

Physical Needs Assessment

Sample Apts.

6000 Sample Avenue

Los Angeles, CA 55555



5/17/2017

Prepared for:

SAMPLE PORPERTY MANAGERS

6000 Sample Avenue
Los Angeles, CA 55555

Prepared by:



Lane Consulting Services
4136 Del Rey Avenue
Marina del Rey, CA 90292
310-823-7613



Sample Apts. Physical Needs Assessment

PROJECT MANAGER'S STATEMENT

Lane Consulting Services, LLC was directed by Sample Property Managers to perform a Physical Needs Assessment for Sample Apts. and report on the findings for use as a planning document for preserving and improving the building.

Lane Consulting Services, LLC has extensive experience in construction management, Physical improvements, and facilities management. The information and recommendations in this report are the result of our investigations. David Heatherly, LCS Senior Facilities Manager, as Project Manager, worked with the aid of the property manager.

We did visual site inspections on Tuesday, May 2nd, 2017. This report provides a record of our observations, recommendations for remediation, and it provides sufficient information for financial planning and decision-making regarding the cost of improvements and needed repairs and replacements. Exact costs can be determined when the precise scope, timing, and bidding of the recommended work are determined.

Sincerely,



Rod Lane
Principal

Lane Consulting Services, LLC
4136 Del Rey Ave.
Marina del Rey, California 90292

(310) 823-7613



EXECUTIVE SUMMARY & REPORT METHODOLOGY

Executive Summary

General Introduction

The goal of this report is to document the condition of Sample Apts., a two building project, and make recommendations for improvements and repairs based on our observations. Sample Apts. is located at 6000 Sample Avenue; Los Angeles, CA. The property manager accompanied us during the inspection. Each of the units were individually inspected as well as the site, building, and systems.

Site

All ornamental iron fencing should be painted, to include the pool enclosure, vehicle gates, and all guard railings; all pedestrian gates need new hardware; damaged planter walls and waterproofing need to be repaired or replaced; the dry rot/termite damage on all wooden trellises should be repaired; a traffic coating should be installed at the site of the removed play area.

Building Systems

Common area HVAC should be replaced with newer units, and the refrigerant line insulation should be replaced; the garage ventilation system should be repaired (it is currently inoperative); the elevator room equipment should be modernized, the existing exhaust fan should be repaired, properly sized air conditioning should be installed, and the cab refinished; an aquastat and time-clock should be installed for the domestic hot water system; the mop sink sewer line should be rerouted; all damaged interior lights should be repaired; all damaged fire rated barriers (doors, walls, and ceilings) should be restored or replaced.

Building

The traffic coat on all decks and walkways should be redone, to include the pool deck, and a patch of bare dirt on the first level where a play area has recently been removed; damaged gutters should be repaired; all roof sheet metal should be repaired and repainted; the roof access hatch should be reconfigured according to OSHA guidelines; the building should be power washed after repairing all stucco cracks; lever-handle hardware should be installed on all common area doors; all common area vinyl flooring should be replaced.

Units

The carpeting in all of the units, and the vinyl flooring in 25% of the units should be replaced; all unit walls and ceilings should be repainted; new kitchen cabinets and countertops should be installed in all units; new kitchen range hoods should be installed in all units; new bathroom exhaust fans should be installed in all units; all tub/showers should be reglazed; moisture damage should be repaired in all unit bathrooms; flooring should be replaced in 15% of unit bathrooms; new HVAC should installed in all units; new lighting fixtures should be installed in all units; all balcony traffic coatings should be redone, and all balcony guard railings should be repainted.

Report Methodology

This inspection was conducted using the accepted methods for Physical Needs Assessments, and as described in the LCS proposal for this project.

An Integrated Coding System

LCS uses a proprietary classification system for identifying and linking all elements within a Physical Needs Assessment (PNA). Everything falls under one of five general sections: Site - 100, Building Systems- 200, Building - 300, Dwelling Units - 400, and Commercial Leased Space - 500. Each section is then broken down into categories; for example, under Building Systems (200) you will find HVAC Systems - 201, which is then further broken down into subcategories, such as “HVAC Serving Common Areas - 201.010.”

What is most powerful about our coding is that it ties together all of the information contained in the report. It allows for easy cross-referencing, from descriptions in the Narrative to other elements in the report such as the Summary of Recommendations and the Physical Improvement Budget. This makes the information easy to understand, and readily accessible.

