

Greenburgh Central School District

475 West Hartsdale Ave.,
Hartsdale, NY 10530



Engineering Services

Structural Assessment, Administrative Building

■ March 25, 2020
Update

BBS

ARCHITECTS
LANDSCAPE
ARCHITECTS
ENGINEERS

244 East Main Street, Patchogue, New York 11772
T.631.475.0349 | F.631.475.0361 | www.bbsarch.com

187 Wolf Road, Suite 205, Albany, New York 12205
T.518.621.7650 | F.518.621.7655 | www.bbsarch.com

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1| BBS Cover Letter to Structural Engineering Consultant's Report



Above the ceiling in ECP rooms 2 & 3

BBS ARCHITECTS LANDSCAPE ARCHITECTS ENGINEERS

FREDERICK W. SEEBA, PE, MANAGING PARTNER
LAWRENCE SALVESEN, AIA, PARTNER
KEVIN J. WALSH, AIA, PARTNER
KENNETH G. SCHUPNER, AIA, PARTNER
JOSEPH B. RETTIG, AIA, PARTNER
GARY W. SCHIEDE, AIA, PARTNER
ROGER P. SMITH, AIA, FOUNDING PRINCIPAL

March 25, 2020

Greenburgh CSD
Administrative Office
475 West Hartsdale Ave.
Hartsdale, NY 10530
Attention: Ms. Mary O'Neil

Re: Greenburgh CSD
Administrative Building Structural
Assessment
Our File No. 19-318

Dear Ms. O'Neil

As a part of the District's recent RFP process, BBS provided a response to the Request for Engineering Services associated with the Structural Assessment of the District Administration Building. BBS was engaged by the District for this purpose and performed our initial visual observations in a walkthrough of the building interior and exterior on January 21, 2020. BBS was accompanied on this walk through by our structural engineering consultant YAS and the District's Head of Maintenance. YAS returned to the site and performed additional exterior observations on January 31st.

There are no existing and/ or original construction drawings of the building. The building was constructed in the early 1900's as a residence in what is mostly a Tudor Revival style with faux half timbering. The building and property were given to the School District in 1956 by the Warburg family. As of August 2019, the building was being used for District Administration with a portion used for part of the Early Childhood Program, another section used for Special Education and remaining space on the lower level used for District Maintenance purposes and storage.

The building is currently vacant other than some use by the maintenance staff. The building was vacated based on the District's decision in response to a memo issued by CS Arch on August 28, 2019 and a follow up report issued on September 16, 2019. The August 28 memo identified certain specific spaces to be hazardous to be occupied by students and called for these spaces to remain unoccupied until repairs could be completed.

The follow up report, which was deemed "a Comprehensive Structural Assessment of the full Mansion" concluded that; "the deteriorated areas appeared to be isolated and caused by unique structural conditions, not symptomatic of more widespread issues." Safety concerns were concluded to "appear to be limited to the 4 areas of structural damage listed and the area of the retaining wall collapse.

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The four areas identified in the CS Arch memo of September 16, 2019 are:

1. Projecting wood floor framing members on the exterior of the building that are visibly severely deteriorated. Probes showed that floor structure is generally in good condition.
2. Changes in the floor levels at two locations on the ground floor. Probe revealed partially failed foundation level structural members due to damage from water infiltration.
3. A second-floor area of differential floor level. Upon probing, found to be failure of original floor framing details. Cantilever indicated to be visibly sagging on the outside.
4. Deterioration of the porch floor structure and porch roof structure above the garage entry area.

BBS and YAS reviewed these areas during our walkthrough on January 21st. **We are in agreement with the prior study in that the structural issues appear to be isolated to unique conditions and not generally widespread.** However, we did also identify some additional isolated areas of concern. Beginning with the interior of the building and going from the lower level up, we identified the following areas of concern:

(What may seem unusual room numbers mentioned, such as 2023, are from the Warren and Panzer asbestos key plans that we were provided with to perform our study. We will clarify actual space names, room numbers as the plans for the building are drafted.)

Lower Level

1. Garage ceiling, deterioration of the joists in the area below the outdoor porch and open balcony above. (Water penetration) **(same as CSA #4)**
2. **(New Item)** Deterioration of steel ceiling beams and archway lintels at an area of the boiler room that is below the outdoor walkway that approaches the former first floor main entry door, now located in the mail room. These beams are embedded in an arched concrete ceiling construction. As there is outdoor space above, the deterioration is due to water penetration over time.
3. **(New Item)** A large section of the plaster ceiling above the boilers has released from the structure above and is hanging from the continuation of the lath substrate and some is supported by boiler piping. Several areas of the ceiling in this area have previously failed and are replaced by various hodgepodge gypsum board or mineral board patches. The fire separation of the boiler room from the spaces above has been compromised. This ceiling may have been identified as asbestos containing plaster (to be verified).
4. At the Early Childhood Program Rooms 2&3, (former pool area), we have the plaster ceiling deterioration. This ceiling is original to this section of the building and lies 6-7' above a suspended ceiling that was installed when the space was renovated to classrooms. The plaster is in varying stages of deterioration seemingly due to water penetration over time, possible roof leaks and possible migration of water through masonry elements. It appears as though several areas have dropped onto the ceiling below. In the CS Arch September 16th memo, this area is no longer indicated as one of the four areas of safety concern, however, the structural report of September 13th still recommends the removal of this ceiling. We agree this remains a safety concern should plaster release and fall through the suspended ceiling below during building occupancy.

First floor

5. Within the Steam Office (2023), the two outside corners of the floor are sagging. It is in this area that one of the probes were made during the prior investigation. **(CSA #2)** This space is wider than the storage space below at the lower level. By viewing down into the probe area, it appears that the two corners were constructed over unvented crawl spaces. It is not clear if the balcony above may have been added after the original construction. There were two windows noted in the storage room below that were bricked up. If original, possibly these could have

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been vent openings into these crawl spaces. At the balcony above this area the balcony railing has been clad in aluminum, apparently to stop water penetration that had previously been discovered. It is not known when this cladding was placed or what the condition of the railing and posts that lie below this cladding are. (Possible area for additional investigation). The gable roof above this outdoor balcony area does not extend all the way to the corners. This would expose these corners to more possible sources of water penetration than if there was a full roof over this area.

