From: Sandy Point Recreation Group
To: Nicole Blades
Subject: February 11th - Council Meeting
Date: February 4, 2026 3:02:12 PM

Hi Nicole,

Further to our discussion.

Zelka Lipovac (President) and Linda Harris-Rioux (Fundraising Committee Chair) will attend the council meeting.

This will be an update to the presentation we gave in October 2025 and shouldn't take too long.

Engineers report and Construction Repair Quote will be sent as separate emails.

Thanks so much,
Lana Shupe

Quote

Quote #:2026-006
Date: January 30, 2026

Atlas Contracting

1100 West River Station Road,
Salt Springs, Nova Scotia, B0K1P0
(902) 921-8151
Dallis.Atlas@gmail.com

QUOTED TO:

Client Name: Sandy Point Lighthouse
Address: Sandy Point Road, Shelburne, NS, B0T 1W0
Phone: (289) 241-1625 Email: zlipovak2017@gmail.com

Description	Amount
Fender & Skirt Replacement (Scope of Work in Email)	$90,120.00

Subtotal: $90,120.00
HST (14%): 12,616.80
TOTAL: $102,736.80

Payment Terms:
30% Deposit required to hold a spot on Atlas Contracting's schedule and to source materials. Remainder is invoiced weekly for the duration of the project.

Payment Methods (only once contract is signed):
Cash or E-Transfer: Dallis.Atlas@gmail.com

Sandy Point Lighthouse

Structural Condition Assessment

1586 Sandy Point Road, Shelburne, NS

Prepared for:

Sandy Point Recreation Group
1586 Sandy Point Road
Shelburne, NS, B0T 1W0

Prepared by:

RJC Engineers
1701 Hollis Street, Suite 800
Halifax, NS, B3J 3M8

December 23, 2025
RJC No. HFX.143644.0001

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RJC No. HFX.143644.0001

December 23, 2025
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Shelburne, NS

Executive Summary

Sandy Point Lighthouse

As requested, Read Jones Christoffersen Ltd. (RJC) has completed a structural condition assessment of the Sandy Point Lighthouse located near 1586 Sandy Point Road, Shelburne, NS.

To develop this report, a visual review of the existing structure was undertaken on November 4, 2025, to identify visually obvious signs of distress and document their general condition. The review focused on the condition of the concrete foundation, timber fenders around the foundation, wood framing, and structural steel elements.

At the time of the review, the lighthouse exhibited varying degrees of structural deterioration, with the foundation and timber fenders in poor condition. In particular timber protection fenders around the base of the lighthouse pier contained missing, loose and rotten boards, severely corroded steel corner plates, and some evidence of undermining at the base of the concrete walls. Inside the concrete foundation, large vertical cracks, calcification, efflorescence, concrete spalling, and severe corrosion of the steel rails were observed. The lantern room and gallery at the top of the lighthouse also showed deterioration, including corrosion of the steel framing, damaged/cut waterproofing, and likely rotten/decayed wood of the perimeter decking under the waterproofing.

Non-structural elements such as the pier exterior steel ladder, top of pier perimeter railing, and wood cladding were also in poor condition, and they likely do not have sufficient capacity for their intended use. While the tower's interior wood framing appeared to be in generally fair condition, localized water damage such as decay was noted.

RJC recommends that repairs be prioritized beginning with the foundation and pier, followed by remaining structural repairs for the main lighthouse structure and then non-structural elements. A phased approach may be beneficial if funding or logistics limit full repair work to be completed at one time. To support these efforts,

applying for relevant government grants and exploring opportunities with heritage organizations is encouraged. Additional recommendations include establishing an ongoing maintenance program to mitigate future deterioration.

1.0 INTRODUCTION

Sandy Point Lighthouse

Read Jones Christoffersen Ltd. (RJC) was requested by Sandy Point Recreation Group (SPRG) to undertake a visual structural condition assessment of the existing lighthouse structure located near 1586 Sandy Point Road, Shelburne, NS.

The purpose of this assessment was to determine the existing condition of the building's foundation and its wood and structural steel framing. As part of this review, we performed a cursory visual walkthrough examining the structure to note the existing conditions and to identify visually obvious signs of distress, cracking or corrosion in the structural framing. We also identified deterioration of secondary steel elements that the SPRG may wish to address.

This report is exclusively for the use and benefit of the Sandy Point Recreation Group and is not for the use and benefit of, nor may it be relied upon by, any other person or entity. The contents of this report may not be quoted in whole or in part or distributed to any person or entity other than the SPRG.

Figure 1: View of the lighthouse from the Sandy Point Recreation Center during low tide

2.0 BRIEF DESCRIPTION OF THE STRUCTURE AND BACKGROUND

The Sandy Point Lighthouse is located on a sand bar approximately 400 ft (120 m) offshore from the Sandy Point Recreation Center located at 1586 Sandy Point Road in Shelburne, NS. It is our understanding that the current structure was built and relocated circa 1903 following significant damaged the previous lighthouse, which was built in approximately 1873. We understand renovations reportedly occurred in 1960 and 2008. The
current square-tapered lighthouse tower is approximately 43 ft (13 meters) above sea level and consists of wood construction supporting a steel-framed lantern room at the top.

The structure sits atop a square pier foundation enclosed by timber fenders wall consisting of vertical timbers. The concrete foundation walls appear to be founded on a stone foundation with the concrete base just above low tide surrounded by stone rip-rap. The concrete walls appear to be 40” to 44” thick based on an outside width of approximately 26’-8” to 27’-0” with an interior chamber of approximately 17’-8” to 17-11”. This chamber contains horizontal steel rails as bracing elements spanning across the full length of the chamber in three layers near the base, mid-height, and top of the walls.

A timber fender ‘protection wall’ made up of 8” x 2-½” pressure-treated wooden boards encloses the foundation and is offset from the foundation using horizontal 10” x 10” wooden beams. The boards are likely treated with Chromated Copper Arsenate (CCA). The pier corners have ½” thick L-shaped steel plates 24”

wide x 8'-0" high installed within the tide zone, although only portions of the northeast and southwest corner plates remain. A stone rip-rap with cobbles and small boulders surround the exterior with marine life and plants on the stones and foundation.

The tower is clad with wooden shingles. The tower interior is accessed through a steel door on the eastern side, directly above a ladder extending to the bottom of the pier. An exterior perimeter walkway with a steel railing surrounds the tower above the pier. The tower has 3 interior levels with a rooftop lantern room and exterior roof walkway (the 'gallery'). The steel-framed lantern room consists of a 'steel box' on a wood floor with a checkered steel floor, steel walls with windows and a steel roof. The gallery around the lantern room is approximately 3'-0" wide and has steel railing around the perimeter with a membrane over the wood floor. For this report, the base level is defined as the bottom of the concrete foundation, level 1 as the top of the pier with the entrance door, level 2 and 3 as the interior lighthouse floors and the roof as the level with the steel lantern room and gallery.

