2 Year Post-Construction Audit

Tapestry

750 West 12th Avenue
Vancouver, British Columbia

Presented to:

Mr. Paul McGuire
Concert Properties Ltd.
9th Floor, 1190 Hornby St.
Vancouver, BC V6Z 2K5

Report No. 5075201.00 December 18, 2009

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1. INTRODUCTION

1.1 Terms of Reference

Morrison Hershfield (MH) was retained by Concert Properties to undertake a visual review of the current condition of the building envelope for the building located at 750 West 12th Avenue, Vancouver, BC.

This report documents the results of our review. The results reported herein are based on information provided by Concert and observations noted during construction (MH was retained by Concert as the Building Envelope Professional for the Tapestry project) as well as the on-site visual reviews of common areas and eight units (4 per building). The units were chosen by Matthew Pel (MH) and Bob Patrosa of Concert. The selected areas reviewed do not represent a total listing of all locations with deficiencies nor do they imply all similar locations or items to be deficient.

1.2 Scope of Work

The purpose of our involvement was to conduct a visual review of the building envelope components (where accessible) to determine current condition, maintenance requirements and assembly performance (refer to MH proposal dated March 20, 2007). Matthew Pel of MH performed the visual review of both interior and exterior elements on November 30, 2009 and was accompanied by a representative from Concert. The weather at the time of the fieldwork assignment was rainy, with a temperature of approximately 7°C.

1.3 Limitations

Our review was based on a visual inspection. Unless specifically noted in this report, testing, detailed analysis or design calculations were not conducted, nor were they within the scope of this review. Specifically, design calculations were not conducted to confirm the adequacy of the structural components. Also, the wall assembly was not specifically analyzed for its conformance with fire code regulations.

Any comments or conclusions within this report represent our opinion, which is based upon our field review of physical conditions and our past experience. This review is limited to technical, construction and performance items.

Some of the findings herein are based on a random sampling and others are based on a visual review of the surface conditions. Deficiencies, which may exist but were not observed and recorded in this report, were not apparent given the level of study undertaken.

In issuing this report, MH does not assume any of the duties or liabilities of the designers, builders or owners of the subject property. Owners, prospective purchasers, tenants or others who use or rely on the contents of this report do so with the understanding as to the limitations of the documents reviewed, the general visual inspection undertaken and understand that MH cannot be held liable for damages which may be suffered with respect to the purchase, ownership or use of the subject property.

2. BUILDING DESCRIPTION AND HISTORY

The building complex consists of two concrete structures. These are the east facing and the north facing building. The east facing building is a ten-storey building in which the structure of an existing concrete building was retained and redetailed. The north building is a six-storey building over a 2 storey below grade parking garage which is shared with both buildings. The project architect was Nigel Baldwin Architect Inc. The design was issued for development permit in 2004 and the project was complete in September 2007.

The above grade floors of the buildings consist of (new or existing) reinforced concrete slabs, columns and walls. The exterior walls are mainly of painted poured concrete and brick cladding with areas of existing stone cladding on the east building (ground floor).

Punched windows and window wall is used throughout both building, with a small area of curtain wall at the main entrances.

The north building's main roof is a conventional flat roof consisting of waterproofing membrane over recovery board, insulation vapour barrier and steel deck. The roof over the east building is a green roof over insulation, waterproofing membrane and concrete slab. The parking garage areas are comprised of either landscaping or pavers over rigid insulation, waterproofing membrane and concrete deck. The exposed decks over conditioned space are made up of pavers over rigid insulation, waterproofing membrane and concrete deck. The exposed balconies and concrete eyebrows are waterproofed with a liquid-applied urethane traffic coating.

2.1 Building Envelope Systems

Our recommendations are summarized in the following table. Each item has been categorized according to the type of deficiency:

- **Category D** – A construction deficiency exists, in our opinion, when the observed conditions in the building complex differ significantly from the intent of the design drawings and specifications provided for review, from the applicable codes and standards, or from good construction practice, given that these documents are not deficient.

- **Category M**– A maintenance deficiency exists, in our opinion, when the observed conditions in the building complex are caused by general wear and tear on building components and equipment, or when they concern an item that has not received routine service, adjustments and/or cleaning.

- **Category I** – A deficiency exists, in our opinion, where no clear decision can be made as to whether the problem is a design, construction or maintenance

deficiency. Repairs to correct the deficiency or further investigation, e.g., test openings or material/component testing, is generally required.

Refer to Appendix A for photographs taken during our review.

Items identified as construction deficiencies should be brought to the attention of the appropriate company for satisfactory correction (general contractor and trades). Our review did not allow for a complete visual review of all walls of the complex, in particular the upper walls where access is limited. Therefore, as a general rule we recommend that the extent of the deficiencies be confirmed. We have provided recommendations for addressing deficiencies in the tables below, under "Corrective Action".

2.1.1 Walls

The exterior wall claddings for the buildings consist of painted architectural concrete walls and mass concrete walls with new and existing stone or brick veneer. All exterior cold joints in the concrete have been detailed with crystalline waterstop. External vertical and horizontal reveals were cast into the concrete such as at window jambs and slab edges. All vertical reveals are detailed with bond breaker and sealant.

The assembly behind the new stone/brick veneer is mass concrete. These walls are built according to the rainscreen principle, and incorporate an air cavity and a moisture barrier (vapour permeable trowel-on membrane or paint) on the concrete back-up wall to promote drainage and drying potential. The existing stone veneer clad walls lack drainage between the stone clad and the inner concrete walls—but is mostly located on the ground floor, under an overhang.

The new exterior concrete walls are insulated with one inch of rigid insulation between the concrete and the steel studs and batt insulation within the steel studs. This wall type incorporates a polyethylene vapour barrier. The existing exterior concrete walls are insulated with spray polyurethane foam, which also acts as a vapour barrier.

During our visual review, we looked at the exterior walls of the building. MH was provided access to the upper roof areas (both buildings) as well as units #812 (Heather building), #813 (Heather building), #903 (Heather building), #1007 (Heather building), #202 (North building), #306 (North building), #404 (north building) and #601 (North building). Access was also provided to all ground floor common areas, main entranceways, under ground parking and storage room.

