

Building Envelope Maintenance Report

November 2005

**The Siena
1428 West 6th Ave.,
Vancouver, BC**

BCS 207

Conducted by: BEMCO Services Ltd.
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Introduction

We have conducted a building envelope maintenance review of the Siena project located at 1428 West 6th Ave., Vancouver, BC. The review was conducted on November 23 & 24, 2005 in order to evaluate the current condition of materials, and as the basis for the following observations and recommendations. This review was not invasive, and did not include the removal or destructive testing of any areas of the building. For the purposes of inspecting the hi-rise building, 9 drops from a boson chair were conducted. The drop locations were selected in order to maximize accessibility to the various building components and details.

The review is intended to report the condition of materials visible at the time of inspection. It should be noted, that while every effort has been made to identify defects, we do not guarantee that every potential problem has been itemized in the inspection. When the maintenance work is conducted on this building any additional issues that might be discovered should also be attended to.

Overview

The Siena is a residential project consisting of a 15-story concrete hi-rise and fourteen 3-story concrete town homes. The project was constructed on top of a two level concrete parkade.

In general, the materials on the exterior of this project were in good condition. The following report outlines the overall condition of products, as well as listing areas that may require some remedial work. During our review, we noted all conditions we saw which require attention, including matters that go beyond what would typically be considered maintenance issues.

The following information outlines the general condition of exterior materials and components, as well as noting specific areas of concern. Photographs are included in the appendix, as are elevation drawings that correlate the location of inspection drops and observations.

The Siena

Roof

The roofs of the Siena are constructed of a polyurethane membrane, rigid insulation, filter cloth and rock ballast. The flat roof areas are in good condition with the ballast well dispersed and the drains all clear and free of debris except for one drain that was clear but had some moss growing inside of the drain screen.

The perimeter cap flashing of the roof was in good condition as was the gum lip flashing at the base of the up stand walls and mechanical room.

It is recommended that a cursory inspection be carried out on a quarterly basis by some one in the building to check for blocked drains, vegetation growth, debris, or damaged areas including flashings.

Decks, Balconies and Walkways

The balconies are constructed of reinforced concrete with a liquid applied membrane and finished with ceramic tile. They are sloped to the exterior and drain over their edges and were in good condition and clean at this time.

The roof and patio decks, which are finished with concrete paving stones, are in good condition and appear to be kept clean with the exception that there is some minor plant growth in some of the patio drains and between pavers. These decks have surface drains for drainage, which appeared to be clear and free flowing. At the time of this review there was no ponding water present at the drain locations.

The common area walkways are constructed using concrete pavers with surface drains. These walkways were all clean and the drains clear and free of debris.

The decks and balconies should be inspected regularly, by the owners, to ensure that they are clean and draining properly. Regular cleaning of decks and balconies not only helps to extend the life expectancy of the materials, it also provides an excellent opportunity for owners to assess the condition of these areas.

It is recommended that plants and planters be kept from direct contact with deck surfaces, as they tend to retain moisture and increase the rate of deterioration. Also, mats that hold water can increase the growth of mold or mildew on the deck surface. Mats that are open or breathable are less likely to facilitate organic growth. It is important for owners to inspect the deck surface beneath mats or carpets on a regular basis.

Paint

The painted concrete was in good condition at this time.

Paint coatings should be cleaned whenever they show signs of dirt, or organic growth buildup. This condition can attract and retain moisture, which can eventually cause the coating to deteriorate. The method of cleaning can range from a garden hose and soft bristled brush, to the use of cleaning agents, and a pressure washer. It is generally advisable to use as little force as is required by a given job.

Sealant

The majority of sealant was in good condition with only a couple of locations where it was missing or starting to fail. There were two locations on the townhouses where sealant was missing. One was at the concrete eyebrow to brick joints, as identified on the drawings, and the other was at the windowsill frame above the entrance to 1413 West 7th. Also the sealant was separating at all but one of the townhouse hose bibs.

Flashings

All of the flashings appeared in good condition. The gum lip flashings at all locations viewed were in good condition.

Windows

The windows of this project are double-glazed, thermally broken aluminum framed windows and are in good condition. No failures were observed during the course of this review. All of the exterior weep holes were clear, and where accessible, the rubber gaskets were checked, and found intact.

Vents

At the time of our review the all of the vents were clear and properly sealed. There were a few locations where condensation and staining was present on and around the soffit vents.

Residents should be reminded to clean out their dryer lint traps regularly, which will help to minimize the build up of lint at exterior vent screens. It is important that a regular program be implemented to clean the exterior vent covers as well as to arrange for professional cleaning of the dryer ducting. A poorly maintained dryer vent can lead to moisture problems and staining within the building.

Concrete

The concrete on this project is in good condition with only a few cracks observed during this review. However, there were a few cracks present and one balcony edge where the concrete was spalling slightly. These locations are indicated on the attached drawings. Crack repair has obviously been conducted since our last review.

Masonry

The masonry walls have been constructed as rainscreen walls, with a vented cavity behind the exterior brick. Weep holes have been included at the base of walls in order to drain any incidental moisture that may make its way behind the brick.

The masonry walls of this project are currently in good condition. As mentioned earlier in the sealant section, there was still one area on the townhouses where sealant was missing where the brick meets the concrete. The weep holes in the brick veneer were clear, as intended, to allow any incidental moisture out of the wall cavity.

Since the townhouses and some lower portions of the high-rise are the areas where masonry has been used, it is important to keep the plant growth away from the wall areas. This increases the drying potential of the brick and minimizes algae and organic growth.

Parkade

The parkade was in good condition with no breaches or major cracks in the traffic membrane. However, there were numerous cracks present in the ceilings walls and floor of the parkade, none of which appeared to be active at this time. It is suggested that these cracks be monitored for any future evidence of moisture present.

Summary

Although the project is in good condition some remedial work is required in order for the building envelope to perform as originally planned.