Narrative

The Narrative presents a description of the conditions observed during our on-site visit, items that need to be addressed, and relevant comments.

To identify specific or typical conditions, we select those that best represent items and conditions from the large volume of photos taken on site. These images are included under the related Narrative.

Recommendations

The recommendations (placed to the left of the Narrative) represent significant and specific steps that should be taken to preserve and improve the property. Some recommendations may be included in the body of the Narrative if they require explanation.

Icons

When appropriate, icons (placed above the rating) help identify, at-a-glance, the type of conditions that exist or improvements that will be made when addressing their associated recommendations.



TABLE OF CONTENTS & RECOMMENDATIONS

100 SITE

101.010 Fencing

Paint ornamental iron fencing throughout the site.

101.011 Gates

Install panic hardware on the interior of all pedestrian gates, and lever handles on exterior of all pedestrian gates.

101.020 Retaining Walls And Raised Planters

Repair and replace sections of the planter wall cap.

101.040 Guard Railings

Repair or replace damaged railings.
Paint all guard railings.

101.050 Pool Equipment Enclosure

Paint pool enclosure fencing.

102.020 Vehicle Gates

Re-paint rusted vehicle gates.

102.030 Garages

Re-stripe garage area per current code.

104.010 Plants, Turf, and Gardens

Backfill sunken grass area along Seville.

104.020 Trees

Trim trees away from all buildings.
Remove large fern.

104.030 Irrigation System

Rework irrigation system and adjust new WaterSense irrigation timer to minimize overwatering.

105.020 Trellises/Shade Structures (freestanding)

Repair dry rot and termite damage.
Repaint structures.

106.010 Play Areas and Sport Facilities

Install traffic coating at removed play yard.
Redo striping at basketball court area.

106.030 Pools, Spas, and Water Features

Replace inoperative pool heater.

107.050 Sump Pumps

108.040 Street Trees

Contact City Dept. of Public Works to remove planter grate trip hazards.

200 SYSTEMS

201.010 HVAC Serving Common Areas

Renew refrigerant line insulation for roof-mounted condensers.
Replace existing FAU units with new, high-efficiency 18+ SEER models.

201.030 Garage Ventilation

Repair inoperative garage ventilation system.

201.050 Equipment Room Cooling

Install a properly-sized air conditioning unit in each elevator equipment room.

202.010 Water Mains and Metering

202.020 Backflow Preventers

202.030 Supply Piping

202.040 Water Supply Booster Pumps

202.050 Domestic Hot Water System

Replace both boilers with new more efficient models, complete with proper time clock controls.



202.060 Sanitary Sewer

Remove the mop sink or properly reroute waste line.

203.010 Main Plumbing Service and Metering

203.020 Seismic Shutoff Valve(s)

Add seismic valves at each unit gas meter and the house meter.

204.010 Transformer

204.020 Main Electrical Service and Metering

205.010 Exterior Lighting

Install more efficient exterior lighting fixtures.

205.020 Garage Lighting

Install additional fixtures to minimize dark areas.

Install new bi-level switching and motion controls to minimize operational expense.

205.030 Interior Lighting - Common Areas

Replace damaged light fixtures (Approximately 25).

205.040 Exit Lighting and Signage

Replace older exit signage emergency lights combination fixtures with new LED versions.

Install new glow-in-the-dark exit signage.

205.060 Controls/Timers

Program time clocks as a backup for the photocell controls.

206.010 Entry and Access System(s)

206.050 Security Cameras

Install 16 new cameras to provide coverage of the building perimeter and building access points.

207.010 Fire Extinguishers

207.020 Fire Sprinkler System

Schedule Title 19, five year fire sprinkler inspection.

207.030 Fire Alarm System

Upgrade fire alarm system with new equipment.

207.040 Fire Separation - Doors

Remove all door stops from building fire doors.

Repair or replace damaged or missing door closers.

Replace modified fire doors for all laundry rooms and elevator mechanical rooms.

207.050 Fire Separation - Walls & Ceilings

Replace missing drywall in stairwell.

208.010 Elevator Equipment

Modernize the elevator systems.

208.020 Elevator Door and Cab

Upgrade cab finishes with more durable materials.

300 BUILDING

301.010 Courtyards, Decks, and Balconies

Redo traffic coating on courtyard areas.

301.020 Walkways

Redo traffic coating on walkways.

301.030 Exterior Stairs

Install Accessibility Code required contrast striping on all exterior stairs.

302.010 Roofing Material

302.030 Drainage/Gutter and Downspouts

Clear debris from downspouts and gutters.

