

HALLIWELL

Engineering Associates

January 9, 2013

Mr. Richard Swink
National General Adjuster
York SLA
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RE:	Claim No.:	TBD
	DOCUMENT TYPE:	INVEST-ENGINEERING REPORT
	Date of Loss:	October 29, 2012
	Insurance Carrier:	Lexington London Insurance Company
	Insured Name:	Sand Castle Condominium
	Policy No.:	41LX006437850-8
	Location of Loss:	Sand Castle Condominium 384 Ocean Avenue Long Branch, NJ
	Independent Adjuster:	Mr. Richard Swink, NGA
	IA File No.:	YKFS-20861
	HEA Project No.:	12-997

Dear Mr. Swink,

1) Introduction

York Risk Services Group requested that Halliwell Engineering Associates, Inc. (HEA) perform an investigation of the reported damage at the above noted location of loss (the Property). This investigation was requested as the result of a claim having been filed by the Insured associated with damage from Super Storm Sandy located at the Sand Castle Condominium.

The damage was reported by the Insured with a date of loss of October 29, 2012. The Sand Castle Condominium is located at 384 Ocean Avenue, Long Branch, New Jersey. Mr. Athanasios Tom Marinos, P.E., S.I. performed the site inspection on behalf of HEA.

2) Purpose

The purpose of this investigation was to provide an engineering opinion as to the cause and origin of the reported damage to the roof and along the Exterior Insulated Finish System (EIFS) walls of the subject Condominium.

3) Scope of this Investigation

The scope of this investigation was based on visual observations and findings related to the existing conditions of the subject condominium located at the Property. This facility had been reported by the Insured as having been damaged by Super Storm Sandy, on October 29, 2012.

There were no construction record documents reviewed as part of this investigation. Based on our observations of the damage at the Property, as described below, such review was determined by HEA as not being required.

The conclusions in this report are therefore representative of our visual observations, and findings, coupled with our professional experience.

4) Background Information

The subject Property is located in Monmouth County, New Jersey. According to Monmouth County Property Appraiser's website, the Property was constructed in 1994. The Property is located east of Highway 57 (Ocean Blvd), north of Avenel Blvd along the coastal shoreline of the City of Long Branch, NJ (Photo 1).

The Property is a seven-story residential Condominium structure that has an enclosed parking level located at the ground floor. The site development also includes an exterior in ground pool. There are a total of 24 units within the subject Property that are owner occupied.

The roofs of the subject Property are multi-level and include roofing configurations that range from low sloping to Hip shaped. The low sloping roofs were covered with a Thermoplastic Polyolefin (TPO) membrane.

The exterior walls of the subject Property were clad with a barrier type, directly applied Exterior Insulated Finish System (EIFS) along the upper floor areas above the first floor level. The EIFS system was also used at portions of the first floor level exterior walls. The remainder of the first floor level exterior walls was composed of concrete masonry unit (CMU) block clad with painted stucco.

There were no observations conducted of the structural framing system, as the structural framing system was not accessible.

Access to the attic roof spaces was not performed, as HEA was not provided access to these spaces during the inspection. Access to the upper low sloped roof areas was provided by the

Insured to HEA. There was no access provided to the lower canopy low sloped roof area. Observations for this roof were performed from the upper building areas.

Access to upper penthouse unit balcony areas for Units 701 and 704 was provided by the Insured to HEA. No other units were accessed by HEA.

5) Documents Reviewed

The documents reviewed as part of this investigation included the following:

1. Monmouth County Property Appraiser's website
(<http://oprs.co.monmouth.nj.us/Oprs/GoogleWithUC/Default.aspx>).
2. Minimum Design Loads for Building and Other Structures, ASCE Standard 7, 2010 published by the American Society of Civil Engineers (ASCE).

