Corporation of the City of
NEW WESTMINSTER

Attachment G

Owner's Engineer Reports (MAF and ASYAM) From March 2019 to September 2024

Project No.: G20080-00 April 10, 2020

Mr. Mike Amiri, President
MYK Construction Ltd.

Dear Mr. Amiri:

Re: Existing Apartment Building
53- 4th Street
New Westminster, B.C.

Concern was raised for the condition of the apartment building at the above-mentioned address due to settlement along the south section of the building. For this, we carried out a site reconnaissance on March 18. 2020.

During our site reconnaissance, we tour around areas of the building impacted by the settlement. Followings are our observation.

1. On the south section of the east exterior wall and section of the south exterior wall, sections of the walls bubbled out due to settlement. Crack was observed started from the bottom of the third floor window (on the west section of the south wall) to the bottom of the building.
2. No crack was observed on the exposed portion of the footing wall.
3. Alligator cracks were observed on Carnarvon Street which fronts the building on the south side.
4. No distress was noted in the interior of the building.
5. Discussion with Mr. Mir Afshar Niakouei, P. Eng. from MAF Engineering Ltd. and Mr. Niakouei points out that there is no significant change for the conditions on the east and south exterior walls since March, 2019.

Background

The apartment is a three-storey wood-framed building with slab on grade construction. Exterior of the building is of stucco finishing.

We received a report from MAF Engineering Ltd. (MAF) and noted that MAF had monitored the building since March 2019. It appeared settlement on the south side of the building happened before March 2019. During the monitoring period, MAF reported no significant changes on the condition of the building.

Discussion and Conclusion

1. It is evident that south side of the building subsided. Such settlement had caused bubbling of sections of the south exterior wall and the south section of the east exterior wall. A stress crack had formed on the west section of the south wall below the third floor window. The stress crack extended to the top of the footing. However, there is no crack formed on the exposed footing wall. Monitoring for the building was carried out by MAF since from March 2019. Based on MAF report dated July 12, 2019, not significant settlement occurred since March 2019.

2. There are alligator cracks along the south fronting street. Forming of alligator cracks is an indication the near surface soils are soft.

3. Based on our site reconnaissance and discussion with Mr. Niakouei, we concluded that building had subsided on the south side. However, the settlement has been stabilized. The settlement is likely due to consolidation of the near surficial soils. Except for minor adjustment for doors and repairing of the damaged on the east and south exterior walls, there is no immediately safety issue for the building.

4. We further understand the property will be re-developed in 18 months. Although settlement along the south side appeared stopped, the building shall be monitored every three months for further assessment of condition of the building.

Should you have any questions regarding the above or if we can be of further assistance, please call.

Yours Truly

Asyam Consulting Ltd.

Per

Devadas Pranassery, M. Tech.

Reviewed

Per:

Zhao Guan, M.A.Sc., P. Eng.

Enclosed.

Picture #1: BOTTOM OF SOUTH WALL (BUBBLING OF BOTTOM SECTION)

PICTURE #2: EAST SECTION OF SOUTH WALL (WALL BUBBLED AT THE MID-SECTION)

PICTURE #3: SOUTH WALL (NOTED ALLIGATOR CRACK ON ROAD)

PICTURE #4: SOUTH SECTION OF EAST WALL (BUBBLE ON WALL NEXT TO MAIN FLOOR WINDOW)

MAF ENGINEERING LTD.
CIVIL / STRUCTURE

MAF Engineering Ltd.

Email: mirafsharn@gmail.com

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MEMORANDUM

Project Address: 53, 4th Street, New Westminster, BC

Date: December 3rd, 2020, 2020

There was a site visit of existing situation of the above-mentioned building.

All the review was on exterior walls and no review has been done on interior elements.

As described in previous report, Building is constructed in 3 storey wood framing on the footings and South side of the building has settlement and caused many cracks in stucco siding and deformation on one window frame in South side.

There is no significant change regarding to last site review except:

In South west corner of the building, one small part of stucco has fallen. This part was peeled of the building in last visit which now, fell completely. This may occur because of penetration water, rain, snow ... in that spot and caused some oxidation on stucco material during few months which caused removal. Or may be caused of additional Settlement in that part of building which needs to have further investigation.