302.040 Sheet Metal and Trim

Repair and paint all roof sheet metal and parapet trim.

302.050 Access

Reconfigure roof access hatches in Building B to an OSHA approved configuration.

Add extend-able safety poles to all roof access ladders

303.010 Paint

Power wash stained areas.
Caulk all stucco cracks.
Re-paint building exterior surfaces.

303.020 Stucco and Exposed Concrete

Repair the cracks in the stucco.

304.010 Doors

Install Accessibility Code compliant lever hardware on all common area doors.

304.020 Windows

Install new vinyl dual-glazed Low E windows at all existing window locations (approximately 223).

304.030 Sliding Glass Doors

Replace the 24 existing sliding glass doors with new dual glazed Low E vinyl models.

304.040 Storefront

Adjust the community room storefront doors, repair as necessary.

305.030 Framing and Sheathing

Schedule a termite inspection and possible treatment.

306.020 Insulation - Attic

Install additional blown-in insulation to raise the overall R-value to R-38.

307.030 Traffic/Deck Coatings

Repair walkways.
Reapply traffic coating for all of the courtyard and walkway areas.
Reapply coating to pool deck.

307.050 Planter Waterproofing

Replace damaged planter waterproofing in all planters.

308.010 Lobbies and Entries

308.021 Interior Stairways

Add Accessibility Code required contract stripping on garage stairs

308.050 Mailboxes

Install parcel box.

308.070 Laundry Room

Install fire rated high-low vents.

308.080 Public Restrooms

308.090 Common Kitchen

Replace kitchen cabinets.
Replace kitchen countertop.

309.010 Trash Rooms and Trash Chutes

Repair fire door at bottom of Building A Trash Chute.

309.030 Maintenance/Janitorial

310.010 Common Area Finishes - Flooring

Replace vinyl flooring in Laundry Rooms.

310.020 Common Area Finishes - Walls

Repair Water Damaged Drywall in Community Room.

400 UNITS

401.010 Unit Entry Doors

Replace all unit entry door hardware with lever handle models.

401.020 Interior Doors/Hardware

Replace 75% of all interior door hardware with lever handle models.

401.030 Closet Doors

401.040 Patio Doors

Paint Conventional Patio Doors.



402.010 Finishes - Flooring

Replace carpeting in all units.
Replace vinyl flooring in 25% of all units.

402.020 Wall & Ceilings Surface**402.021 Finishes - Paint**

Paint all unit walls and ceilings.

402.050 Finishes - Window Coverings**403.010 Kitchen Cabinets**

Install new kitchen cabinets in all units.

403.020 Kitchen Countertops

Replace kitchen countertops in all units.

403.030 Kitchen Sink and Faucet

Install new Accessibility Code compliant kitchen faucets in 50% of the units.

403.040 Kitchen Appliances**403.050 Kitchen Outlets/GFCI's****403.060 Kitchen Exhaust**

Install new EnergyStar rated models in all kitchens.

404.010 Bathroom Vanity/Sink

Install new vanity cabinets and sinks in all unit bathrooms.

404.020 Toilet

Install new 1.28gpl toilet in all unit bathrooms.

404.030 Tub and Shower

Re-glaze all fiberglass tub/shower and surrounds.
Clean and re-caulk shower doors.

404.040 Bathroom Walls and Ceilings**404.050 Outlets/GFCI's**

Reapply missing "Protected GFCI Outlet" labels to outlets in bathrooms as required.

404.060 Lighting

Install new high efficiency light fixtures in all bathrooms.

404.070 Bathroom Exhaust

Install new EnergyStar rated exhaust fans in all units.

404.080 Bathroom Accessories

Replace all damaged mirrors and medicine cabinets in unit bathrooms.

404.090 Flooring

Replace flooring in 15% of all unit bathrooms.

405.010 Unit HVAC Equipment

Install a new high efficiency heat pump systems in all units.

406.010 Electrical Power**406.020 Lighting**

Replace T-12 kitchen fixtures with new T-8 models.

408.020 Fire Alarm System

Replace all painted over siren modules (25%).

408.030 Smoke/CO Detector

Replace all bedroom smoke detectors with new combination smoke/CO models.

409.010 Surface

Reapply deck coating to all balcony decking.

409.030 Railing

Repair Damaged Railings.
Paint all Balcony Railings.

NARRATIVE

101.010 Fencing

Fair

Paint ornamental iron fencing throughout the site.