The following table summarizes the deficiencies observed at the wall assemblies:

Item/ Photo	Category	Description	Corrective Action
1	**M**	Unit #404 North Building – A section of sealant installed along the roof deck gum edge flashing is failed (east side of deck)	Removed failed sealant, clean and installed new sealant.
2	**M**	Unit #405 North Building – A section of sealant installed along the roof deck gum edge flashing is failed (west elevation)	Removed failed sealant, clean and installed new sealant.
3a 3b	**D**	Unit #404 North Building – Cracks in the concrete are filled with sealant however, no paint is installed to repaired locations. MH understands that this work is in progress.	Paint crack repair areas as required.
4	**M**	Unit #404 and #405 North Building – A crack has developed along the cold joint (west elevation). The crack is on the under side of the floor slab above and is treated with a water stop treatment.	The crack should be monitored by the strata and repaired if required.
5	**M**	Unit #1007 Heather Building – Damaged paint was observed on the exterior face of the south elevation parapet wall.	This appears to be rope damage from chair drops. The loose paint should be removed and repainted as required.
6	**D**	Unit #812 Heather Building – It appears that the parging below one window is cracking and bulging.	The crack should be tested for loose parging. Any loose material should be removed and the crack sealed appropriately.
7	**M**	North Building Roof – A crack in the concrete has developed in the parapet (northeast corner).	The crack should be routed, cleaned and sealed with caulking.

Item/ Photo	Category	Description	Corrective Action
8a 8b	**M**	Heather Building – Various cracks were observed in the concrete parapets at level 3 and the penthouse (east elevation). MH understands that this façade existing concrete that was retained.	The cracks should be reviewed. Cracks in the concrete should be addressed by routing, cleaning and sealing with caulking. This should be part of the strata's regular building maintenance.
09	**D**	North Building – A vertical concrete reveal below one window jamb is missing and is cracked. (2nd floor – north elevation).	The crack should be routed, cleaned and sealed with caulking.

2.1.2 Windows Systems

Punch windows, window wall (9000 series) and balcony swing door (9500 series) both manufactured by Starline Windows are used throughout the buildings at Tapestry. The aluminum frames are thermally broken. The glazing units are double-glazed sealed units installed from the exterior and held in place with aluminum stops. The window configuration includes a combination of fixed, casement and awning type units. A deflection header system is incorporated into the top of the frame to allow for movement in the concrete structure and window assembly. All accessories for the windows (flashing, couplers, break shapes etc.) were supplied by Starline Windows. For further detail refer to the window shop drawings as provided by the manufacturer.

Other window systems installed on the building include a curtain wall glazing system installed on the ground floor at the lobby. Similar to the windows, the curtain-wall incorporates rainscreen principles.

The rough openings for all window systems in the buildings are protected with a self-adhesive waterproof membrane. The membrane is sealed to the window frame on the interior to provide air barrier continuity. The membrane is protected by metal flashing at the sill and jambs on the exterior. The membrane at the bottom of the window opening provides the main egress plane for incidental water in the window frame. Weep holes in the window frame and under the window frame allow water to exit the window system.

The following table summarizes the deficiencies observed at the wall assemblies:

Item/ Photo	Category	Description	Corrective Action
10a 10b	**D**	Unit #813 and #1007 Heather Building – The exterior gaskets at various spandrel panels are misaligned, have shrunk and pulled out	Reviewed and repair gaskets as required.
11	**D**	Unit #1007 Heather Building – There is a gap between the window sill flashings on the west elevation (roof deck) and the self adhesive membrane is exposed.	Install a splice plate to close gap and protect membrane from UV.
12	**D**	Ground Heather Building – Exposed membrane at the sill/jamb transition of one window at the north elevation meeting room.	The membrane should be protected from UV with a cover flashing.
13	**D**	Unit #202 North Building – Plastic shims are lodged between the window deflection header and the window frame (balcony window).	The shims should be removed to ensure deflection header is continuously sealed to the window frame.
14	**D**	Unit #404 North Building – The exterior sealant adjacent to the living door roof deck swing door is failed.	The failed sealant should be removed and replaced as required.
15	**D**	Lobby Door North Building – There is exposed self adhesive membrane along the north elevation lobby door threshold.	The membrane should be protected from UV. A metal flashing can be installed.

2.1.3 Balconies and Eyebrows

The projecting balconies are not over conditioned space. A few terraces are located over conditioned space, these are treated as roofs and are covered with concrete pavers and/or landscaping (refer to section 2.1.4).

The balconies are provided with aluminum guardrails, with tempered glass panels, secured through the top of the concrete deck or into the inside face of the concrete upstand around the balcony perimeter. Drainage is achieved with slope on the concrete directing water typically to the outside edge of the balconies or to scupper drains.

The balcony membrane is a liquid applied urethane pedestrian traffic coating which was applied on the deck surface and up the balcony perimeter. The same membrane was used to cover the eyebrows.

For the same locations described under the wall section, MH reviewed the surface condition of the balcony, railing connections and scuppers. No deficiencies related to the balcony were noted or reported by Concert at the time of this review.

The following table summarizes the deficiencies observed at the wall assemblies:

Item/ Photo	Category	Description	Corrective Action
16	**M**	Exhaust Vents – The vent screens at most locations are blocked with lint/debris. This is typical for both buildings.	Dryer ducts should be reviewed and cleaned on a regular basis as outlined in the maintenance manual issued to the strata.
17	**M**	North Building – Hair line cracks were observed on the under side of the upper soffit, typically at exhaust vents. Condensation from the vents collects along the cracks and deposit efflorescence making them highly visible.	This is cosmetic only. Clean as required. Keeping vents clean will reduce instances of condensation.
18	**D**	Unit #1007 Heather Building – Missing membrane was observed at the eyebrow slab edge where the decorative vertical steel column by-passes the slab.	Paint slab edge as required.

Item/ Photo	Category	Description	Corrective Action
19	M	East Building – The large concrete eyebrow over the children's play area is back-sloped to interior drains. The drains are provided with screens which are collecting debris. Ponding water was observed.	Drains and screens should be reviewed and cleaned on a regular basis as outlined in the maintenance manual issued to the strata.

2.1.4 Roofs and Roof Decks

The main roofing system for the East Building is a conventional system with a two-ply styrene-butadiene-styrene (SBS) membrane. Roof insulation is tapered to provide slope to the drains.