6. Room 2011 provides access to the balcony area over the garage. The fascia cladding, soffit and underlying structure at the east end of the balcony roof are deteriorated from water penetration over many years. This area needs to be reconstructed/opened up and reframed. **(CSA #4)**. This area does not appear to be in eminent danger of collapse, but it is severely compromised and temporary shoring may be warranted until repairs can be implemented. It may be of benefit to reconstruct this area when the roof is done as the hip roof, adjacent cross gable and main gable roof all come together in this area in a flattened valley condition that requires repairs under the roofing.
7. In the wing above the garage and maintenance storage area, there is a lot of cracking in the plaster walls in various locations. This may be due to normal movement of the wood frame structure over time with potentially shallow foundations. It also may be due to the fact that these rooms are being used for other than their intended purpose. They may have originally been servant quarters for the residence and some on the upper level are now being used for storage of files and various other materials. Structural components may be overloaded. A leaky roof is also a contributing factor.
8. **(New Item)** In the Early Childhood Program room 1 (2036) there is evidence of settlement in the walls at the north side, just after you enter the room and at the floor of the east end of the room.

Second Floor

9. In the Administrative office area, room 3023 is where the cantilevered floor section is dipping down. There was an opened probe in this room and we were able to verify that there is a steel beam running below the outside wall. It is assumed that this beam is supported by a cantilevered section running east/west at the north end of this room, but this would need to be verified via further exploration. Floor joists appears to be dry and in good condition. **(same as CSA #3)**
10. **(New Item)** At room 3005 which is located right where the main building transitions to the wing above the garages, there is an attic type space that currently contains 15 four drawer file cabinets. The floor was sagging in this space, probably due to overloading. The room at the end of this wing (3016) also had 10 four drawer file cabinets stored within. As the building was originally a residence, these spaces were more than likely not designed for this type of loading. These files should be removed. Additional investigation may be required at the ceiling below room 3005.
11. In room 3013, there was a large section of wall plaster and lath that has released from the wall framing. This and several other areas of plaster damage throughout this section of the building should be removed and repaired.

Tower Access stair

12. **(New Item)** Starting at the space labeled 4000, there is a stairway up to the tower roof. The intermediate landing of this stair (labeled 5000) has sunken several inches. There are several large horizontal cracks in the plaster both sides of the walls in this area. The last run of this stairway can also be seen to be settled by the same several inches.

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Following our interior walkthrough, we walked the exterior of the building. The exterior exhibited several types of deterioration that are typical of a building of this age and construction that has not benefitted from regular routine maintenance of masonry movement and deterioration issues as they occurred. As these conditions remain unaddressed over time, they can allow water into the walls and exacerbate the conditions as well as cause new issues. The types of exterior deterioration that we found include the following:

Exterior

1. General mortar deterioration and weathering of mortar joints. Mortar has a 25-30 year life cycle and the building should receive pointing work in coordination with this regular cycle to maintain the structural integrity and water shedding characteristics of the building veneers. This includes the granite of the tower area as well as the rubble stone foundations around the garage and brick masonry and cast stone at the main body of the building.
2. Vertical and stepped cracking. This type of cracking is generally evidence of differential settlement and or uncontrolled thermal expansion and contraction. This cracking is not new. Several areas have been repaired via the installation of caulking. This is a temporary solution that will reduce water penetration however, the masonry should be restored via replacement of any cracked or broken brick and tuckpointing of the failed joints. This is also occurring at all of the various types of masonry used in the building.
3. Retaining wall and property wall failures. These walls have not stood the test of time as well as the main building walls. This may be due to their increased exposure to water penetration and their lack of sufficient mass and reinforcement to resist the forces imparted by Mother Nature. Foundations and reinforcing for these walls on a residential scale, over 100 years ago, would be very different than the way we would construct these facilities today.
4. Repair/replacement of exposed timber elements. The worst case seemed to be generally in the area where the main building transitions to the wing above the garages, near the metal stair that was added to exit space number 2008.

The above items, briefly summarized here, appear in greater detail in the attached Structural Assessment Report as provided by our Structural Engineering consultant YAS. This report includes the Warren and Panzer floor plans marked with areas of concern, photos of the conditions along with the explanations and recommended corrective actions. Following their report, you will find a chart reflecting our estimated costs for all the work described in these documents. This chart states that the costs are preliminary because there are areas where additional investigation is warranted to refine and finalize the costs. These areas include but may not be limited to:

- Exploratory work to verify the main framing supporting the end of the cantilever at room 3023 to allow verification of current determination.
- Removal of a section of the severely deteriorated plaster above the ECP rooms 2&3 to determine if the roof structure is failing due to water damaged.
- Expansion of the initial probe at the STEAM office to allow a better evaluation of the condition.
- Exploration of the ceiling below the room with the 15 file cabinets to determine if any failure has occurred or if this is just the wood framing sagging due to overloading.
- Exploration of the foundation adjacent to the main retaining wall collapse to determine if the exposed concrete is the wall footing or simply a widened section of the wall below.

In addition to the above, while we were in the building it was noted that the classrooms for the Early Childhood Program are on a dead-end corridor. BY SED Manual of Planning Standards guidelines, a dead-end corridor pocket is not permitted to extend beyond 1-1/2 x it's width. The access to all three of the ECP programs exceeds this distance. This is a Health and Safety concern in terms of fire safety and

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exiting requirements and should be noted as a non-conforming item on your Evaluation of Existing Buildings when submitting a project to SED for review. **This condition needs to be corrected!** Also, when viewing above the ceiling in the ECP rooms 2&3, it could be seen that the corridor wall only has single sided sheetrock above the ceiling level and there is no wall between the classrooms above the ceiling level. The corridor wall does not provide a proper fire separation for exiting purpose whereas the lack of a wall between the rooms is more of an acoustical issue.

The two floor levels above the garage area on the north west side of the building (Special Ed area) both contain dead end corridors beyond the access stair to this side of the building. In addition, as these two floor areas are completely wood frame construction above the garage level, the SED may not allow student occupancy here.

There may be other code conformance issues that show up during the performance of the Building Condition Survey, such as lack of fresh air and lack of ADA compliance.

Another factor that will show in the BCS that is a contributing factor to some of the types of deterioration found is the deterioration and failure of the roof drainage systems. Roof leaders are off and or are reflecting clogs and backflow in the system. The inability to move water away from the building effectively accelerates deterioration due to this water.