The concrete masonry unit wall (CMU) is on two sides of the site, and has a 3-foot ornamental fence topper. There is additional ornamental iron fencing at the podium level. The CMU is in satisfactory condition and appears to have recently been painted; however, the ornamental iron fencing is merely in fair condition. The paint has begun to chip and fade, and rust has begun to form. We recommend repainting the ornamental iron with a high-performance steel coating system in lieu of conventional paints. The high-performance coating will provide a chip- and fade-resistant life-cycle of up to 15 years, rather than the usual 5-7 years of conventional paint.



Iron Fence Topper on CMU Fence



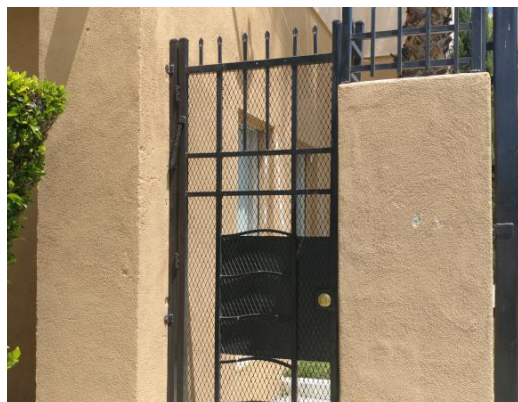
Fence Along Podium Level

101.011 Gates

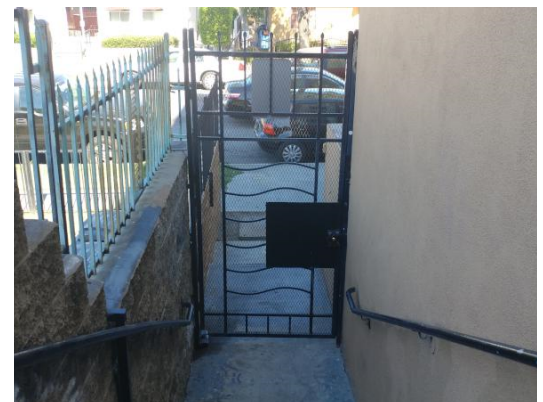
Fair

Install panic hardware on the interior of all pedestrian gates, and lever handles on exterior of all pedestrian gates.

The pedestrian gates are in fair condition. They should be painted along with the rest of the iron fencing, as discussed in “Section 101.010 Fencing.” The pedestrian gate hardware is not Accessibility Code compliant. All of the gates on the property should have the hardware replaced with lever-handle/panic bar combinations to better accommodate a population that is likely to age in place.



South Gate on Rita Ave.



Pedestrian Gate to Seville

101.020 Retaining Walls And Raised Planters

Unsatisfactory

Repair and replace sections of the planter wall cap.

The raised planters throughout the site are in fair condition. The waterproof lining has begun to fail and many cap bricks are missing or loose. We recommend that the planters have their contents removed and the waterproofing replaced as discussed in "Section 307.050 Planter Waterproofing," and the missing cap bricks should be replaced and secured.



Missing Cap Section at Community Room



Missing Cap Section

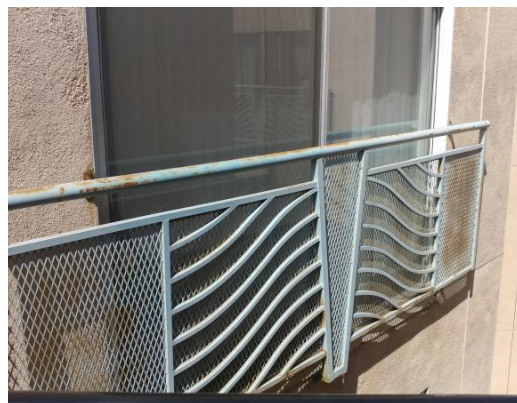
101.040 Guard Railings

Fair

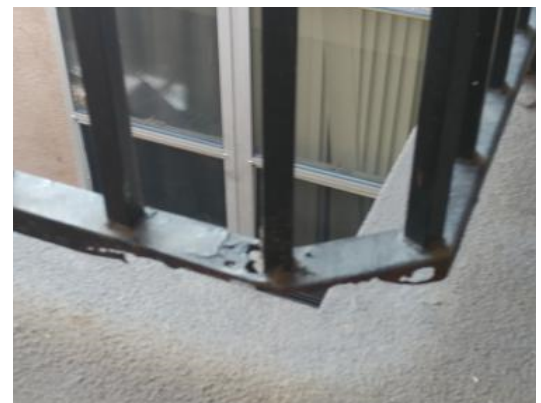
Repair or replace damaged railings.