6) On-Site Inspections

The subject Property was inspected by HEA on December 19, 2012.

a) Inspection Attendees

During HEA's inspection the following individuals were present:

1. Mr. Bill Mosey, Management Company: Representative of Sand Castle Condominium.
2. Mr. Athanasios Tom Marinos, PE, SI, Senior Forensic Civil / Structural Engineer: HEA

b) Visual Inspection Observations

The following is a summary of HEA's observations made during the site inspection. Photographs depicting the conditions associated with these observations are found in Appendix A.

Exterior – Roofs and EIFS walls

1. The metal siding along the fascia areas of the upper roofs was pulled outwards along some field and corner areas (Photos 2 through 5).
2. A limited number of tiles were dislodged and missing from some of the upper roof areas (Photos 6 and 7).
3. The roof membrane of the upper low sloping roofs was observed to be aged and deteriorated in several areas (Photos 8 and 9).
4. Roof field drains were observed that had missing roof drain screens (Photo 10).

5. An exterior window frame from Unit 704 facing the upper, low sloped roof was observed to have its bottom sash exposed from its cladding. This area of the wall plane was observed to be in a deteriorated state from rot (Photo 11).
6. In Unit 704, a sloped EIFS wall cap at the balcony separates a hip tiled roof from the balcony was observed to have been recently damaged. This area had been repaired in place. The repair consisted of sealing the cracks and fastening through the sloped EIFS wall cap to the interior wall framing with tin-capped screws (Photo 12).
7. There were several areas of the lower canopy roof that were observed to have been repaired. The repair consisted of several patches, with a concentration of repairs along the north edge of this roof area (Photo 13).
8. There was a dislodged tile found on one of the low-sloped upper roofs. The concrete tile appeared to have been a double pan tile manufactured by "Marley" (Photo 14).
9. One of the EIFS wall panels along the east side building corner was observed to have been displaced outwards from its static position. The damage to the EIFS wall panel was noted to have been located between the 3rd and 4th floors along the east elevation of the building, at the north-east corner (Photo 15).
10. There were several gouges observed at the EIFS wall located at the north end tower of the east elevation of the building, along the 3rd level (Photo 16).
11. There was glass broken from an exterior window located at the north end tower of the east elevation of the building, along the 3rd level (Photo 16).
12. There were several hairline and minor cracks (less than 1/16-inch wide) observed along the painted stucco exterior stucco used at the CMU block walls along the north elevation of the building (Photos 17, 18 and 24).
13. There were several holes observed along the first floor level EIFS wall panels located along the north exterior walls, to the east of the covered front door entry (Photos 19 through 21). In some of these areas, the protective coating along the exterior EIFS was observed to have a slight discoloration.
14. The metal doors along the north elevation, in the same general area as where the holes were observed to the EIFS wall, were observed to have been extensively corroded and damaged along the bottom sill area and around the door frame (Photos 22 and 23).
15. There was a hairline crack observed along the west elevation wall at the first floor level, located above a door header (Photo 25).

7) Additional Findings (over and above visual observations)

Based on ASCE 7 Standard, the design wind pressures for the subject Property are based on wind speeds that are in excess of 100 miles per hour (mph).

8) Analysis

a) Meteorological Data

1. Data Sources and Information Development

- a. As of the date of this report, the National Weather Service (NWS), the National Oceanic Atmospheric Administration (NOAA), the Federal Emergency Management Administration (FEMA), the US Geological Survey (USGS), and the Hurricane Research Division (HRD) of the Atlantic Oceanographic & Meteorological Laboratories (AOML) have not released post-storm reports for Super Storm Sandy.
- b. Andy Johnson, CCM, has completed a Preliminary Super Storm Sandy Wind & Storm Surge Analysis from Virginia to Massachusetts, dated November 27, 2012.

2. Wind Speeds, Direction and Timing:

The National Hurricane Center (NHC) has not released a post-storm report on Super Storm Sandy as of the date of this report. The Hurricane Research Division (HRD) of the Atlantic Oceanographic and Meteorological Laboratories (AOML) at the National Hurricane Center released the H*Wind maximum sustained wind swath of winds that occurred during Super Storm Sandy (see Figure 1).