In general, the following items should be reviewed with regard to future work:

- Apply sealant to locations where it is missing at brick to concrete joints and at the windowsill joints of TH 1413 West 7th
- Replace separated sealant where required, including TH hose bibs
- Seal large cracks in concrete
- Remove plant growth from patio drains and between pavers (Owners)

Appendix

- Photographs
- Elevation drawings with notes
- Homeowners Inspection List

ON-SITE PERSONNEL / OWNER INSPECTIONS

Item To Inspected	Inspection Frequency	Inspect for
Roofing	Quarterly	A cursory monthly check is intended to spot physical damage or drainage problems. This check is purely a visual inspection conducted from the ground.
Flashings	Semi annual	Physical damage. Look for flashing which may have been damaged or bent by gardeners, window cleaners or other operations around the building.
Decks / Drains & Gutters	Quarterly	Drain blockage, or physical damage. Individual deck drains and troughs should be checked frequently during the rainy season, and when debris is most prevalent in the fall. Check the membrane surface for cracks or splits when cleaning or sweeping. Check the soffit above for water stains.
Sealants	Semi annual	Look for damage or obvious sealant failure when cleaning windows or decks.
Paint	Semi annual	Observe condition of paint when cleaning windows or decks. Look for peeling or blistering paint.
Windows	Semi annual	Observe condition of hardware and weep holes when cleaning windows. Clear any dirt or debris from weep holes. Check sealant at mitered corners.
Vents	Semi annual	Regular cleaning of dryer lint screens will reduce the necessity to clean the exterior vent covers. Dirty or blocked exterior covers can lead to moisture accumulation in the vent pipe, and cause leakage and deterioration.
Plants	Annual	Plants growing directly adjacent to or in contact with the building exterior can reduce the drying potential of the exterior cladding, and increase the likelihood of problems. Keep plants and shrubs away from exterior walls.
Doors	Annual	Doors should be checked in order to assess the hardware, and the perimeter seals. Poorly operating mechanisms or weather-stripping should be repaired or replaced.
Cladding	Annual	Visually observe the condition of the exterior materials, looking for any signs of damage or deterioration.

The Siena Photograph Maintenance Review 2005

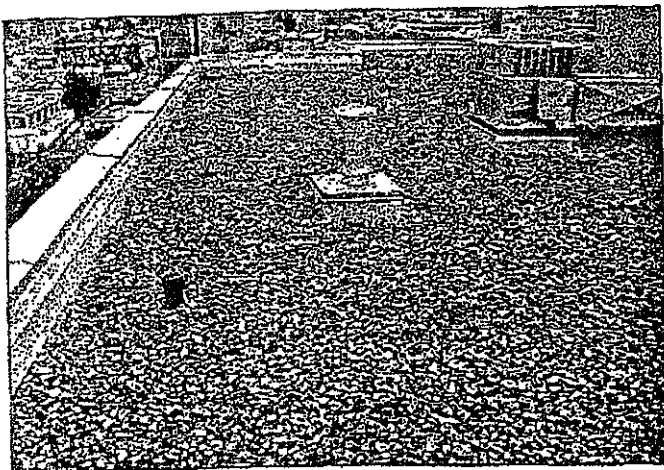


Photo #1- Roof areas, penetrations, ballast and flashings in good condition.

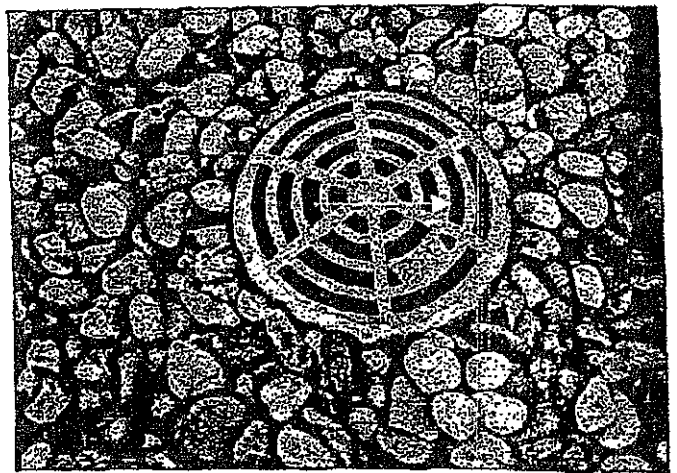


Photo #2- Roof drain clear with moss growing inside of drain screen.

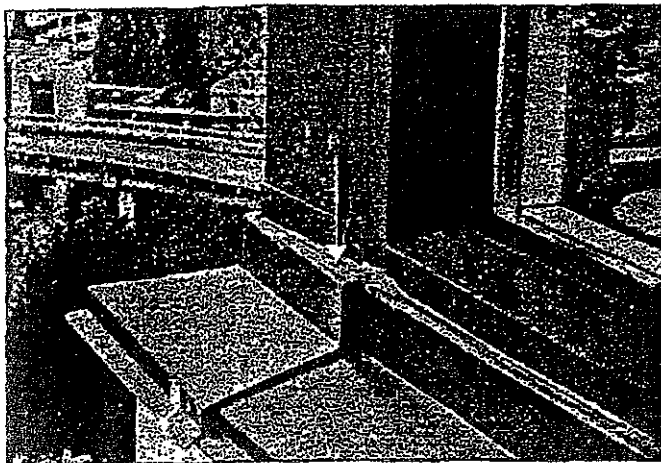


Photo #3- Sealant separating.

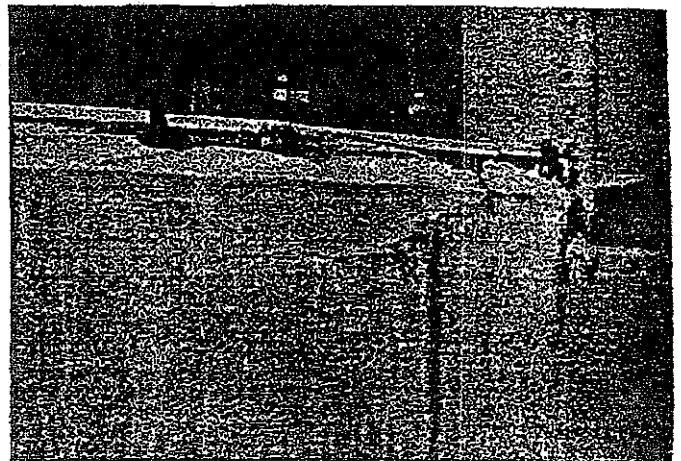


Photo #4- Concrete spalling at balcony edge.