Although this assessment is focused on structural conditions only, we felt it important to raise these issues here as the District may want to correct these items and possibly others prior to reoccupying the building for the ECP use. As the various components of these reports are developed and come together, we will have a more wholistic view of the work ahead.

Please review this information and do not hesitate to contact us to clarify any of this information or for further discussion.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'L. Sol', is written over a horizontal line.

Lawrence AIA LEED AP
Partner

Cc: Michael Falcone
Director of Facilities
Enclosures

2| **YAS Structural Assessment Report**



1938 photo



Feb. 2020

Greenburgh Central School District Administration Building Structural Assessment Report

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I. INTRODUCTION

Ysrael A. Seinuk, PC was requested by BBS Architects, Landscape Architects, and Engineers to perform visual inspection of the Administration Building (also known as Mansion Building) of the Greenburgh Central School District (GCSD) located at 475 West Hartsdale Avenue, Greenburgh, NY. The inspection was performed in two phases – interior of the building was inspected on January 21st and exterior on January 31st.

Currently, the building is not occupied due to concerns related to condition of certain elements of the structure.

For the purpose of describing structural components of the building it is helpful to divide the footprint of the structure into 4 areas as show in figures 1 to 3.

These are:

- Main building – area A highlighted in green on sketches.
- Tower structure – Area B highlighted in red on sketches.
- Garage wing – Area C highlighted in yellow on sketches.
- Additions/alterations – Area D highlighted in blue on sketches.

1. Main building (area A) structural overview:

Basement – stone/brick loadbearing walls, brick column piers. Concrete slab on grade in most areas. Partially wood floor on wood sleepers. At south end of the basement, original structure housed large pool with roof at 2nd floor level with large skylight. Subsequently, the pool was converted into two classrooms and new suspended ceiling was installed over entire area.

1st Floor - brick load bearing walls, wood joist floors with steel beams girders.

2nd Floor – wood load bearing walls with stucco finish, wood joist floors with steel beam girders.

3rd floor/Attic – wood frame gable roof, wood stud walls, wood joists floor.

Roof – slate covered gable roof with wood structural frame. Flat roof over central hall.

2. Tower (area B)

Tower is a 4 story stone/brick, load bearing walls structure with wood joists floors. Basement level of the tower encompasses main entrance to the building and is open to the 2nd floor via wood staircase.

Flat roof with small entry bulkhead and stone parapets.

3. Garage wing (area C)

Basement - Stone/brick load bearing walls with large garage door openings.

2nd floor – wood stud load bearing walls with stucco and plaster finish. Second floor cantilevers up to 1'-6" from basement walls on wood beams with balcony projecting up to 4'.

Roof – slate covered gable roof of wood construction housing occupied attic.

4. Additions/alterations (area D)

We are describing these areas as distinct from area A as there are some indications that they are either additions to the original building, or alterations of the original structure. In particular, one story part at south-east corner of the building has no basement and seems to be added to the building at later time. Another possibility is that original open terrace at this location was covered over with flat roof at later time. As a consequence, foundations for this part of the building are somewhat separate from main building foundations and may behave in a different way, for example, settlement may be different.

