APPENDIX A: Terminology & Glossary

Appendix A: Terminology & Glossary

A number of the terms used in this report have specific meaning in the context of this report and are therefore defined below. All of the terms and abbreviations used are standard in the industry. This glossary may be of some aid for those not familiar with construction terms:

Air Barrier refers to a combination of materials and components, including joints, that control the flow of air through an assembly, limiting the potential for heat loss and condensation due to air movement.

Air Leakage refers to the airflow into or out of a space through the wall assembly. The outward leakage of air is known as exfiltration and the inward leakage is known as infiltration. Exfiltration of warm, humid interior air will carry water vapour into the wall assembly which may condense on contact with cold surfaces.

Balcony refers to a horizontal surface exposed to the outdoors, but projected from the building so that it is not located over a living space.

Base Coat refers to the initial wet state material, either factory or field-mixed, used to encapsulate the fibreglass reinforced mesh (in EIFS applications).

Building Envelope refers to those elements of the building that separate inside conditioned space from outside unconditioned space, and includes walls, windows, doors, roofs, balcony decks (over occupied living space) and foundations. Sometimes referred to as "building enclosure" or an "environmental separator" in building codes.

Building Paper refers to a breather-type asphalt sheathing paper which is rated in minutes (15, 30 or 60), based on preventing water flow through it for number of minutes in accordance with a standard test. Also referred to as moisture barrier.

Built-up Roof (BUR) refers to a waterproof system constructed of multiple felt layers mopped down with hot bitumen.

Capillary Break refers to the gap between parallel layers of material sufficient to break the surface tension of water, which is typically a minimum of 10 mm (3/8").

Cladding refers to a material or assembly that forms the exterior skin of the wall. Typical cladding types include; stucco, EIFS, metal panels, brick/stone veneer, wood siding, and vinyl siding.

Concealed Barrier Wall Assembly refers to an exterior wall assembly where moisture is allowed to drain through a series of small interconnected cavities formed between the siding (typically wood or vinyl) and the building paper / moisture barrier. The size and effectiveness of these cavities varies significantly from one type of horizontal siding product to another.

Deck refers to a horizontal surface exposed to the outdoors, located over a living space, and intended for moderate use but not for access to other areas of the building.

Delamination refers to a separation along a plane parallel to the surface.

Dew Point refers to the temperature at which air containing a constant amount of water vapour reaches the saturation point. As the temperature decreases, the air has a lower capacity to contain moisture. Condensation can occur at or below the dew point temperature.

Drained Cavity (also **Rainscreen**) refers to a design strategy whereby a positive drainage plane is created immediately behind the exterior cladding material and in front of the moisture barrier. The so-formed cavity is sufficient in width to break the surface tension of water, and allows incidental water entering the wall system to drain by gravity with the aid of flashings and membranes.

Drip Edge refers to a projection detailed to direct water run-off away from wall, window, balcony or roofing element.

Efflorescence refers to the dissolved salts in the material (such as concrete or brick) being transported by water, and redeposited on the surface after evaporation.

EIFS refers to *Exterior Insulated Finish System* and generally consists of layers of rigid insulation adhered or fastened to the substrate, and finished with thin coats (lamina) of reinforced cementitious material and a finish coat of acrylic stucco.

EPDM (Ethylene Propylene Diene Monomer) refers to a waterproofing sheet membrane made of vulcanized rubber. These membranes, usually single-ply applications, may be installed fully bonded to the substrate with an adhesive, or may be "loose-laid" with only the laps and terminations of the membranes adhered.

Face-seal refers to a building envelope strategy where the performance of the exterior wall is dependent on the ability of the exterior surface of the cladding, windows and associated sealant to shed water and prevent its infiltration. This system can not accommodate water that penetrates past the exterior face since a positive drainage path and/or additional continuous waterproof barrier are not provided.

Finish Coat refers to the final wet state material, which provides colour and texture, applied over the reinforced base coat (on stucco or EIFS applications).

Fishmouth refers to a deficiency in the installation of waterproofing membranes (roofing, self-adhering membranes, etc.) which results in a fold in the edge of the membrane, through which water can penetrate.

Flashing refers to sheet metal or other material used in roof or wall construction and designed to shed water (typically sloped outwards, with a drip edge to shed water). Used in conjunction with:

- *Cap* or *Parapet flashing:* top of wall, pier, column or chimney.
- *Saddle flashing:* an upturn, sloping transition piece between a horizontal and vertical plane, eg., balcony cap and wall intersection.
- *Head/sill flashing:* at head or sill of window opening or other penetration.
- *Base flashing:* at bottom edge of wall surface.
- *Cross cavity* or *Through-wall flashing:* a flashing which sheds water from the moisture barrier plane to the exterior, through the cladding.

Gum Lip refers to a method of sealing a flashing to a wall surface whereby the top edge of the flashing is bent outwards to form a caulk-filled cavity (typically at the termination of a waterproofing membrane).

Housewrap refers to a sheet plastic material which is used as a sheathing paper, generally between the wall sheathing material and the exterior cladding. Although recognized as a proprietary term, in this report *housewrap* is used to represent a generic group of materials. One common type of housewrap consists of spun-bonded Polyolefin (SBPO), another is made of perforated polyethylene. Their resistance to liquid water is high, but provides little resistance to water vapour diffusion.

Maintenance refers to a regular process of inspection, cleaning and minor repairs of envelope elements and exterior systems such as roof, walls, windows, gutters, downspouts and drains. Maintenance is performed to ensure proper performance of service life of assemblies or components.

Movement Joint or **Control Joint** refers to a continuous joint in a structure, cladding or other element which allows differential movement of portions of the building structure (expansion joint), or prevents or localizes cracking of brittle materials, such as stucco, where movement needs to be controlled (control joint).

Penetration refers to a hole passing through the building envelope in which ducts, electrical wires, pipe and fasteners are run between inside and outside.

Punch Window refers to the architectural style of the window being expressed as a single "punched" opening surrounded by the cladding material, as opposed to being arranged in vertical or horizontal strips of several window units.

Relative Humidity refers to the ratio (expressed as a percentage) of the amount of moisture within the air to the maximum amount of moisture that the air could possibly contain for a given temperature.

Saddle refers to the transition of small horizontal surfaces, such as the top of a balcony guardrail or parapet wall, with a vertical surface, such as a wall.

Scupper refers to a metal pipe or trough section creating a drainage overflow from a roof or balcony to a downpipe or to a surface below.

Sheathing refers to a material used to provide structural stiffness to the wall framing and to provide structural backing for the cladding and sheathing paper. Typical materials are OSB (oriented strand board), plywood, or gypsum board.

Sheathing Paper (or **moisture barrier**) refers to a material or combination of materials in an exterior wall whose purpose is to retard penetration of incidental water further into the wall structure once past the cladding. Commonly used materials are building paper or housewrap.

Spall refers to a fragment of material, such as concrete or masonry, detached from a larger mass by a physical blow, weather action, internal pressure or efflorescence within the mass (sub-fluorescence).

Strapping refers to the use of wood or metal material, typically 19mm (¾") nominal thickness, to form a drainage cavity and act as a capillary break behind the cladding.

Surfactant refers to an agent (eg., detergent) that, when mixed with water, breaks the surface tension of water drops, thus enabling easier absorption of water through a material. Without surfactants, water would have a greater tendency to remain as drops on the surface of a given material.

Symptoms refers to visual evidence, such as staining or wetting of surfaces, loss of strength, material delamination or cracking, peeling paint, debonded coatings, etc., which suggests a performance problem within the exterior envelope of a building.

Thermal Bridge refers to a material with higher thermal conductivity transferring more heat through an assembly than the surrounding components. For example, a stud in a wall will transfer more heat that the surrounding insulation.

UV refers to ultra-violet radiation (from the sun), which has a degrading effect on many membrane and sealing materials (asphalt based) unless protected by an appropriate shielding layer.

Vapour Retarder refers to a material having a high resistance to water vapour diffusion that is located within the assembly to control the flow of vapour and limit the potential for condensation due to diffusion.

Weephole refers to an opening placed in a wall or window assembly to permit the escape of liquid water from within the assembly. Weepholes can also act as vents.

Window refers to a manufactured assembly of a frame, sash, glazing and necessary hardware, made to fit an opening in a wall.

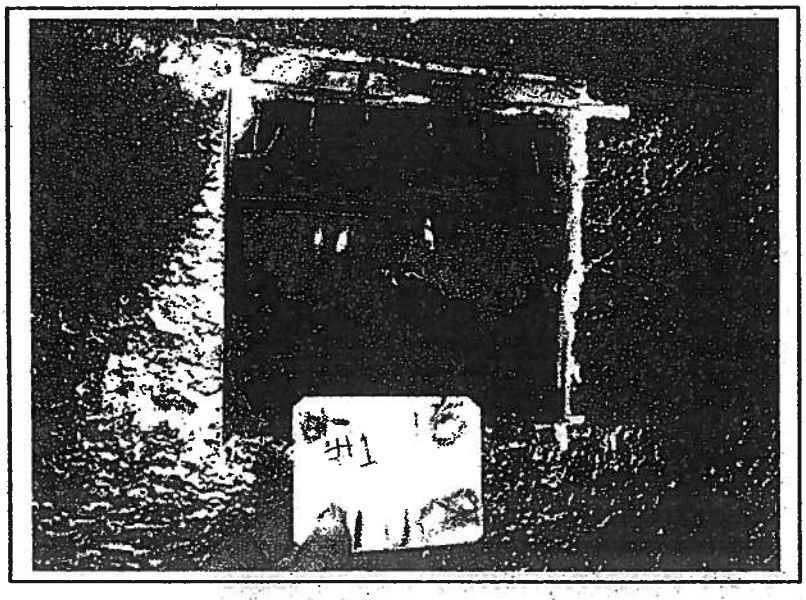
- *Window sill*: horizontal member at the base of a window.
- *Window head*: horizontal member at the top of a window.
- *Window jamb*: either of the vertical members at the sides of a window.
- *Mullion*: vertical member between the glazed units.
- *Rail:* horizontal member between the glazed units.

- *Glazing:* The glass portion of the window.
- *IGU:* Insulated glazing unit. Double or triple panes of glass sealed together to provide insulation value. The still gas between the panes acts as the insulation.
- *Condensation track:* a channel at the interior sill level of the window intended to intercept small amounts of water condensing on the interior surface of the glass.

APPENDIX B: Exploratory Openings

Exploratory Opening 1

Location	**North Stucco wall near Unit 1868 below control joint**
Building Element	Stucco wall

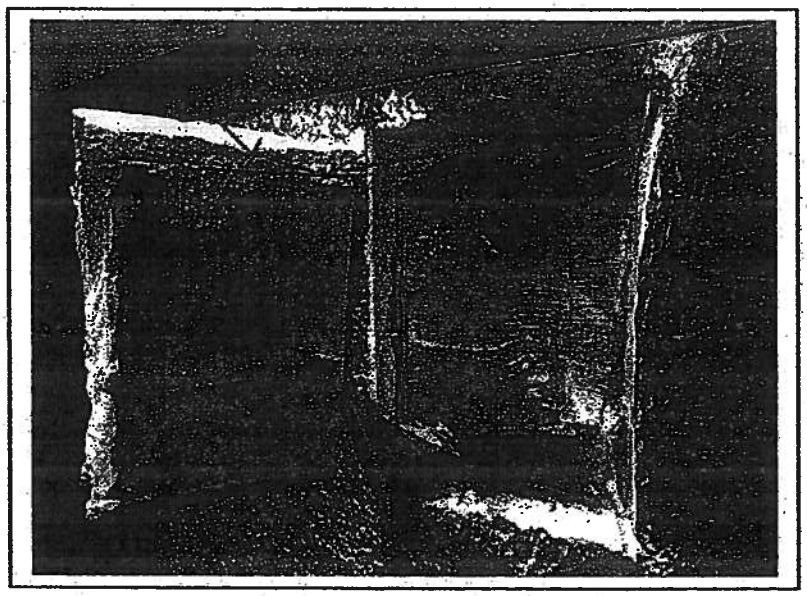


Description:

- **Sheathing is completely deteriorated.**
- **Mold on exterior face of drywall (polyethylene sheet has a hole)**
- **Top plate intact but is wet**
- **Wire mesh is slightly corroded**
- **Paper adhered to stucco**
- **5/8" stucco**
- **Signs of ant infestation**

Exploratory Opening 2

Location	**North Stucco wall below balcony saddle of Unit 1856**
Building Element	Stucco Wall

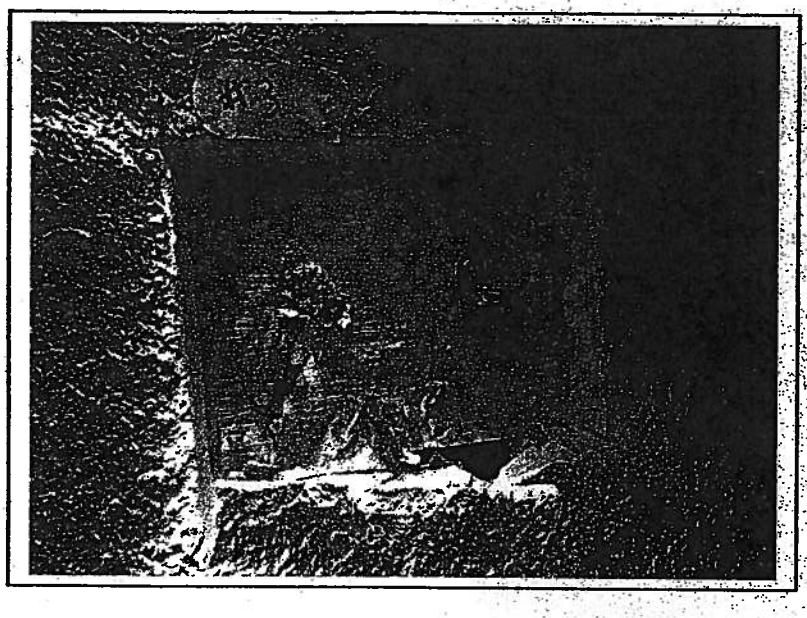


Description:

- **Wire mesh slightly corroded**
- **Building paper is deteriorated**
- **Signs of moisture ingress**
- **Sheathing intact**
- **Sheathing MC: 20 – 30%**

Exploratory Opening 3

Location	**North stucco wall below balcony saddle of unit 1886**
Building Element	Stucco wall