In South-east corner of building there was a crack which filled by caulking and now it seems to become wider. Some cracks on stucco which filled by caulking seems need more caulking to protect of water penetration in to framing material.

Here below; there are some photos captured on site with some descriptions:

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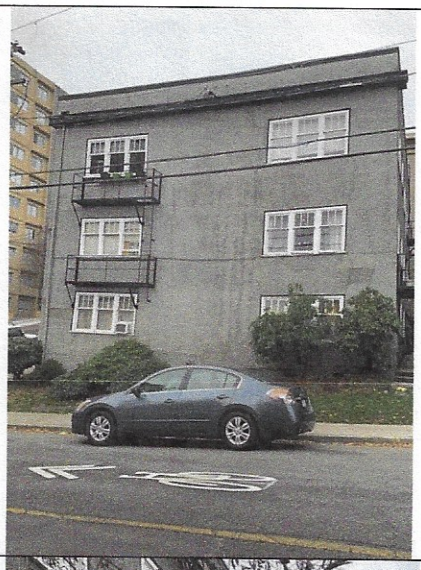
1	A photo from South side of the building	
2-	A photo from West side of the building.	

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3	A bubble in South-West corner of the building which siding is bubbled and stucco has already separated / peeled off the building.	
4	Same bubble on stucco of different angle.	

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5	A photo of South-West corner of the building which stucco was bubbled in previous site visit and observed the stucco has been peeled off and fell down. Obviously, a thin layer of mortar has been done on this part. This part was bubbled in previous site review (the same as figure 3 & 4) and now it fell down. This needs more further investigation and can be noticeable.	
6	Some cracks which caulked before and it seems need to be re-caulking.	

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7	On the South-East corner of the building there is one crack which need more caulking and need to be fixed. Water, rain can penetrate thru this crack and may cause some rot in framing. Or water may already penetrate and caused some rot. It needs more investigation on framing.	
8	Same spot with closer view.	

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9	Same spot of figures 7 & 8 with different angle which needs more caulking and more investigation on existing framing regarding rot.	
10	This crack also need to be r-caulked	

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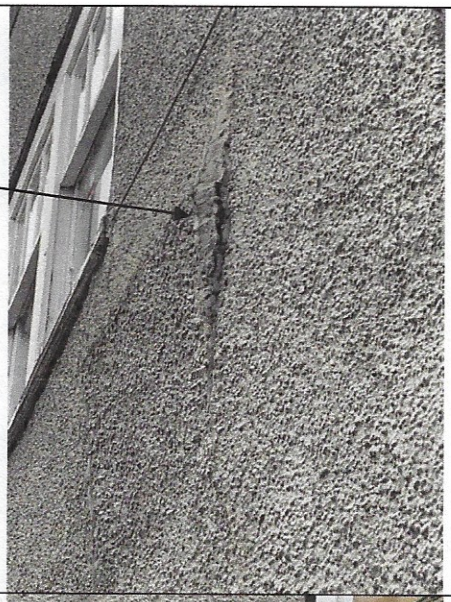
11	Crack is caulked before and needs more caulk to protect on water penetration.	
12	Cracks which filled by caulking and needs more caulk.	

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Limitations:

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The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations. The recommendations are not intended to be utilized as a detailed specification for any remedial work that may be required. MAF Engineering Ltd. accepts no responsibility for interpretation of our recommendations, or actions taken based on them without our consultation and supervision.

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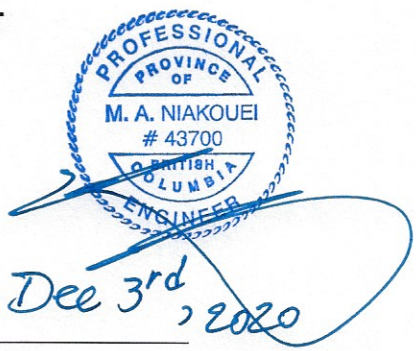
responsibility for damages suffered by any third party as a result of decisions made or work carried out based on reports or documents authored by MAF Engineering Ltd.

Please let us know if you any questions or concerns arising from this report.

Prepared by:

MAF Engineering Ltd.

Per:



Mir Afshar Niakouei, P.Eng.