The Siena Photograph Maintenance Review 2005

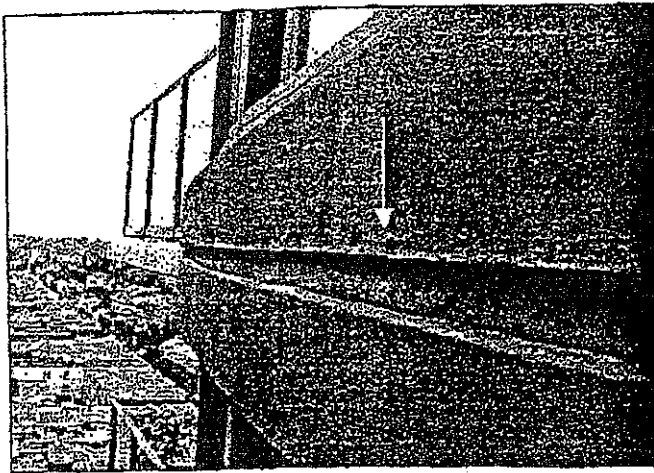


Photo #5- Crack with moss growing.

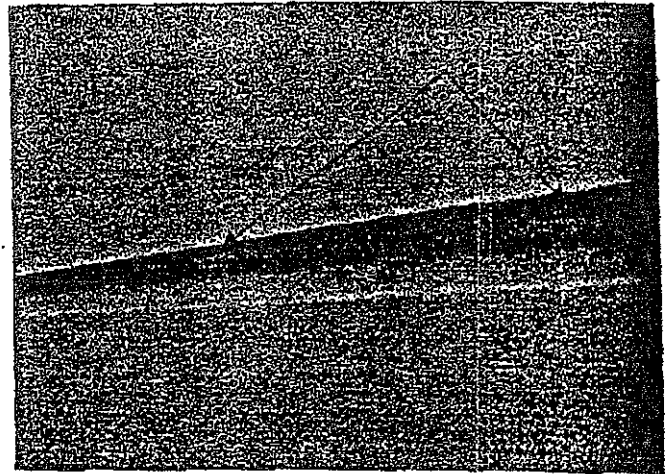


Photo #6- Sealant separating in concrete reveal.

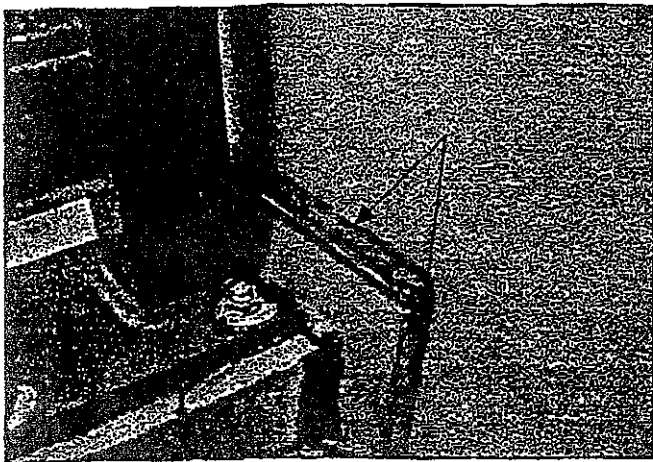


Photo #7- Sealant separating and failing at flashing termination.

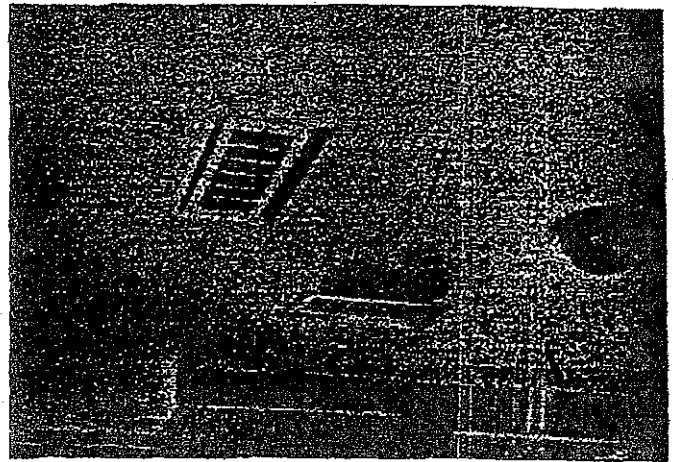


Photo #8- Soffit staining and moisture present in vent.

The Siena Photograph Maintenance Review 2005

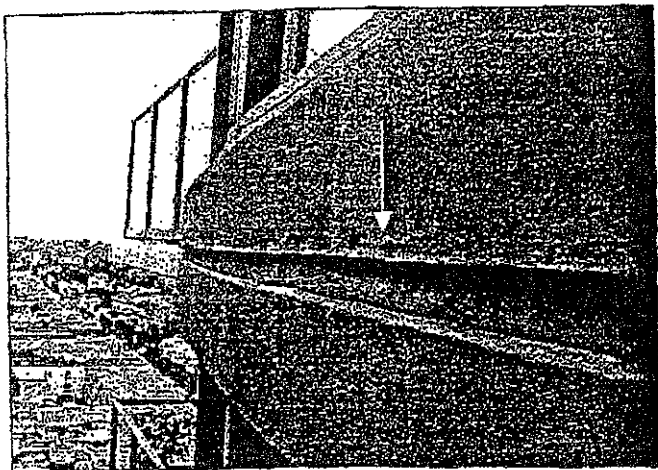


Photo #5- Crack with moss growing.

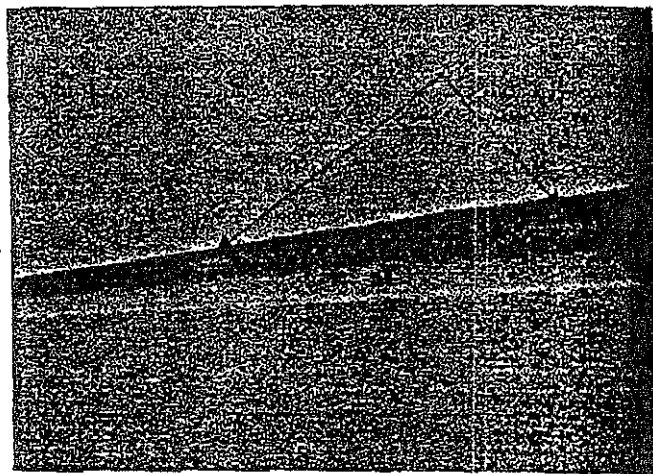


Photo #6- Sealant separating in concrete reveal.