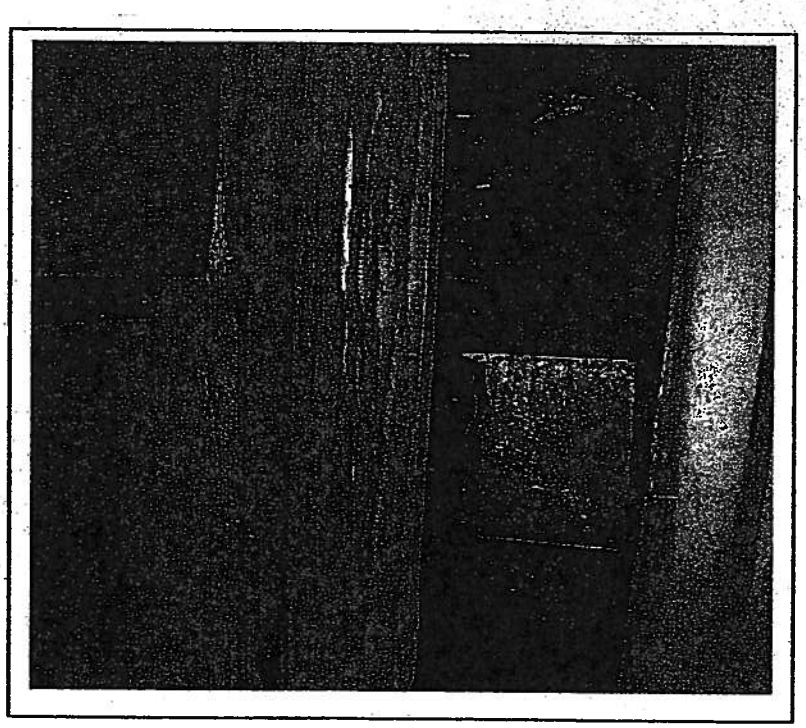


Description:

- **Wire mesh is slightly corroded**
- **Building paper deteriorated**
- **Sheathing severely deteriorated and peeling away**
- **Base plate has staining and is wet (MC 45%)**
- **Sheathing fully exposed at balcony saddle**

Exploratory Opening 4

Location	**East wall of unit 1890 below balcony saddle**
Building Element	Sheathing behind wood trim

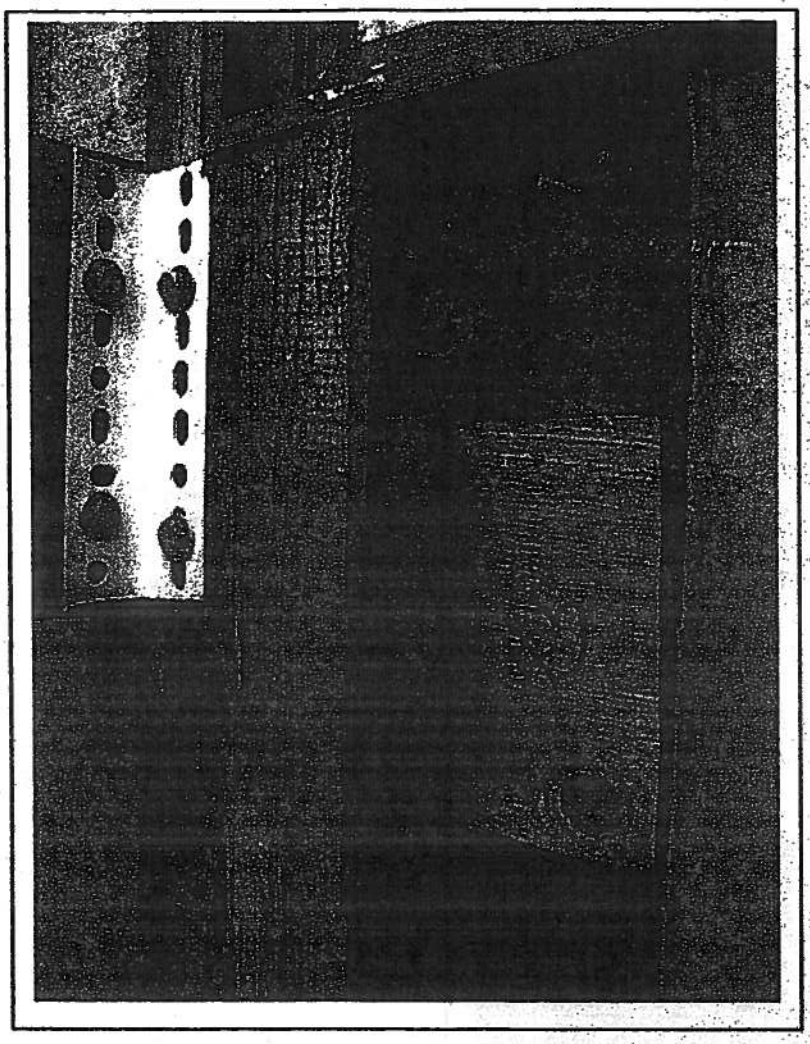


Description:

- **Wood cladding paint is peeling**
- **Condition of sheathing and building paper is good**
- **Sheathing MC: 0 %**

Exploratory Opening 5

Location	**Below window of unit 1898**
Building Element	Sheathing behind wood trim

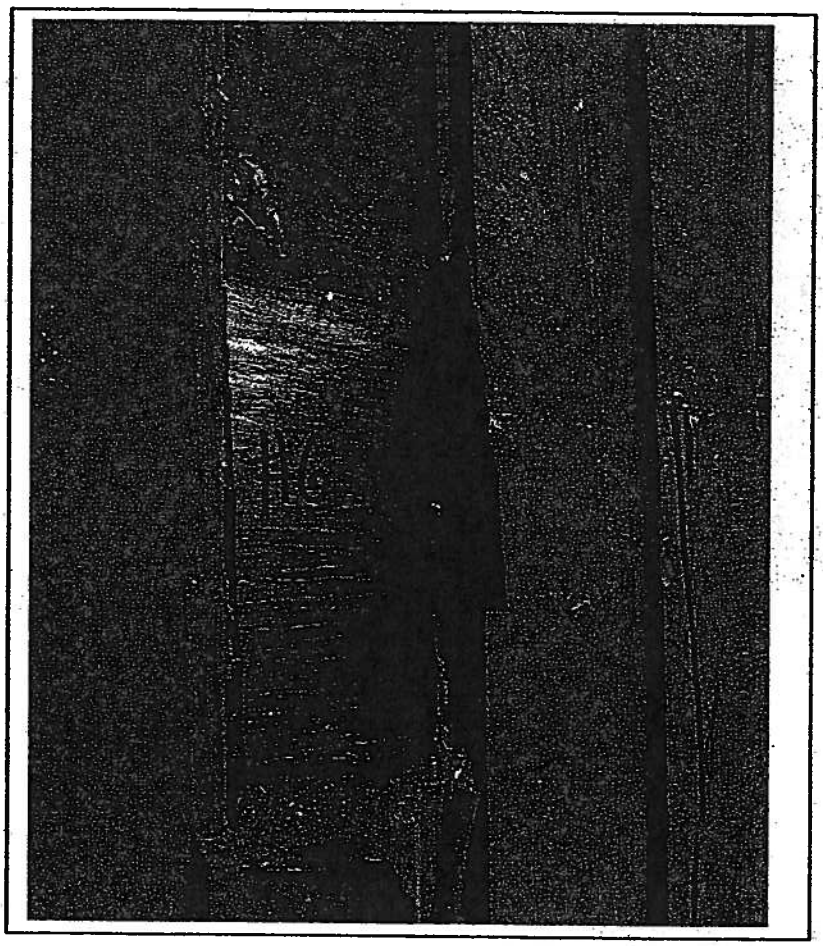


Description:

- **Wood cladding paint is peeling**
- **Condition of sheathing and building paper is good**
- **Reverse lap in building paper at window sill flange**
- **Sheathing MC: 0 %**

Exploratory Opening 6

Location	**North wall of units 1888 to 1898**
Building Element	Sheathing behind wood trim

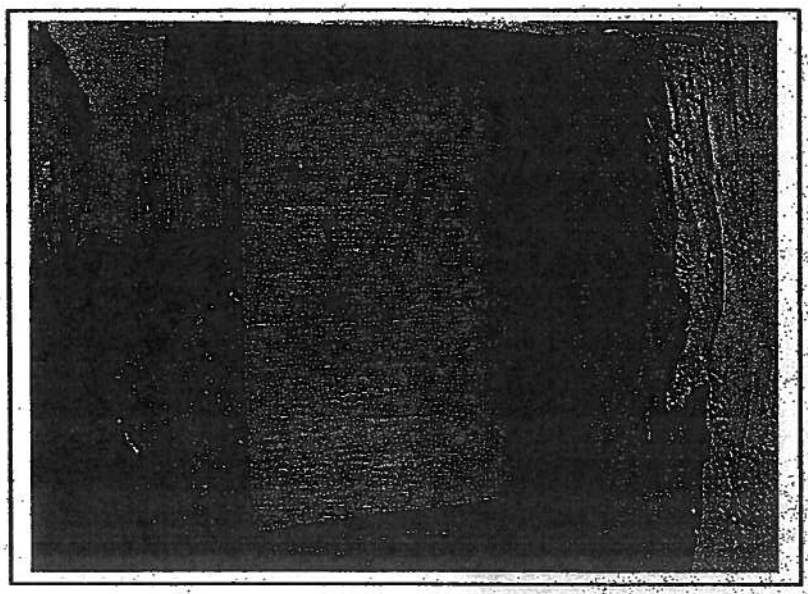


Description:

- **Wood cladding paint is peeling**
- **Condition of sheathing and building paper is good**

Exploratory Opening 7

Location	**North wall of units 1888 to 1898**
Building Element	Sheathing behind wood trim

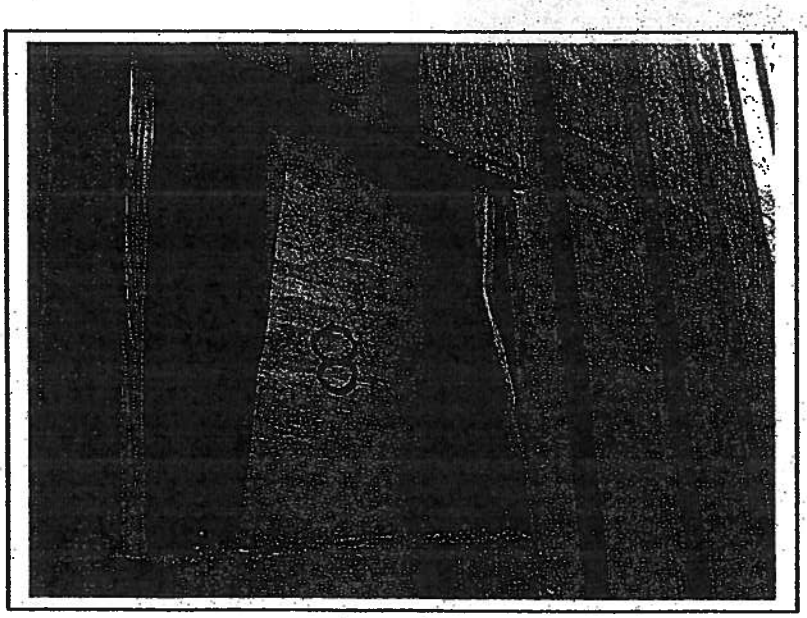


Description:

- **Wood cladding paint is peeling**
- **Condition of sheathing and building paper is good**
- **Slight staining at nail head**
- **Sheathing MC: 13 – 15%**

Exploratory Opening 8

Location	**North wall at unit 1888 below lower roof saddle**
Building Element	Sheathing behind wood trim

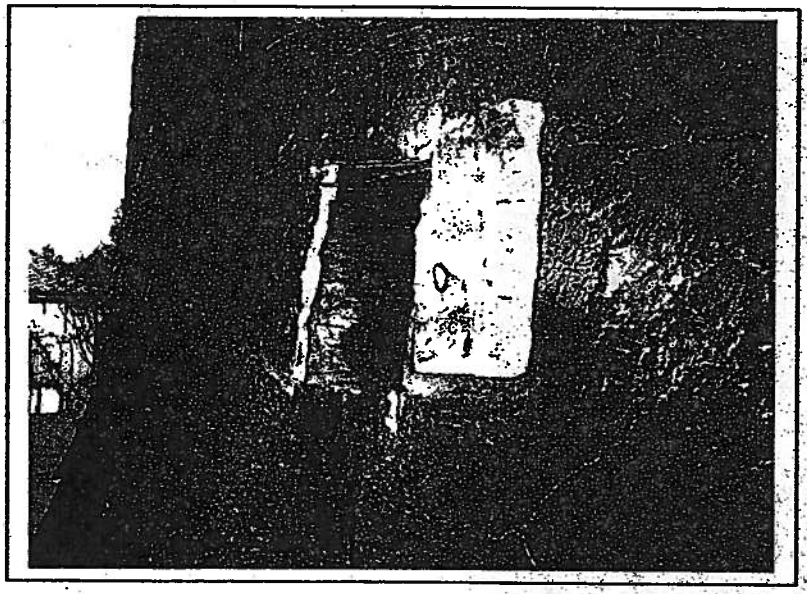


Description:

- **Wood cladding paint is peeling**
- **Condition of sheathing and building paper is good**
- **Sheathing MC: 15 %**

Exploratory Opening 9

Location	**South stucco wall below balcony saddle near unit 2050**
Building Element	Stucco wall