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Project address: 53, 4th.street, New Westminster, BC

Dear Georgetta

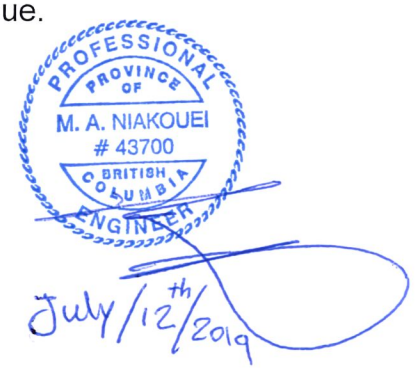
I had a visual inspection in past 3 months up to end of June 2019 from outside and inside of the building and like my last report there is no significant changes has been occurred during three past months.
There is a significant settlement in building at the South-West corner.
This settlement might have various reasons; such as: blockage of drain tiles in the soil and frequent saturation/dewatering of soil, consolidation of deep soil in that corner with regarding the close distance to river and most likely being sand soil underneath, constructing the building foundation on a back filled soil which was not well-compacted at the time of construction, etc.

Any of these reasons by itself or a combination of them may cause this un-wanted non-symmetric settlement.
This settlement has caused some significant and obvious cracks on the wall in interiors and exteriors which already caulked and painted.

Just be informed that with this existing situation and with real assumption of end-less settlement due to soil un-stability, I am strongly recommending you hire a geotechnical engineer/company to come on site and have a deep investigation to find out what is the reason of this settlement and based geotechnical report, we can consult about repairing/ maintaining this issue.

Thanks and
Regards,

Mir Afshar Niakouei P. Eng.



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Project Address: 53, 4th Street, New Westminster, BC

Date: July 12th, 2022

Hello Serena

Thanks for your email and your concerns about this building.

Firstly, if the city has the original building drawings in archive, it will be required to evaluate the issues. The following link is a page in the city's archive which shows the picture of the building in circa 1930. Please let us know if the building drawings are available by any chance.

http://archives.newwestcity.ca/permalink/55123/

Please find below your answers in BLUE:

Please provide the following clarification within the next 30 days:

- Provide a comparison of photographs of the last inspection by date. This inspection notes that there is no change, but we don't see the 'before' pictures from the prior visit.
- Have you taken any measurements to insure that the cracking/settlement isn't getting incrementally larger?
- If you haven't taken measurements in the past, please do so this time and photograph evidence of these measurements so that the photographs can be compared to those taken during the next visit.

  This will be done. Pictures from fixed angles are provided. As evident from these pictures, the changes from May 2019 have been happening slowly and gradually. This will also be done for new pictures that will be taken in each regular visit (6 months intervals).

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We can visit the site each 6 months to:

1-Taking pictures of the same locations and compare.

2- Taking measurements to see if the building is still settling or not.

- We require an inspection of the building interior; specifically the lower two units on the southern end of the building below the significant deflection.
    - Can you assess that there is still bearing coverage of the floor framing on the exterior walls? How much is bearing is provided?
- Can you confirm if there has been any crushing of the framing members in the settlement or has the framing remained intact but buckled?

We will schedule an interior inspection.

Note: It is also important to know if the building framing is of the "Balloon framing type" or the newer "Platform frame" type. As the floor joist rest/bearing space is different between the 2 types. Balloon framing was still used by the 1930s. Having the original building drawings can identify the framing type. If not available, a visit to the building's interior might be able to determine the framing type. The importance of this issue is that generally speaking, the balloon type framing of the old have less floor joist bearing space as compared to the new platform type framing (as the picture below shows).

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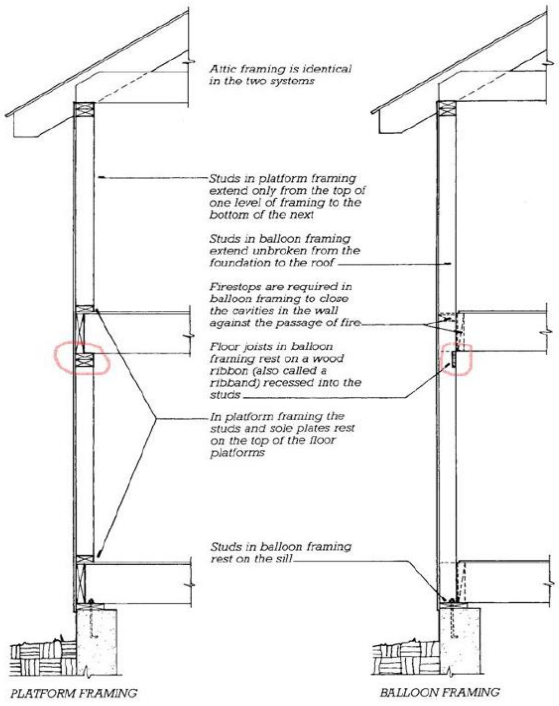