2.1 Existing Documents and History of Previous Reviews

It is our understanding that the lighthouse was built to its current location circa 1903 and underwent major renovations in 1960 and 2008. RJC did not have access to structural drawings of the current lighthouse location however Sandy Point Recreation Group had a copy of the previous lighthouse iteration with the wood cribbing. Unfortunately, the drawings are faded with limited information.

Information on the history of the lighthouse is based on information from the Sandy Point informational signs on site, existing drawings, members of the Sandy Point Recreation Group and from the following websites:

- *History*. Sandy Point Lighthouse Community Center. (n.d.). https://sandypointlighthouse.weebly.com/history.html
- *Sandy Point Lighthouse*. LighthouseFriends. (n.d.). https://www.lighthousefriends.com/light.asp?ID=1359
- *Sandy Point Lighthouse*. Nova Scotia Lighthouse Preservation Society. (n.d.). https://www.nslps.com/about-ns-lighthouses/lighthouse-lists?c=sandy-point-lighthouse

3.0 OBSERVATIONS FROM THE SITE VISIT

The field work associated with this structural condition assessment was undertaken by RJC Engineers on November 4, 2025. A visual review of the existing structure was undertaken to identify visually obvious signs of distress and document their general condition. We have provided select site photos in Appendix A and definitions of the visual classification used is in Appendix B. See the sections below for observations of the foundation, tower and lantern room respectively.

3.1 Pier Foundation

The pier foundation includes the concrete foundation below the base of the tower at level 1 to the seafloor. We have divided our observations based on the exterior/seaside region and the interior of the pier. The following observations were noted based on a visual review and limited measurements:

3.1.1 Foundation - Seaside

In general, the timber fender wall built on the seaside of the foundation appeared to be in poor condition, showing severe signs of degradation from the harsh sea environment. The concrete foundation walls were generally concealed behind the fenders but gaps in the fenders provided limited access to the wall. The concrete is in fair to poor condition with local regions of undermining and loss of concrete. The secondary steel elements have areas with a total loss of section and need replacement. See below for detailed comments:

Timber Fenders:

- Several vertical boards were loose, partially detached, or missing as shown in Figure 2. Soft and decaying boards were observed throughout but particularly within the tidal zone, with early signs of decay also noted on many of the boards near the top of the wall.
- Near the high tide elevation, many boards were soft and had lost up to 1” of their thickness. This can likely be attributed to repeated wave impact, as it was primarily noted along the western wall. • The fenders were fastened to the horizontal timbers behind with steel bolts which were severely corroded and many bolts were loose or the hole in the wood enlarged enough that they provide little restraint of the vertical fender.
- Horizontal gaps up to 2” thick were present between the top of the timber fenders and concrete wall at level 1, indicating possible displacement of the timber fender from its original position. • Bowing of the south wall was observed suggesting movement may have occurred in the wall.

Figure 2: View of the deteriorating and lost timber fenders with the concrete wall behind.

Concrete Foundation Walls:

- In general, the concrete appeared sound, although with obvious signs of significant wear and loss of area.
- The base of the concrete wall behind the timber fenders could not be determined due to the rocky nature of the base but it appears to be likely at or just below the rocky seafloor. We observed either likely undermining or erosion of the of the concrete base in some areas of up to 6” into the wall. Based on an approximate wall thickness of 40” to 44” this could be 10 to 20% of the wall thickness. The depths of possible undermining varied, with a maximum of 8” along the southern face and 4” to 6” observed elsewhere.
- In the tidal zone behind the fenders, a loss of section in the exterior face of the wall was measured to be up to 4” to 6” into the wall in some areas.

Secondary steel elements:

- Protective L-shaped steel plates were originally installed at each corner of the pier, although only the northeast and southwest corner plates remain. The plates were very severely corroded, with a complete loss of section on the western side of the southwestern plate.
- In the corners without protective plates, the boards were soft and rotten, particularly the northwest corner.

• We understand one or two rows of steel cables had originally enclosed the base of the pier but they no longer are present. We observed some remanence of the existing steel cables on the seafloor. • Very severe corrosion and delamination were observed on the access ladder leading up to level 1 on the eastern side of the pier, overall in poor condition. Several rungs have lost the majority of their cross section and a plate was installed mid-height of the ladder to prevent access, as the existing rungs are severely corroded and not recommended for use.

3.1.2 Foundation - Interior

In general, the concrete condition on the face of the interior chamber is in poor condition with large cracks and signs of efflorescence and concrete reactivity with the environment. The cracking likely propagates to the exterior surface although this is concealed by the timber fenders. The steel bracing rails are in poor condition and severely corroded and delaminated. See below for detailed comments:

Concrete walls:

- Several ½" to ¾" wide vertical cracks were noted throughout the concrete foundation walls as shown in Figure 3. There were typically two distinct types of cracks: cracks from the top of the foundation walls extending downward, and cracks spanning vertically between connections of the horizontal steel rails.
- A significant crack is located on the northeast corner, approximately ¾" wide at the top and 6" deep into the wall, which may suggest possible foundation movement of the north wall.
- Signs of diagonal and vertical cracks on most faces and possible poor concrete consolidation during construction.
- Concrete reaction with saltwater is evident as widespread calcification and efflorescence was visually observed throughout the concrete walls. Hard calcium and crystalline deposits with white staining were observed.
- Significant concrete spalling was noted near the base of the walls with spalled portion up to 2" deep. These areas are also exposed to round river or possibly beach rock, which may have contained salt deposits during construction.
- Embedded reinforcing bar was not observed in the wall cracks suggesting the walls may be unreinforced.

Steel rails:

• Very severe corrosion and delamination were present on the steel rails. Layers of steel flake off easily. • Significant efflorescence was observed on the steel rails near the rail-to-wall connections. Stalactite-like calcification deposits were observed.

Additional conditions:

- The wooden floor assembly overhead appeared to be in relatively fair condition and dry in most areas, although water damage was present near the southern edge.

• We observed areas where anchor bolts at the top of the wall were missing, which likely provide attachment points for the perimeter timber fenders.

• The base of the foundation consisted of saturated sandy-silty ocean floor with varying elevation. Water was present throughout, up to approximately 18" in the deepest section at the time of our review. We also observed thick black sludge on the lower 4 feet of wall, suggesting high tide infiltration.

Figure 3: View of typical corrosion of steel bracing and large cracks in foundation wall.

3.2 Lighthouse Tower

The lighthouse tower includes the wood structure from level 1 at the top of the concrete pier up to the roof below the lantern room. The following observations were noted based on a visual review and limited measurements:

Overall, the lighthouse tower wood structure appeared to be in generally fair condition and dry at the time of our review, although there are signs of water infiltration in some areas. The secondary elements were

generally in fair condition except for the perimeter railing at the top the pier and the cedar shakes, which are in poor condition.