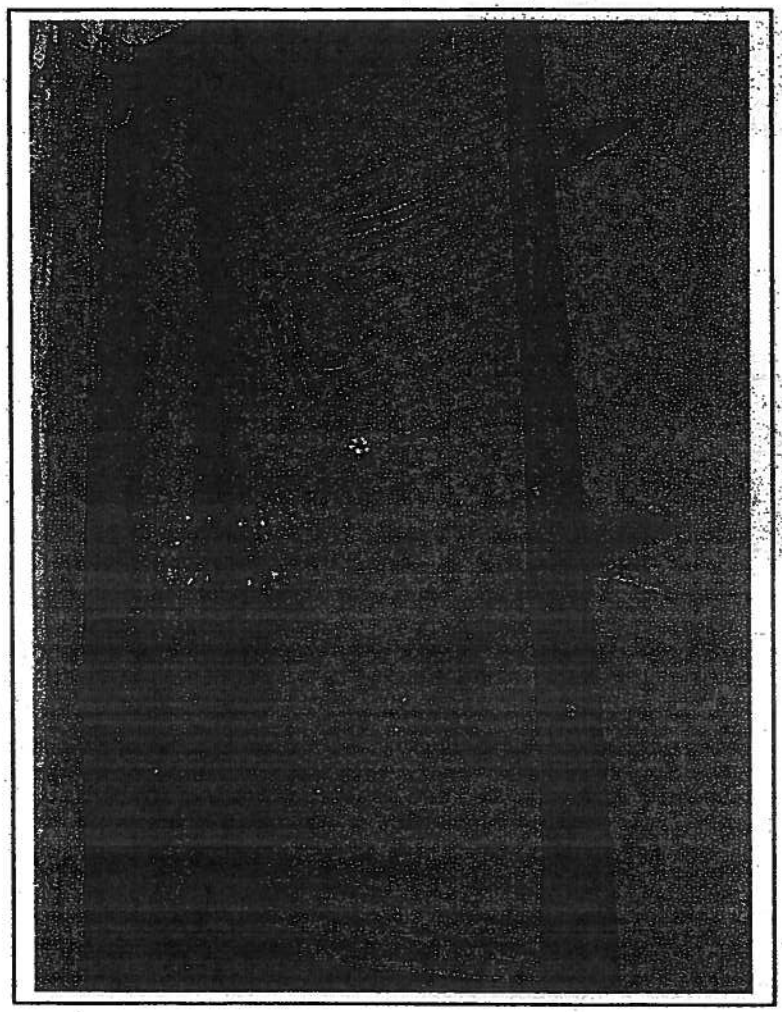
Description:

- **Stucco bowed outwards at control joint and sheathing is exposed**
- **Wire mesh is corroded**
- **Building paper has completely deteriorated and is no longer evident**
- **Sheathing is deteriorated**
- **Sheathing exposed at balcony saddle**

- **Sheathing MC: 25 %**

Exploratory Opening 10

Location	**North wall of units 2030 to 2040 under vents**
Building Element	Sheathing behind wood trim

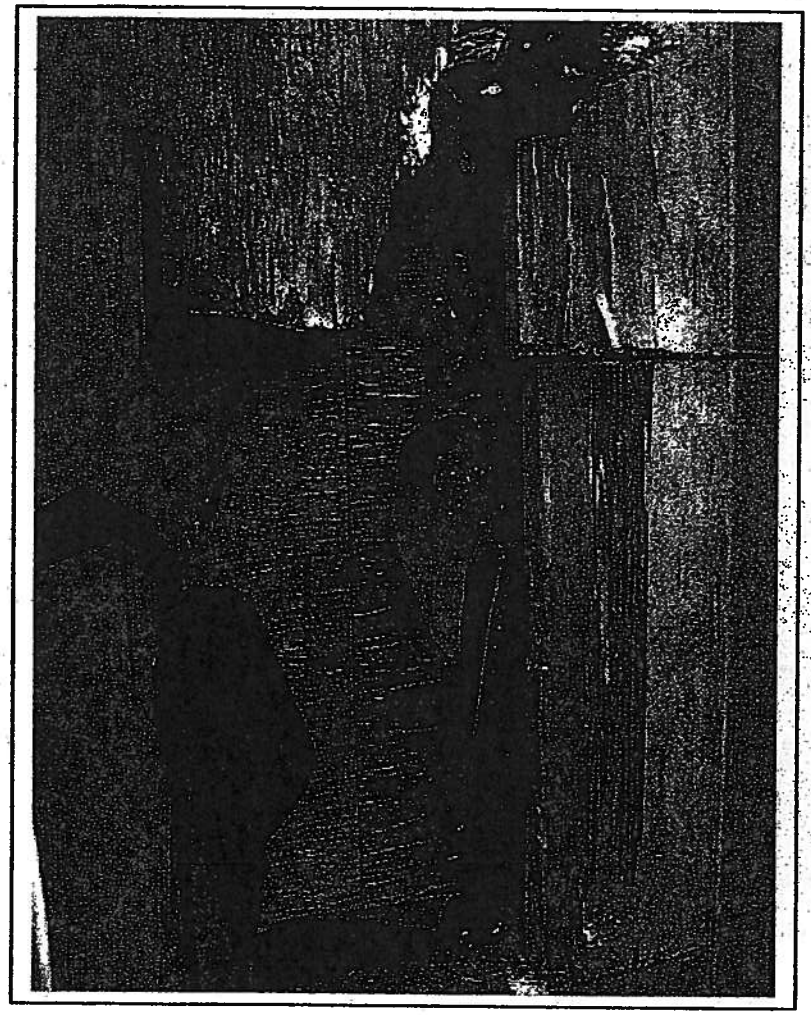


Description:

- **Wood cladding in good condition**
- **Building paper and sheathing is good**

Exploratory Opening 11

Location	**North wall of unit 2030**
Building Element	Sheathing behind wood trim



Description:

- **Wood cladding is deteriorating**
- **Building paper is deteriorated in a small area**
- **Only one layer of building paper noted**
- **Sheathing is good condition with some staining at nails**
- **Sheathing MC: 30 %**

Exploratory Opening 12

Location	**North wall of unit 1922**
Building Element	Sheathing behind wood trim

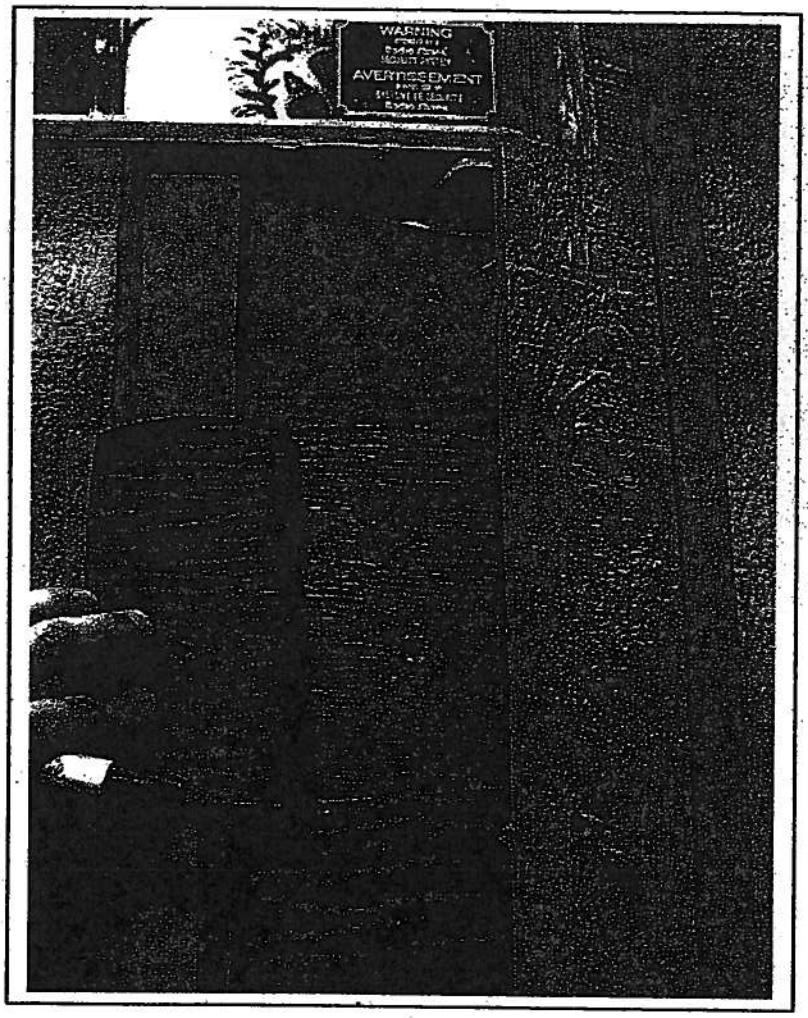


Description:

- **Wood cladding is deteriorating**
- **Building paper is deteriorated in small area**
- **Sheathing in good condition with some staining and rusting at nails**

Exploratory Opening 13

Location	**South wall of unit 1912 below window**
Building Element	Sheathing behind wood trim

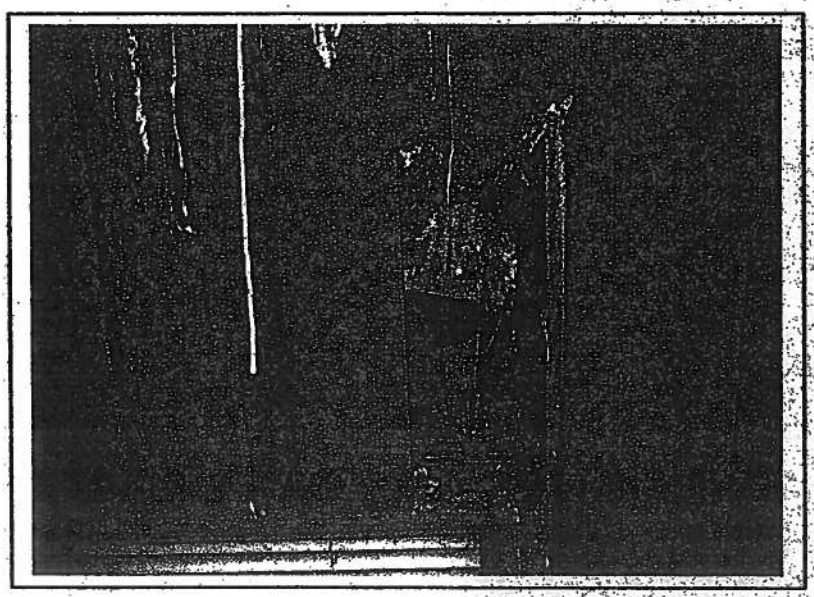


Description:

- **Wood cladding in good condition**
- **Building paper and sheathing in good condition**

Exploratory Opening 14

Location	**North wall of unit 2080**
Building Element	Sheathing behind wood trim

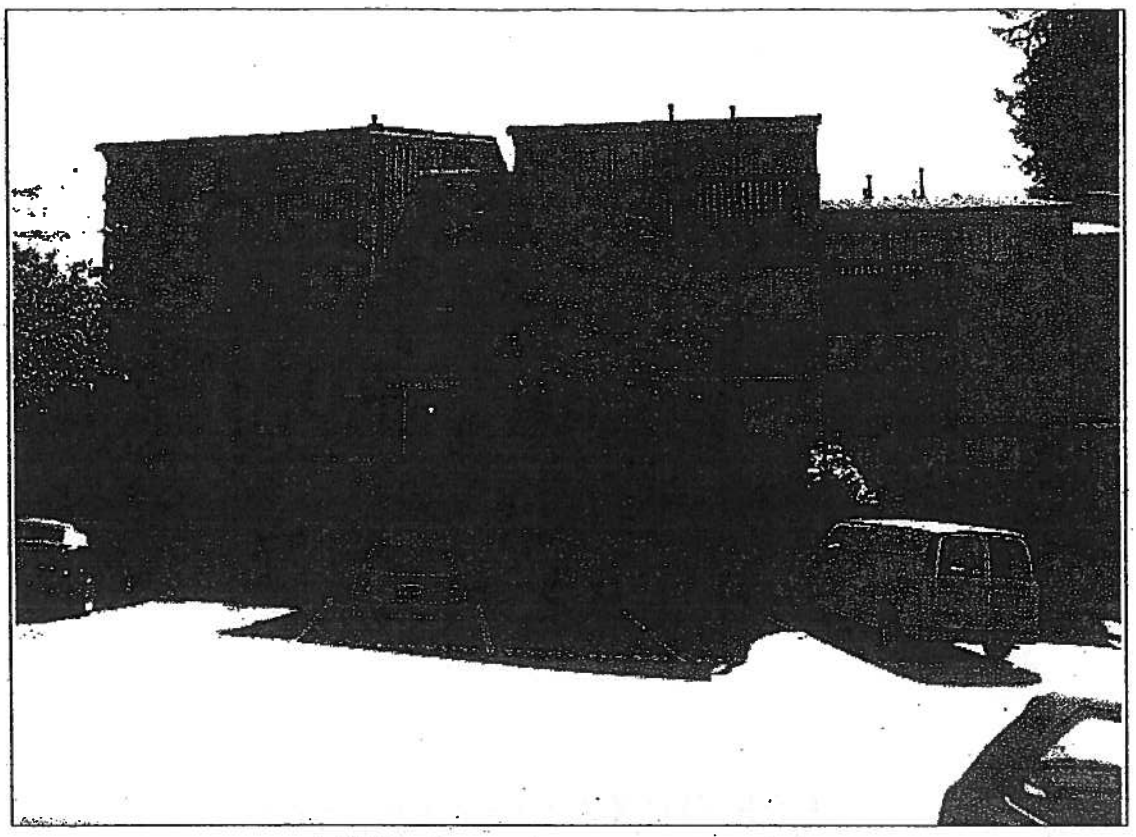


Description:

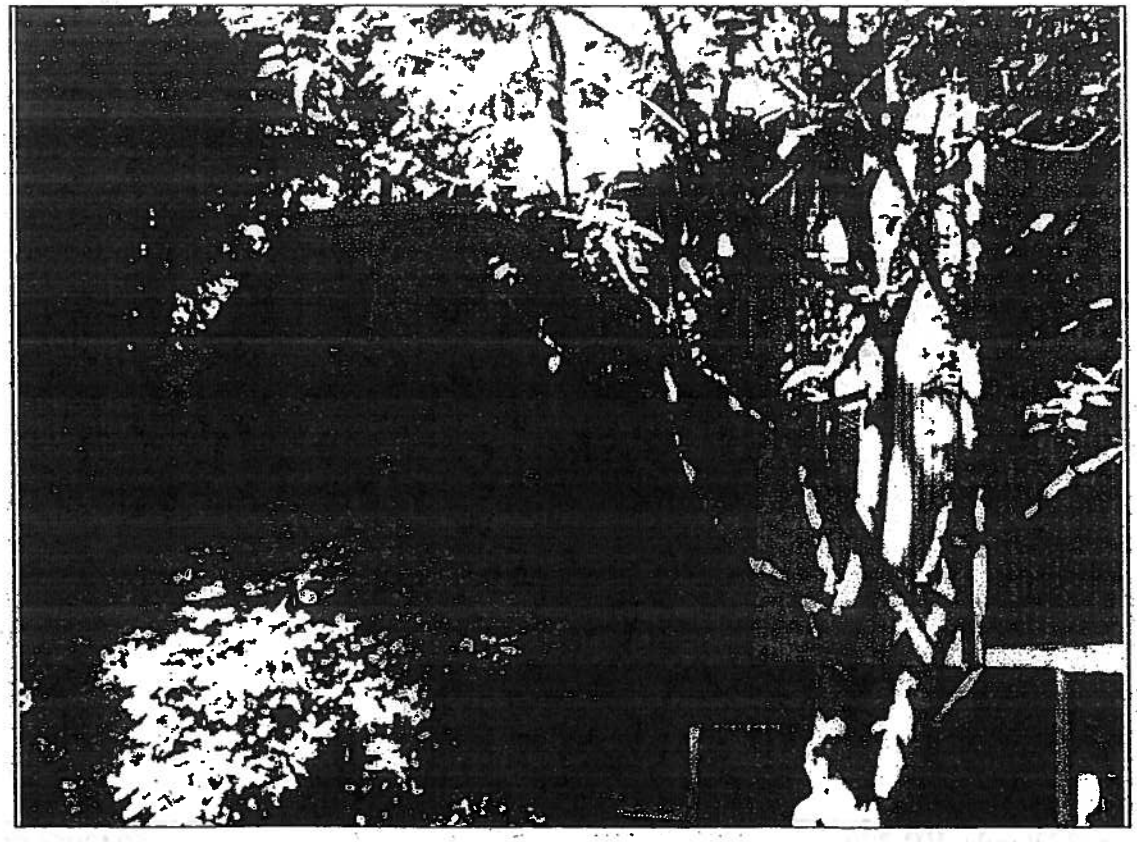
(photo should be labeled #14)