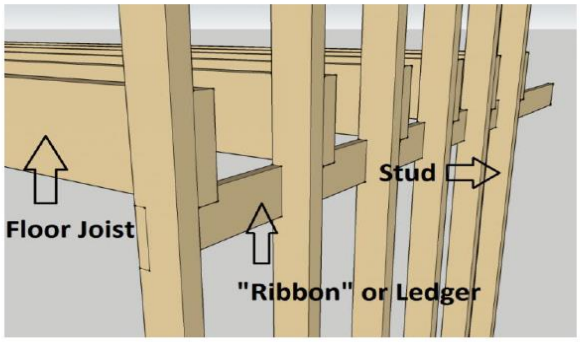

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- I am trying to get a feel for how long the condition can remain like this before the framing may give way.
  No one knows about this item. This depends on many items, lots of parameters can affect to the length of this time duration: loading / unloading of the floors, any possible earthquakes (even low Richter), the saturation of soil underneath, fluctuation of underground water level, lateral loading/unloading (wind), etc.

- How do you anticipate that his system may fail. For example, is the system likely to give notice or fail catastrophically?
  Most possible the failure will be with notice, huge cracks, break Sounds, etc. the possibility of sudden failure is very low.

- Please provide confirmation of any shoring that is needed at the interior in order to stabilize the building and prevent collapse on the lower units.
  Shoring interior is not a good solution because:
  1- Shoring must rely on a rigid base. In this case, the problem is there is not a reliable base that you can put any shoring/ post upon. The soil is settling, underneath soil is failure and gradually is going down slowly. How can we put a shoring on an uncertain base. Shoring will be a good and practical solution if the shores / posts to seat on the stabilized floor.
  2- Tenant are living there in those two units, how can they live with shoring in their space?

- Provide a shoring design that would resist collapse during a seismic event and in the event of continued settlement.
  We can design shoring as you suggested, this will be determined after the interior inspection is done and (hopefully) the original drawings are obtained to determine the structural framing type and characteristics.

- Please confirm that the glazing has not been put under stress such that it will break and create a hazard for those outside or inside the building.
  There was no glazing stress visible at the site. But the bottom of the window frames on the lower level have kinked outwards. But this kink is also evident in the previous pictures, so the change has been slow and gradual.

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- Are you able to ascertain why the building is settling in this way?

Finding the reason of this settlement needs lots of investigation, tests, research, etc. Generally, there is not only one reason for these happenings, but a series of reasons also accumulated and ended to this kind. Overall, finding the soil assessment / soil quality and mechanical parameters of the soil can be a good start to figure out the reason (how much is allowable soil stress? How much is the underground water level? What kind of soil is there? Silt? Clay? Sand? Combination of silt / sand, etc.). Then the size and characteristic of existing footing should be investigated (how is the width? is there any rebar? Is there consistency between footings? Is there a good, crushed gravel material underneath the footing? Is the backfill good compacted? is there appropriate drainage system to discharge possible water accumulation around footing? Etc.)
The location of the building is also important, the building is located on a natural South-ward slope and this slope can exist in different soil layers.
See below photo:

New Westminster, Metro Vancouver Regional District, British Columbia, Canada (49.20677 -122.91088)

Is the foundation failing?
Most possible the soil underneath the footing is failing, settled and caused the footing and that part of building settled down, also this might cause the footing to be broken, as per my experience, I observed old building foundation on other job site during demolition, didn't have rebar / steel members in the footing concrete.

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- Is there buttressing that can be done to stabilize the foundation and limit the slippage?