Paint all guard railings.

The guard railings on the walkways and exterior stairways are in fair condition. The paint has begun to chip and fade, allowing rust to form, and there are several sections that have damage. The damaged sections should be repaired or replaced prior to repainting. We recommend repainting these items with a high-performance steel coating system in lieu of conventional paints. The high-performance coating will provide a chip- and fade-resistant life-cycle of up to 15 years, rather than the usual 5-7 years of conventional paint.



Missing Paint and Rust



Damage

201.010 HVAC Serving Common Areas

Fair

Renew refrigerant line insulation for roof-mounted condensers.

Replace existing FAU units with new, high-efficiency 18+ SEER models.



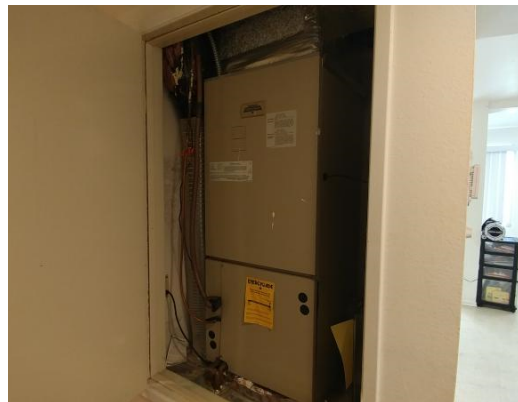
There are a pair of 2-ton heat pumps with their condensers located on the roof (SERVING WHAT AREAS OF THE BUILDING?). Their refrigerant line insulation is severely degraded, and sometimes missing. It should be replaced. There are two forced air units (FAU) - one located in the community room, and one near the office and main lobby area. These units, being in public areas, get extensive hours of use. They appear to be original to the building's construction, making them approximately 20 years old. The typical useful life of this equipment is 15 years, making them five years past their expected useful life. They should be replaced with new, high-efficiency models.



Roof Mounted Condenser



Community Room Air Handler



Damaged Insulation

201.030 Garage Ventilation

Unsatisfactory

Repair inoperative garage ventilation system.



There is a ventilation system present at both levels of the garage. Each level is ducted to a separate fan located on the roof. The system is in poor condition and inoperable, failing to vent carbon monoxide and creating a clear health and safety hazard. There are several CO sensors unplugged or damaged, and both roof-mounted exhaust fans are not operational. We tested this via the override switches on the system controls. The breakers for this equipment are currently turned off. We recommend immediate replacement of the mechanical and electronic components of this system as the ductwork appears to be in satisfactory condition.



Building A Roof Fan



Inoperative Sensor



Damaged Ductwork



Typical Sensor Location

301.010 Courtyards, Decks, and Balconies

Fair

Redo traffic coating on courtyard areas.



The courtyard on the podium deck is in satisfactory condition. The traffic coating on the courtyard is in poor condition. It should be redone, as covered in "Section 307.030 Traffic/Deck Coatings."



Typical Condition

301.020 Walkways

Fair

Redo traffic coating on walkways.



The traffic coating on the walkways is in poor condition. It should be redone, as covered in "Section 307.030 Traffic/Deck Coatings."



Typical Damage

301.030 Exterior Stairs

Fair

Install Accessibility Code required contrast striping on all exterior stairs.

The exterior stairs throughout the project are in satisfactory condition; however, the Accessibility Code required contrast striping for exterior stairway treads is missing. We recommend that this striping be installed as soon as possible.



Stair 1



Stair 2

Roof

302.010 Roofing Material

Satisfactory

The existing flat roof is in satisfactory condition. It was recently re-coated in October 2015. There are a significant number of areas that are darker in shade, suggesting that these are areas of water ponding. These areas should be checked after weather for excess ponding and wear.



Ponding Area



Typical Condition

401.010 Unit Entry Doors

Fair

Replace all unit entry door hardware with lever handle models.



The unit entry doors are in generally satisfactory condition. The door hardware is not Accessibility Code compliant and is in fair condition. We recommend replacement in all units with lever handle hardware.



Door Hardware Unit 211

401.020 Interior Doors/Hardware

Fair

Replace 75% of all interior door hardware with lever handle models.



Many of the interior doors (75%) do not have lever-handle hardware. This is Accessibility Code non-compliant. We recommend that all of these non-compliant models be replaced with new lever-handle hardware.