Tower Structure:

- The rough sawn timbers appeared generally in fair condition and dry, with the exception of water staining behind the cladding in some areas. These areas include the south side, where the exterior cladding is showing signs of damage, and the infilled windows.
- While the tower structure may visually not appear plumb, all 4 sides of the tower appear to have a consistent vertical angle of approximately 80 degrees measured from the interior structure. The levelness of the gallery was not measured and we recommend a survey is performed on the structure and pier prior to any repairs.
- The concrete walkway around the perimeter of the tower has areas with thick moss where vegetation can accelerate degradation. It also creates slippery walking conditions. Moss on the wood shingles are visible, particularly on the northern sides.
- Repeating cracks 1mm to 3mm in width were visible perpendicular to the concrete walkway and spaced at 18” to 24”. Signs of previous grouting or repair attempts throughout and the southern portion walkway appears to have previously re-topped. The concrete walkway is likely the top of the concrete foundation wall, where some top-side cracks have likely propagated down through the wall. In particular, the large crack on the north pier wall visible from the interior appears to be visible on the top side.

Secondary Elements:

- The perimeter walkway railing was unstable with little to no remaining connection to the timber fenders, as it had detached from the foundation in some areas, particularly along the east side. We do not recommend relying on the railing for fall arrest.
- On the south face, many of the wood shingles were loose and rotten. Only the lower shingles were reachable during our review, however the shingles higher up the tower appeared to be in a similar condition.
- Paint peeling from the wood framing members was noted throughout. Based on the age of the structure, an environmental study should be performed to test for potential contaminants such as lead or asbestos prior to repair work.
- Throughout the tower, we observed leftover old electrical equipment and wiring, paint cans, and other equipment.

Figure 4: Damaged and missing wood shingles.

3.3 Lantern Room

The lantern room at the roof of the tower generally appears to be in poor condition. The following observations were noted based on a visual review and limited measurements:

Gallery:

- The wooden floor below the gallery was wet due to recent rain and cuts in the waterproofing membrane were allowing water to penetrate the wood below. The membrane appears to need replacement.
- A significant, inconsistent slope and soft bounce in the gallery floor was noted. The inconsistency of the slope suggests that this is likely a condition that has possibly occurred due to softening or rotting

wood below the membrane, although inconsistent construction methods could also be a cause.

- While the perimeter railings will appear relatively stiff, the overall structural integrity may have been compromised and we do not recommend people access the walkway until further repairs or investigation is performed.

Steel Lantern Room:

- Very severe corrosion resulting in loss of section was observed on portions of the steel framing, particularly at the roof of the lantern room. See Figure 5. Local areas where water ingress is likely are showing severe corrosion and delamination. Minor corrosion was noted throughout the steel lantern room, such as the wall plates and checkered floor.
- The thick paint on the steel members was heavily cracked and peeling, although most cracked paint still appears well bonded. There are likely several layers of paint. We suggest an environmental study for hazards is performed on the paint prior to repair work.

- The wood sealing the single-pane windows appeared to be showing early signs of rotting. • A relatively new battery-powered solar system appeared operational but the lighthouse light was not active at the time of our visit.

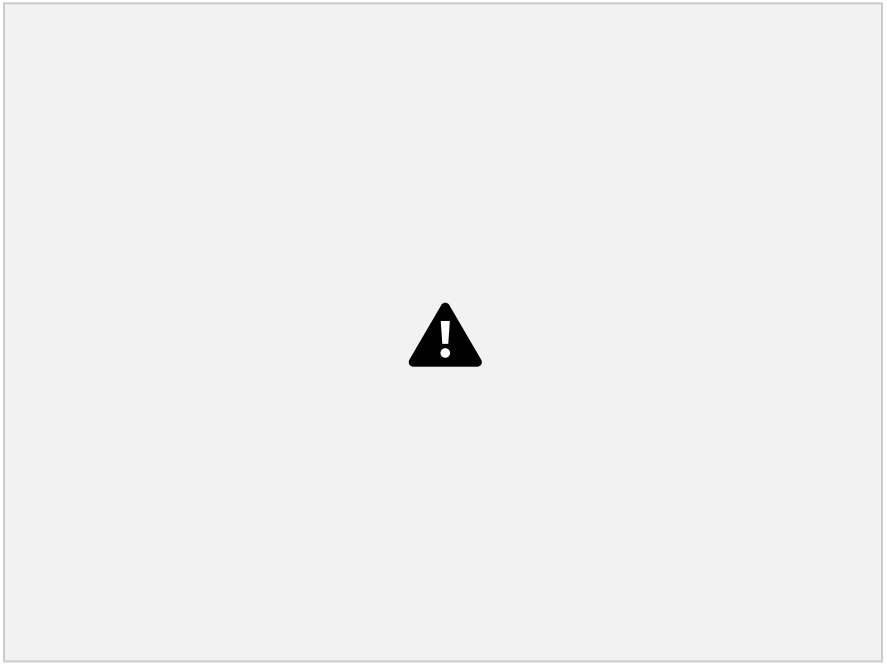


Figure 5: Typical steel corrosion and chipped paint in the lantern room

4.0 DISCUSSION

Based on the information obtained from our site review, several components of the lighthouse are in poor but

currently stable condition, although we recommend repairs are performed as soon as reasonable. In particular, the foundation and lantern roof should be addressed, along with secondary elements such as the tower cladding, railings, and ladder.

If needed to supplement the funding required for repair work, we recommend applying for funding through the government and heritage organizations. One such organization is the Nova Scotia Lighthouse Preservation Society (NSLPS) and perhaps application under the Heritage Lighthouse Protection Act (HLPA), as it does not appear to be currently listed but the application time may have passed. We understand that the last repairs to the lighthouse were completed in 2008, prior to the HLPA. It may be beneficial to phase the work if there are budgetary constraints, however this may increase the cumulative costs versus a single phase to perform all repairs. If this approach is taken, we recommend prioritizing the foundation first, followed by any remaining structural repairs, and then addressing the non-structural elements.

The following sections provide some remediation concepts which can help establish an order of magnitude budget for a contractor or cost consultant, although full detailed design packages would be needed for repair

work. Please note that all repair work should follow the “Guidelines For Construction At Historic Lighthouse Sites” from the NSLPS. RJC is happy to provide detailed design packages as additional scope.

4.1 Foundation

Both the seaside timber fenders and the concrete foundation wall behind were in poor condition. Loose, missing, damaged, and rotten boards were noted throughout the fender wall, along with very severely corroded steel corner plates and undermining of the concrete walls. Inside the foundation, large cracks, spalling, and calcification were noted throughout the concrete walls, along with very severe corrosion and efflorescence on the steel rails.

We recommend full remediation of the pier foundation is undertaken to stabilize the base from further deterioration. In concept, remediation includes a complete replacement of the seaside timber fenders and to repair the concrete on the interior and exterior while the fenders are being replaced. Due to possible undermining, the base of the concrete foundation should be determined through exploratory digging, which can assess if the foundation depth is suitable for long-term stability or if additional rip-rap stone work is needed at the base. The steel rails on the interior of the pier should be replaced or supplemented with additional corrosion-resistance bracing.