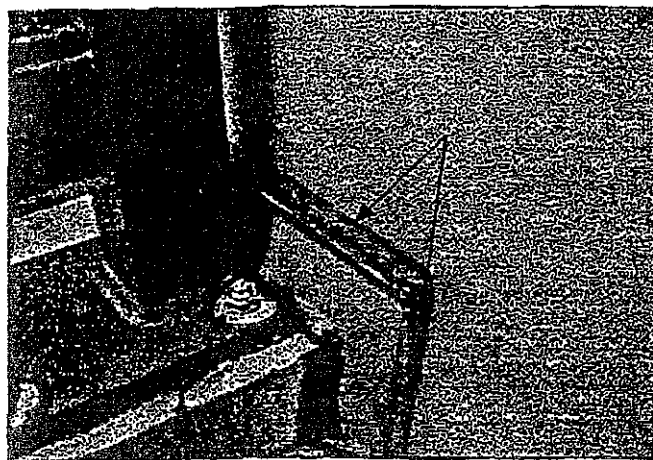


Photo #7- Sealant separating and failing at flashing termination.

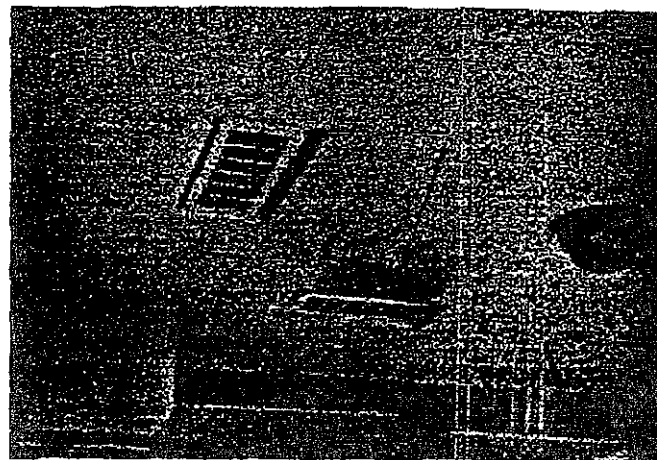


Photo #8- Soffit staining and moisture present in vent.

The Siena Photograph Maintenance Review 2005

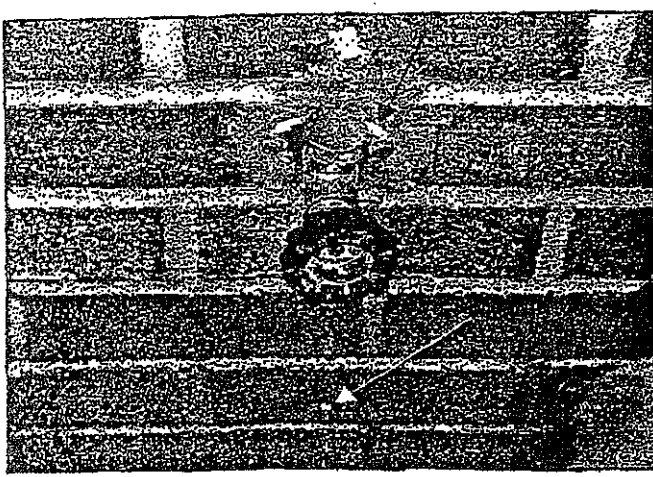


Photo #9- Sealant thin and separating at hose bib. Water dripping.

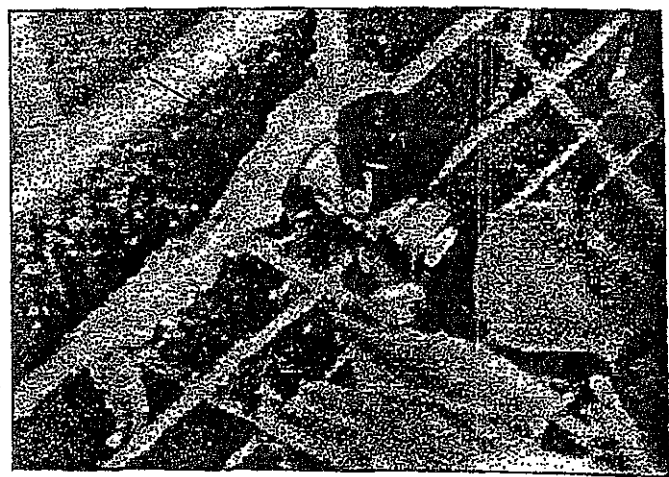


Photo #10- Hose bib properly sealed.

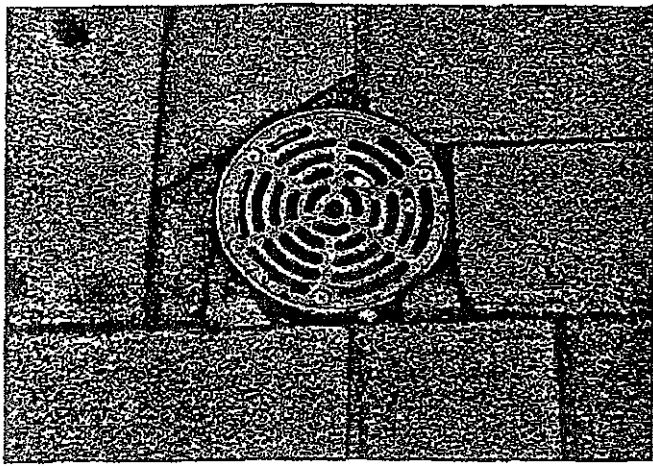


Photo #11- Walkway drains clear.

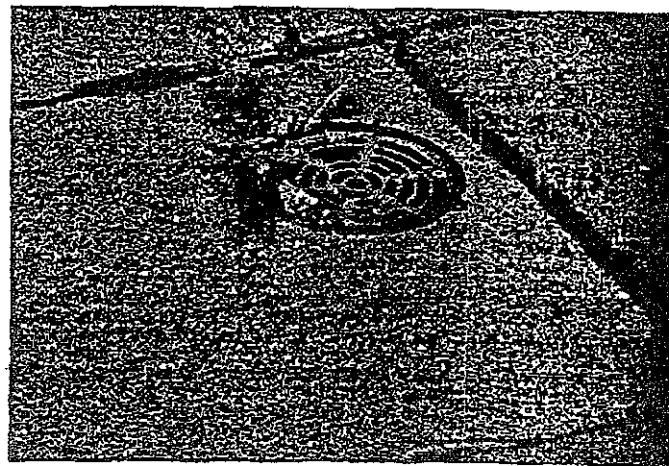


Photo #12- Patio drain with plant growth present.