The main roof for the North Building consists of an inverted roofing assembly on concrete roof slab with landscaped green roof. The roofing system includes the following assembly: growing medium, on filter fabric/root barrier, on insulation, on drainage mat, on waterproofing membrane, on concrete slab. The roof is accessible only for maintenance purposes. The slabs are sloped towards internal roof drains. There are overflow scuppers in the concrete upstand providing emergency drainage.

The roof decks for both buildings consist of a hot rubber membrane installed to concrete slabs. The membrane is protected with drainage mat, roof insulation, filter fabric and pavers. The concrete slabs are sloped to roof drains throughout the decks.

The podium is waterproofed with hot rubber membrane applied onto concrete slab and up the exterior walls. The waterproofing system includes the following assembly: soft growth landscape or pavers, on filter fabric, on drainage course, on drainage mat, on granulated protection board, on waterproofing membrane, on concrete slab. Drainage achieved with a slope on the concrete directing water towards roof drains.

The children play area is complete with waterproofing membrane, protection board, drainage mat, insulation, filter fabric and soil/play features.

MH reviewed the both upper roof areas as well as the roof decks on level 2 (east building), level 4 (north building – unit 404) and level 10 (Heather building – unit 1007). The table below summarizes our findings.

Item/ Photo	Category	Description	Corrective Action
20	**I**	Mech. Room Heather Building – An area of roof membrane granular (UV protection) is damaged.	New granulars should be applied to the damaged area to protect the membrane from UV.
21a 21b	**M**	Heather Building – Some occupants on level 10 have reported water draining over the edge of the roof and is concentrated at various locations.	The eyebrows (~2ft wide) above level 10 are sloped to the exterior and drain over the edge. The strata can install gutters along the roof edge to collect the water if desired.
22	**M**	North Roof – Vegetation is growing in the gravel buffer zone between the green roof and the exterior walls and parapet walls.	Gravel areas on the green roof area should be reviewed periodically. All vegetation should be removed from gravel areas.
23	**I**	North Roof – The gravel ballast was removed from all drain locations exposing the roofing insulation. UV exposure will degrade the insulation over time.	The insulation should be protected from UV, however the drains should be visible so regular maintenance can be provided.
24	**M**	Vent Shafts – Debris is collecting in the bottom of the vent shafts (west courtyard) and ponding was observed in the bottom.	Review vent shafts and clear debris as required. Ensure drains are clear and free draining.

2.1.5 Parking Garage

The below grade existing foundation walls are cast-in-place concrete. The walls incorporate a PVC water stop at the vertical cold joints, and crystalline slurry at the horizontal cold joints. Asphalt emulsion dampproofing is installed on the outside of the foundation walls. A few moisture sensitive rooms have cold applied water proofing on their wall. At these locations, drainage mat was incorporated and is positively lapped to shed water away from the building. Clear pea gravel is present along the entire parking perimeter

The table below summarizes our findings.

Item/ Photo	Category	Description	Corrective Action
25	**M**	MH observed cracks and signs of water ingress (i.e. efflorescence) on the interior of the parkade walls at the following parking stalls; 72, 79, 92, 96,101, 137, 210, 217, 237, V3, V5 and V6 Some cracks appear to have been repaired from the interior with a crystalline slurry or epoxy injection. MH was unable to determine if this staining was present from the time of construction or recent moisture ingress.	These areas should periodically monitored for further staining and/or leaks. If any water ingress is noted these cracks be routed and dry packed using a crystalline slurry (i.e. Xypex).
26	**D**	MH observed water ingress and staining on a concrete beam in P1 (near the entry ramp). This appears to be an active leak	The roofing details on the podium above should be further reviewed and addressed if required. At the interior the crack can be routed and dry packed using a crystalline slurry (i.e. Xypex).
27	**M**	Some cracking in the traffic membrane adjacent to the entrance ramp trench drain was observed. There appears to be a corresponding crack in the concrete slab.	The cause of the cracking should be investigated due to its close proximity to the trench drain. The crack can be routed, cleaned and filled with sealant. The traffic membrane should be repaired as required.

3. SUMMARY AND CONCLUSION

In general, the building appears to be performing in accordance with the original design intent. There are very few deficiencies related to the original construction and the building is overall in very good condition. There are a few items that relates to the original construction, while other items include aesthetic concerns or maintenance measures. Although most of them have not led to any problems so far, they should be addressed as soon as possible. Our review did not allow for a complete visual review of all areas in the complex. Therefore, as a general rule we recommend the extent of the deficiencies be confirmed for similar details elsewhere on the complex. None of the occupants interviewed reported any building envelope concerns during our site visit.

It should be noted that cracking is a typical condition with concrete buildings and is a maintenance issue. The strata should regularly review all painted concrete walls for cracks. The strata should have the cracks routed out, cleaned, filled with an appropriate caulking and painted. During this review we have however identified a few locations where the cracks are an issue stemming from the construction. At locations where concrete parging is installed over joints and is cracked/bulging or where concrete reveals were not installed during construction, cracking should be addressed by the contractor.

It is considered good practice for the Strata to undertake a building envelope review prior to the expiry of the five year warranty. A review should be conducted prior to the expiration of the five year warranty in September 2012.

MORRISON HERSHFIELD LIMITED

Matthew Pel
Building Science Consultant

Sophie Mercier, P.Eng.
Principal

APPENDIX A:

Photographs

Photo 01.JPG

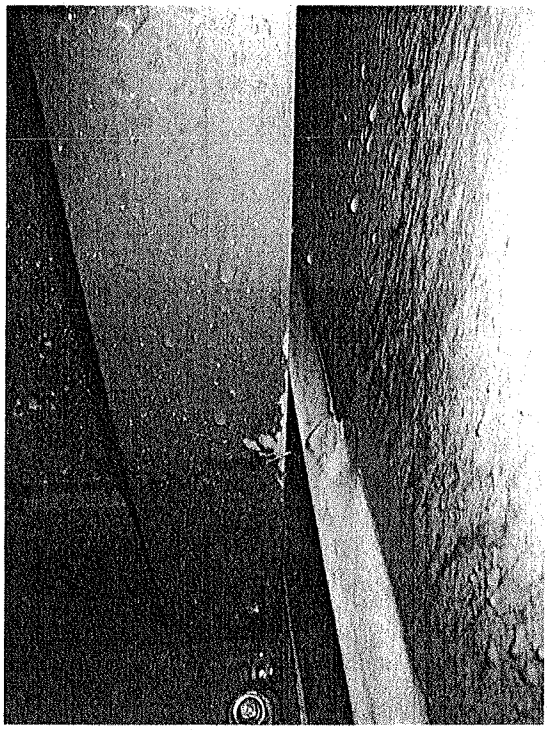


Photo 02.JPG

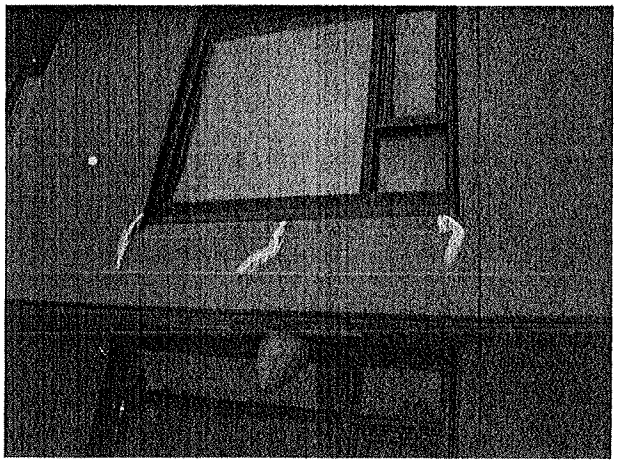
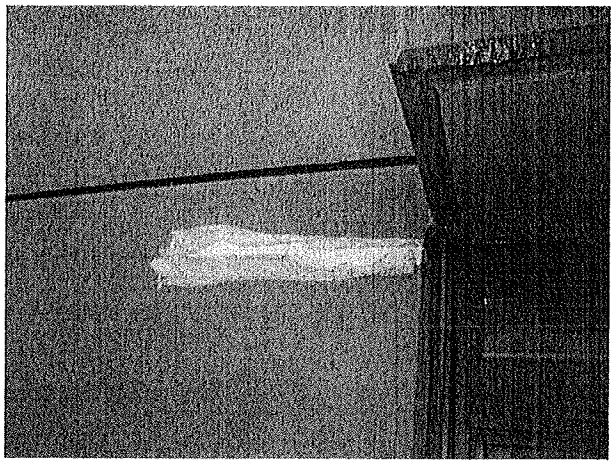


Photo 03a.JPG



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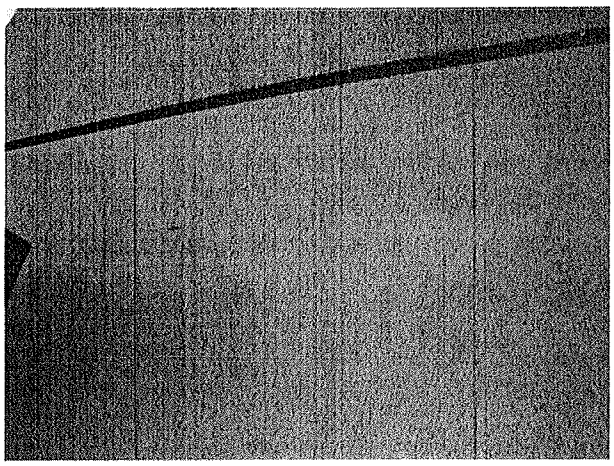

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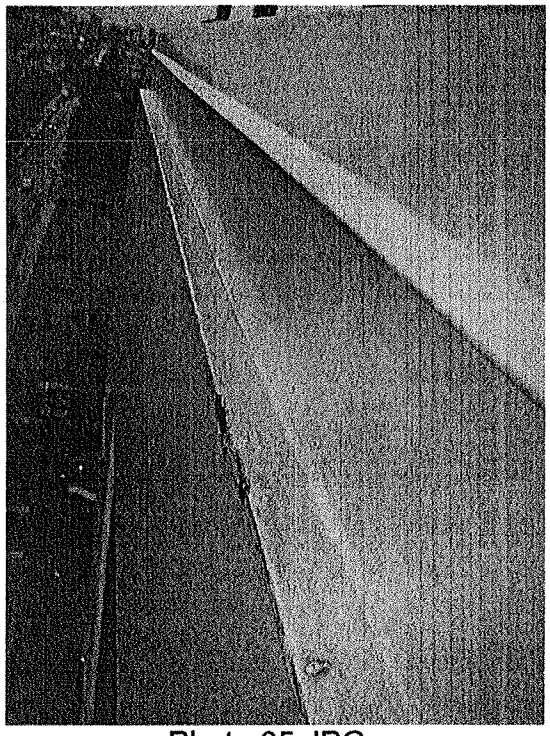

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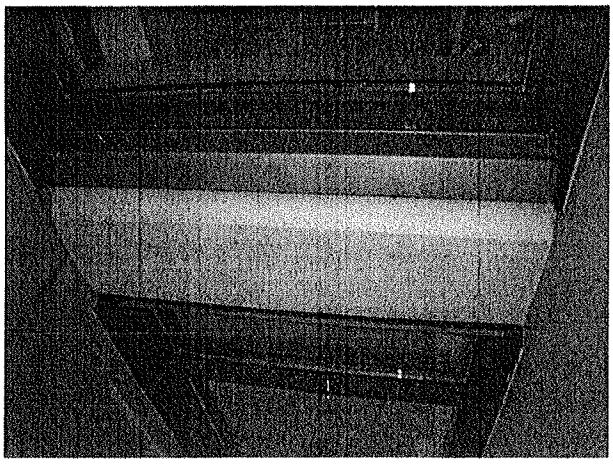

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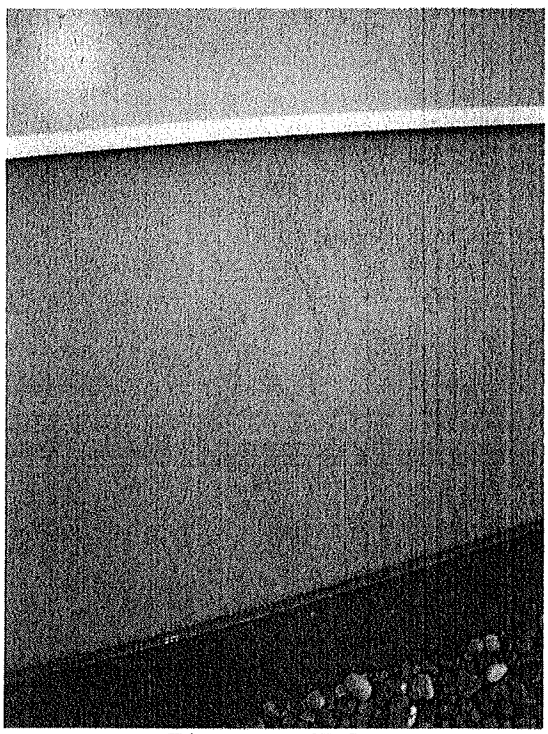