Typical Interior Door Hardware

402.010 Finishes - Flooring

Fair

Replace carpeting in all units.

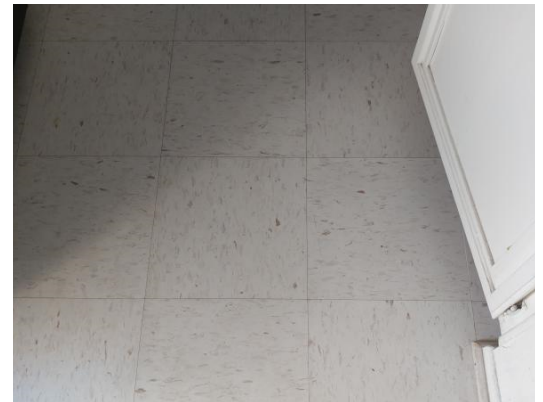
Replace vinyl flooring in 25% of all units.

The carpeting in the units is in fair-to-poor condition. The soiled condition of the carpeting creates an unsanitary condition and if allowed to wear further can unravel and cause a trip hazard. We recommend replacement. The preferred green alternative for the carpeting would be a Low-VOC solution dyed product with recycled content, preferably one that meets Green Label standards, installed with adhesive that meets the SCAQMD Rule 1168 for levels of volatile compounds.

The vinyl flooring is worn and should be replaced in approximately 25% of the units, as there are chipped corners, opening seams, and wear that degrades it from the “clean and wipe-able surface” that is required in bathrooms and kitchens. The replacement for the VCT flooring should adhere to the FloorScore standard to minimize VOC emissions. Alternately, you could specify a “green” such as linoleum, if its adhesives comply with SCAMQD Rule 1168.



Carpeting, Typical



Worn Vinyl, Typical

402.020 Wall & Ceilings Surface

Satisfactory

The walls and ceilings of the units have minimal damage that can be repaired as part of the prep for painting. Damage includes chipped paint and ceiling areas in need of re-texturing.

BUDGET

BUDGETING

Cost Estimating Methodology

The cost estimates detailed in this report reflect the typical cost for each item. Where we are not able to establish the extent, quantity, or quality of an item accurately (IE: the source of a leak, etc.), our extensive experience allows us to provide cost allowance estimates for any required work. Items requiring maintenance or simple repair that are mentioned in any specific narrative are not always included in the estimate, especially if a decision or selection must be made to establish a cost. Items contained in the Cost Estimate include:

- Items in need of major repair or replacement
- Components that are near or past the end of their expected useful life (EUL)
- Significant deferred maintenance items
- Improvements that will significantly extend the life of a site or building component
- Measures that represent significant and immediate utility savings
- Items that are a health or safety concern
- Improvement goals that have been identified by the owner

When work in progress has been observed, for cost estimating purposes, it is assumed to be completed; unless it was also observed to be unacceptable in quality or scope.

Rating System

Items are rated in accordance with the “Condition Codes” shown below. These ratings reflect the level of wear observed, and estimates the approximate remaining life where applicable. These ratings do not necessarily reflect the need for a specific repair in the short term; for example, if the roof system is in excellent condition, but there exists a leak as the result of vandalism, the roof will be rated in excellent condition, and the leak will be addressed in the narrative, and potentially in the budget depending on the nature of the vandalism.

Condition Codes = Rating Description (Percent of EUL remaining):

- 0 = Unsatisfactory (< 10%)
- 1 = Fair (10-40%)
- 2 = Satisfactory (40-60%)
- 3 = Good (60-90%)
- 4 = Excellent (90-100%)

If an inspected item carries importance and holds a rating of 0 (Unsatisfactory) - or in some cases 1 (Fair) - that item could be considered for replacement within Immediate Needs.