Mr. Johnson's analysis included a review of the official (NWS observations & NOAA coastal marine stations) and unofficial wind reports along the New Jersey coast from Weather Flow. Mr. Johnson utilized this information to develop a forensic meteorological analysis of the timing of the sustained and 3-second gust wind speed and direction, as well as an analysis of the storm surge height and timing for the coastline of New Jersey from Sandy Hook, south to Seaside Heights.

Figure 2 is a timing graph from this analysis. This graph shows that the wind speed peaked (65 mph sustained, 83 mph 3-second gust) at approximately 8:35PM EDT on October 29, 2012 from an east-southeast direction.

Figure 3 is an aerial view of the subject property, with a wind rose indicating the direction and magnitude of the maximum wind gusts that affected the subject building during Super Storm Sandy.

Based on HEA analysis of the preliminary data available at the time of this report, we estimate that the maximum sustained winds at the subject site were 65 mph, below the range of a Category 1 (74 – 95 mph) hurricane, with maximum 83 mph wind gusts, from the east-southeast at 8:35 PM on October 29, 2012.

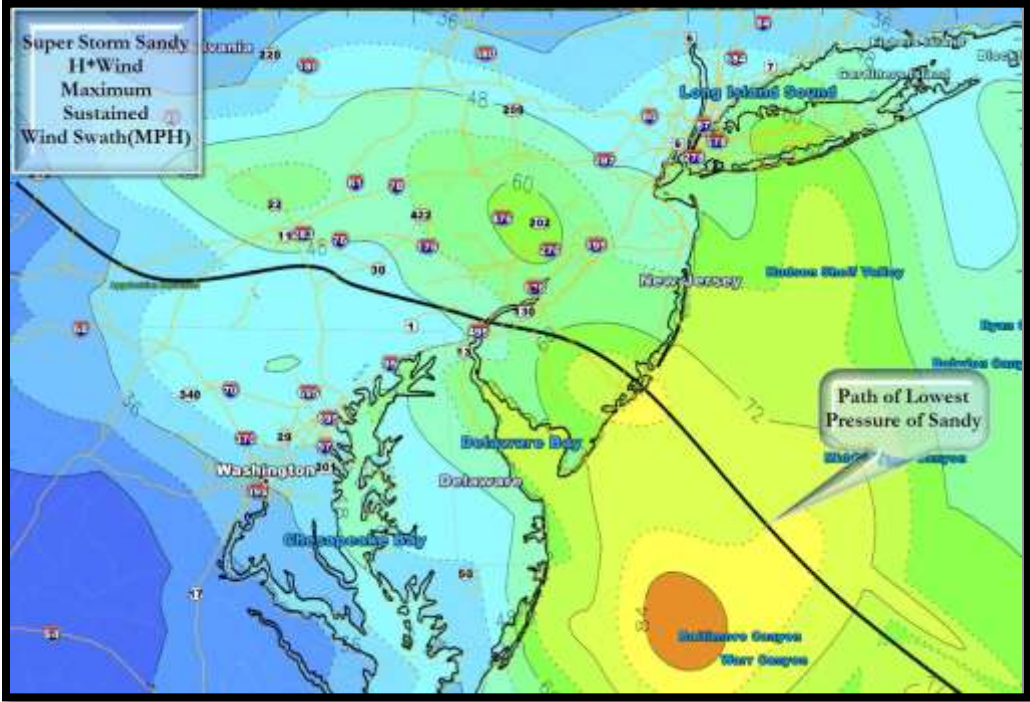


Figure 1: The wind swath of H*Wind maximum sustained winds that occurred during Super Storm Sandy as released by the Hurricane Research Division (HRD) of the Atlantic Oceanographic and Meteorological Laboratories (AOML) at the National Hurricane Center (NHC).