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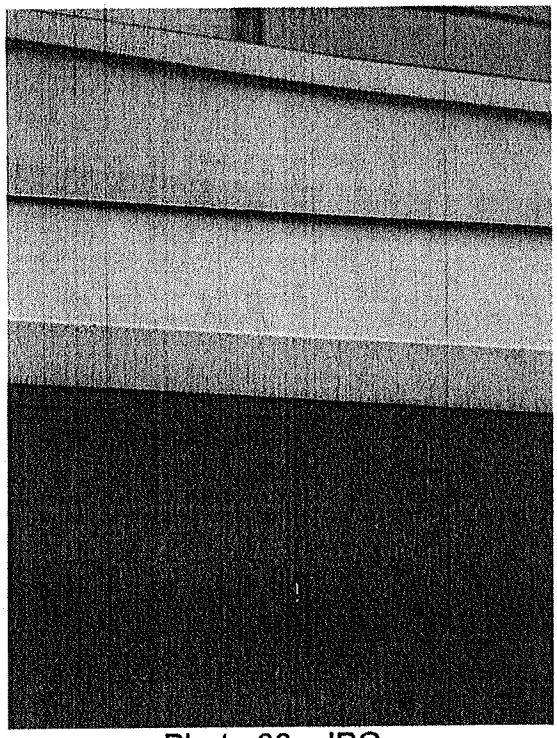

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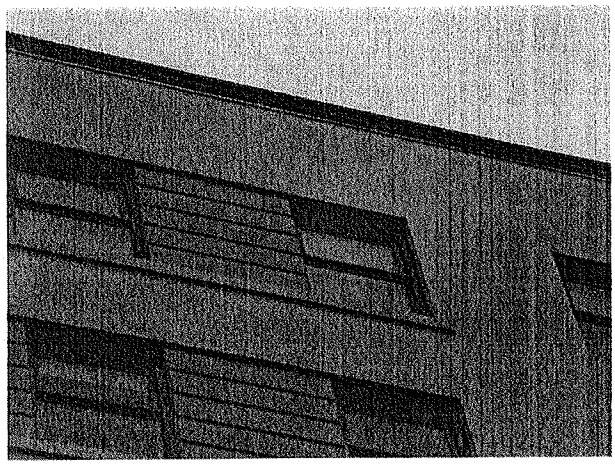

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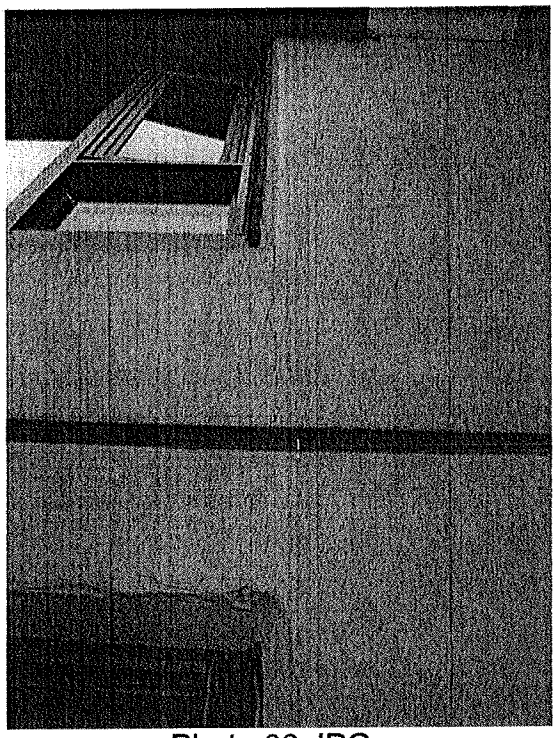

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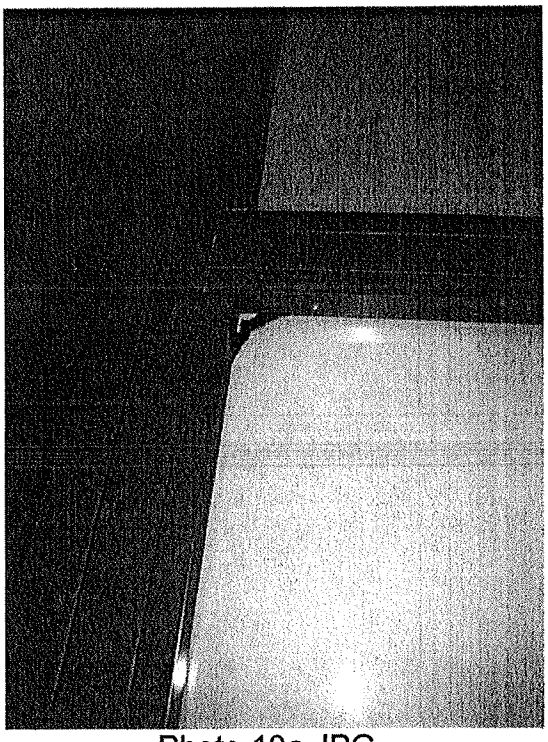

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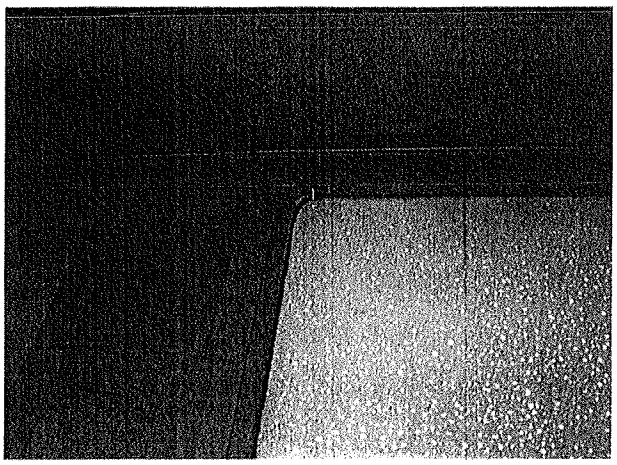