SAMPLE Apts.
Budget Capital Improvement Recommendations

5/15/2017

Section	Item	Rating	Recommendation	Quantity	Unit Type	Unit Cost	Estimated Cost	Immediate Needs	Capital Needs	Green upgrades
100	Site									
101.010	Fencing	1	Paint ornamental iron fencing.	1	LS	5,000	5,000		\$ 5,000	
101.011	Gates	1	Paint all gates. Install panic hardware on all pedestrian gates.	3	ea	500	1,500	\$ 1,500		
101.020	Retaining Walls And Raised Planters	0	Repair and replace sections of the planter wall cap.	1	LS	1,000	1,000	\$ 1,000		
101.040	Guard Railings	1	Paint all guard railings.	1	LS	4,000	4,000		\$ 4,000	
200	Building Systems									
201.010	HVAC Serving Common Areas	1	Replace existing units with new, high-efficiency 16+ SEER models. Renew refrigerant line insulation.	2	ea	6,000	12,000	\$ 12,000		\$ 12,000
201.030	Garage Ventilation	0	Repair inoperative garage ventilation system.	1	Allowance	10,000	10,000	\$ 10,000		
300	Building									
301.010	Courtyards, Decks, and Balconies	1	Redo traffic coating on courtyard areas.	1			10,000		\$ 10,000	
301.030	Exterior Stairs	1	Install Accessibility Code required contrast striping on all exterior stairs.	1	LS	1,000	1,000	\$ 1,000		
400	Dwelling Units									
401.010	Unit Entry Doors	1	Replace all unit entry door hardware with lever handle models	103	ea	200	20,600		\$ 20,600	
401.020	Interior Doors/Hardware	1	Replace 75% of all interior door hardware with lever handle models.	300	ea	75	22,500		\$ 22,500	
402.010:1	Unit Flooring - Carpeting	1	Replace carpeting in all units.	100	ea	1,000	100,000		\$ 100,000	
402.010:2	Unit Flooring - Vinyl	1	Replace vinyl flooring	25	ea	500	12,500		\$ 12,500	

Total Recommended Items							200,100	25,500	174,600	12,000
--------------------------------	--	--	--	--	--	--	----------------	---------------	----------------	---------------

Immediate Needs	25,500	
Capital Needs	174,600	
Green Improvement Opportunities*	12,000	*(already included in the other categories)
Total of recommended items	200,100	
General Requirements and Overhead (8%)	16,008	
G.C. Profit (6%)	12,006	
Subtotal	228,114	
Contingency (15%)	34,217	
Insurance and Bonds (3.5%)	7,984	
Total cost of all items and costs	270,315	



GLOSSARY



GLOSSARY OF TERMS

Aeration: Act of combining substance with air - with regard to lawns, it creates holes in the soil in which lawn grasses grow. In compacted lawns, aeration improves soil drainage and encourages worms, micro-fauna, and micro-flora which require oxygen.

AHU (Air Handler Unit): The inside part of the A/C system that contains the blower, cooling (evaporator) coil, and heater.

Air Conditioner: Device used to control temperature, humidity, cleanliness and movement of air in a confined space.

Air Conditioning: Control of the temperature, humidity, air movement and cleaning of air in a confined space.

Air Cooler: Mechanism designed to lower temperature of air passing through it.

Air Handler: Fan-blower, filter and housing parts of a system.

Air Source Equipment: Heat pumps or air conditioners that uses the outdoor air to transfer heat to and from the refrigerant in the unit.

Back drafting: Reverse flow of combustion gases down the chimney of a vented combustion appliance, which is often caused by depressurization of the room where the appliance is located.

Carbon Monoxide: A colorless, odorless, highly poisonous gas produced when carbon burns without sufficient air nearby.

Charge: Amount of refrigerant placed in a refrigerating unit.

Compressor: Pump of a refrigerating mechanism which draws a low pressure on cooling side of refrigerant cycle and squeezes or compresses the gas into the high pressure or condensing side of the cycle.

Condenser Coil: Part of the outdoor portion of a split-system air conditioner or heat pump. By converting refrigerant that is in a gas form back to a liquid, the coil sends heat carried by the refrigerant to the outside.

Condensing Unit: Part of a refrigerating mechanism which pumps vaporized refrigerant from the evaporator, compresses it, liquefies it in the condenser and returns it to the refrigerant control

Duct: A pipe or closed conduit made of sheet metal, fiberglass board, or other suitable material used for conducting air to and from an air handling unit.

Ductwork: The delivery system through which warm air from the furnace is brought to where it's needed.

EER (Energy Efficiency Ratio): A ratio calculated by dividing the cooling capacity in BTU's per hour (BTUh) by the power input in watts at any given set of rating conditions, expressed in BTUh per watt (BTUh/watt). EER & SEER cannot be compared equally. Air source equipment is rated by SEER and geothermal equipment is rated by EER. EER changes with the inside and outside conditions, falling as the temperature difference between inside and outside gets larger.

Efficiency: A rating on comfort equipment is similar to the miles per gallon rating on your car.