- **Wood cladding is severely deteriorated**
- **Building paper is deteriorating**
- **Sheathing is in good condition with some staining**

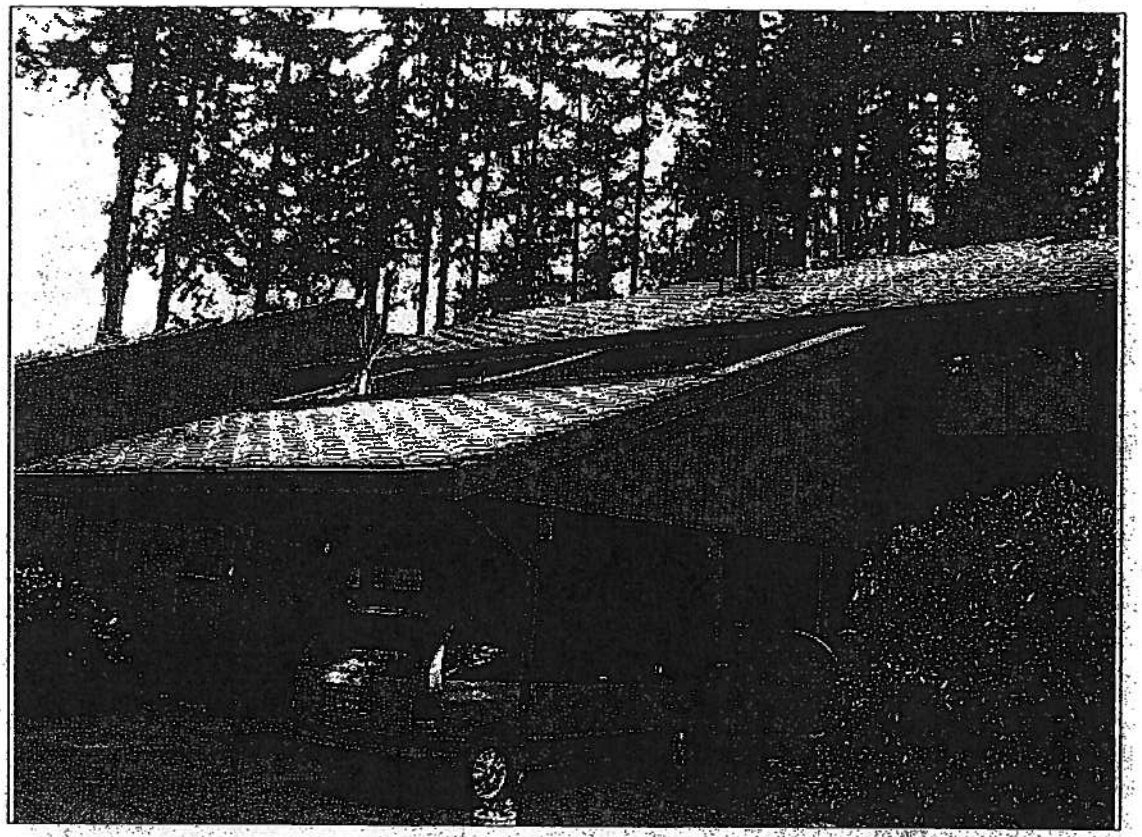
APPENDIX C: Photographs



P01:Partial overview of Building D (west maisonette). Note eave overhangs.



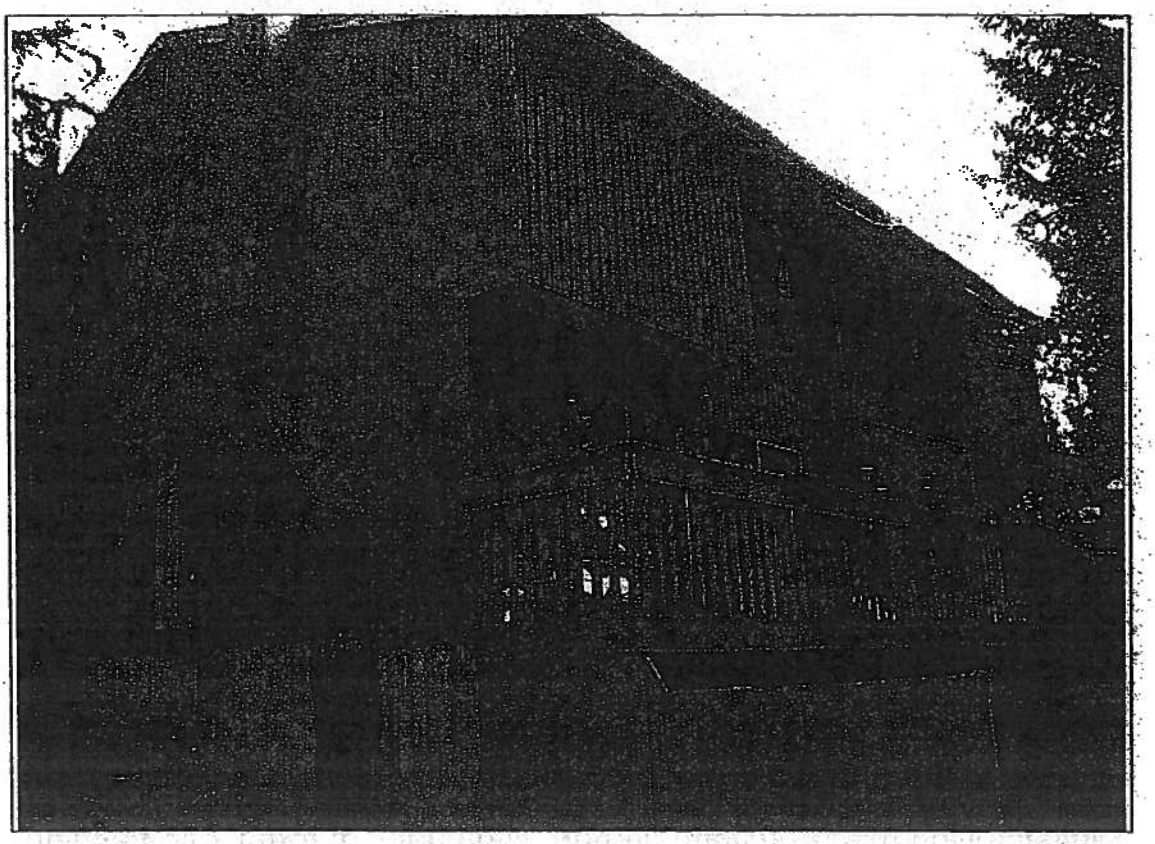
P02: Rear of Building D at locations of test openings.



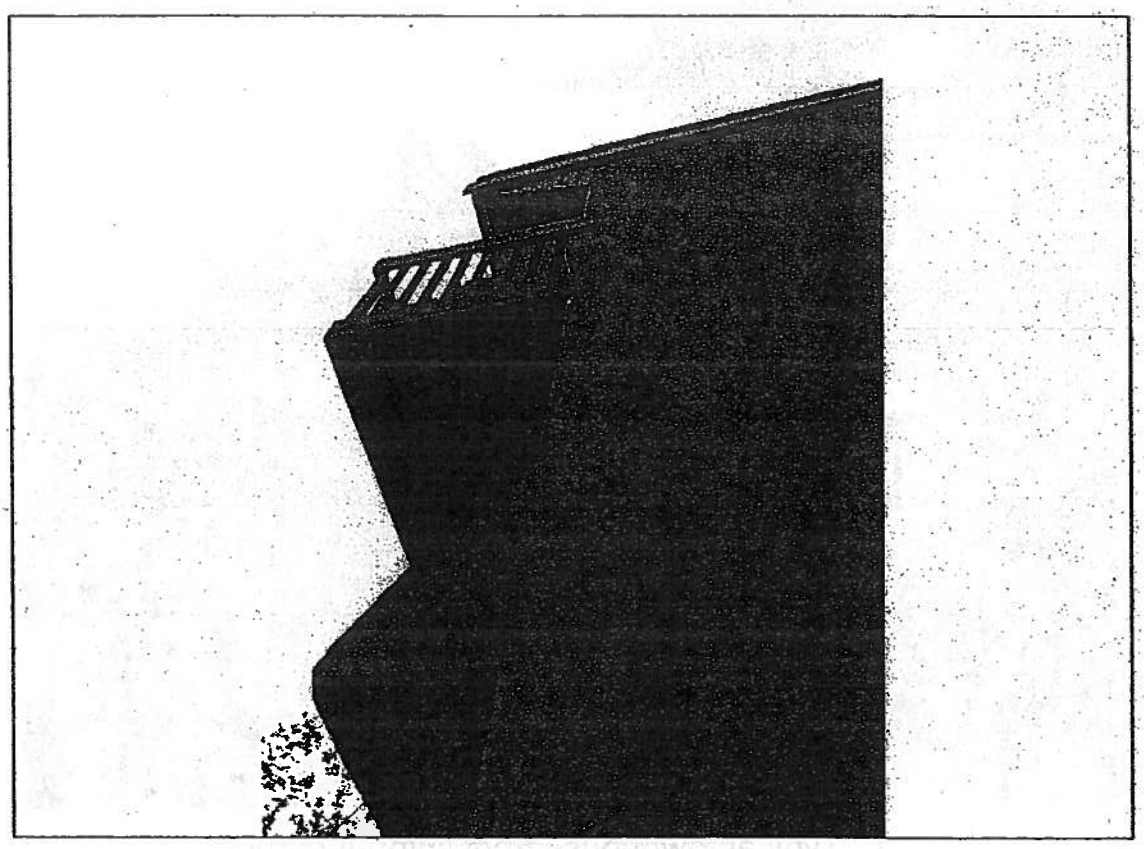
P03: Typical townhouse front with carport. Note lack of metal cap flashings over balcony upstand walls.



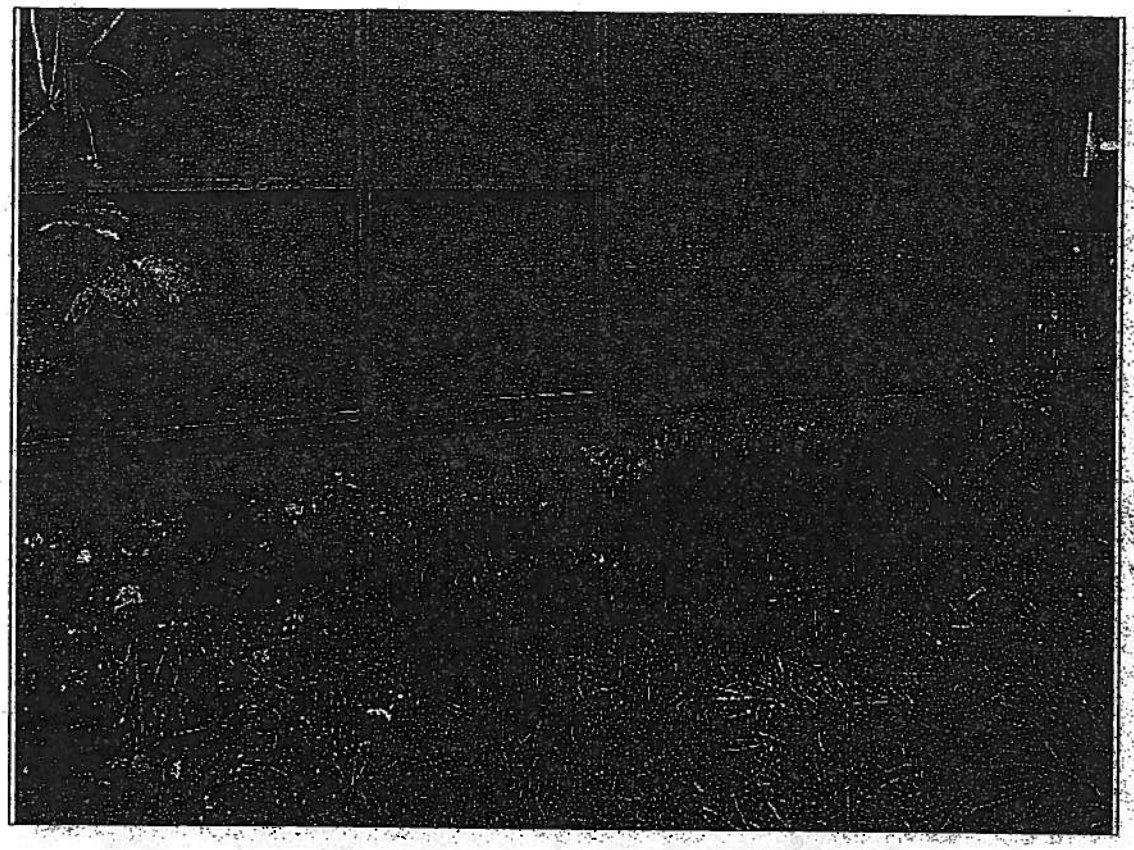
P04: Typical townhouse front without carport.



