Parapet Cap

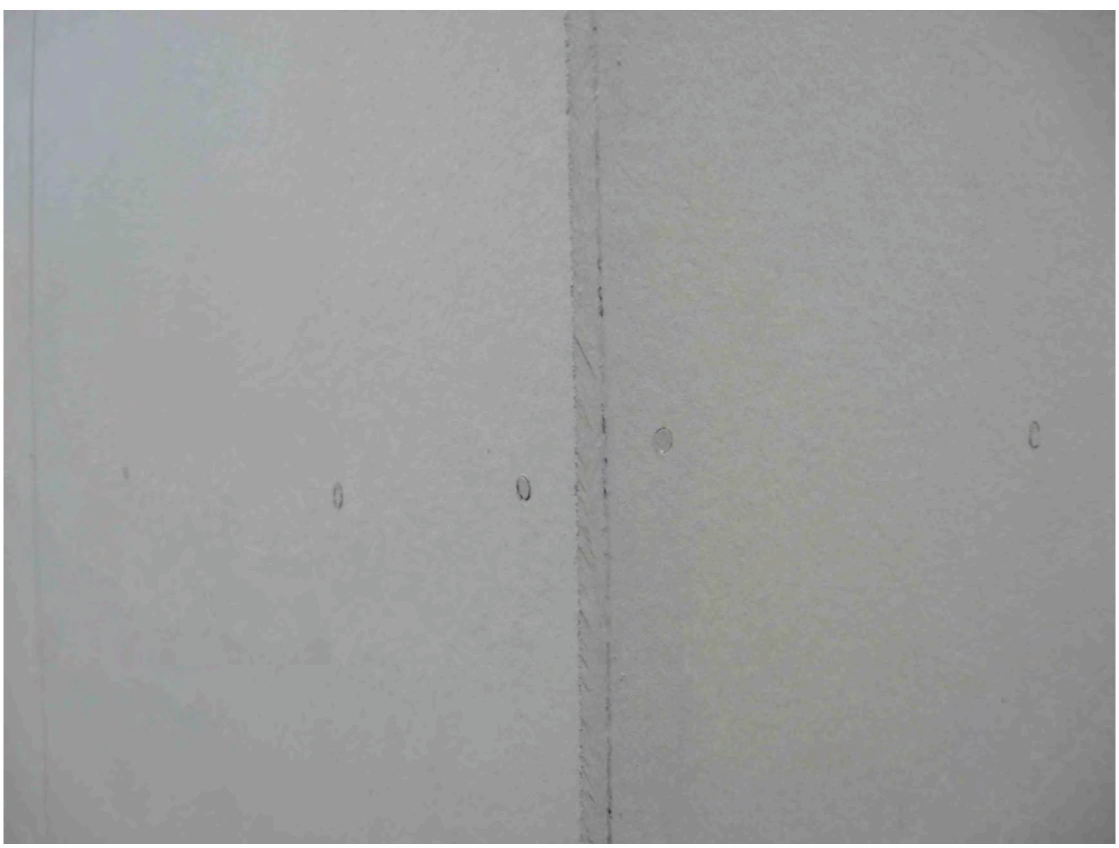
Photograph #11 – Metal Flashing And Weep Holes In Masonry Veneer Wall

Photograph #12 – Unsealed Joint In Masonry Veneer On Derby Street Elevation

Photograph #13 – Cracked EIFS Wall Surface At Window Corner

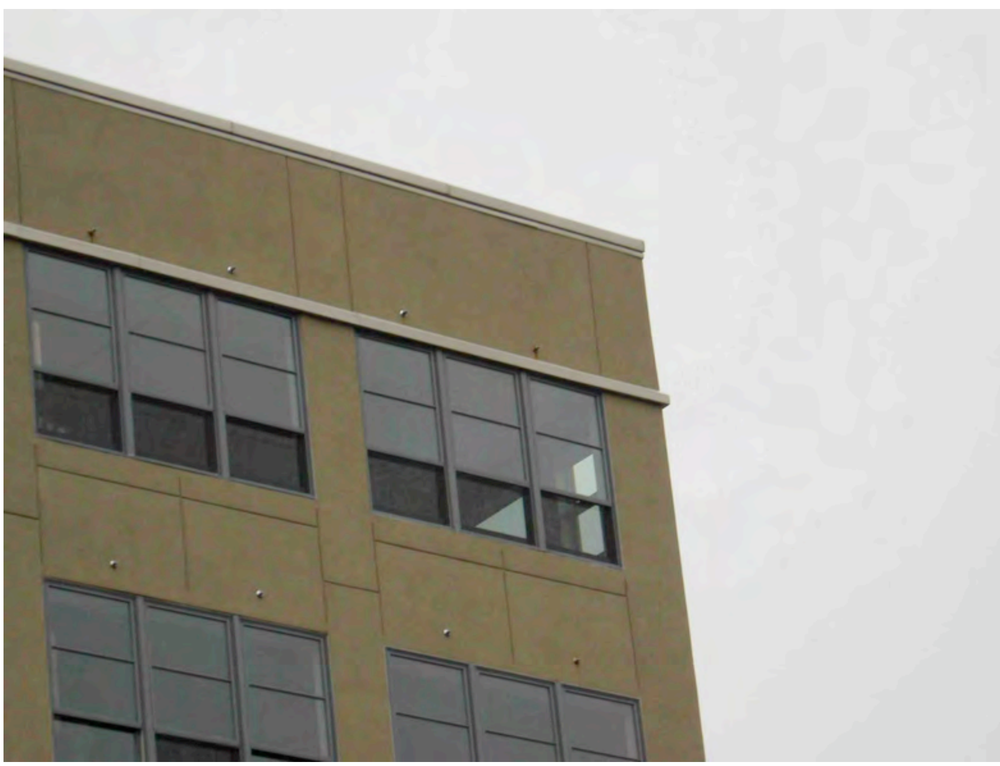
Photograph #14 – Cracked EIFS Wall Surface At Window Corner

Photograph #15 – Fiber-Cement Siding On Rooftop Penthouse



Photograph #16 – Unsealed Fastener Heads In Fiber-Cement Siding

Photograph #17 – Metal Scupper Flashing With Unsealed Joints



Photograph #18 – Sprinkler Heads With Unsealed Joints

Photograph #19 – EPDM Membrane Roof With Crickets To Direct Water To Drains

Photograph #20 – EPDM Membrane Roof With Various Flashing Details

Photograph #21 – EPDM Membrane Run Up Parapet Wall

Photograph #22 – Exterior Balcony On Upper Floor Unit

Photograph #23 – Exposed Wiring In Utility Room Of Unit 509

Photograph #24 – Water Heater Without Pan In Utility Room Of Unit 509