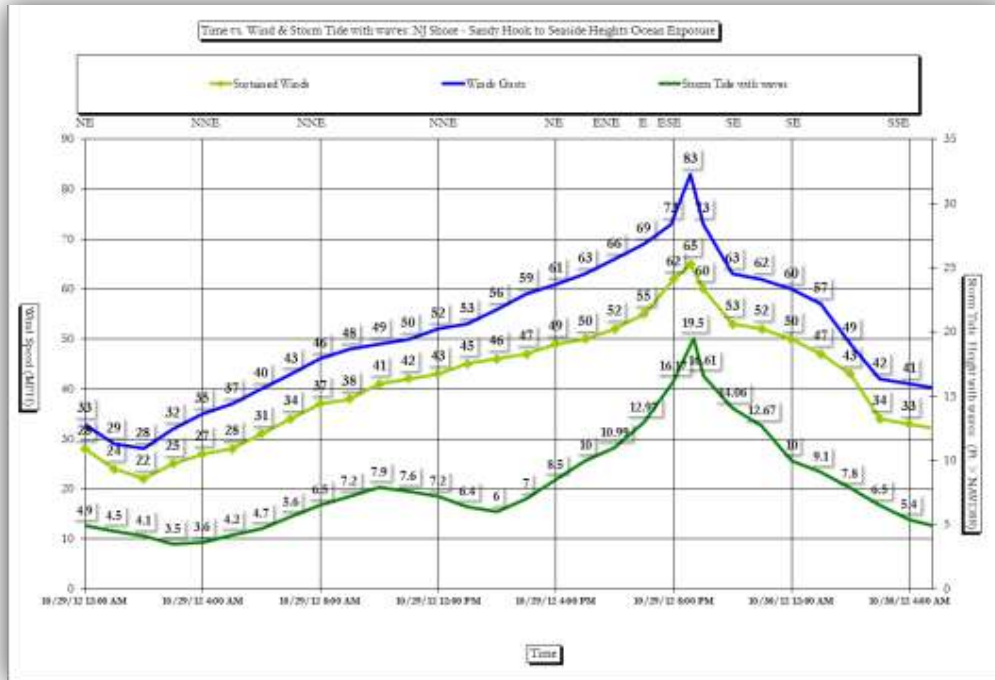


Figure 2: Forensic meteorological analysis of the timing of the sustained and 3-second gust wind speed and direction, as well as an analysis of the storm surge and wave heights, and timing for the coastline of New Jersey from Sandy Hook, south to Seaside Heights.



Figure 3: Super Storm Sandy Maximum Wind Speed and Direction at Subject Building

b) Damage Summary

The damage to roofs and EIFS wall systems of the subject Property may be summarized as follows:

1. The metal siding used at several fascia areas along the upper roofs was missing, and/or dislodged.
2. The portion of the wall cap along a sloped wall located at the balcony of Unit 704 was damaged.
3. A limited number of concrete roof tiles were dislodged or missing on the upper roof levels.
4. Portions of the roof membrane of the upper low-sloped roof areas were aged and deteriorated.
5. Several field roof drain screens were missing in the low-sloped roof areas.
6. The low-sloped roof above the canopy was recently damaged and repaired, particularly along the north edge of this roof section.
7. A window sash along one of the windows of Unit 704 had missing cladding and was deteriorated from rot.
8. Several hairline and minor cracks were observed along the painted stucco cladding used at the CMU block walls located at the north and west elevations of the first floor level.
9. Several EIFS panels were found to have gouges and holes.
10. One of the EIFS panels located at the north-east corner of the east elevation, between the 3rd and 4th floor levels, was pulled outwards from its static position.

c) Pre-Existing Conditions Summary

1. The upper level, low-sloped roofs were aged.
2. The hairline and minor cracks along the painted stucco cladding used at the CMU block walls located at the north and west elevations of the first floor level.

d) Tests/Measurements/Readings, Results and Analysis

No destructive or non-destructive testing was performed on materials of the subject Condominium as such testing was determined to not be required for this investigation.

e) Causation Analysis

On October 29, 2012, a significant weather event (Super Storm Sandy) passed through the vicinity of the geographic area where the subject Property is located. Based on HEA's weather analysis, this weather event generated wind speeds that peaked at approximately 8:35pm with sustained wind speeds of approximately 65 miles per hour (mph) and wind speed gusts of approximately 85 mph.