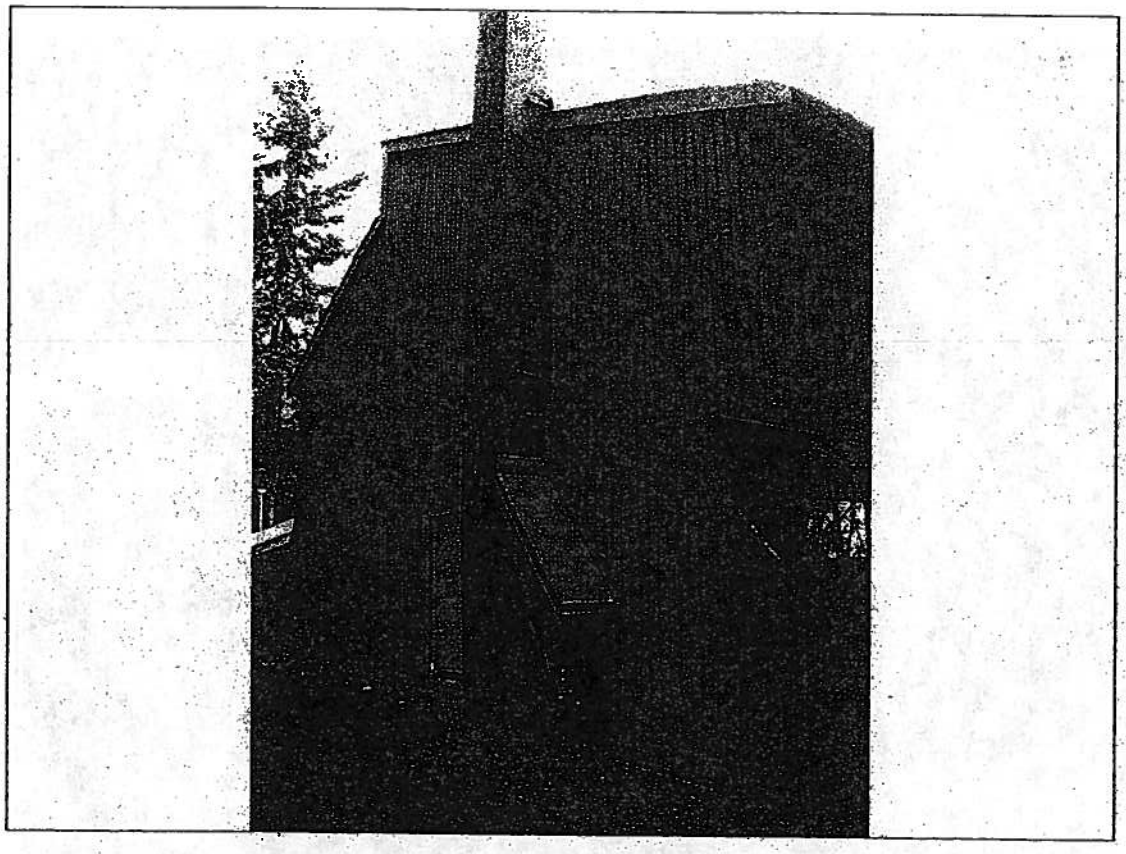
P05: Typical rear of townhouse. Note algae staining on cladding and foundation wall.



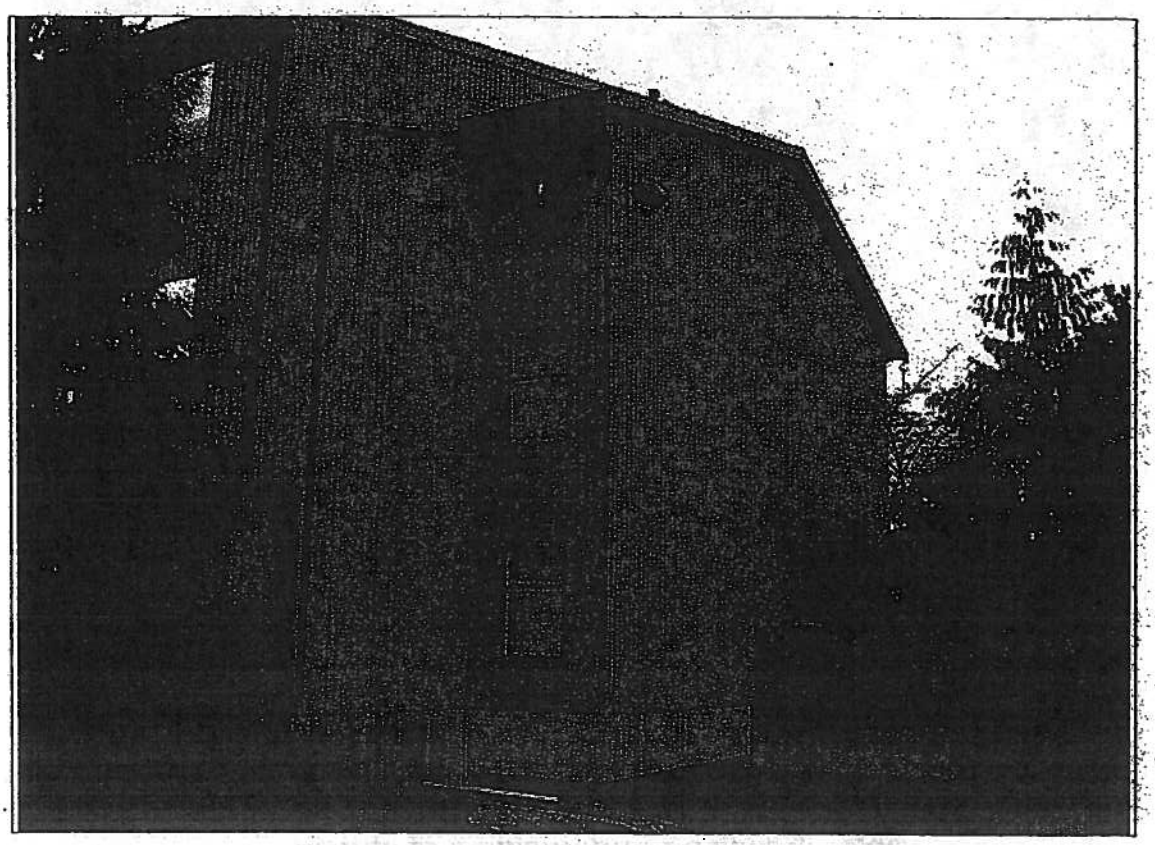
P06: Damage at balcony saddle on stucco wall.



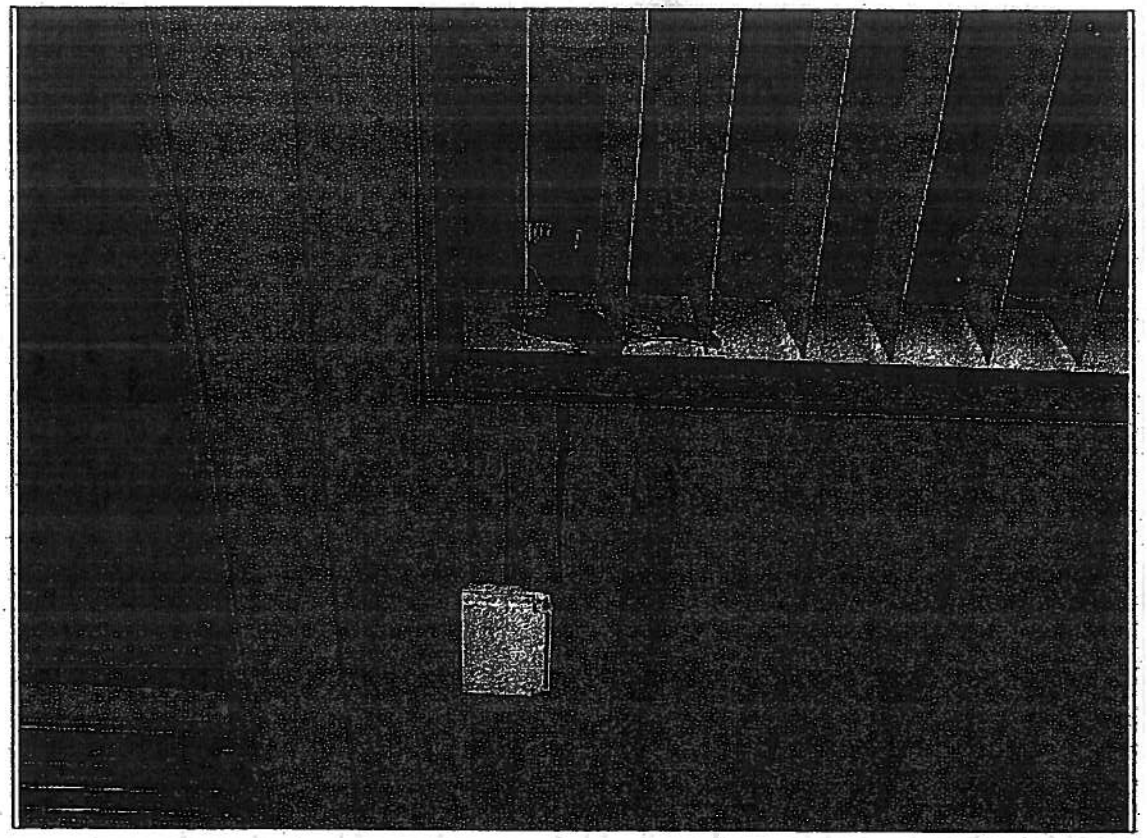
P07: Cracking and buckling of stucco.



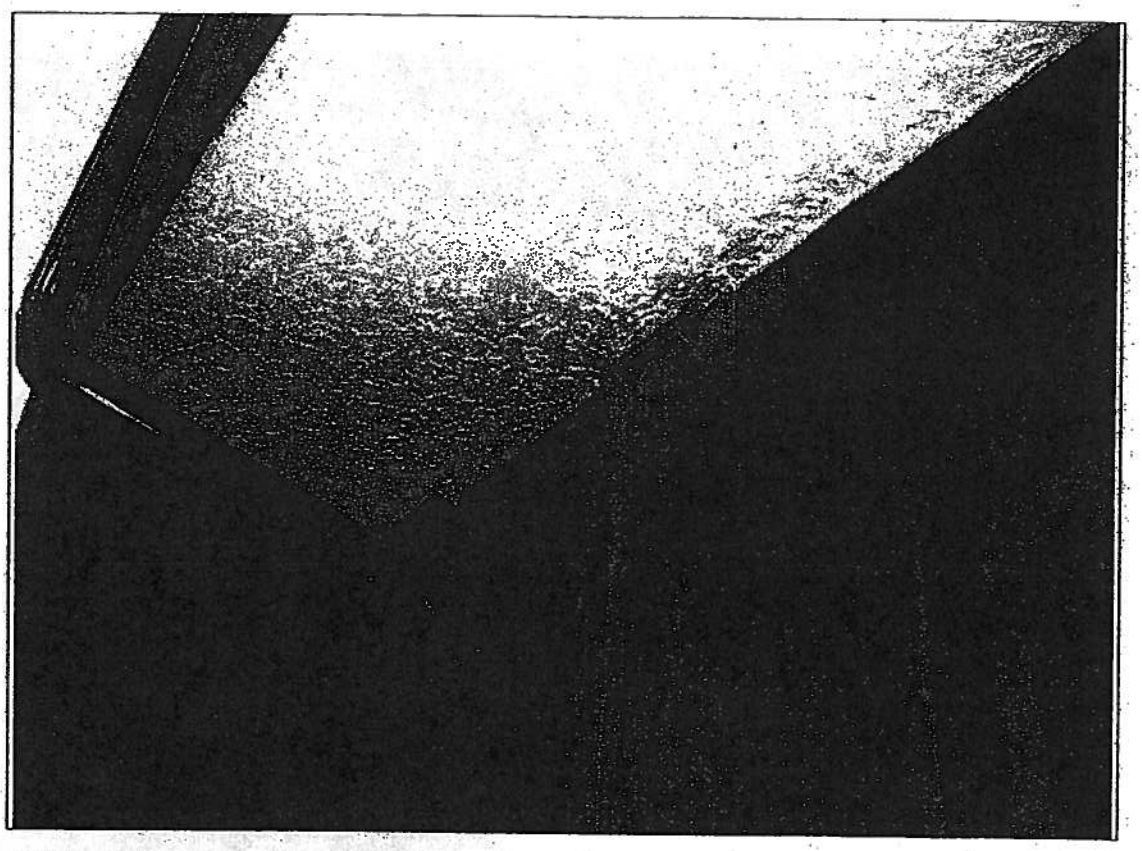
P08: Typical townhouse gable end wall. Note popping of board ends and cracking of stucco at chimney.



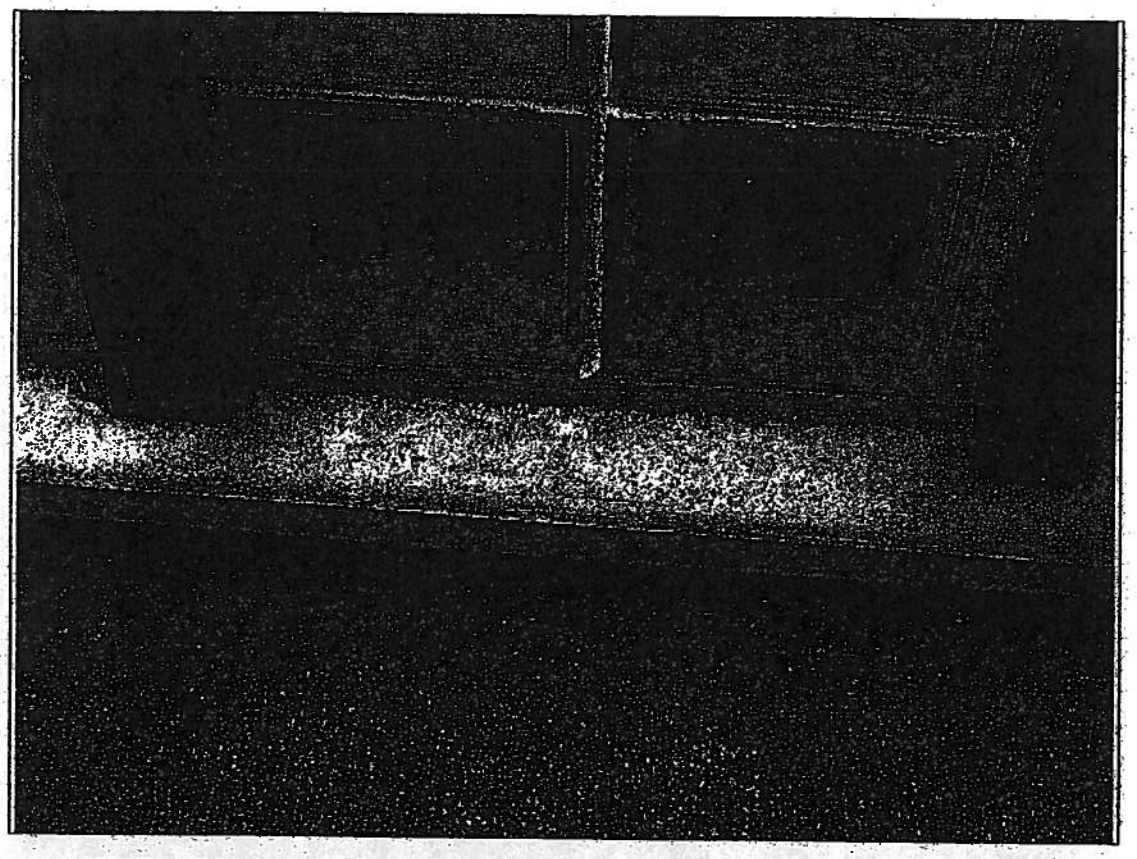
P09: Typical condition of maisonette gable end walls. Note flaked paint and deteriorated cladding.