  Buttress walls – generally- is supporting against lateral loads /horizontal pressure force (i.e. opposed from soil like in concrete retaining wall). in this case there is soil settlement.

- Inspections of the building are required every 6 months to start given the condition of the buckling. If in your professional recommendation, you believe that less or more time between inspections is required, provide that recommendation in your next report.

- Reports / site reviews at 6 months intervals sounds good to me, if more site visits are needed, we can decrease the time intervals between each visit.

MAF Engineering Ltd.

Per:

Mir Afshar Niakouei, P.Eng.

Alireza Johari, E.I.T.

MAF Engineering Ltd.

Email: mirafsharn@gmail.com

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MEMORANDUM

Project Address: 53, 4th Street, New Westminster, BC

Date: December 15th., 2021

There was a site visit of existing situation of the above-mentioned building.
All the review was on exterior walls and no review has been done on interior elements.
As described in previous report, Building is constructed in 3 storey wood framing on the footings and South side of the building has settlement and caused many cracks in stucco siding and deformation on one window frame in South side.
There is no significant change regarding to last site review, The items mentioned in previous report, Dated December 2020 is existing.

Here below there are some captured photos on latest site review:

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1	Generally, not significant changes regarding previous site review.	
2	Same as before.	

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3	Cracks on stucco have been filled by caulking about two years ago.	
4	Same as before.	

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5	Cracks on stucco have been filled by caulking about two years ago.	
6	Same as before.	

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7	Cracks are filled by caulking about two years ago.	
8	Cracks are filled by caulking about two years ago.	

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9	This crack is not filled by caulking, it seems new crack. All other existing cracks have already been filled by caulking which shown in other photos, while this one is not filled. It seems this one is recently appeared which is on the stucco siding and is not on the frame sheathing necessarily.	

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Limitations:

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Please let us know if you any questions or concerns arising from this report.

Prepared by:

MAF Engineering Ltd.

Per:

_____

Mir Afshar Niakouei, P.Eng.

MAF Engineering Ltd.

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MEMORANDUM #7

Project Address: 53, 4th Street, New Westminster, BC

Date: September 5th , 2023

There was a site visit of existing situation of the above-mentioned building on September 5th, 2023. The previous review #6 was on unit #1 in main floor and we can get into upper unit and review the interior walls and interior framings.

As described in previous report, in unit 1 the framing (ceiling joists and stud walls) were reviewed, the floor (slab on grade) having slope. This time the contractor opened the wall finishing and opened up the ceiling in two spots in unit 1 and in upper unit to review and make sure that the existing joists and stud walls are standing in good shape and there is not any un-plumbness in stud walls or any un-leveling in ceiling joists.

There is no significant issue regarding to last site review on interior framings. The framing system is the same as common type (with top plate and bottom plates and joists are sitting on the top plates. The framing system is NOT Balloon type framing.

The existing ceiling joists and wall studs were reviewed, the angle between the joists and wall studs were measured, the joists are perpendicular to top plates in both levels in unit 1 and upper unit.

Here below there are some captured photos on latest site review:

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1	Ceiling and wall was opened up by contractor	

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2	The angle between the top plates and joists / stud walls were rviewed.	

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3	Ceiling and wall were opened up by contractor	

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4	Existing angle between ceiling joists and wall studs were reviewed	

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5	Existing angle between ceiling joists and wall studs were reviewed	

MAF Engineering Ltd.

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Please let us know if you any questions or concerns arising from this report.

Prepared by:

MAF Engineering Ltd.

Per:

_____

Mir Afshar Niakouei, P.Eng.

MAF Engineering Ltd.

Email: mirafsharn@gmail.com

Tel: 778 840 9867

MEMORANDUM

Project Address: 53, 4th Street, New Westminster, BC

Date: July 3rd, 2021

There was a site visit of existing situation of the above-mentioned building.

All the review was on exterior walls and no review has been done on interior elements.

As described in previous report, Building is constructed in 3 storey wood framing on the footings and South side of the building has settlement and caused many cracks in stucco siding and deformation on one window frame in South side.

There is no significant change regarding to last site review, The items mentioned in previous report is existing.