We recommend loose or deteriorating concrete should be chipped and removed to find sound concrete and

replaced with saltwater-resistant concrete. It is unclear if the concrete has reinforcing bars within; if any corroded reinforcing is found, it should be replaced and repaired. Sandy Point Recreation Group could consider adding additional reinforcing to cross existing joints to minimize further crack expansion, although careful detailing and sufficient concrete cover is required to provide longevity to the new rebar.

4.2 Lantern Room

In general, the interior lantern room and the exterior perimeter walkway around the lantern room were in poor condition. The steel roof framing was severely corroded, with minor surface corrosion noted throughout other steel elements in the room. The waterproofing membrane on the gallery has torn, causing possible damage or rot to the wooden floor assembly below.

While the structural integrity of the lantern room is currently stable in our opinion, we recommend repairing the corroded steel framing within the lantern room to extend the life of the structure and to repair the severely corroded or delaminated areas. In concept, we recommend effectively all steel surfaces should be cleaned to bare metal, repairs made to local areas and repainted to preserve the metal. Repairs should also be done to the gallery outside the lantern room, including replacement of the waterproofing membrane and repairing possible damage to the wood structure below. The perimeter railing should be reinforced and the light electrical system should be repaired.

4.3 Non-Structural Elements

Several non-structural elements of the lighthouse were in poor condition at the time of our review, notably the very severely corroded exterior ladder, the partially disconnected railing around the lower perimeter walkway, and the loose, rotten cladding on the southern face of the tower. While these elements do not impact the structural integrity of the lighthouse, we recommend they should be addressed to maintain access, worker safety and to help preserve the lighthouse:

- The exterior pier ladder is not safe for use due to its extreme level of corrosion.
- The partially disconnected railing along the lower perimeter walkway also poses a safety concern. • The loose and rotten wood shingles along the southern face of the tower should also be repaired, as water ingress can lead to several issues in the structure. However, we recommend the all wood shingles should be replaced to help preserve the structure.
- We recommend several older canisters labelled “highly flammable” found inside the tower be removed.

5.0 RECOMMENDED COURSE OF ACTION

Based on the results from the previous sections, the following list is RJC's recommended course of action and upgrades for consideration. The timeline noted is the suggested times for when the actions should be completed. These recommendations should be reviewed with a contractor or cost consultant to assess the feasibility and cost impacts. If requested by Sandy Point Recreation Center, RJC is happy to provide detailed sketches or costing packages and we can work with the trades to refine the details to achieve your desired outcomes.

1. Engage a contractor or cost consultant for costing estimates
    - Timeline: within 3-6 months
    - Engage a contractor or cost consultant to provide costing estimates prior to proceeding with the repair work as the budget can vary significantly due to the location and unique skillset required.
2. Apply for additional funding if required
    - Timeline: 6-12 months
    - Apply for government grants and explore potential opportunities with heritage organizations to supplement funding efforts.
3. Engage consultants to perform a detailed repair design
    - Timeline: 12 months
    - Engage a consultant to provide detailed repair design package suitable for tendering for qualified contractors. If requested, RJC is happy to provide detailed design packages. 4. Complete foundation repairs:
    - Timeline: 6-24 months
    - See recommendations above in section 4.1

5. Complete lantern room repairs:
    - Timeline: 12-36 months
    - See recommendations above in section 4.2
6. Complete non-structural repairs:
    - Timeline: 12-36 months
    - See recommendations above in section 4.3
7. Implement ongoing mainteance program
    - Timeline: 12+ months
    - Ongoing maintenance and painting will help protect against future corrosion and can identify areas that may need further review.
8. Perform a follow-up assessment

- Timeline: 1-2 years after repair work has been completed
- We recommend a follow-up review is completed after the repair work has been completed to review its condition.

6.0 LIMITS OF COMMISSION

Our opinion cannot be extended to portions of the site that were not reviewed or situations reasonably beyond the control of RJC. If unexpected conditions are encountered at the site, RJC must be notified in order that we may determine if modifications to the conclusions presented here are necessary. Any conclusions or recommendations presented in this report were determined from the limited information available.

This report has been prepared in accordance with generally accepted engineering practices. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report. A detailed review of the structural system was not included in the scope of work.

The Client recognizes that special risks occur whenever engineering or related disciplines are applied to identify hidden elements or portions of a building. Even a comprehensive sampling and testing program, implemented with the appropriate equipment and experienced personnel, under the direction of a trained professional who functions in accordance with a professional standard of practice, may fail to detect certain conditions. This is because these conditions are hidden and therefore cannot be considered in the development recommendation. For similar reasons, actual conditions that the design professional properly inferred to exist between examined conditions may differ significantly from those that actually exist.

The Client realizes that nothing can be done to eliminate these risks altogether. As a result, we cannot guarantee the accuracy of opinions of probable cost and can assume no liability where the probable costs are exceeded.

The Client recognizes that RJC does not have expertise in the identification of, or health risks associated with, mould, mildew or other fungi and therefore cannot provide an opinion as to the extent to which these substances exist in the building or the associated potential health risks to building occupants.

RJC prepared this report for the use of The Client. The material in it reflects RJC's judgement in light of information available to RJC at the time of preparation. Any use that a third party makes of this report, or any reliance or decisions to be based on it, is the responsibility of such third parties. RJC accepts no

responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

7.0 CLOSING REMARKS

We would be pleased to meet with you, if necessary, to discuss the findings of this report and assist you with the implementation of our recommendations or to discuss further with the team.

We trust that this is the information you require; however, if you have any questions or concerns, please do not hesitate to call.

Yours truly,

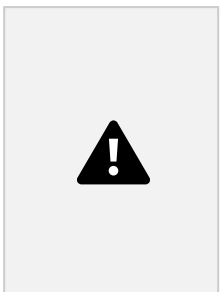
READ JONES CHRISTOFFERSEN LTD.
Prepared by: Reviewed by:

Parker Rowter, MSc, EIT
Structural Designer

Craig Wadsworth, P.Eng., CCCA, CAHP

Encl.:
Appendix A - Photographs from Site Visit Appendix B – Visual Classification
Stephen Mercer, MASc, P.Eng. (BC, NB, NS, PEI)
Regional Manager