The damage observed at the property along the exterior elevations of the subject building appears to have been related to the effects of wind. More particularly, the damage observed along the metal siding at the fascia of the upper roofs appears to have been a result of high wind.

The metal siding is a very flexible building element. When such a building element is subjected to negative pressures from higher than normal wind gusts associated to a building and the metal siding is fastened with a limited amount of fasteners to its substrate material, the metal siding would have a tendency to become dislodged from its substrate material and become distorted. This type of damage was observed by HEA along portions of the metal siding at the upper hip roof fascia areas.

The damage found along the east elevation exterior wall at the EIFS wall panel located at the northeast corner of the subject building appears to be a result of wind forces. According to ASCE 7, exterior corner areas of building are categorized as having high negative pressures, when compared to interior field areas of walls, when the building is subjected to wind forces.

The EIFS wall panel along the northeast corner appears to have been pulled outwards from the bottom corner and exposed edge. This damage appears to be associated with the effects of negative wind pressures that the exterior walls experienced during the event.

The damage to the EIFS wall cap along a demising sloped framed wall along the south side of the balcony of Unit 704 appears to have been associated with the effects of negative wind pressures. The gouges and holes found in several of the EIFS panels located along the east and north elevations appear to have been associated with wind borne debris experienced during the event..

The limited amount of roof tiles found to have been dislodged and/or missing from the upper level roofs suggests that the actual event wind speeds were not excessive as compared to the wind speeds this building was to have been designed for.

According to the ASCE 7 Standard, the design wind speed gust for the geographical area that the subject Property is located was to have been in excess of 100 mph. Therefore, the building, according to the design standards at the time of the initial construction, was to have been designed for wind speeds greater than what the building was subject to during the date of loss (DOL).

The upper low-sloped roofs did not exhibit damage from wind. These roofs were found

to be aged, and in some areas, found to have deteriorated roofing membranes. The lower low-sloped roof at the entrance and canopy area was found to have some damage along the north edge of the roofing membrane.

Based on ASCE Standard 7, the perimeter edge of the roof typically is associated to higher wind pressures than the field roof areas. The lower sloped canopy roof, similarly to the upper low-sloped roof areas, was also aged.

As a result of age of the roofing membrane, the northern edge of this roof may have sustained some damage from wind pressures associated to higher than normal wind experienced during the event. There was no visibly apparent evidence of structural damage to the structural framing of the roofs including the upper hip roof, upper and lower low-sloped roofs.

The hairline and minor cracks found along the north elevation exterior EIFS and CMU block walls do not appear to have been formed as a result of the wind experienced during the event. These cracks appear to have been formed as a result of thermal and environmental changes that these building materials would be normally subjected to over the years from their original construction. These cracks appear to have formed along the outer stucco finish surface. These cracks are cosmetic cracks and do not alter or affect the structural strength, soundness or integrity of the building structural system.

f) Code Analysis

The design procedure and construction documentation required for the remediation of the observed damage to the structural elements of the subject concrete pier will be required to comply with the New Jersey Uniform Construction Code (“Code”).

The limited structural damage to the subject building can be considered as a repair based on Subchapter 6 of the Code and can be remediated in like kind and quality without requirement of structural code upgrades or that would require compliance with current design load criteria. Design load criteria for the repaired structural members can be based on the design load criteria of the building code that had been in effect when the building was originally constructed in 1994.