Limitations:

The information presented in this report is based on direct visual observation made by personnel with MAF Engineering Ltd. and in some instances as noted within the report on information provided by others. Recommendations contained within our report reflect our informed opinion based on the information gathered during our investigation. The findings cannot be extended to components of the building or portions of the site that were not reviewed or that were concealed or unavailable for direct observation at the time of our visit.

The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was

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Please let us know if you any questions or concerns arising from this report.

Prepared by:

MAF Engineering Ltd.

Per:

_____

Mir Afshar Niakouei, P.Eng.

MAF Engineering Ltd.

Email: mirafsharn@gmail.com

Tel: 778 840 9867

MEMORANDUM #5

Project Address: 53, 4th Street, New Westminster, BC

Date: June 12th, 2022

There was a site visit of existing situation of the above-mentioned building on June 12th, 2022.

All the review was on exterior walls and no review has been done on interior elements.

As described in previous report, Building is constructed in 3 storey wood framing on the footings and South side of the building has settlement which caused many cracks in stucco siding and deformation on one window frame in South side.

There is no significant change regarding to last site review, The items mentioned in previous report, Dated December 2021 is existing.

Here below there are some captured photos on latest site review:

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1	Generally, not significant changes regarding previous site review.	
2	Same as before.	

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3	Cracks on stucco have been filled by caulking about two years ago.	
4	Same as before.	

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5	Cracks on stucco have been filled by caulking about two years ago.	
6	Cracks are filled by caulking about two years ago.	

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7	This crack is not filled by caulking, it was observed on the last review.	

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The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our

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conclusions and recommendations. The recommendations are not intended to be utilized as a detailed specification for any remedial work that may be required. MAF Engineering Ltd. accepts no responsibility for interpretation of our recommendations, or actions taken based on them without our consultation and supervision.

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Please let us know if you any questions or concerns arising from this report.

Prepared by:

MAF Engineering Ltd.

Per:

Mir Afshar Niakouei, P.Eng.

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MEMORANDUM #6

Project Address: 53, 4th Street, New Westminster, BC

Date: July 20th, 2023

There was a site visit of existing situation of the above-mentioned building on July 20th, 2023.
All the previous reviews were on exterior walls and we could had the first interior review in unit #1 in the main floor for interior elements.

As described in previous report, Building is constructed in 3 storey wood framing on the footings and South side of the building has settlement which caused many cracks in stucco siding and deformation on one window frame in South side.

There is no significant change regarding to last site review on the exterior finishing and stuccos. In interior investigation in unit 1 there are some un-levelness of flooring and wall in one unit. The same wall on the South side which includes deformed window.
Partial floor un-levelness and wall un-plumbness can be seen in one room in unit 1 as are marked locations on the drawing. This can be an indication of differential settlement in the south-west corner. The other interior areas of the building such as the middle of the building seem fine and there were no visible defects. Also, the upper floor walls and floors do not have any un-levelness. This is consistent with the "Differential Settlement" pattern in buildings.

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As per owner declaration, the existing un-levelness on the floor and un-plumbness on the wall were existing since she purchased the building in 6 years ago and she clearly declared that these issues not increased since purchasing date.

Regardless this item, we reviewed other floors hallways and no significant crack or any defects have been observed.

Here below there are some captured photos on latest site review:

1	South – East corner of the Buildoing	

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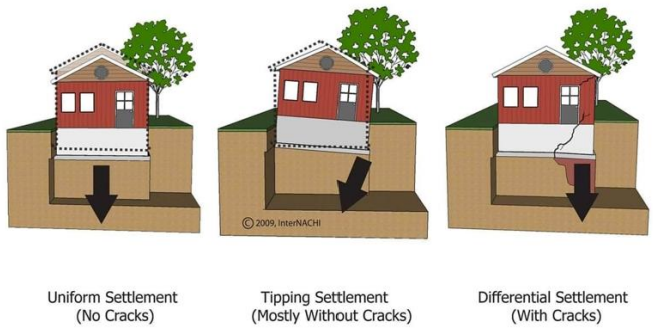
2	Types of settlement in simple sketch	

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3	South-west Corner of the Building	

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4	South-West Corner of the building in different view.	