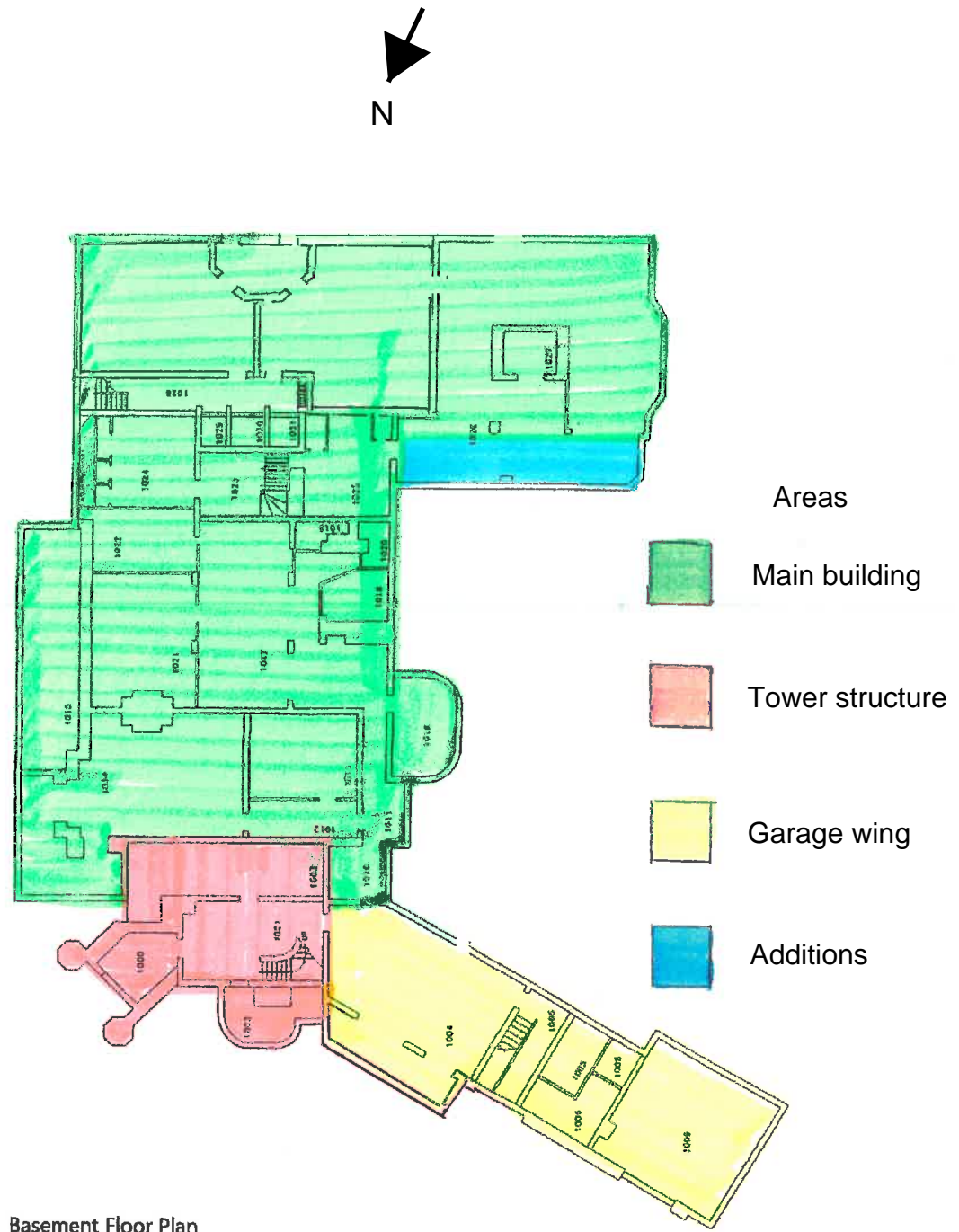


Figure 1

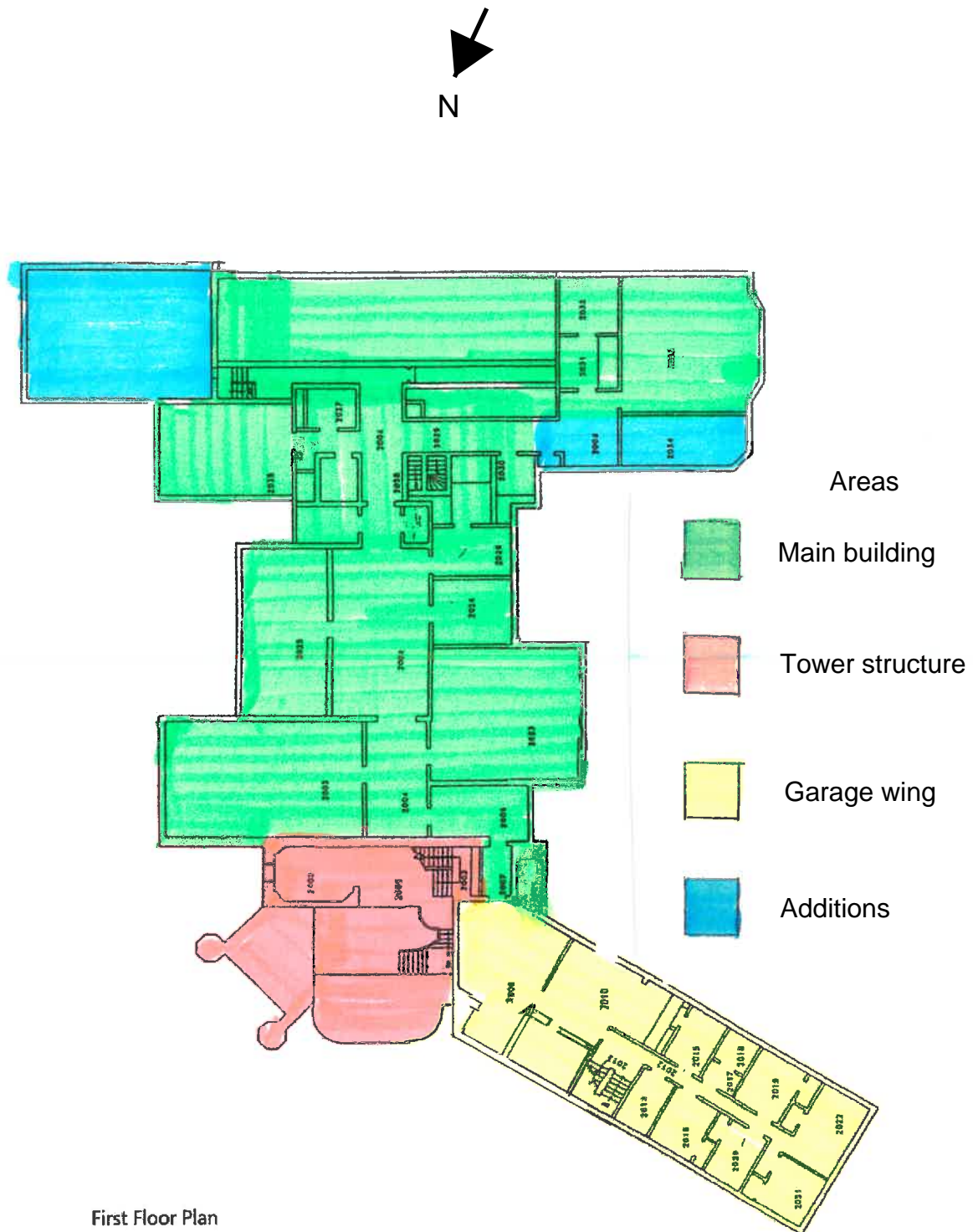
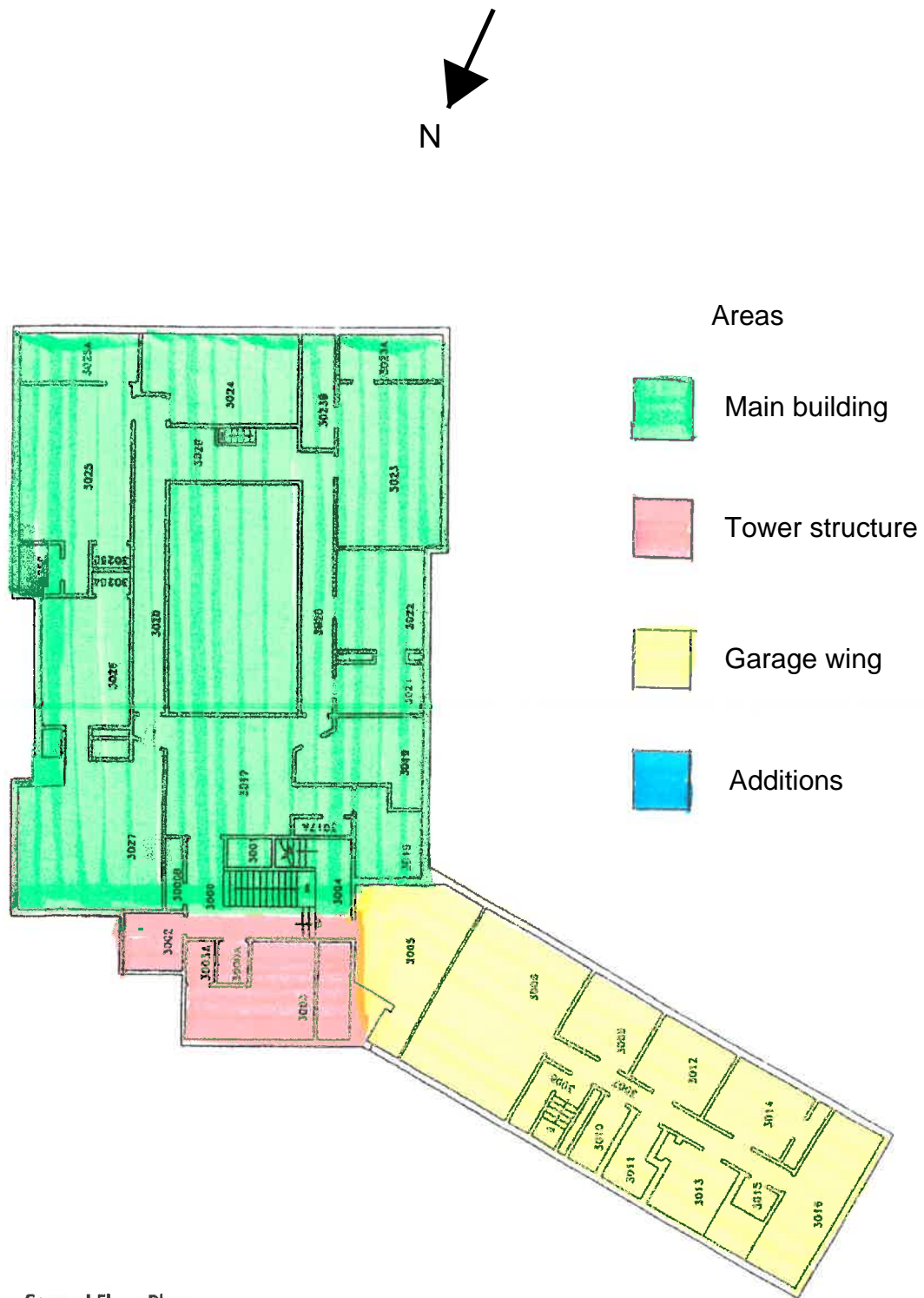