The responsibility for compliance to the applicable Code will be assigned to the Structural Engineer of Record of the Insured for the repair of this building.

9) Conclusions, Opinions and Recommendations

Based on available information provided for the subject Property, the results of our site inspection, our field observations, findings and the conditions present, coupled with our knowledge of construction, along with HEA’s professional opinion and judgment, we draw the following conclusions associated with this investigation:

- a. The subject Property was originally constructed in 1994 making it approximately 18 years old.

- b. On October 29, 2012, the DOL, the subject Property was exposed to Super Storm Sandy.
- c. On October 29, 2012, the wind gusts at the Property peaked at approximately 85 mph.
- d. The design wind gusts for the subject Property were in excess of 100 mph.
- e. The wind damage to the subject Property was localized along some of the upper level roof areas, lower level low-sloped entrance/canopy roof and several EIFS panels located along the east, northeast and north elevations of the building.
- f. The roof damage experienced during the event was found at metal siding along several the fascia areas, at a limited amount of roof tiles on several of the upper level hip roofs, and at one area along the north perimeter edge of the lower low-sloped roof near the entrance/canopy area of the Condominium building.
- g. The damage to the EIFS along the exterior walls of the subject Property experienced during the event was found along the northeast corner of the building, along the exterior edge of an EIFS wall panel located between the 3rd and 4th floor levels. Several gouges and holes were also observed along the east and north EIFS walls.
- h. There was no visibly apparent damage to the building's structural system and/or the ground level CMU block walls.

10) Limitations

Our professional analysis and opinions contained within this report are based upon, and therefore limited to, the information available to us at this time and the scope of our investigation as described herein. We reserve the right to amend this report if and when previously unknown or unseen conditions are discovered or additional information becomes available to us. Following your review of this report, please contact me with any questions, comments and/or directives you may have. Thank you.

Halliwell Engineering Associates, Inc.



Athanasios Tom Marinos, P.E., S.I.
Senior Forensic Civil/Structural Engineer
New Jersey PE registration pending
Florida PE Reg. No. 51562

cc: Dan Neeb, R.A.: Halliwell Engineering Associates Inc.
File, HEA Cloud

Appendix A: Photos

APPENDIX A

Photographs



Photo No. 1: Aerial photo of site retrieved from Google Earth.



Photo No. 2: Damage to metal siding along upper roof fascia (View from balcony of Unit 704).



Photo No. 3: Damage to metal siding of upper roof fascia (View from balcony of Unit 701).



Photo No. 4: Damage to metal siding of upper roof fascia (North-east corner).



Photo No. 5: Damage to metal siding of upper roof (East elevation).



Photo 6: Missing/dislodged roof tile along upper roof (View from balcony of Unit 704).



Photo 7: View of missing/dislodged roof tile (View from low-sloped upper roof).



Photo 8: View of one of the low-sloped upper roof.



Photo 9: View of aged and deteriorated roof membrane (TPO).



Photo 10: View of missing screen from field roof drain.



Photo 11: View of damage to bottom sash of window (Unit 704).



Photo 12: View of sloped EIFS wall cap damage (View from balcony of Unit 704).



Photo 13: View of lower low-sloped canopy roof.



Photo 14: View of dislodged concrete roof tile.



Photo 15: View of damage to EIFS wall panel along corner of building (North-east corner).