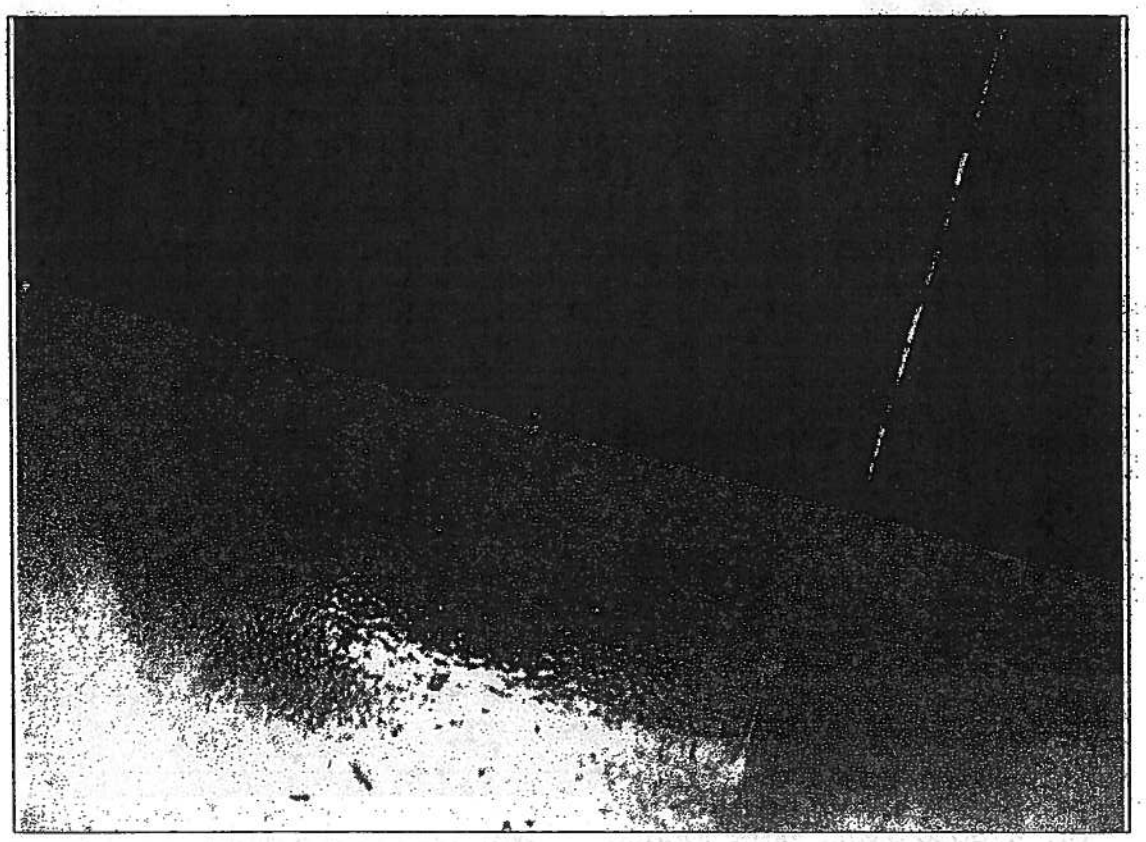
P10: Typical window unit. Note lack of subsill flashing and poor condition of sealant. Also note split cladding and unsealed penetration.



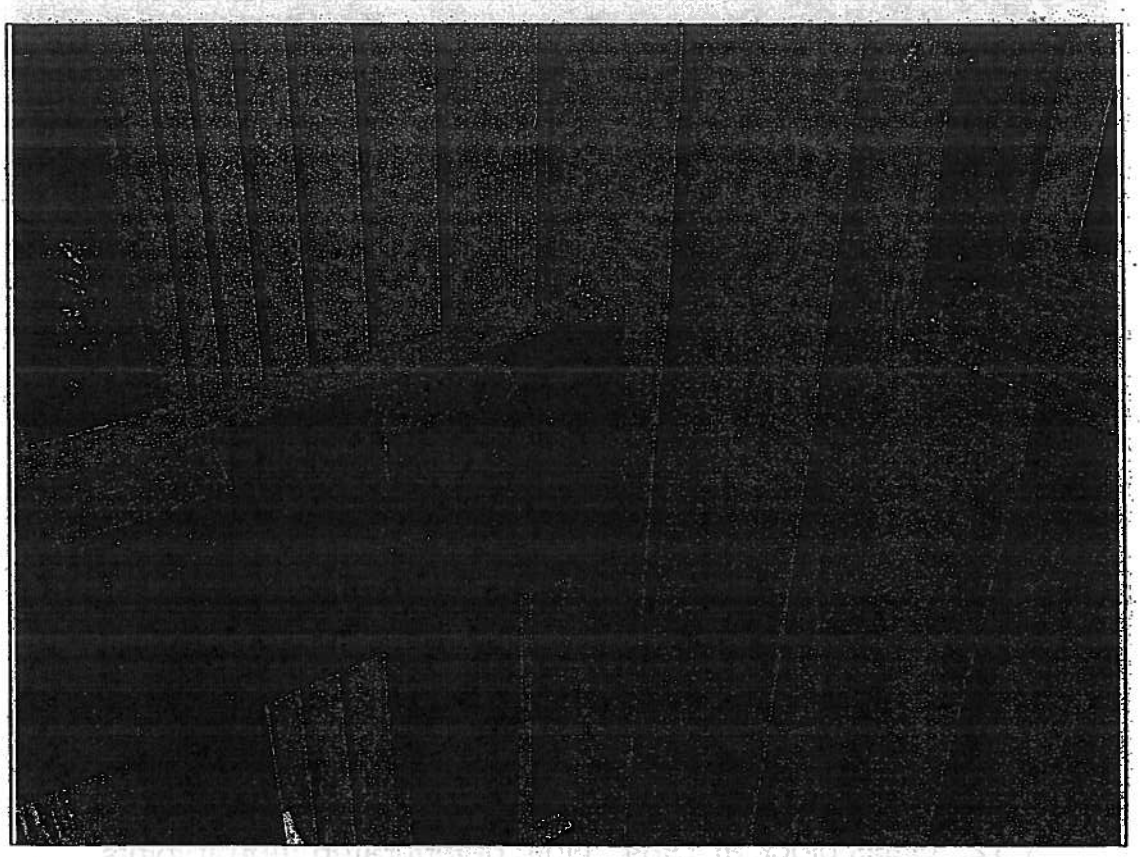
P11: Stucco soffit. Note location of wall vent and staining from vent.



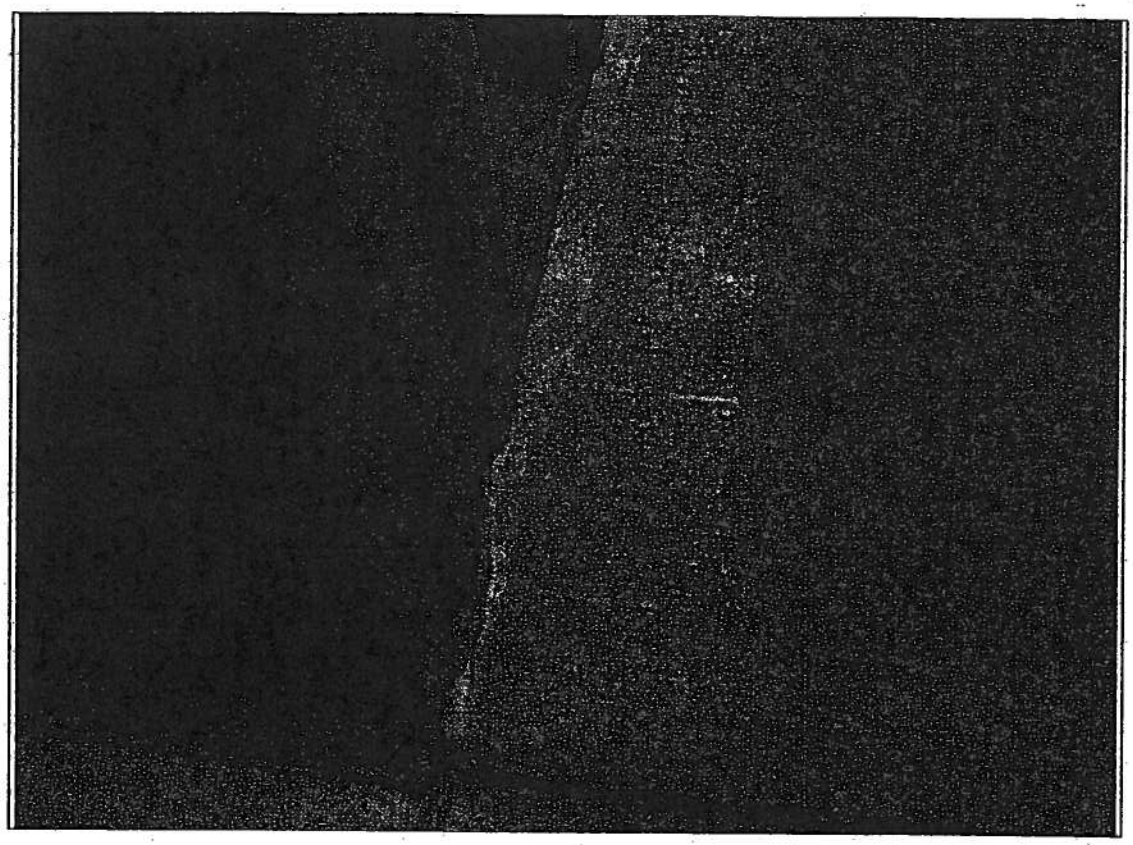
P12: Glass block at 1984. Note deteriorated mortar joints.



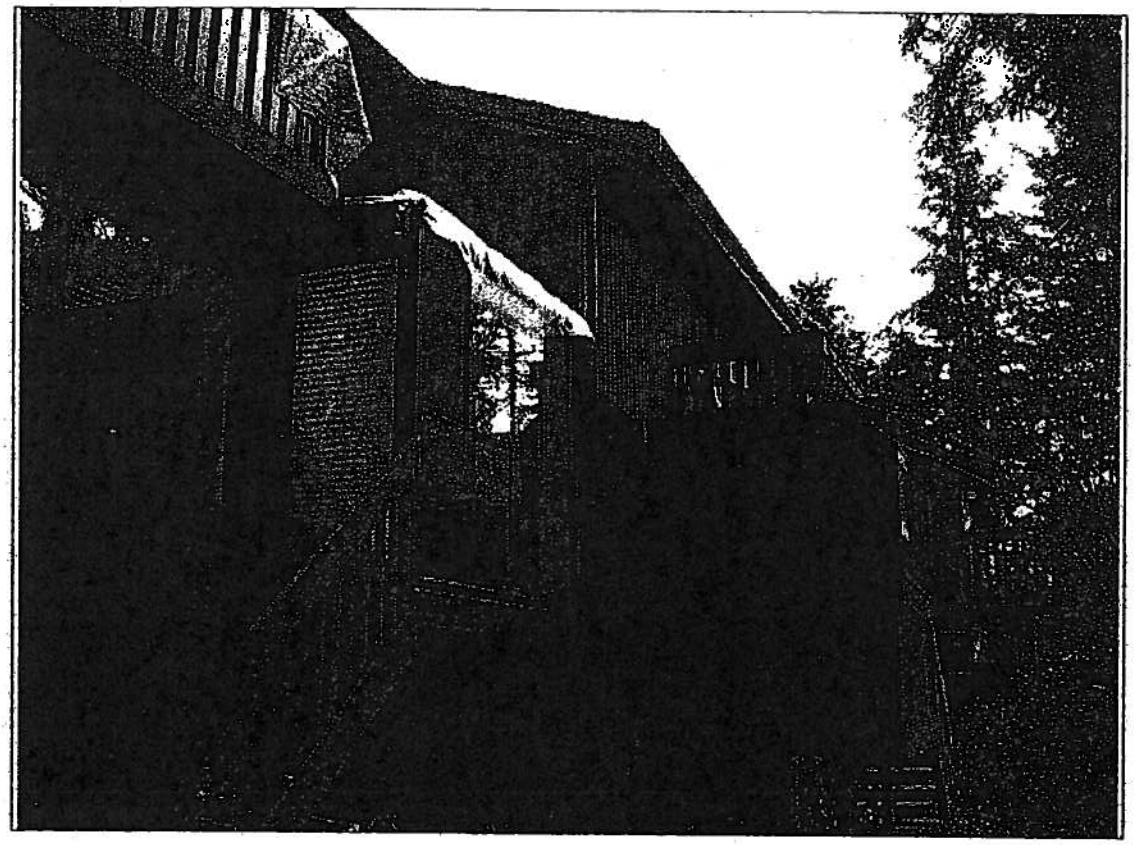
P15: New balcony at Unit 1976. Note drainage is provided by holes made by owner.



P16: Typical balcony rail connection at wall.