Figure 2



Second Floor Plan

Figure 3

II. OBSERVATIONS – EXTERIOR

1. North Elevation

At the north side of the tower turret it was observed that:

- 1.1. The granite between the turret openings is deteriorated and splitting along the exterior face (Ref. photo nos. 2 and 3).
- 1.2. Pointing is deteriorated and missing between the granite joints at the turret.
- 1.3. Along the cantilever porch over the garage door, joist ends have wood rot (Ref. photo nos. 4 and 5).



Photo No. 1
Location: North elevation
Description: General view.



Photo No. 2
Location: Tower turret
Description: General view.



Photo No. 3
Location: Top of tower turret.
Description: Deteriorated and splitting granite.



Photo No. 4
Location: Porch above sectional doors.
Description: Wood decayed at ends of joists.



Photo No. 5

Location: Close-up of photo no.4.

Description: Wood rot at ends of joists.

2. West Elevation

At the west elevation multiple types of deficiencies were observed at the exterior face.

2.1. Open and missing joints at the stone foundation wall at basement level (Ref. photo no. 6).

2.2. Insect damage to wood/rot at wood members randomly throughout at first floor (Ref. photo nos. 7 to 10).

2.3. Cast stone window lintel with open joints (Ref. photo no. 11)

2.3. Retaining wall and property wall at two locations has tilted out at one location and has failed at another location (Ref. photo nos. 12 & 13).

2.4. At cast stone of window openings there are several random cracks (Ref. photo nos. 14 & 15).



Photo No. 6

Location: Basement foundation stone wall.

Description: Open and missing joints.

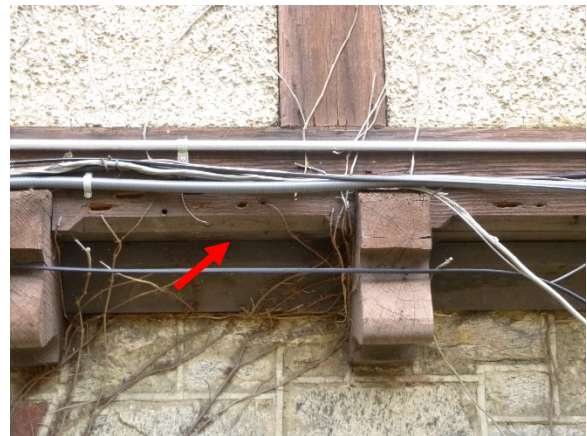


Photo No. 7

Location: First floor exterior wood members.

Description: Insect damage.



Photo No. 8
Location: 1st floor wood trim.
Description: Wood rot and insect damage.



Photo No. 10
Location: Bay window at 1st floor.
Description: Insect damage.



Photo No. 12
Location: Solid brick retaining wall.
Description: Wall tilted out.



Photo No. 9
Location: Open porch at 2nd floor.
Description: Insect damage at rafter.



Photo No. 11
Location: Cast stone lintel at window.
Description: Open and missing joint material.



Photo No. 13
Location: Property wall.
Description: Brick wall failed.



Photo No. 14
Location: West elevation
Description: Cast stone cracked at window openings.



Photo No. 15
Location: Close-up of photo No. 14.
Description: Cracked cast stone.

3. South Elevation

At the south elevation there are several deficiencies that was observed.

- 3.1. There is a solid brick masonry wall hat has partially failed adjacent to the stairs (Ref. photo no. 16).
- 3.2. Deteriorated pointing was observed at Early Childhood Program Room 1 (Ref. photo no. 17).
- 3.3. At two corners along south elevation the parapet has cracked at two locations (Ref. photo nos. 18 & 19)
- 3.4. Stairs to Early Childhood Program Room 1 spalled and missing exterior brick work at sides (Ref. photo no. 20).



Photo No. 16
Location: Retaining wall adj. stairs.
Description: Partially failed retaining wall.



Photo No. 17
Location: ECPRM1
Description: Localized deteriorated pointing.



Photo No. 18
Location: Parapet at corner cracked.
Description: Parapet cracked.



Photo No. 19
Location: Close-up of photo no. 18.
Description: Parapet cracked.



Photo No. 20

Location: Stair at south elevation.

Description: Spalled and missing bricks at both sides.

4. East Elevation

At the east elevation there are several types of deficiencies that were observed.