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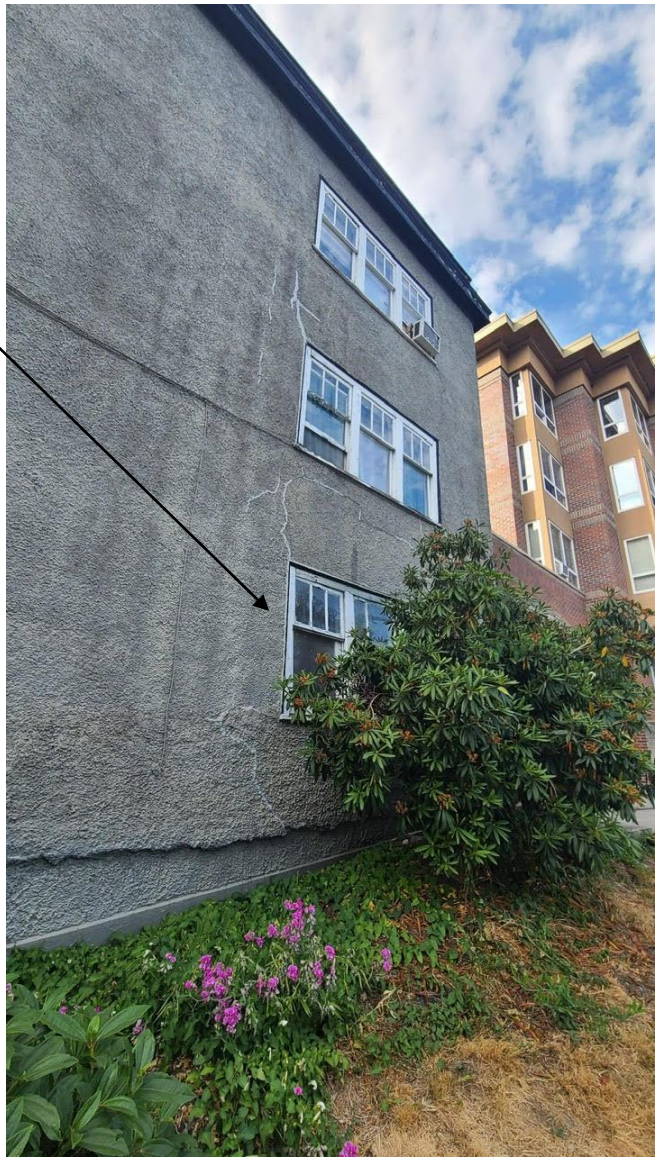
5	South elevation The unit that interiors were reviewed is located at behind this window.	

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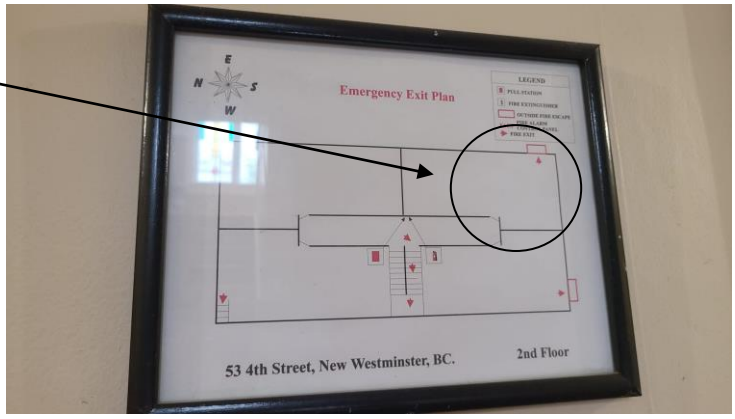
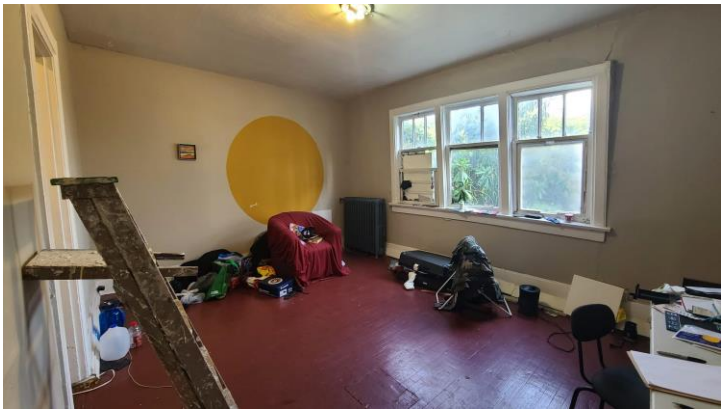
6	The unit that reviewed interior is located in this plan in the circle.	
7	Unit #1	