Energy Star Label / Certification for Buildings: The ENERGY STAR® label can be applied to commercial buildings that meets the requirements of the ENERGY STAR program. Buildings achieving an Energy Star rating of 75 or higher and professionally verified to meet current indoor environment standards are eligible to apply for the ENERGY STAR for commercial buildings label. Achieving an Energy Star Rating of 75 or higher shows that a building is in the top 25th percentile, in terms of energy consumption, when compared to the national building stock. Displaying the ENERGY STAR plaque conveys superior energy performance to tenants, customers, and employees. Highlighting the ENERGY STAR qualified buildings in your portfolio sends a positive message to lenders, appraisers, owners, investors, and potential tenants or customers. Contact RCx Building Diagnostics or visit the ENERGY STAR website to find out more.

Evaporator Coil: Part of a split-system air conditioner or heat pump located indoors. The evaporator coil cools and dehumidifies the air by converting liquid refrigerant into a gas, which absorbs the heat from the air. The warmed refrigerant is then carried through a tube to the outdoor unit (condenser coil).

Exfiltration: Uncontrolled air leakage out of a building.

Exhaust: The air flow leaving the treated space.

Filter: A device for removing dust particles from air or unwanted elements from liquids.

Forced Air: This describes a type of heating system that uses a blower motor to move air through the furnace and into the ductwork.

Heat Exchanger: Device that enables furnaces to transfer heat from combustion safely into breathable air. The primary heat exchanger transfers heat from combustion gases to the air blowing through the ductwork.

Heat Pump: Compression cycle system used to supply heat to a temperature controlled space. Same system can also remove heat from the same space.
HEAT RECOVERY VENTILATOR (HRV) - This device brings fresh, outside air into a home while simultaneously exhausting stale indoor air outside. In the process of doing this, an HRV removes heat from the exhaust air and transfers it to the incoming air, pre-heating it.



Humidity: The amount of moisture in the air. Air conditioners remove moisture for added comfort.

HVAC: Heating, Ventilating and Air Conditioning

Indoor Air Quality: is “the nature of the air inside the space that affects the health and wellbeing of the building occupants.” (USGBC) Affected by the amount of ventilation, air cleansing with filter systems, and emissions from various materials, IAQ can be the cause of both short-term and long-term health effects varying from irritation of eyes, nose, and throat through heart disease, respiratory disease and even cancer. (US EPA)

Infiltration: Air flow inward into a space through walls, leaks around doors and windows or through the building materials used in the structure.

Photovoltaic: A Photovoltaic system uses sunlight to produce electricity. Photovoltaic arrays, also known as solar cells, are made of semiconductor material. When sunlight is absorbed by the photovoltaic system, the electrons in the semiconductor become excited and move, producing electricity. For more information, visit the Department of Energy’s website.

Refrigerant: Substance used in refrigerating mechanism. It absorbs heat in evaporator by change of state from a liquid to a gas, and releases its heat in a condenser as the substance returns from the gaseous state back to a liquid state. Register - Combination grille and damper assembly covering an air opening or end of an air duct.

Renewable Energy: Energy derived from resources that naturally replenish quickly (such as sunlight, wind, geothermal, and tides) and that are not depleted by their use is considered Renewable Energy.

Runoff: water (typically rain/stormwater or snow melt) that moves across a surface without being absorbed by that surface. Runoff can cause several environmental problems, such as the stripping of earth and minerals from an area or the transfer and accumulation of pollutants into the water supply.

Supply: The ductwork that carries air from the air handler to the rooms in the house. Switchover Valve - A device in a heat pump that reverses the flow of refrigerant as the system is switched from cooling to heating. Also called a reversing valve or four-way valve.

Time Delay: Usually refers to a device that will not allow the condenser to restart for an average of 5 minutes.

Ventilator: Captures heating or cooling energy from stale indoor air and transfers it to fresh incoming air.

Volatile Organic Compound (VOCs): Volatile Organic Compounds (VOCs) are chemical compounds that are considered volatile, or potentially harmful, at room temperature. They can be found in EPA Reference Test 24, Code of Federal Regulations Title 40, Part 60, Appendix A.

Water Sense: “WaterSense is an EPA-sponsored partnership program that seeks to protect the future of our nation’s water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices.” This program also “helps consumers identify water-efficient products and programs that meet WaterSense water efficiency and performance criteria. Products carrying the WaterSense label perform well, help save money, and encourage innovation in manufacturing.” (EPA/WaterSense)