- 4.1. At the Early Childhood Program Room 1 (ECPRM1) there were several settlement cracks at the exterior masonry wall above grade (Ref. photo nos. 21 to 23)
- 4.2 At the first floor the brick masonry wall exhibits several step cracks from settlement that has been repaired with a sealant (Ref. Photo No. 24)
- 4.3. Open horizontal joints were observed due to settlement of the wall at area near enclosed porch (Ref. photo no. 25)
- 4.4. At the 3rd floor horizontal wood beam below hip roof has open seam with wood rot (Ref. photo no. 26)
- 4.5. At the first-floor brick masonry wall adjacent to the north elevation below the lower roof setback there is a vertical separation crack at wall (Ref. photo no. 27).
- 4.6. At the tower turret at the upper portion there are deteriorated and open joints at the granite (Ref. photo no. 28).



Photo No. 21
Location: ECPRM1
Description: Vertical open settlement crack.



Photo No. 22
Location: ECPRM1.
Description: Vertical open settlement crack.



Photo No. 23
Location: ECPRM1
Description: Vertical open settlement crack.



Photo No. 24
Location: Exterior brick masonry wall.
Description: Step cracks repaired with sealant.



Photo No. 25
Location: Brick masonry wall.
Description: Open horizontal joint.



Photo No. 26
Location: Horizontal wood member.
Description: Wood rot and open seam.



Photo No. 27
Location: 1st floor below roof setback.
Description: Separation crack at parapet



Photo No. 28
Location: Tower turret.
Description: Deteriorated and open joints.

III. OBSERVATIONS - INTERIOR

1. Basement – areas A, B and C - see plan Figure 4 for locations.

- 1.1. Overall condition of basement masonry walls, both exterior and interior is satisfactory. No major deficiencies were observed.
- 1.2. Basement ceiling/1st floor framing – deteriorated plaster ceiling was observed in boiler room. **Hazardous condition as ceiling can be asbestos contaminated.** (location 2, Photo #3)
- 1.3. Heavily corroded steel beams were observed at basement rooms adjoining the boiler room. These include lintels over masonry openings and roof framing beams. **Hazardous condition as loss of steel cross-section estimated at 60%.** (location 1, Photo #1 and #2)
In other areas of the basement where exposed steel framing could be inspected the condition of the steel members is satisfactory – see Photo # 4.
- 1.4. 1st floor wood joists and wood beams were inspected in few locations where basement ceiling was not present or probes were previously open and overall condition of the wood elements is satisfactory. This observation does not apply to exterior wood elements of the 1st floor framing at area C – see observation – exterior.
- 1.5. Deteriorated/corroded decorative column was observed at main entrance. As the column is not a structural element there is no impact on overall stability of the structure. (location 3, Photo #5).
- 1.6. For description of deteriorations of the ceiling over old pool (area 4) see 1st floor description for location 7.

2. 1st Floor – area A, B and D - see plan Figure 5 for locations.

- 2.1. Severe floor settlement was observed in room 2023 (location 1) and moderate settlement in room 2036 (location 2). Probe was previously opened in room 2023 – 3x10 wood joist was observed to be in satisfactory condition. In both of these locations exterior walls are not supported by basement walls and have independent foundations but only minor settlement was observed in the walls. Settlement of the soil backfill under the floor support may contribute to the observed floor damage. **The deterioration constitutes hazardous condition.** (Photo #6 and #7)

- 2.2. In area of the original pool a new suspended ceiling was installed in the past some 3'-4' below the original plaster ceiling. Continuing water infiltration caused suspension structure of the new ceiling to corrode. Heavy efflorescence is present both on the original ceiling and on the surrounding walls above the suspended ceiling. Lack of proper ventilation in the area above suspended ceiling may contribute to ongoing deterioration. **Condition of the original ceiling in over old pool constitutes hazardous condition.** (location 7, Photo #10)
- 2.3. Water leak is evident in small room near main staircase (location 3, Photo #8)
- 2.4. Cracking of plaster finish was observed in room 2035.

3. 1st floor – Area C see plan Figure 5 for locations

- 3.1. Insect damage to exterior wood members of the 1st floor, described in item II. 2.2. of exterior observations is causing excessive movement in the framing of the 1st floor of Area C.
- 3.2. Severe cracking of plaster finish was observed in several locations, both in exterior walls and interior partitions. We consider this to be a symptom of movement/deflections in wood framing of the structure. (Photo #9)

4. 2nd Floor – area A and B - see plan Figure 6 for locations.

- 4.1. Floor settlement was observed is in room 3023 (location 1). Second floor in cantilevering ±3' from the underlying wall. Previously opened probe in this location was inspected revealing framing consisting of combination of 2x12 wood joists and steel beams but exact layout of the framing is not known. Individual elements of the framing – steel beams and wood joists seem to be in satisfactory condition – it is suspected that observed floor settlement is the result of deflection of the framing.
- 4.2. Moderate settlement in corridor 3020 is typical for locations where stair opening is framed in wood construction as headers around the opening deflect due to loosened connections and lumber shrinkage (location 2).
- 4.3. Water leaks were observed in several locations – locations 3, 4 and 7.
- 4.4. Wood framing of the gable roof over Area A is exposed in the attic space allowing close-up inspection. In general, wood members are in satisfactory condition. (Photo #12).
- 4.5. One of the valley rafters of the framing was cut/trimmed to accommodate new partition in the attic space. **Hazardous condition - affected rafter has to be reinforced to restore its original structural capacity.** (Photo #13).

5. 2nd floor – Area C see plan Figure 6 for locations

- 5.1. Severe cracking of plaster finish was observed in several locations in interior partitions. We consider this to be a symptom of movement/deflections in wood framing of the structure. Location 6. (Photo #11)
- 5.2. Framing of the roof over cantilevering porch at south elevation of area C is compromised. Wood joists are heavily deteriorated, in particular at location 5A – suspected cause is combined water and insect damage. **Hazardous condition and the roof framing over the porch has to be reconstructed – area 5 and 5A, Photo # 14.**
- 5.3. Wood framing of the gable roof over area C could be inspected in some locations and the condition of the wood members (rafters and ridge beams) is satisfactory.
- 5.4. Some areas of the 2nd floor (attic) over area C are used as document storage spaces. It is suspected that the resulting loading of the floor structure exceeds design loads (design load for attic spaces is usually low).