The Siena Photograph Maintenance Review 2005

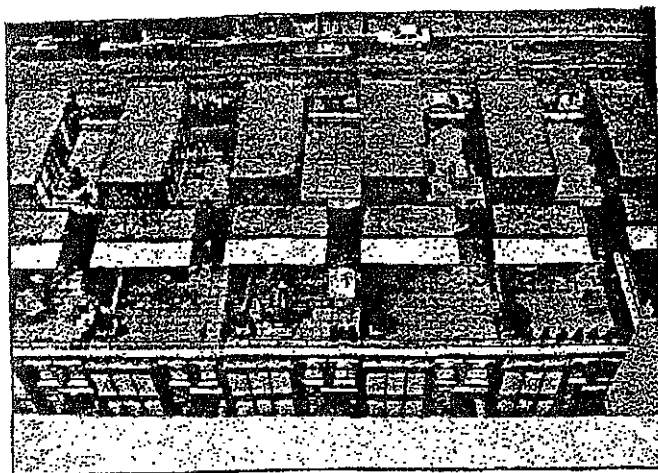


Photo #13- Townhouse roofs in good condition. Some organic growth and debris present on decks.

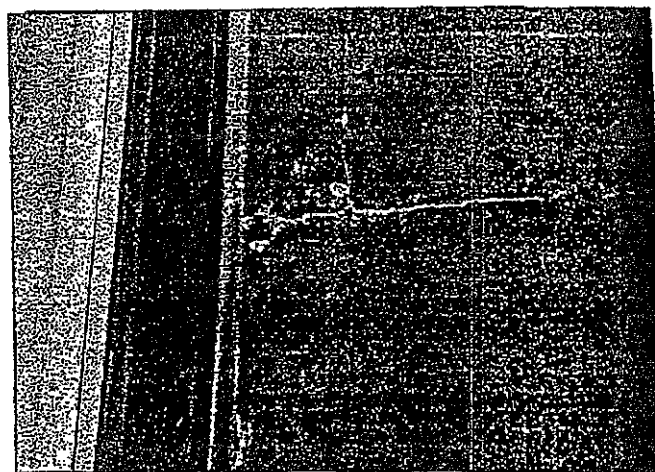


Photo #14- Cracks on townhouse wall.

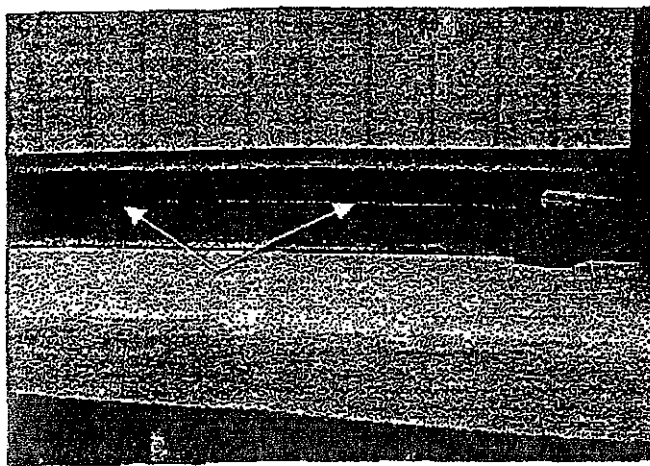


Photo #15- Sealant missing at window frame (unit 1413).