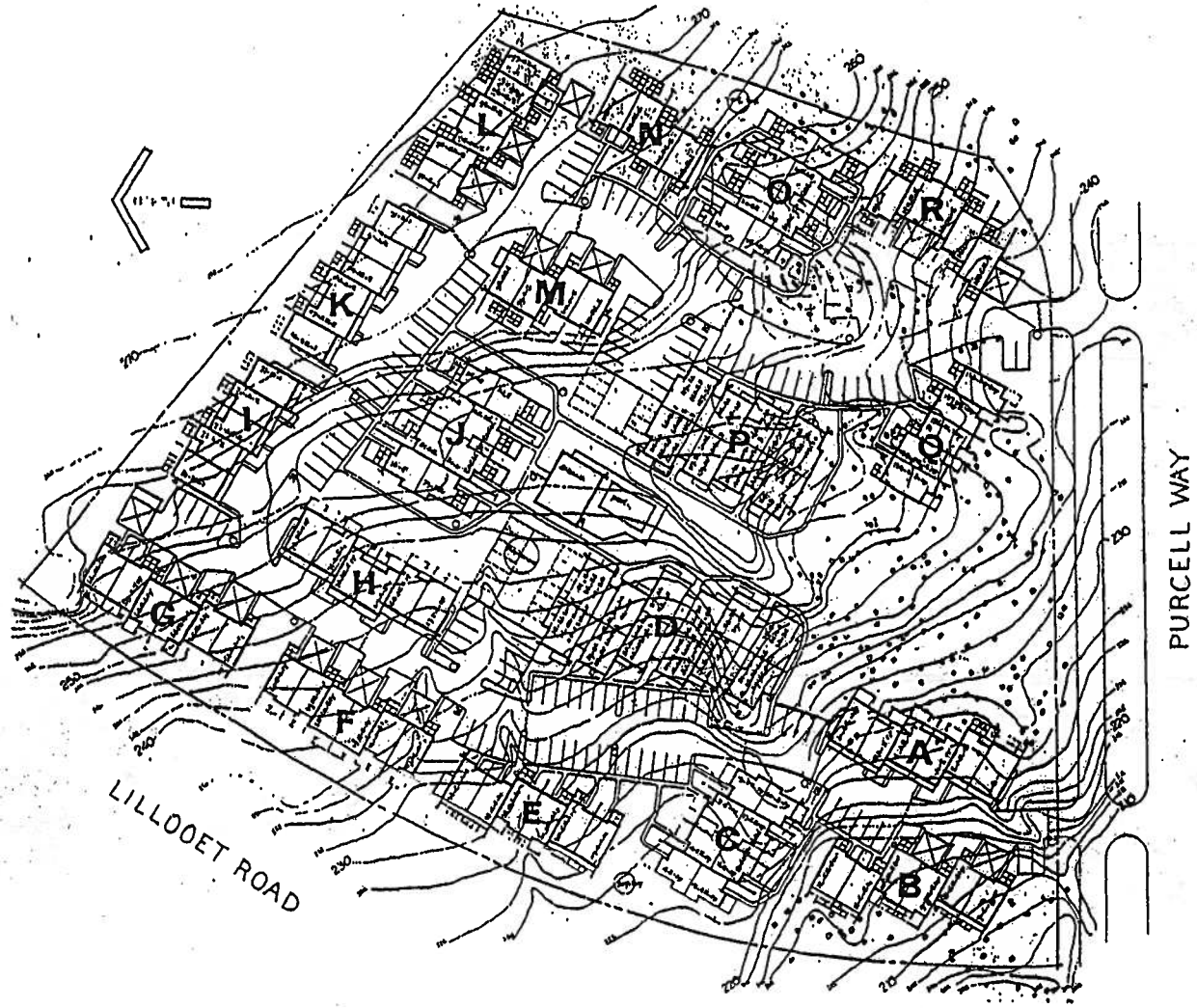


P19: Concrete topping poured directly against wood cladding at patio level. Also note concrete is at door threshold level.



P20: Enclosure at unit 2072. Note tarped roof.

APPENDIX D: Drawings



LEGEND

- STUCCO
- EXPLORATORY OPENING
- MC > 30%
- 20% < MC < 30%
- MC < 20%

DO NOT SCALE DRAWING

REPRODUCED FROM BASE DRAWINGS A1 TO A24
ARCHITECTURAL FIRM: DUNHILL DEVLOPMENT CORPORATION LTD.
DRAWINGS DATED: SETEMBER 1975

MOISTURE PROBE SURVEY PERFORMED: MARCH 26, 2004
EXPLORATORY OPENINGS PERFORMED: APRIL 13, 2004

MORRISON HERSHFIELD

PURCELL WOODS

MOISTURE PROBE SURVEY

Site Plan

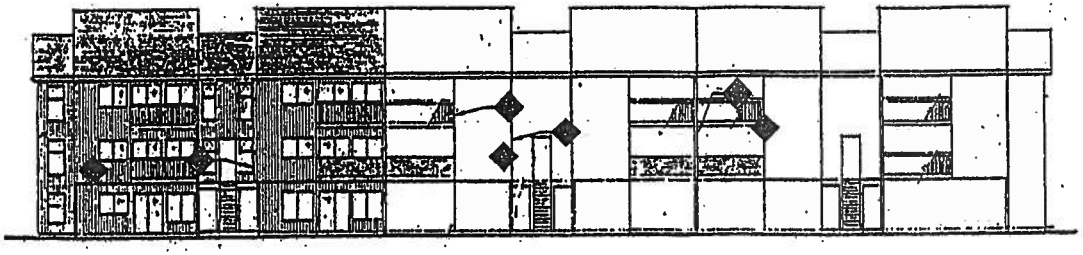
SCALE: N.T.S. DATE: MAY/04

DRAWN: -

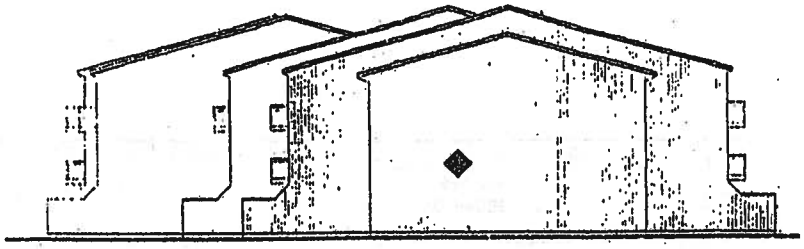
REVIEWED: -

DRAWING No.: FIG. 1

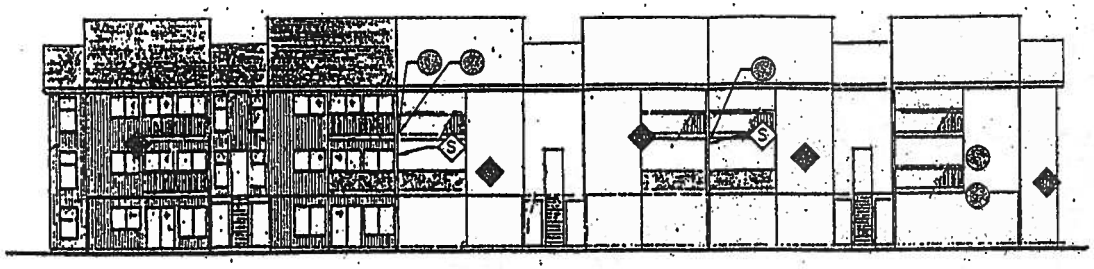
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Last update: May 03, 2004
Plot scale: 1=96 (i)



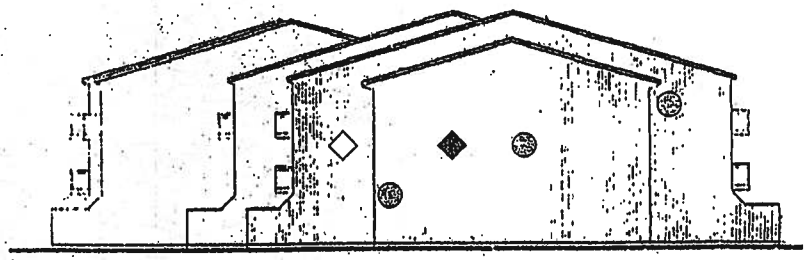
BUILDING D WEST ELEVATION



BUILDING D SOUTH ELEVATION



BUILDING D EAST ELEVATION



BUILDING D NORTH ELEVATION

LEGEND

- STUCCO
- EXPLORATORY OPENING
- MC > 30%
- 20% < MC < 30%
- MC < 20%

DO NOT SCALE DRAWING

REPRODUCED FROM BASE DRAWINGS A1 TO A24
ARCHITECTURAL FIRM: DUNHILL DEVLOPMENT CORPORATION LTD.
DRAWINGS DATED: SETEMBER 1975

MOISTURE PROBE SURVEY PERFORMED: MARCH 26, 2004
EXPLORATORY OPENINGS PERFORMED: APRIL 13, 2004

MORRISON HERSHFIELD

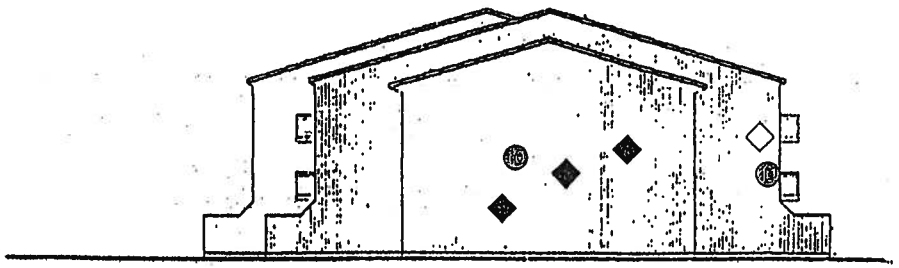
PURCELL WOODS

MOISTURE PROBE SURVEY
Building D 1644-1698 Purcell Way

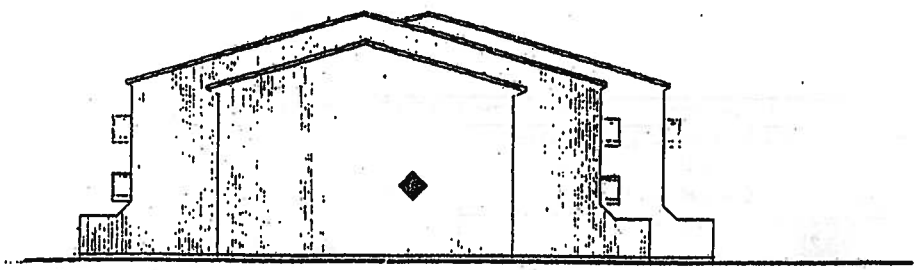
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REVIEWED: -
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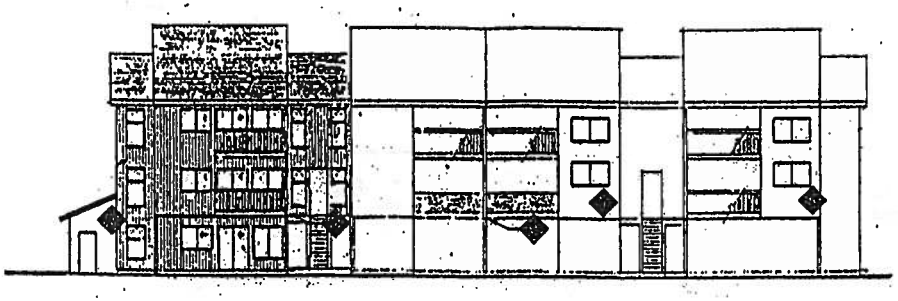
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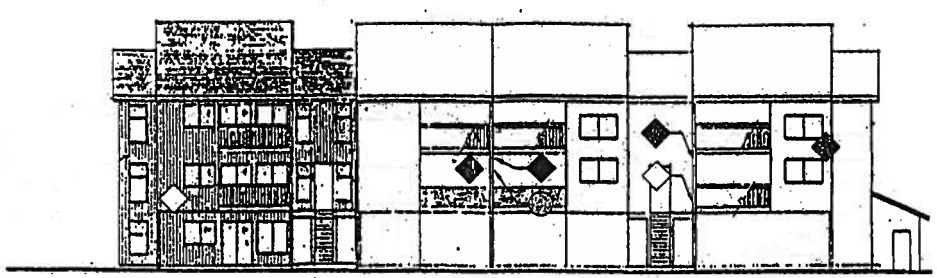
BUILDING P NORTH ELEVATION



BUILDING P SOUTH ELEVATION



BUILDING P EAST ELEVATION



BUILDING P WEST ELEVATION

LEGEND

- STUCCO
- EXPLORATORY OPENING
- MC > 30%
- 20% < MC < 30%
- MC < 20%

DO NOT SCALE DRAWING

REPRODUCED FROM BASE DRAWINGS A1 TO A24
ARCHITECTURAL FIRM: DUNHILL DEVLOPMENT CORPORATION LTD.
DRAWINGS DATED: SETEMBER 1975