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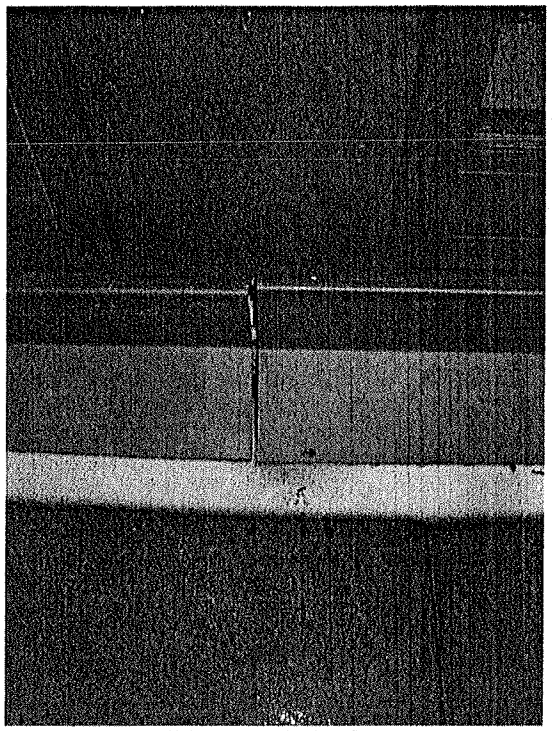

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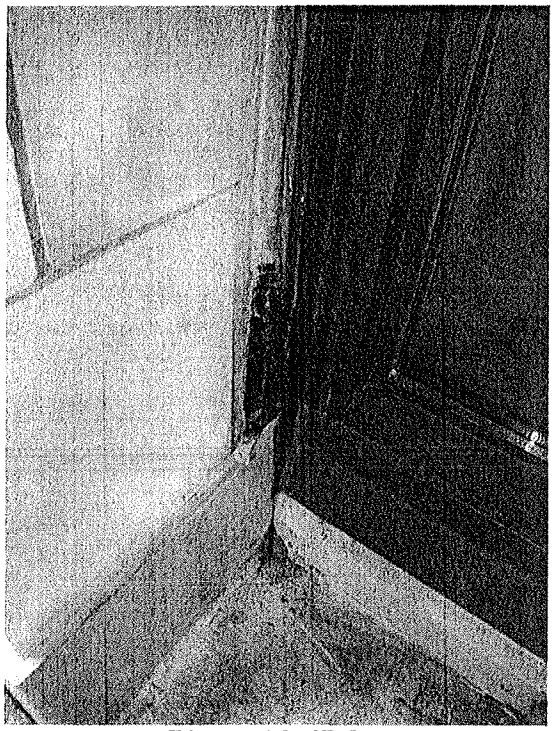
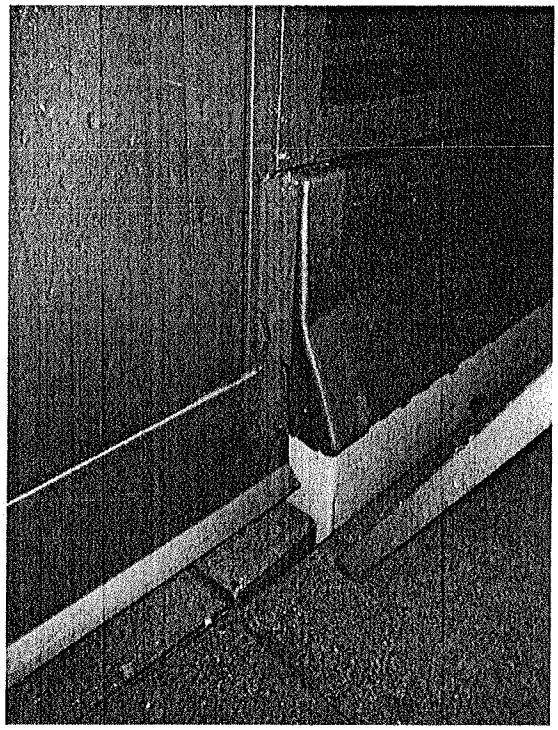


Photo 12.JPG

Photo 13.JPG



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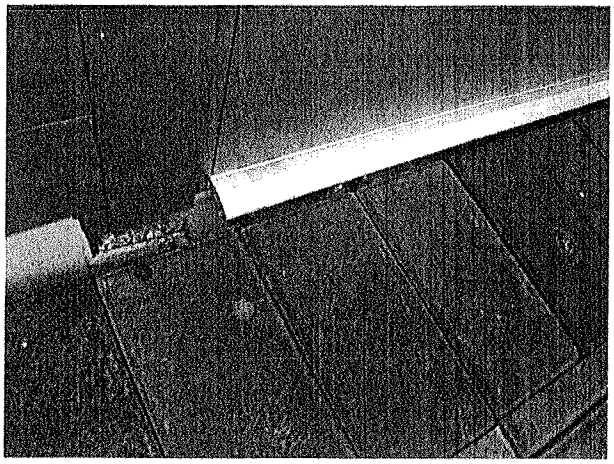

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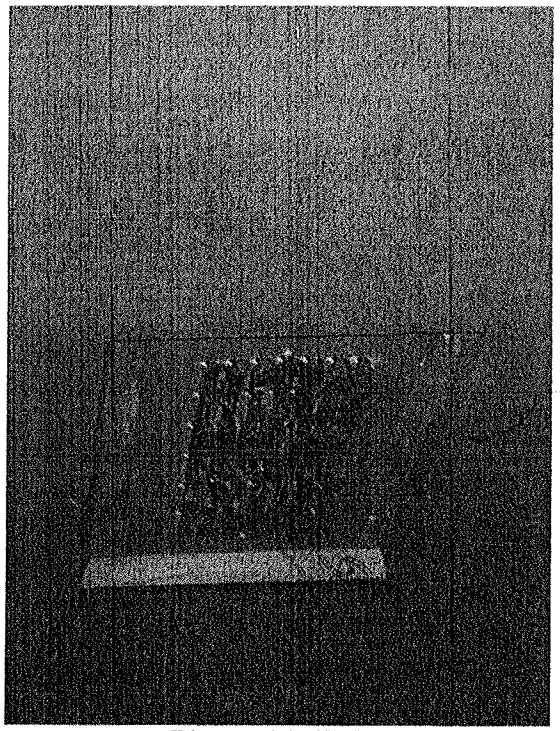