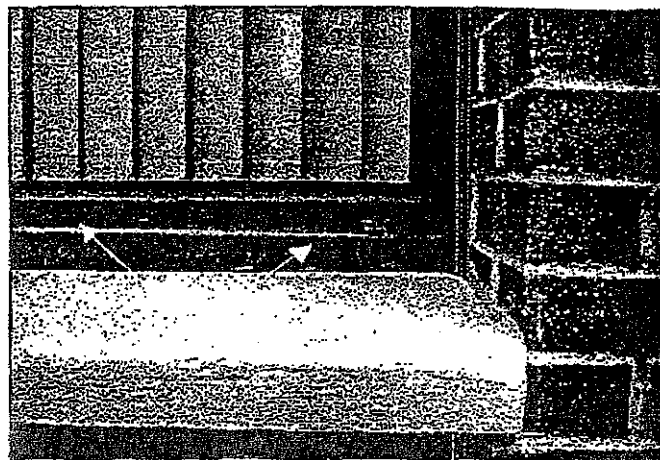
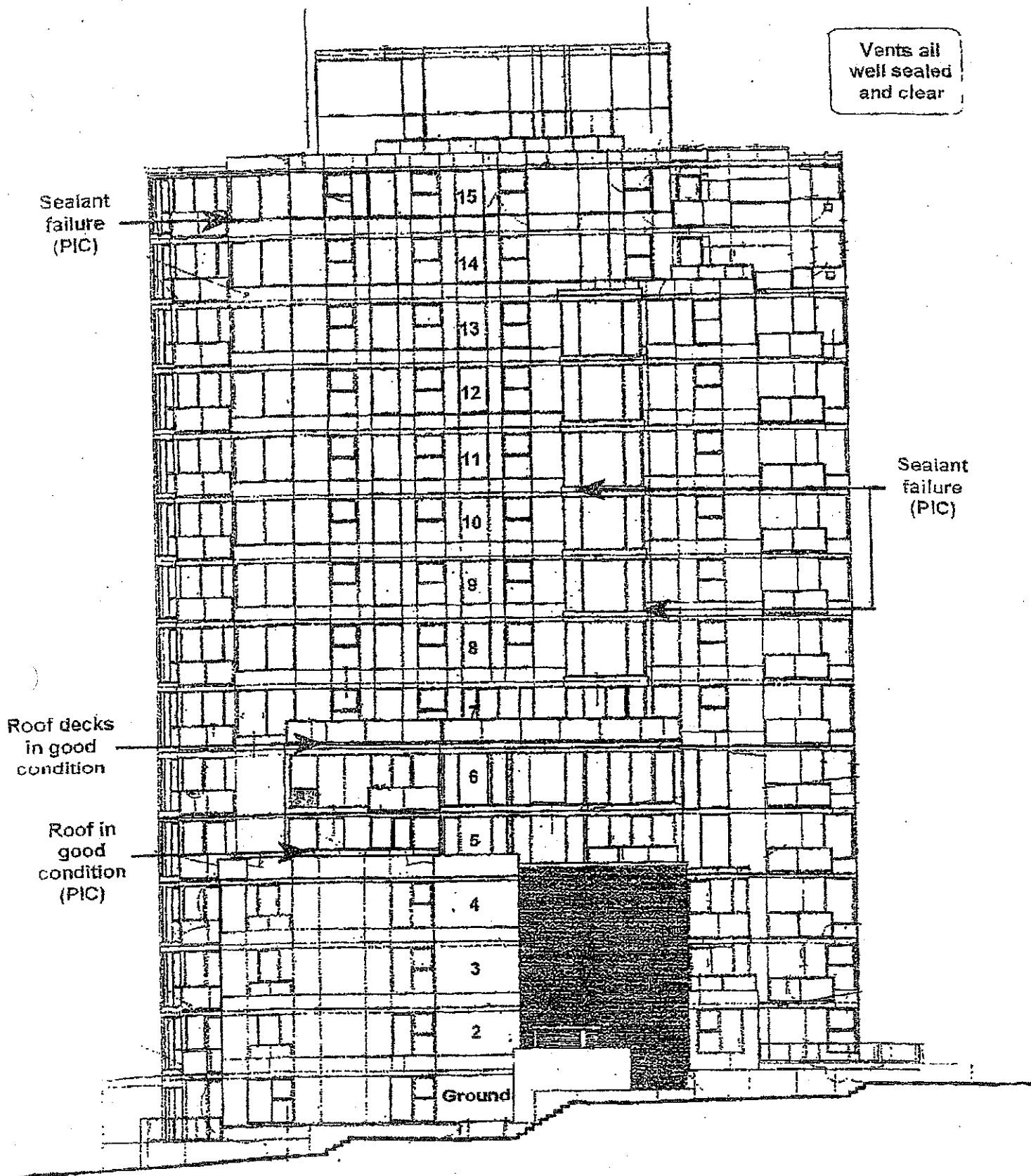
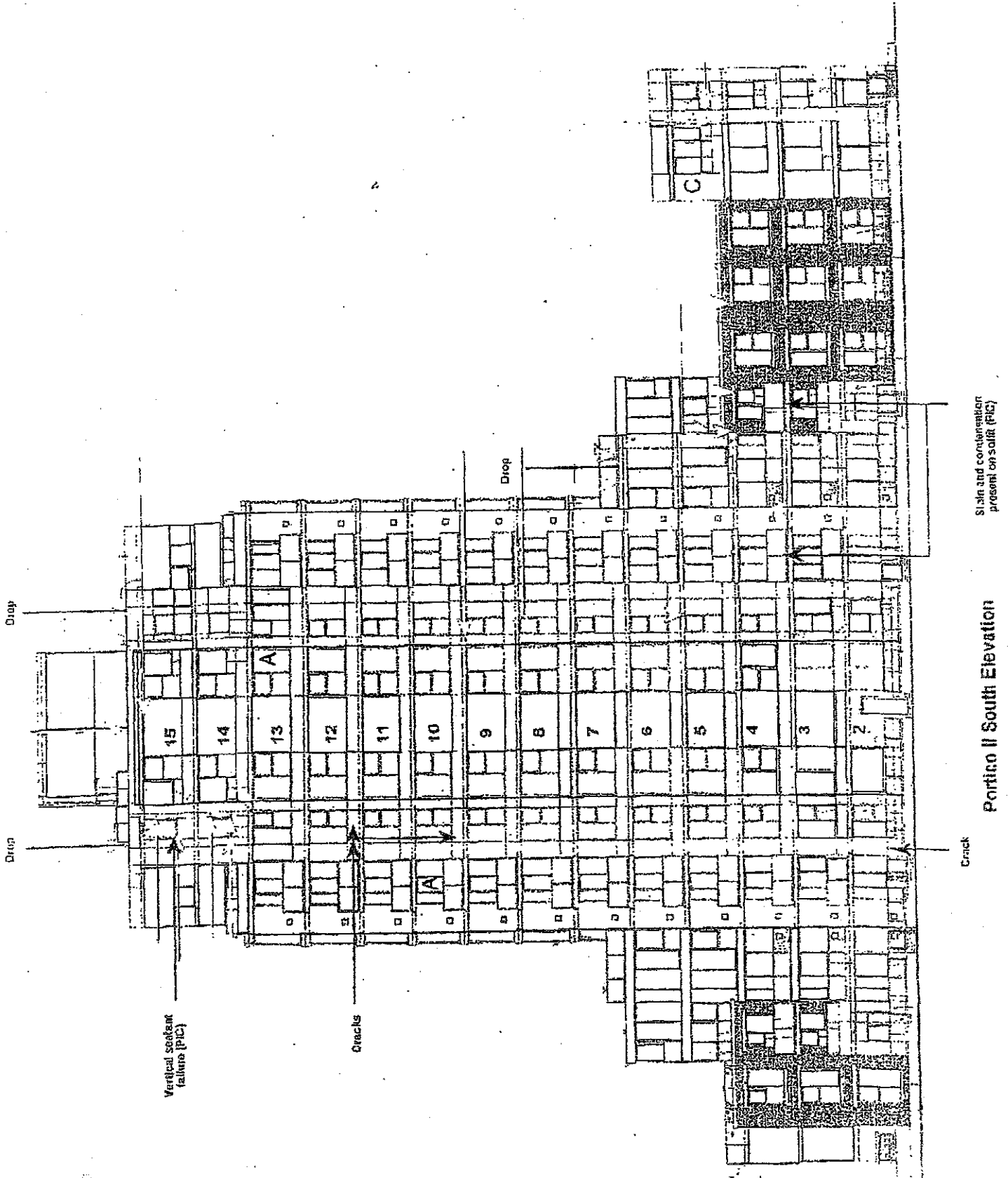


Photo #16- Sealant present at window frame.