and



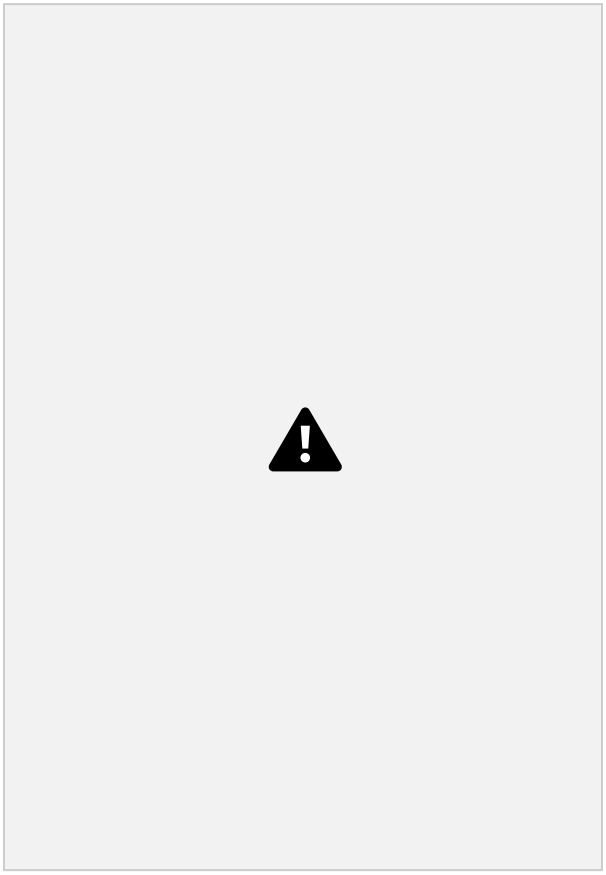
Appendix A

Photographs from Site Visit

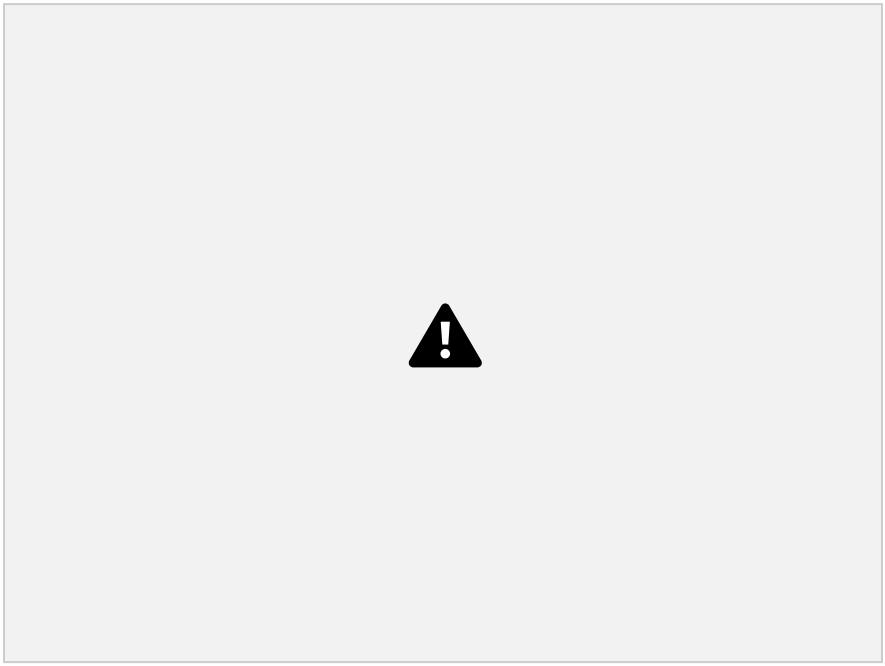
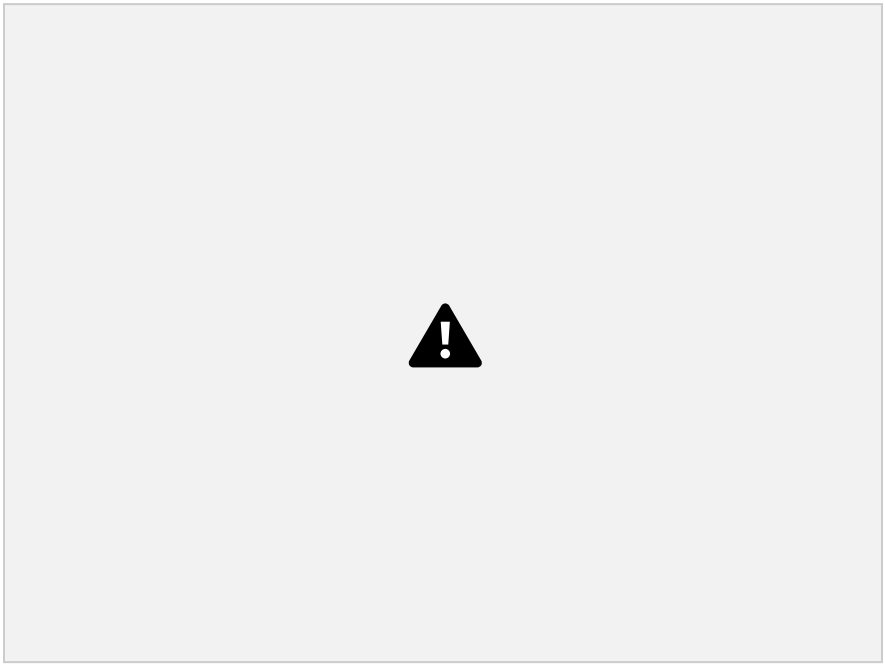
Date of Visit: November 4, 2025

Sandy Point Lighthouse
Structural Condition
Assessment
1586 Sandy Point Road,
Shelburne, NS

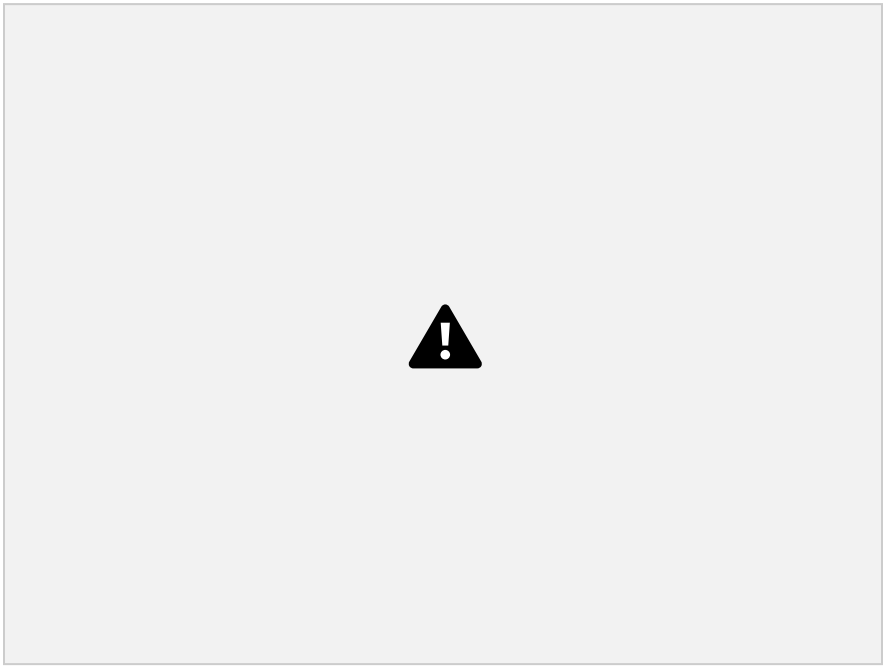
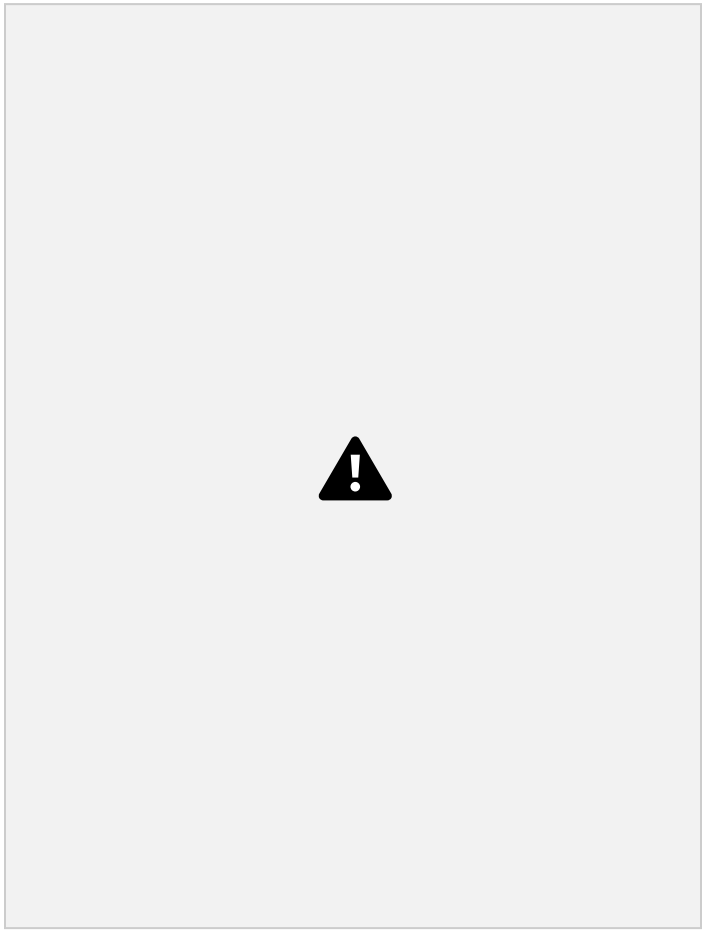
Description	Photograph
Photo 1: View of the east face of the lighthouse from the Sandy Point Recreation Center during low tide.	