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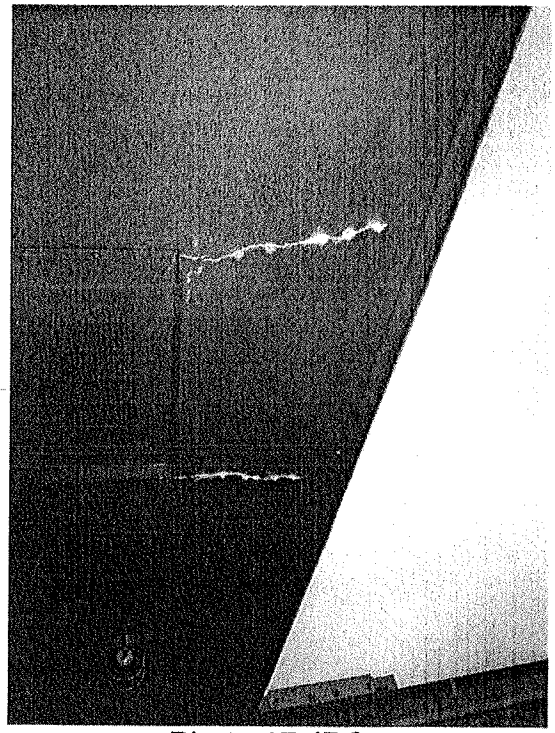

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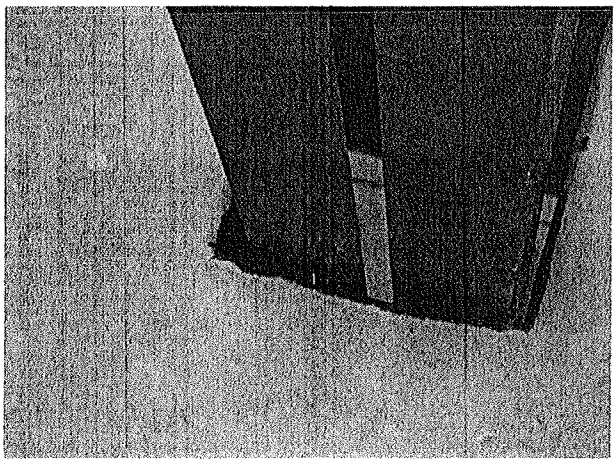

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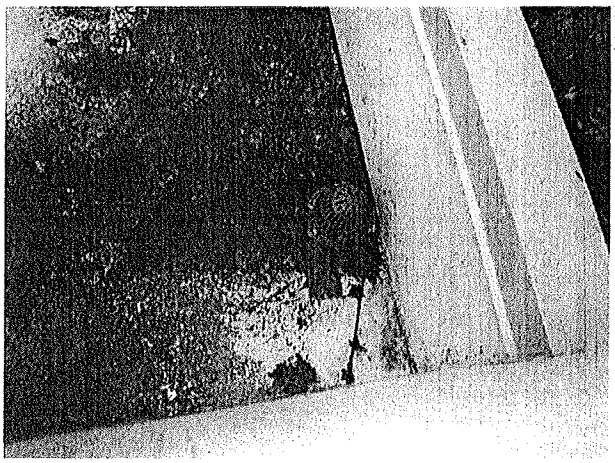

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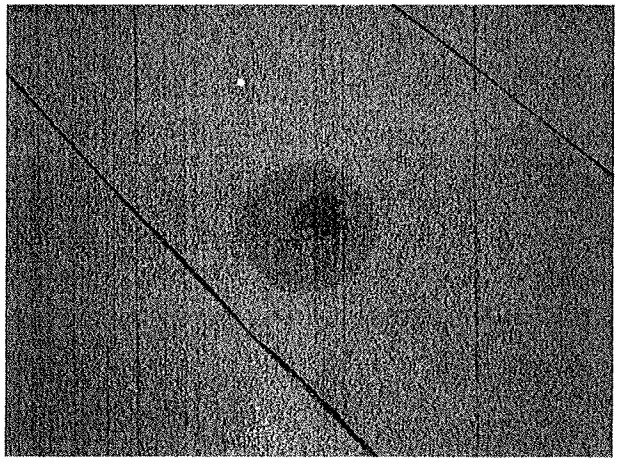

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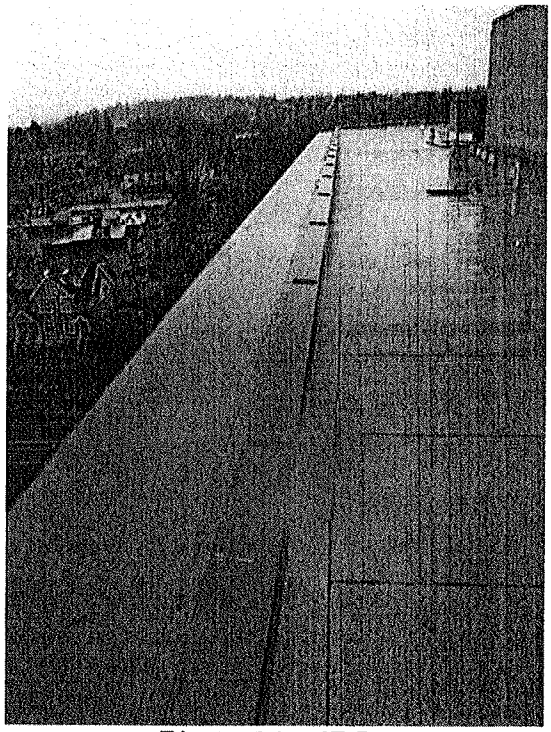

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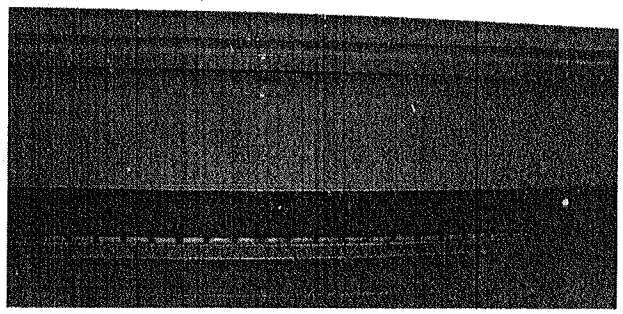