West Elevation
East Tower



Sinks and contamination present on salt (PIC)

Portico II South Elevation

Crack

Drop

Drop

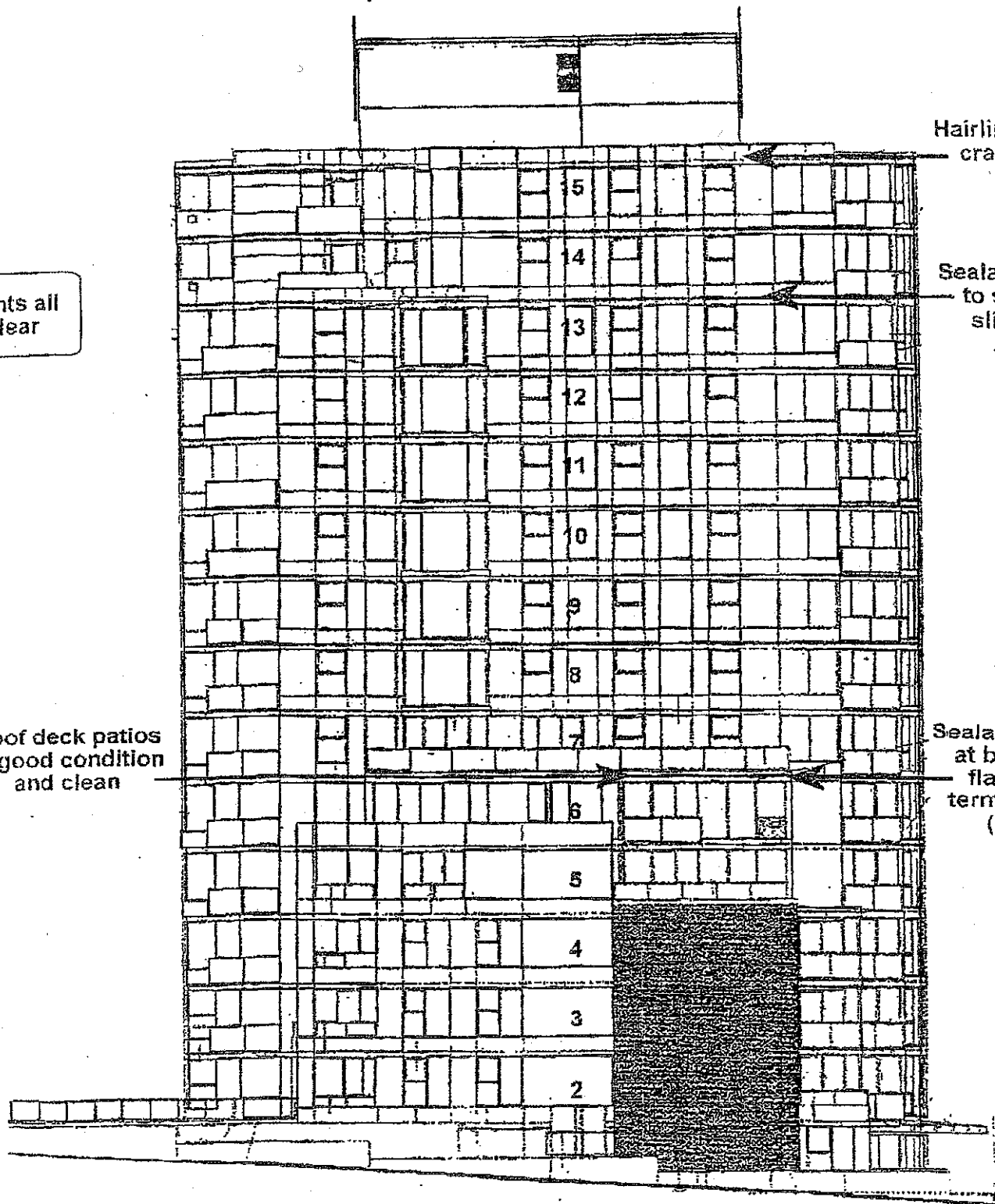
Hairline vertical crack (PIC)

Sealant starting to separate slightly in reveal (PIC)

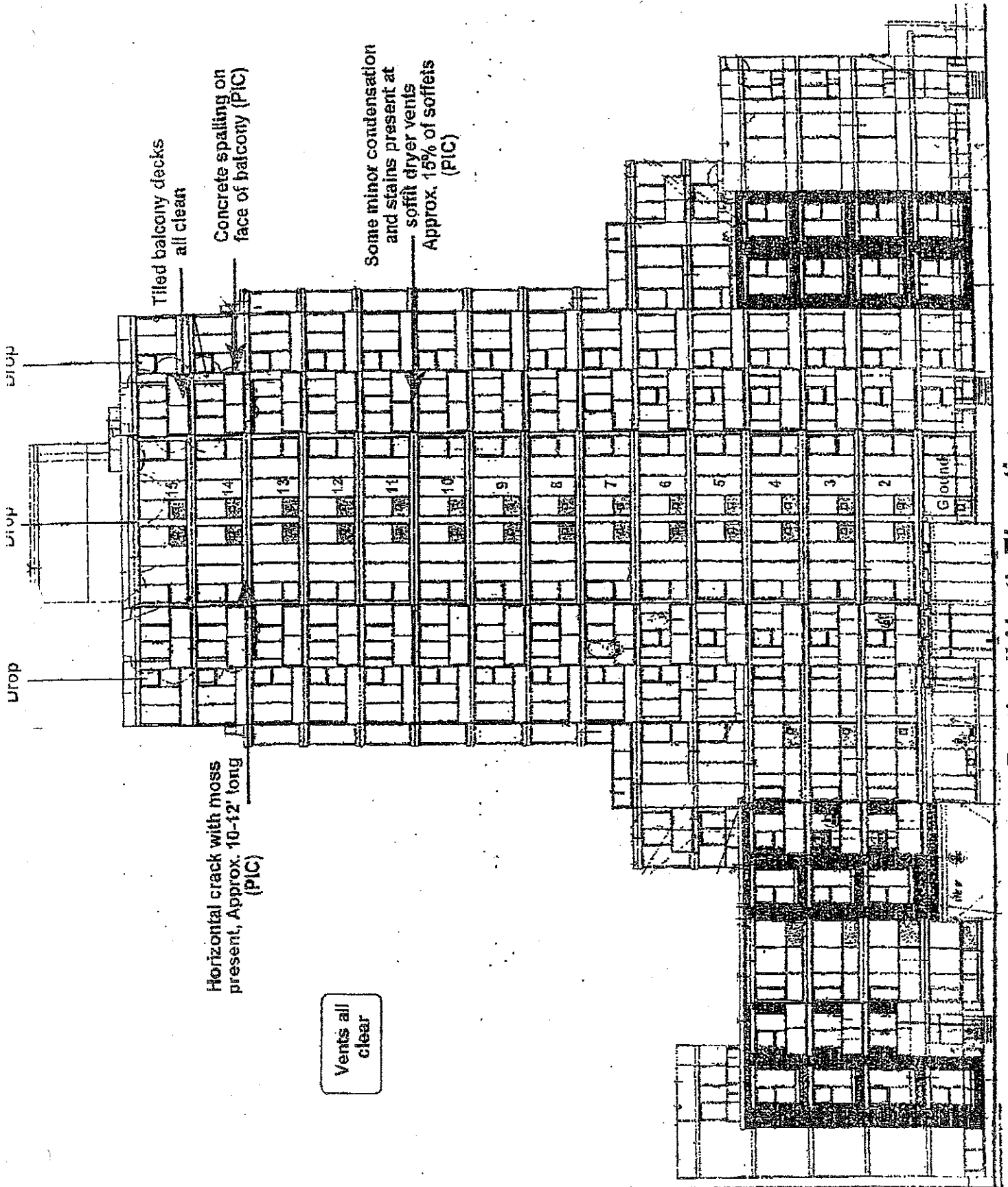
Sealant failure at balcony flashing termination (PIC)