Photo 2: View of the east and south faces of the lighthouse during low tide.	

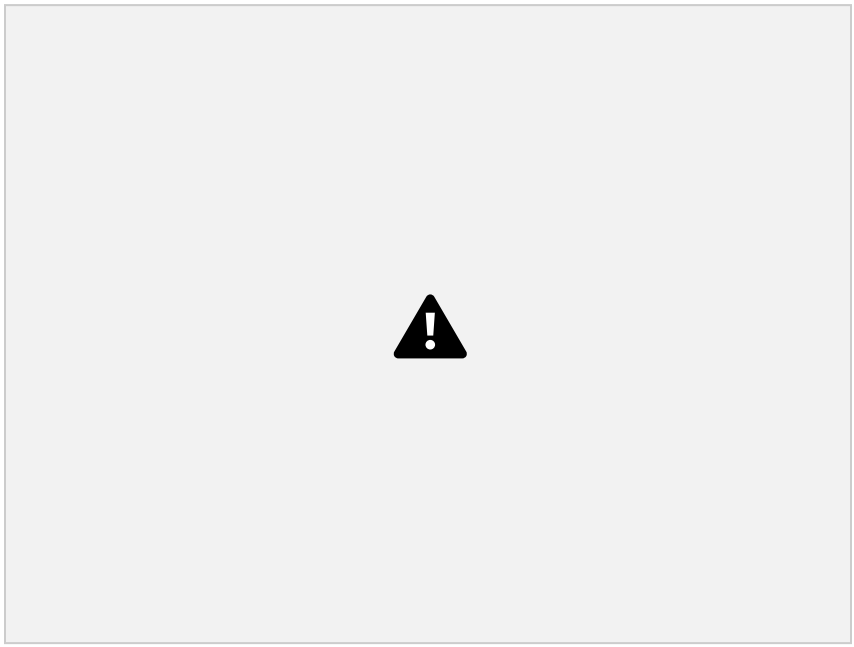
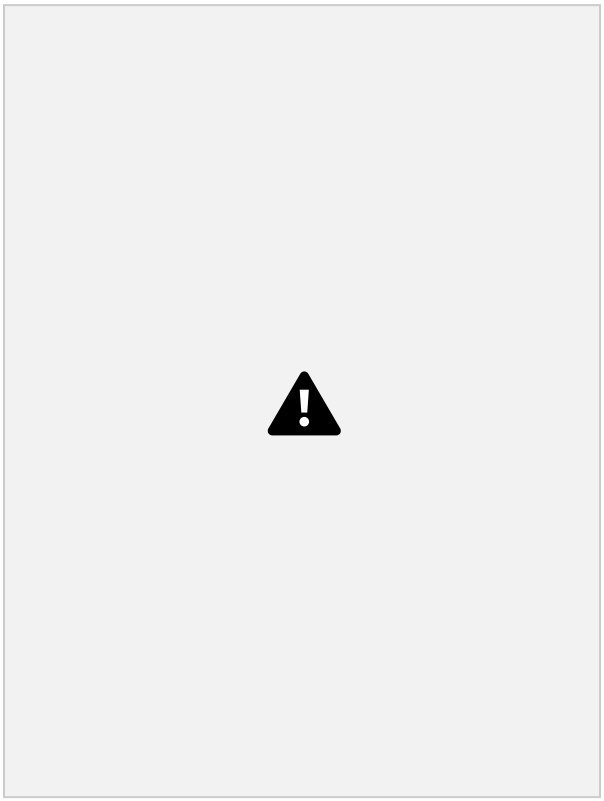
Description	Photograph

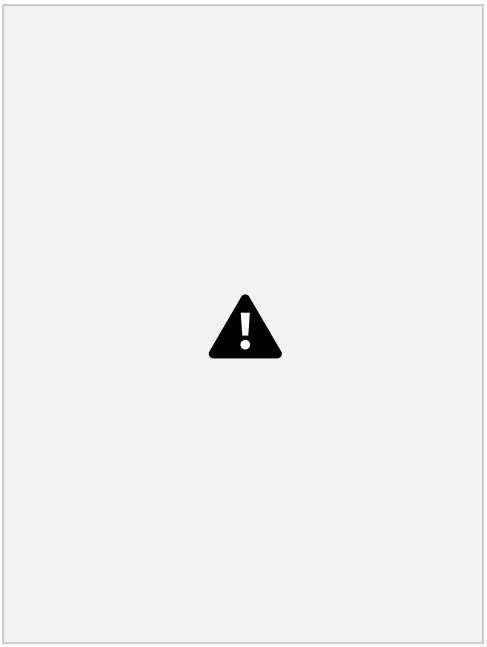
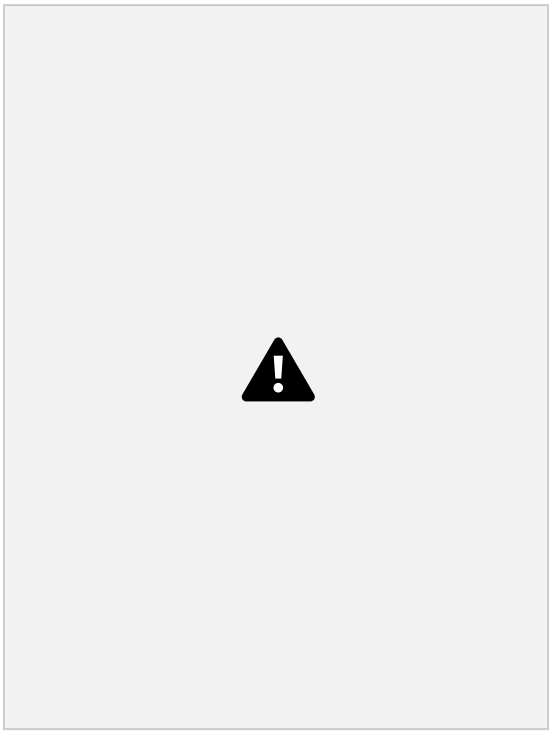
Photo 3: View of the east side of the lighthouse during low tide.	
Photo 4: View of the east and north sides of the lighthouse during low tide.	