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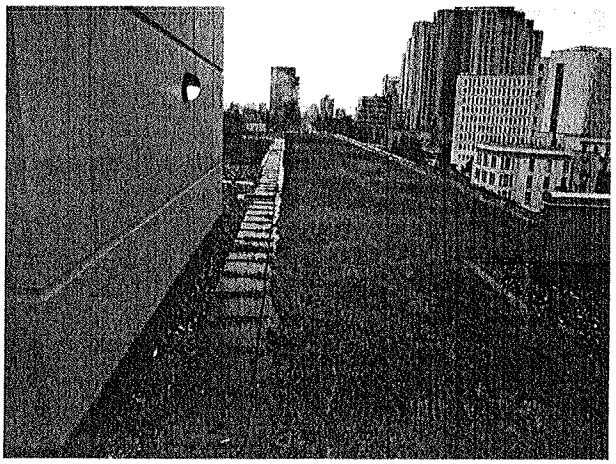

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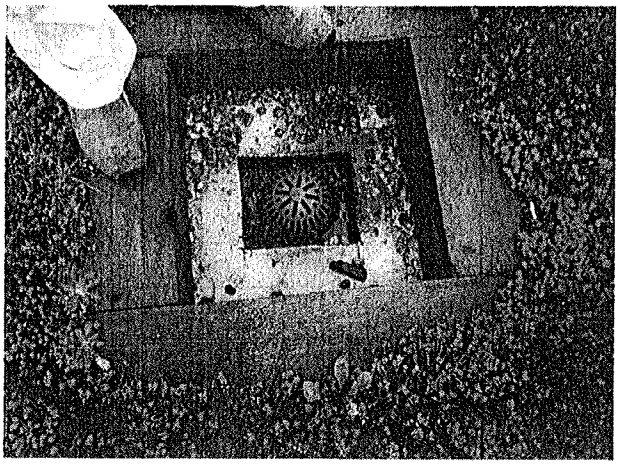

Photo 23.JPG

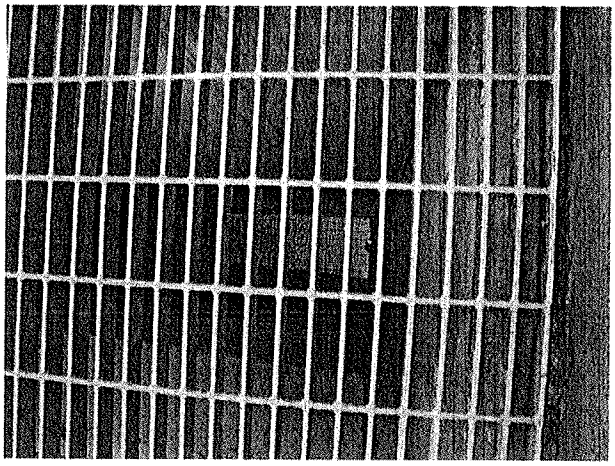

Photo 24.JPG

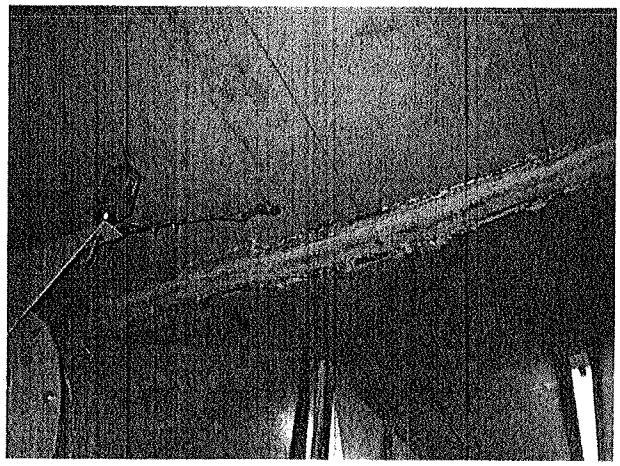

Photo 25.JPG

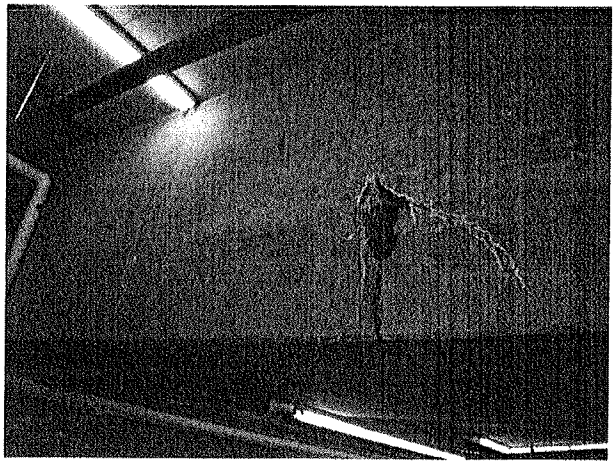

Photo 26.JPG

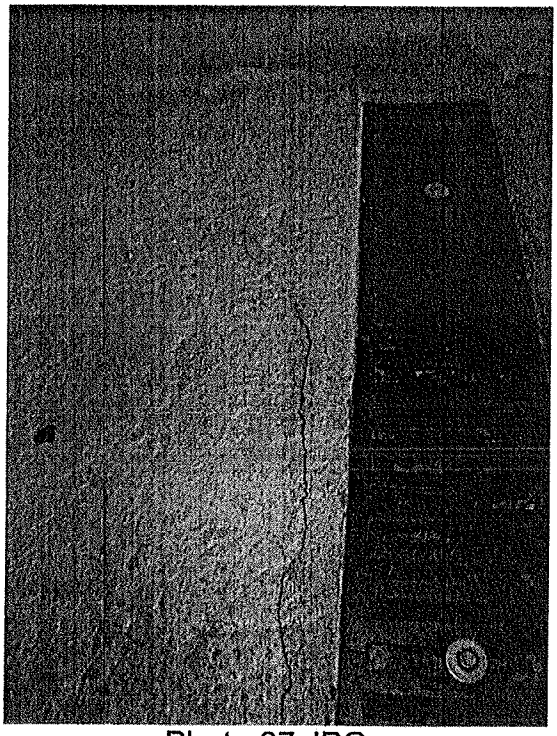

Photo 27.JPG