VI. Recommendations

1. Immediate action should be undertaken for items designated as hazardous conditions in the descriptions above. These are:

- 1.1. Ceiling in the boiler room should be removed and replaced with new ceiling complying with required fire rating. (Item III.1.1 of observations)
- 1.2. Deteriorated beams in the boiler room areas should be replaced and concrete slab repaired. Walkway above should be temporarily closed from public access. (Item III.1.3 of observations)
- 1.3. Deteriorated floor in rooms 2023 shall be repaired. (Item III.2.1 of observations)
- 1.4. Deteriorated original ceiling over the old pool shall be removed. (Item III.2.2 of observations)
- 1.5. Framing of the porch roof shall be reconstructed. (Item III.5.2. of observations)

2. The following repairs are recommended once the emergency repairs listed above are completed:

- 2.1. Exterior masonry repairs. These will include brick/stone stitching, replacement of cracked stones and mortar joint pointing.
- 2.2. Replacement/reinforcement of affected wood framing elements of the 1st floor in Area C displaying insect damage.
- 2.3. Reconstruction of partition walls and their finish in 2nd floor rooms of area C.
- 2.4. Further investigation of the deflection in the floor of room 3023.
- 2.5. Reconstruction of failed site retaining walls.

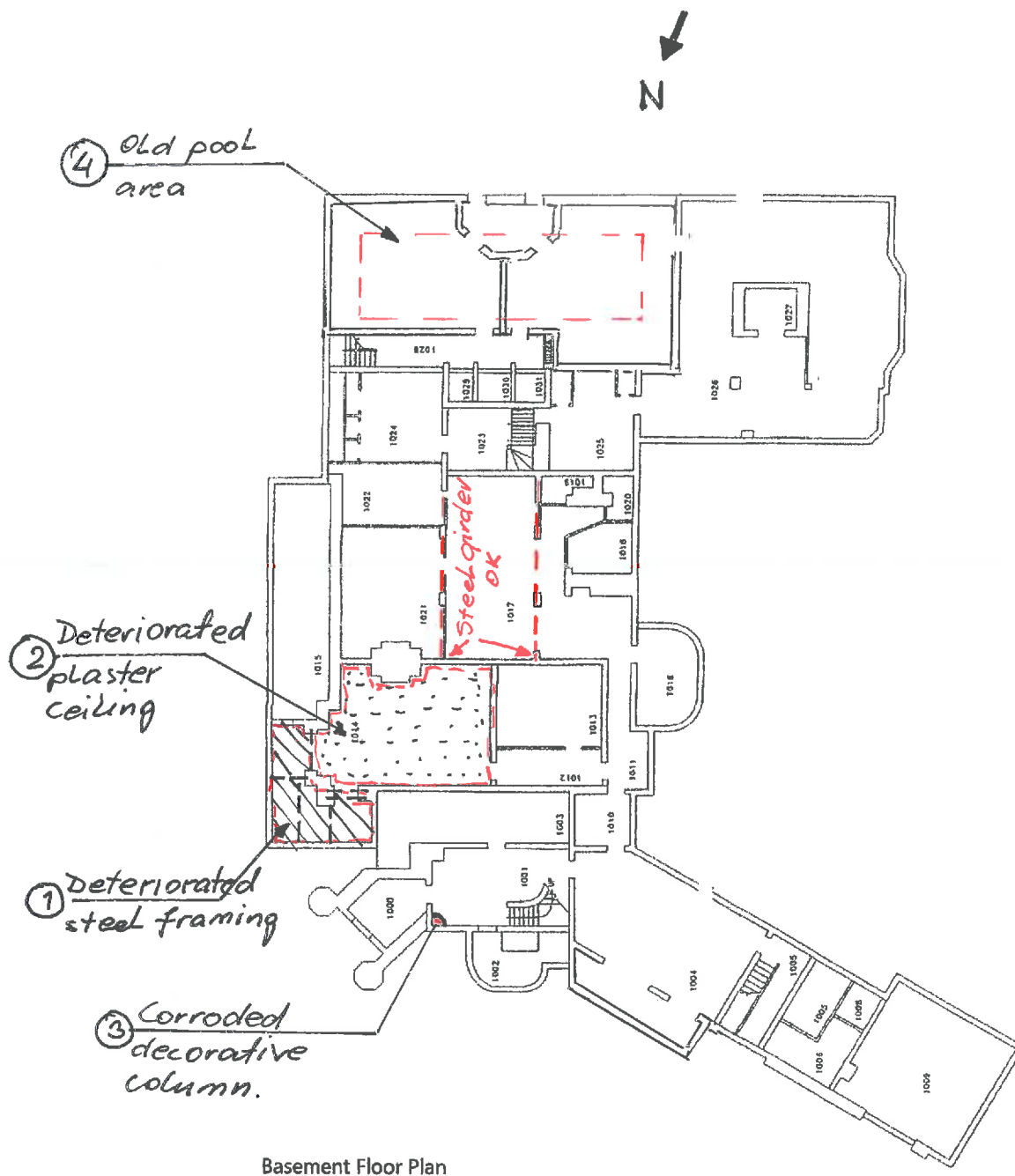


Figure 4

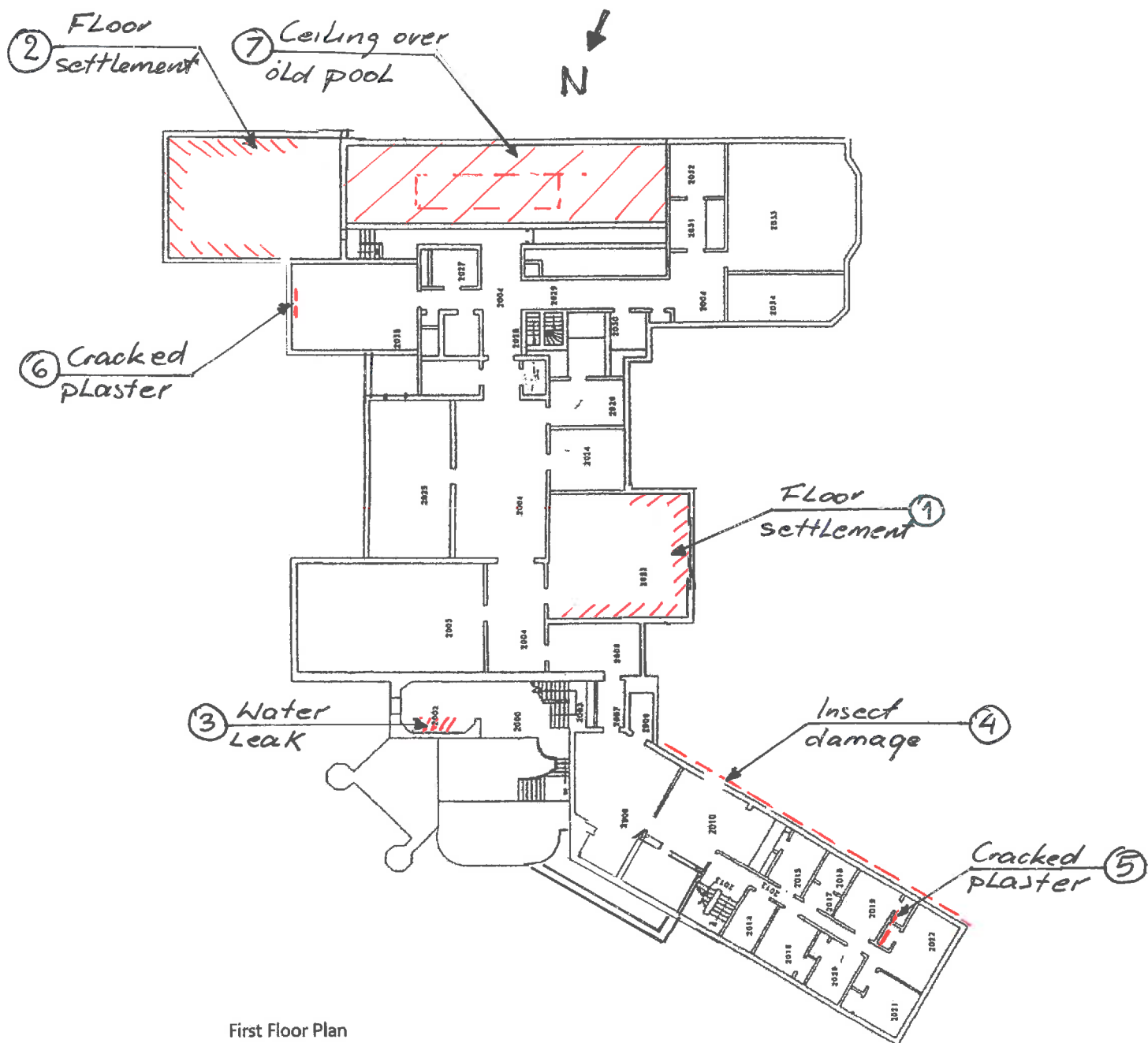


Figure 5

VI. INTERIOR PICTURES



Photo No. 1 Deteriorated steel framing



Photo No. 2 Deteriorated steel framing



Photo No. 3 Damaged plaster ceiling
in boiler room



Photo No.4 Steel beams of the 1st floor framing
in satisfactory condition.



Photo No. 5 Deteriorated decorative column.



Photo No. 6 Settled floor
In room 2023.



Photo No. 7 Settled floor in room 2023



Photo No. 8 Leak in room 2002.



Photo No. 9 Cracked plaster in room 2022



Photo No. 10 Deteriorated plaster and efflorescence in the ceiling above old pool.



Photo No. 11 Cracked plaster in room 3013



Photo No. 12 Main roof framing.



Photo No. 13 Cut out in 12X3 valley rafter.



Photo No. 14. Deteriorated framing and ceiling over porch



Photo No. 15. Tower roof

3| Costs



ECP classrooms 2&3

Structural Assessment preliminary order of magnitude costs and essential nature of corrective work vs. need/desire to reoccupy the building. 3-25-20

#	Item	Estimated Cost (*preliminary)	Repairs Essential to Reoccupy	Comments
Interior				
1	Garage ceiling below balcony	\$25,000	No	Not in eminent danger of collapse. Not in a public area, access to balcony could be closed off.
2	Boiler room steel below walkway	\$40,000	No	Walkway could be closed, beams could be temporarily shored. (Shoring only, \$5,000)