MOISTURE PROBE SURVEY PERFORMED: MARCH 26, 2004
EXPLORATORY OPENINGS PERFORMED: APRIL 13, 2004

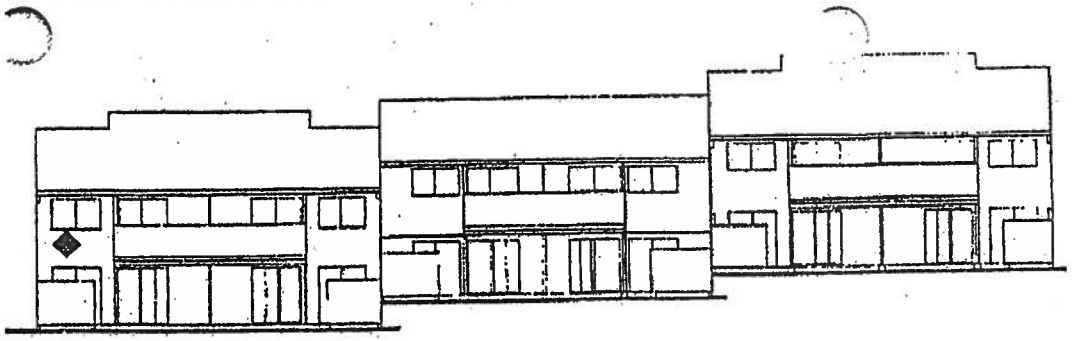
MORRISON HERSHFIELD

PURCELL WOODS
MOISTURE PROBE SURVEY
Building P 2030-2068 Purcell Way

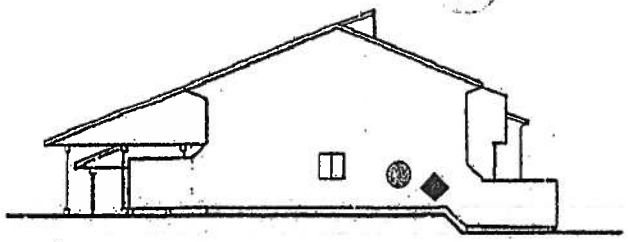
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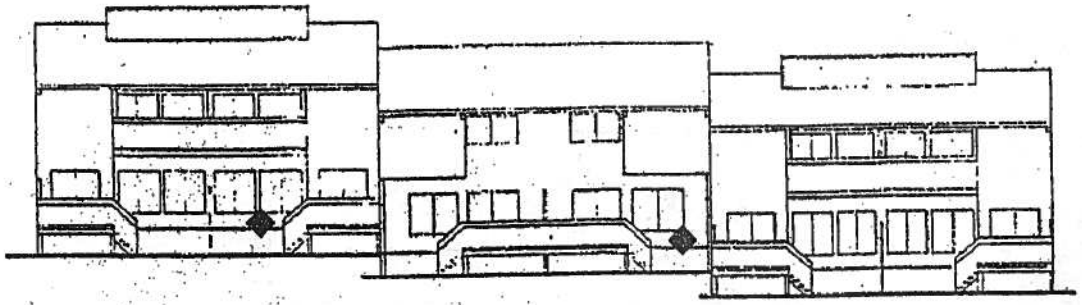
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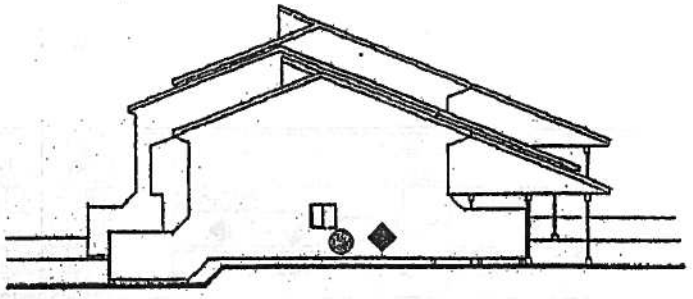
BUILDING F EAST ELEVATION



BUILDING F NORTH ELEVATION



BUILDING F WEST ELEVATION



BUILDING F SOUTH ELEVATION

LEGEND

- STUCCO
- EXPLORATORY OPENING
- MC > 30%
- 20% < MC < 30%
- MC < 20%

DO NOT SCALE DRAWING

REPRODUCED FROM BASE DRAWINGS A1 TO A24
ARCHITECTURAL FIRM: DUNHILL DEVLOPMENT CORPORATION LTD.
DRAWINGS DATED: SETEMBER 1975

MOISTURE PROBE SURVEY PERFORMED: MARCH 26, 2004
EXPLORATORY OPENINGS PERFORMED: APRIL 13, 2004

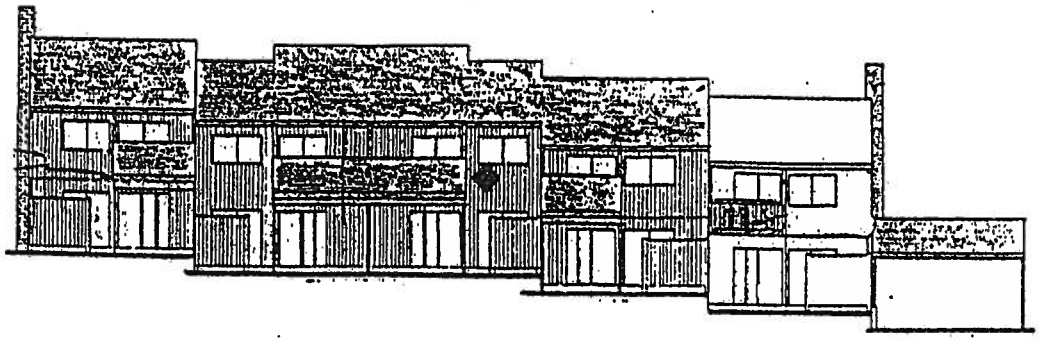
MORRISON HERSHFIELD

PURCELL WOODS
MOISTURE PROBE SURVEY
Building F 1912-1922 Purcell Way

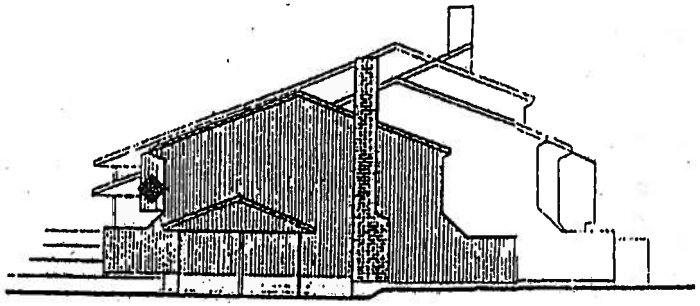
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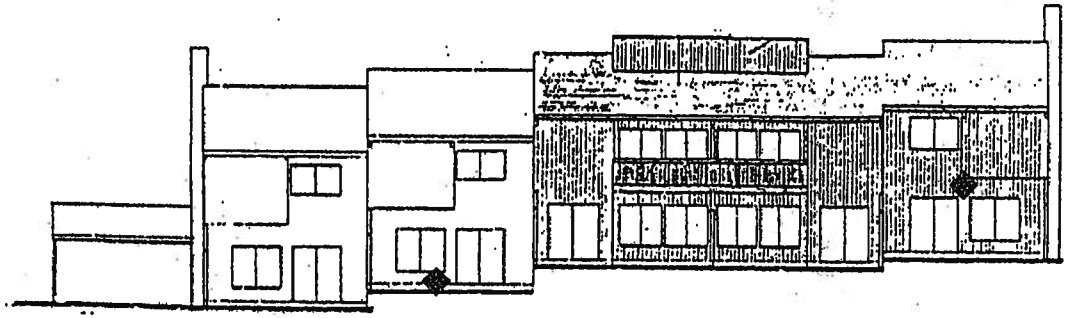
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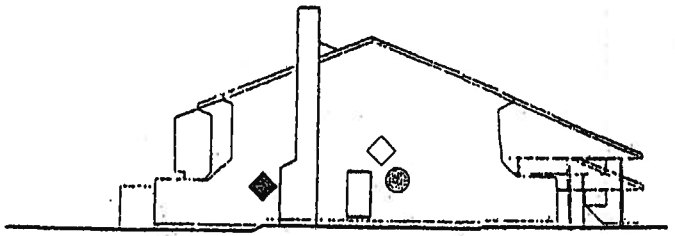
BUILDING R WEST ELEVATION



BUILDING R SOUTH ELEVATION



BUILDING R EAST ELEVATION



BUILDING R NORTH ELEVATION

LEGEND

- STUCCO
- EXPLORATORY OPENING
- MC > 30%
- 20% < MC < 30%
- MC < 20%

DO NOT SCALE DRAWING

REPRODUCED FROM BASE DRAWINGS A1 TO A24
ARCHITECTURAL FIRM: DUNHILL DEVLOPMENT CORPORATION LTD.
DRAWINGS DATED: SETEMBER 1975

MOISTURE PROBE SURVEY PERFORMED: MARCH 26, 2004
EXPLORATORY OPENINGS PERFORMED: APRIL 13, 2004

MORRISON HERSHFIELD

PURCELL WOODS

MOISTURE PROBE SURVEY

Building R 2080-2088 Purcell Way

SCALE: N.T.S. DATE: MAY/04

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REVIEWED: -

DRAWING No.: FIG. 5

File name: M:\Proj\5042066\Drawings\Purcell Woods 5042066.dwg
Last update: May 03, 2004
Plot scale: 1=96 (1)

APPENDIX E: Proposal

MORRISON HERSHFIELD LIMITED
9 Canada Way, Ste. 247, Burnaby, British Columbia V5G 1H3
T. (604) 454-0402 Fax. (604) 454-0403 www.morrisonhershfield.com
Pierre E. Gallant, MAIBC, MRAIC

February 5, 2004

MH ref. 5042066.99

The Owners, Strata Corporation VR 329 – Purcell Woods
C/O Mr. George Alexandra
Vancouver Condominium Services Ltd.
400-1281 West Georgia Street
Vancouver, BC V6E 3J7

Fax: 604-684-1539

Dear Mr. Alexandra:

Re: Building Envelope Condition Assessment
VR 329- Purcell Woods, 1804-2088 Purcell Way, North Vancouver

Thank you for the opportunity of providing a proposal for our services to meet the requirements of the Strata for a building envelope condition assessment.

Background Information

Our Proposal is based on the information we obtained in telephone conversations with Mr. George Alexandra and observations made during a brief site visit.

Purcell Woods is a 3-storey, 143 unit complex constructed in 1976. The complex is comprised of townhouses and apartments divided into 18 separate buildings. The buildings are wood framed. The primary cladding is cedar siding.

Windows are a combination of fixed and operable units. The operable units are mainly sliders with some awning. There are sliding patio doors at balconies. We expect, based on their vintage, that the windows are not thermally broken.

We understand that there has been evidence of interior moisture but no reported active leaks.

Scope of Work

The following tasks form our proposed scope of work for the Initial Assessment of the exterior envelope elements:

Task 1: Review available original design documents to become familiar with the designer's intent with respect to the exterior enclosure of the buildings. This will be useful for us to become familiar with the facility details before we

perform site visits, and afterwards for estimating quantities and budgets. Ideally the documents would include architectural drawings and specifications, and previous repair documents.

Task 2: Undertake a visual examination of the building cladding elements; siding, windows, roofs and balconies. The purpose of this examination is to identify the current condition of the various components of the building envelope, and to identify probable locations of moisture problems for more in-depth survey and exploratory work. Some of our findings will be based on a random sampling and specific location testing, and some of the findings will be based on a visual review of the surface conditions only. We will require access to a minimum of five suites for review.

Task 3: The test probe locations will be focused on five blocks of the 18 separate buildings; and located in areas where the detailing suggests a potential problem. We would expect to make probes at approximately 15 locations per block.

The results of the moisture survey will be representative of the five blocks probed in detail but cannot necessarily be applied to the whole complex without sampling of other blocks. If additional coverage is required of other blocks we have provided optional unit rate fees per additional block. These probes will assist us in determining the extent of the moisture that may exist behind the cladding. The holes required are very small and will be filled with sealant to leave barely noticeable marks.

Task 5: Based on the results of the moisture survey, identify locations where exploratory openings may be warranted. Typically, these openings involve cutting 200 x 200mm (8"x8") holes in the cladding to observe the conditions under the stucco cladding. We may also lift cap flashings or make small openings at window perimeters. We would expect to make openings at approximately 3 to 5 locations per block

We will require the assistance of a contractor to make and close the test openings during our review. They will be patched temporarily to avoid additional damage occurring. Permanent repairs can take place once a remedial work program has been established and authorized to proceed. This contractor will be hired directly by the owner, under separate contract and fee

Task 3: Develop conceptual remedial work and renewal recommendations with associated budget cost estimates for each element of the exterior building

envelope that is likely to require action over the next few years. We would provide a priority rating for each task

Task 4: Prepare two copies of the final, professionally sealed report. Based on our findings we will propose a conceptual remedial work program, including quantity and cost estimates and an implementation plan and schedule. We have included one meeting with the owner representatives to discuss our conclusions and recommendations.

The above scope of work is developed to provide a method for determining whether there are any water ingress issues of concern at your facility, at a low initial cost. It is possible that we may need to recommend additional investigative work as one of the outcomes of this Initial Assessment. We have endeavored to provide the most cost effective, rational approach to identifying the current condition of the complex and the needed strategies for continued maintenance and repair of the facility.

The above scope of services does not include our involvement in the design (drawings and specifications) and management of the contractor's activities for any of the recommended renewals work. A proposal for this work can be provided once the renewals plan has been established.

Fees and Expenses

For the above scope of work, we propose a fixed fee of $ 7,800 plus GST. This fee includes our anticipated expenses but it does not include the cost of retaining a contractor as identified in Task 4. We recommend an additional budget of between $1,000 and $1,200 for a contractor's cost to assist in the making and temporarily sealing of the exploratory openings. If moisture probing were justified for additional block coverage as outlined in Task 3, the optional unit rate fee is $200 per block (15 probes).

This proposal is open for acceptance for 60 days. The Goods and Services Tax (GST) will be added to the above fees and will be shown as a separate item on our invoices. Our billing terms are enclosed for your information. Please note that the quoted fees and expenses exclude costs associated with obtaining original drawings, attendance at additional meetings, and assistance in negotiating with the original builder or assistance in litigation support.

Morrison Hershfield Limited

Morrison Hershfield (MH) was incorporated in 1946, and has been working with Lower Mainland clients in the building science field for over 15 years. Since establishing an office here over eight years ago, we have focused primarily on the building envelope

services part of our business. We have worked on hundreds of complexes with similar building enclosures and associated performance problems to those at your building.

The field of building science, and in particular building envelope engineering, is now recognized as a specialty that is focused on the elimination of performance problems associated with the enclosures of buildings. Our company's strength resides with our broad team of engineers, architects, technologists and former contractors, all with direct knowledge of the Lower Mainland's special issues. Morrison Hershfield is recognized as a leader in the building envelope field across North America.

In addition to the services we traditionally provide to new construction projects, our company has been involved in thousands of investigations of buildings with envelope performance problems. In most cases this investigative work has led to the design of remedial work and, in many cases, to the management of exterior wall, window and/or roof replacement or rehabilitation programs.

In 1996, Morrison Hershfield completed a study for CMHC that looked at the causes of building envelope failures in the Lower Mainland, entitled *Survey of Building Envelope Failures in the Coastal Climate of British Columbia*. This study resulted in the CMHC retaining Morrison Hershfield to prepare the *Best Practice Guide* (BPG), a guideline document for improved design and construction practices for the Lower Mainland. MH co-authored the published BPG guideline document.

We are currently involved with many Strata Owners, Property Managers and Co-op Boards in the various stages of Assessment, Tender document preparation and Project Management of the rehabilitation phase. References are available upon request.

We look forward to completing this project and providing you with high quality, professional service. Please do not hesitate to contact us at 604-454-0402 if you require additional information or if you have any questions regarding our proposal.

Sincerely,

MORRISON HERSHFIELD LIMITED

Jacquelyn White, P.Eng.
Project Engineer

Pierre E. Gallant, MAIBC, MRAIC
Principal