Description	Photograph

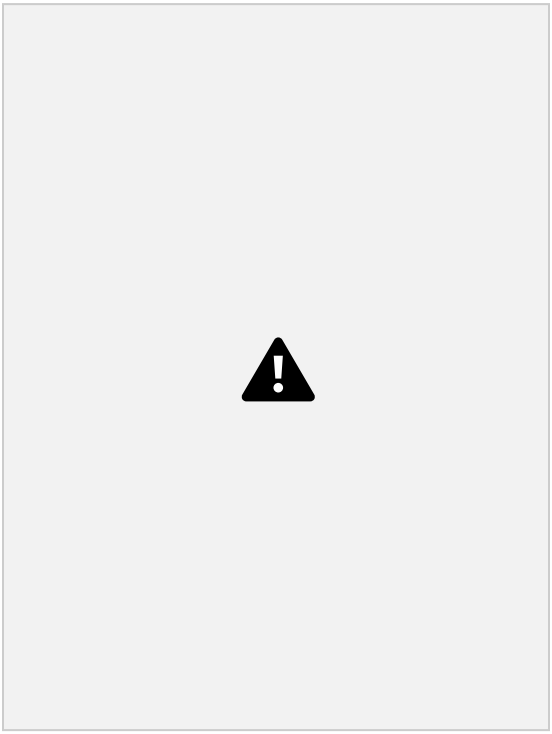
Photo 5: View of the northern timber fenders during low tide.	
Photo 6: One of several missing boards of the timber fenders.	

Description	Photograph
Photo 7: Very severely corroded steel corner plate, on the west side of the southwest corner, with a complete loss of section.	
Photo 8: Very severely corroded steel corner plate, on the south side of the southwest corner.	

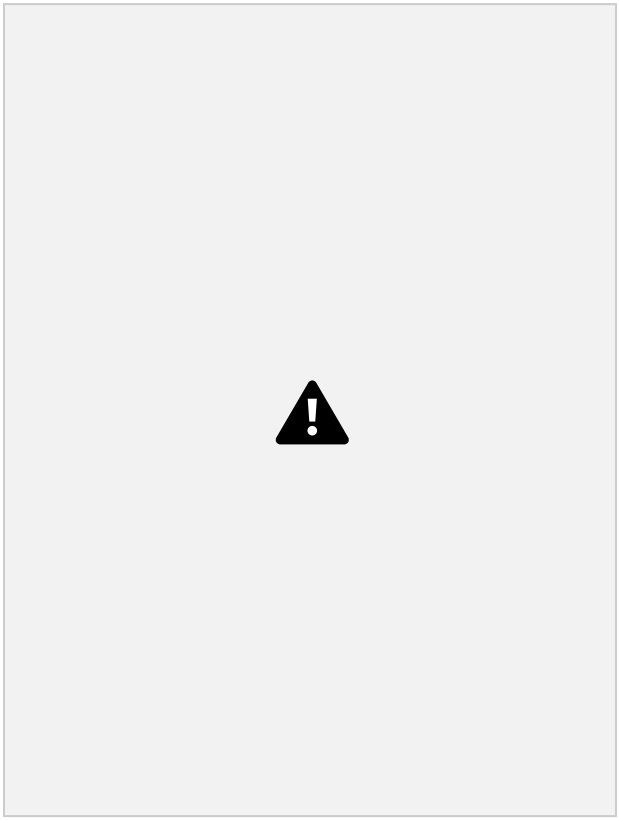
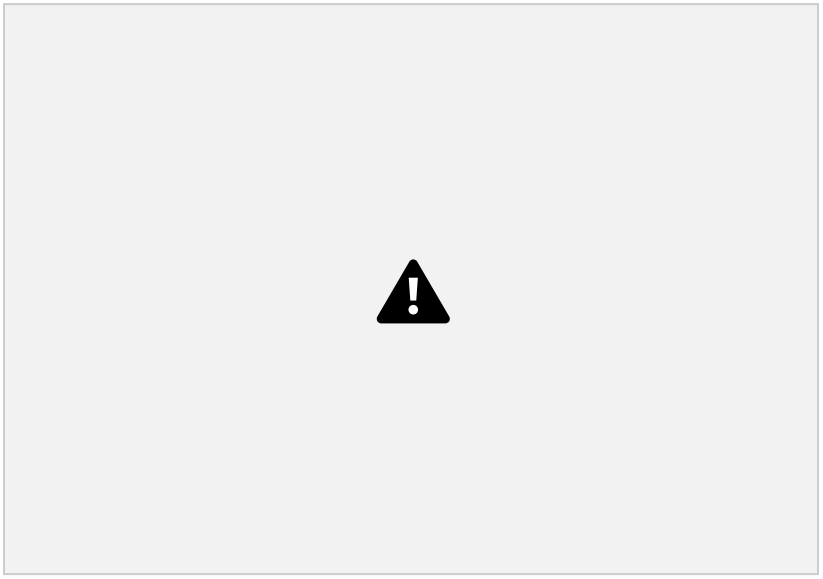
Description	Photograph
Photo 9: Very severely corroded steel plate, on the northeast corner.	
Photo 10: Severely corroded and delaminated rungs of the ladder on the east face of the building. We do not recommend use of the existing pier ladder.	

Description	Photograph
Photo 11: Very severely corroded and delaminated ladder on the east face of the building.	
Photo 12: Plate installed on the ladder to prevent access.	