Vents all clear

Roof deck patios in good condition and clean



Portico II
East Elevation



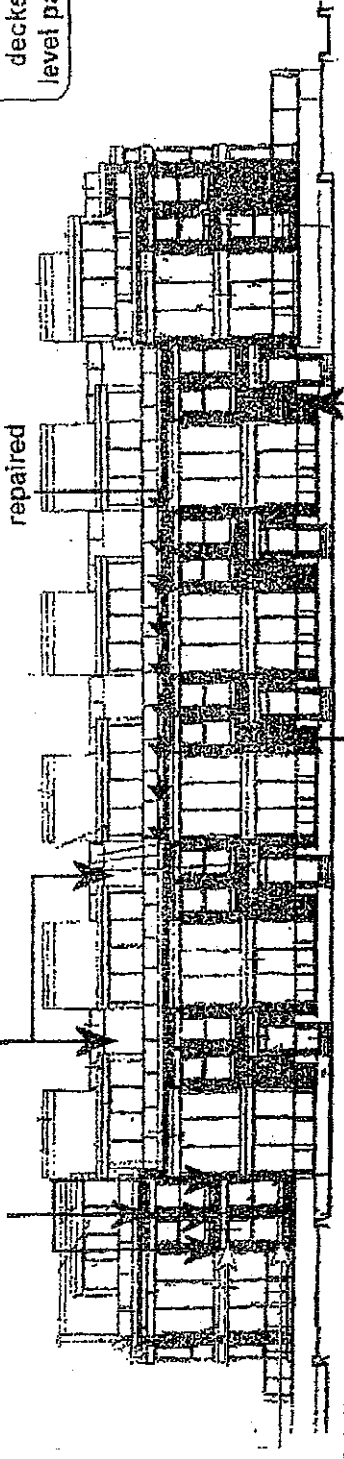
organic growth between pavers on most roof decks ground level patio decks

cracks present in concrete wall cap several locations. most have been repaired

Windows all well sealed at perimeters and clear

Missing sealant

Cracks



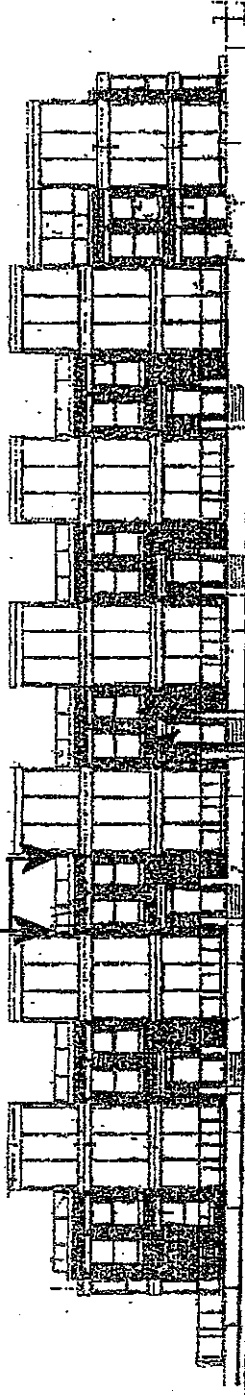
Some weeds and debris present on some patios between pavers

NORTH (COURTYARD) ELEVATION
Sealant separating at hose bib
Sealant separating at hose bib

Sealant separating at hosebib and tap dripping steadily

Hosebibs on Townhouses are generally poorly caulked, all locations but one.

cracks



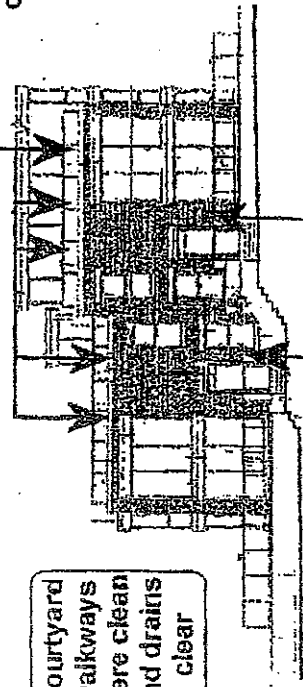
Deck drains generally clear with minor weed growth present at a few locations

SOUTH (7TH AVENUE) ELEVATION
Missing sealant (PIC) Unit 1413 W7th others all caulked

Cracks various locations

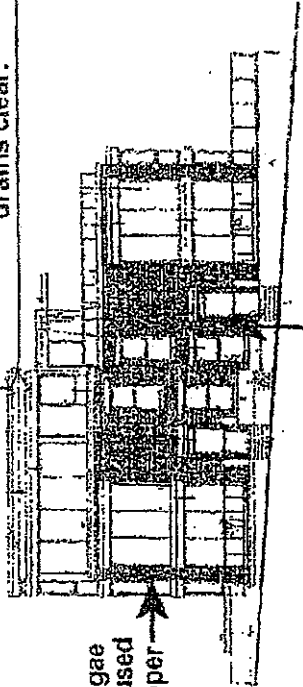
Ground level patio decks have varying amounts of organic growth and debris present, some are very clean and drains clear.

Courtyard walkways were clean and drains clear



WEST (COURTYARD) ELEVATION
Sealant separating at hosebib
Hosebib well sealed (PIC)

Dirt and algae on wall caused from scupper above



EAST (BELLOCK ST.) ELEVATION
Sealant separating at hosebib