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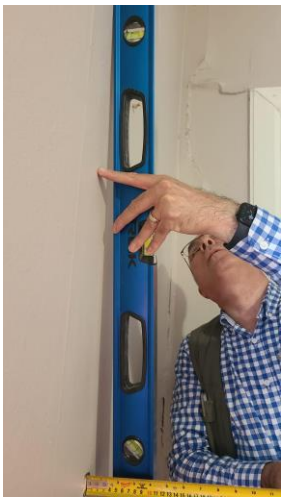
8	Deformed window	
9	Un-plumbness of the wall	

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10	Un-levelness of the floor in one room Adjacent to deformed window	
11	Deformed door frame.	
12	Un-levelness of the floor in other room same unit	

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13	Un-levelness of the floor in other room same unit	
14	Un-levelness of the floor in other room same unit	

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Please let us know if you any questions or concerns arising from this report.

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Per:

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MEMORANDUM #8

Project Address: 53, 4th Street, New Westminster, BC

Date: September 12th , 2023

There was a site visit of the existing situation of the above-mentioned building on September 11th, 2024. The previous memos #6 and #7 were on unit #1 on the main floor, and we could get into the upper unit and review the interior walls and interior framing.

On the latest review on September 11th, 2024, we could get into Unit 1 and Unit 2 on the main floor. There are no significant changes in the interior units or in the hallways. The interior walls were the same as the previous reviews.

On the exterior walls review, we found some minor increase in the South wall stucco and finishing. In the south-east side of the building, there is stucco peeling off the wall, which shows progress compared to the photos taken on 2020. On the south-west side of the building, we observed the same minor increment.

By peeling off the stucco, there are some rotted wood on the south-east side of the building framing, which should be fixed and replaced as well.

Here below there are some captured photos on latest site review:

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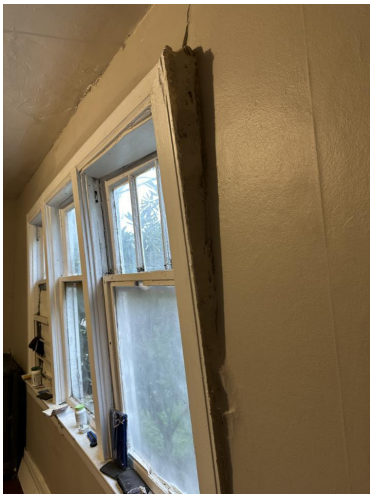
1	Unit #1: Interior The window and wall are almost at the same situation regarding the un-plumbness as previous inspection	
2	The corner that reviewed on existing framing Zoom in this point See the next photo	

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3	There are some cracks on drywall/ plaster/ wall finishing in the corner Unit #1 on the south wall. By reviewing the taken photos on 2023 , the same crack was there and no inprovement from interior side. See the next photos	
4	The photo was taken in September 2023 from the same spot on the previous photo  No significant change in interior side	

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5	This view of the southwest side of the building on the exterior wall. Stucco is peeled off. Compare with the phot of the same spot was taken in 2020 in below	
6	This photo was taken on 2020 There is a minor improvement in the stucco peeling with the framing.	

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7	This view of the southeest side of the building on the exterior wall. Stucco is peeled off. Compare with the photos # 9 & 10 of the same spot that were taken in 2020 in below	
8	This view of the southeast side of the building on the exterior wall. Stucco was peeled off. Compare with the photos # 9 & 10 of the same spot that were taken in 2020 in below. The wood framing at this corner is rotted and need to be repaired / replaced.	

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9	This photo was taken on 2020 There is a minor improvement in the stucco peeling on this corner. The inside wood / framing is rotted now.	
10	This photo was taken on 2020 There is a minor improvement in the stucco peeling on this corner. The inside wood / framing is rotted now.	

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Prepared by:

MAF Engineering Ltd.

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Mir Afshar Niakouei P. Eng.