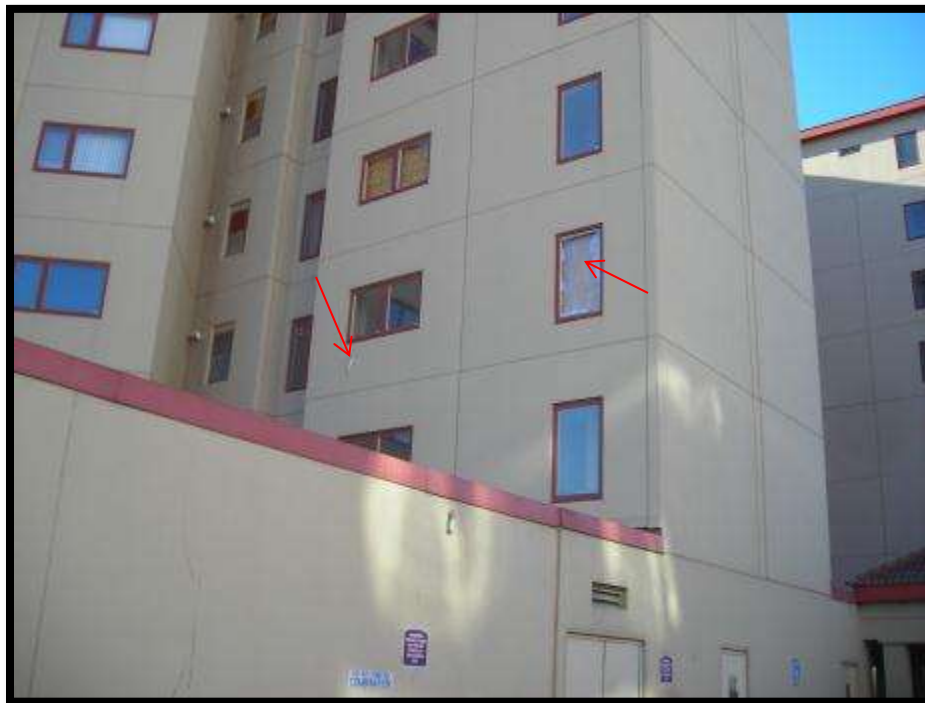


Photo 16: Gouge in EIFS wall (East elevation, 3rd floor level).



Photo 17: Hairline crack in CMU block wall (North elevation).

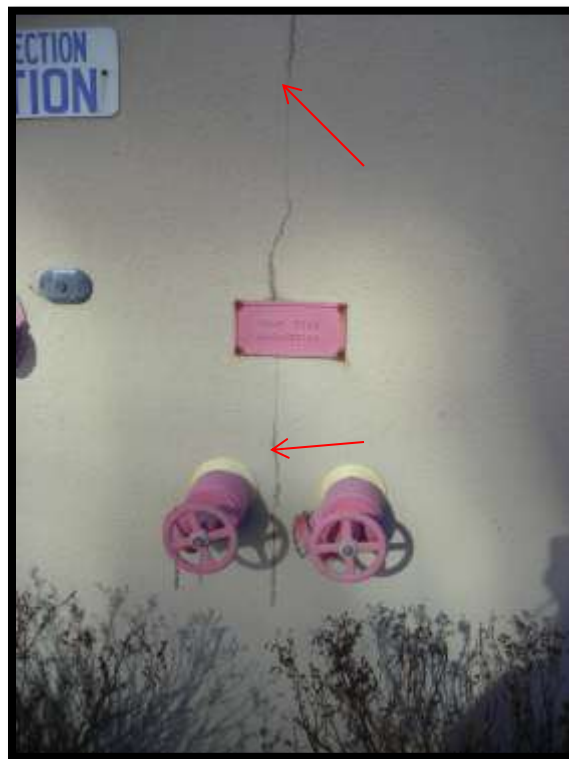


Photo 18: Hairline crack in CMU block wall (North elevation).



Photo 19: Hole in EIFS wall (North elevation).



Photo 20: Gouge in EIFS wall (North elevation).



Photo 21: Gouge on EIFS wall (North elevation).



Photo 22: Damage to metal frame surrounding window of metal door (North elevation).



Photo 23: Damage to metal door sill (North elevation).



Photo 24: Hairline/minor crack in CMU block wall (North elevation).



Photo 25: Crack in exterior first floor level wall (west elevation).