3	Boiler room ceiling replacement	\$37,000	No	Not in eminent danger of collapse. Unoccupied space. Fire separation is a concern. Been like this for years...
4	Early Childhood Program rooms 2&3, plaster ceiling Dead end condition and substandard corridor walls require discussion. Cost to correct included.	\$220,000	Yes	Sections have released over the classrooms below. Scope of removals/reconstruction requires discussion. Office of Parks concern. Historic Structure, will want it restored. Cost is not a restoration, only removal of the plaster. Cost does include new suspended ceiling and lighting and correction of dead-end condition.
5	Steam Office (2023) floor reconstruction (corners)	\$30,000	No	Space is within a private office. Area could be cordoned off. Condition is isolated.
6	Balcony roof above garage	\$24,000	No	Space is within a limited access area and can be temporarily shored until corrective work can be performed. Correction may be best if they can be done with the roof replacement.
7	Plaster cracking in spaces above Garage area Two floors above	\$50,000 (allowance)	Yes	Special Ed area of the building. Additional quantification required and definition of approach required to update estimate.
8	ECP Rm 1 (2036)	\$15,000	No	May only be observations, no corrective work required.

#	Item	Estimated Cost (*preliminary)	Repairs Essential to Reoccupy	Comments
9	Administrative office, cantilevered floor (rm 3023)	\$5,000	No	Not in eminent danger of collapse. Area could be cordoned off. Additional exploratory work required in this area to determine if corrective work is required.
10	Attic storage area (rm 3005)	TBD	No	Generally unoccupied space. Remove stored files. (15 cabinets) Additional investigative work required.
11	Room 3013 wall plaster	Incl in Item 7	No	Same as Item 7
12	Tower Access Stair reconstruction	\$18,000	No	Limited access area. Close off access, unless essential, until corrective work can be accomplished.
Exterior				
1	Mortar deterioration	\$125,000	No	Not in eminent danger of collapse. Typical weathering
2	Masonry Cracking	\$115,000	No	Not in eminent danger of collapse. Typical building movements
3	Retaining wall reconstruction	\$240,000	No	Areas could be cordoned off and access limited until corrective work can be accomplished
4	Repair of exposed timber elements	\$520,000	No	Generally ornamental, non- structural elements. Not impeding access.
Total				
	All interior and Exterior items listed above.	\$1,464,000		

*Costs are indicated as preliminary because there may be additional exploratory work recommended or required in order to verify final determinations to be made as we proceed.

All costs listed include contractors overhead and profit, design contingencies, construction contingencies, escalation and Owner soft costs.