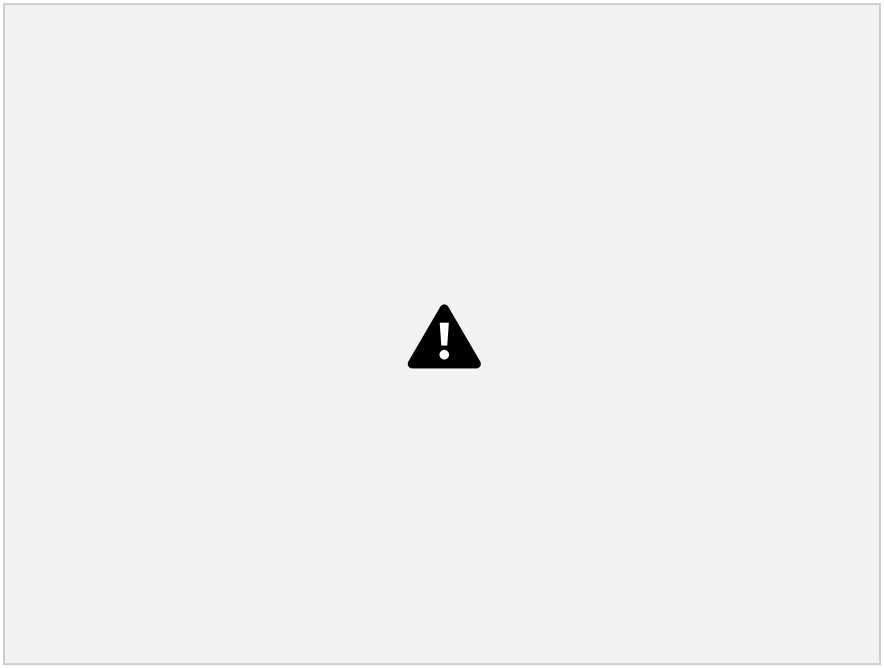
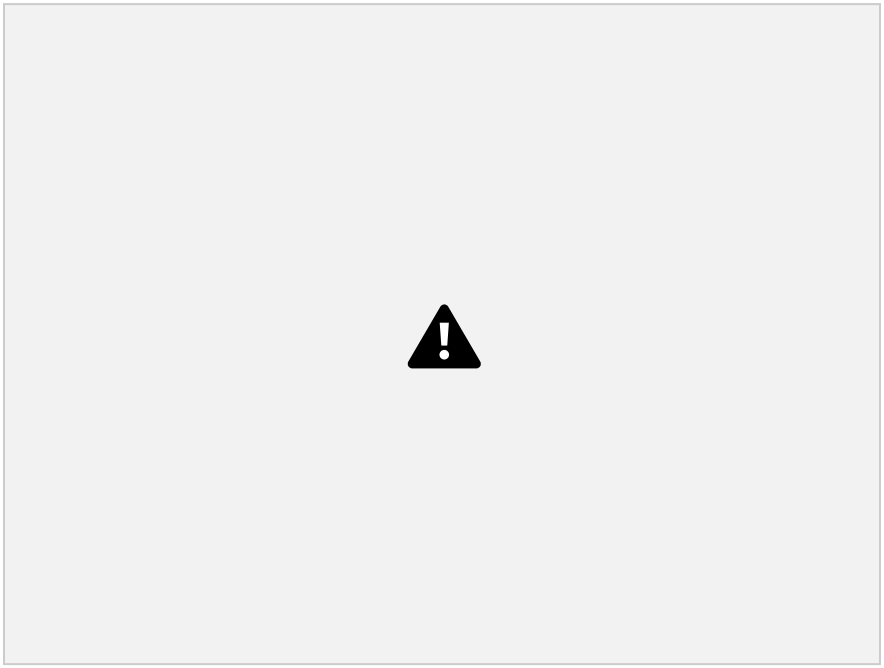
Description	Photograph
Photo 13: Missing boards of the timber fenders.	

Photo 14: Missing boards of the timber fenders.	

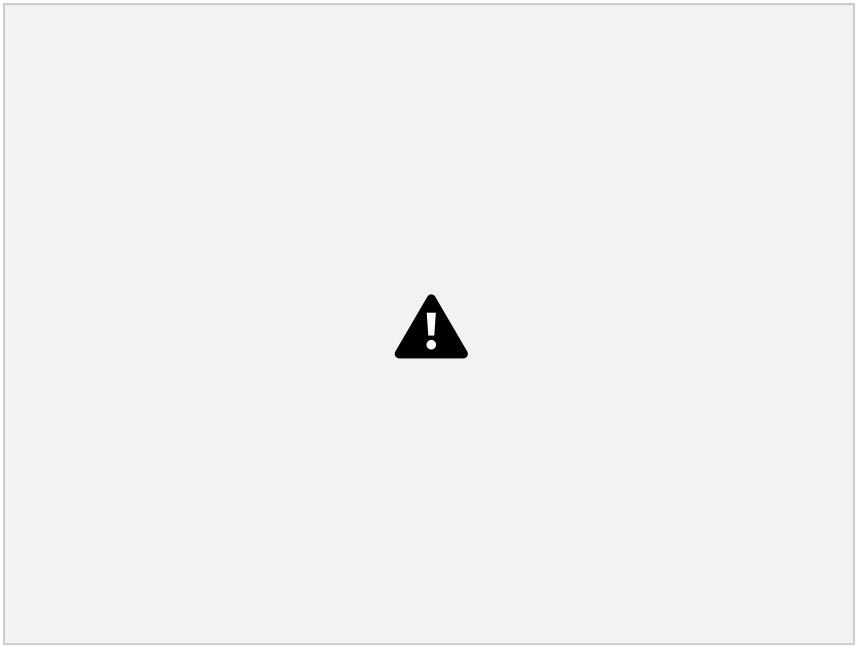
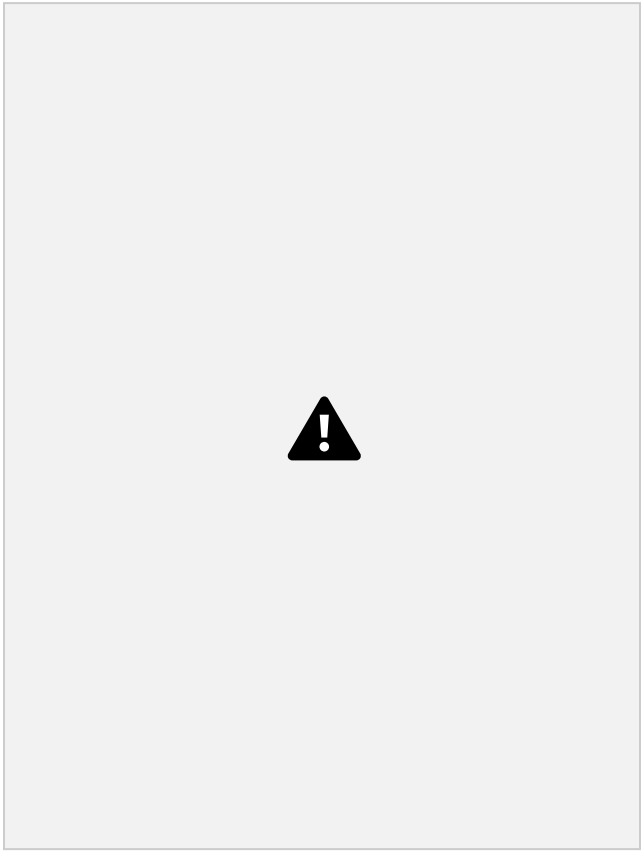
Description	Photograph

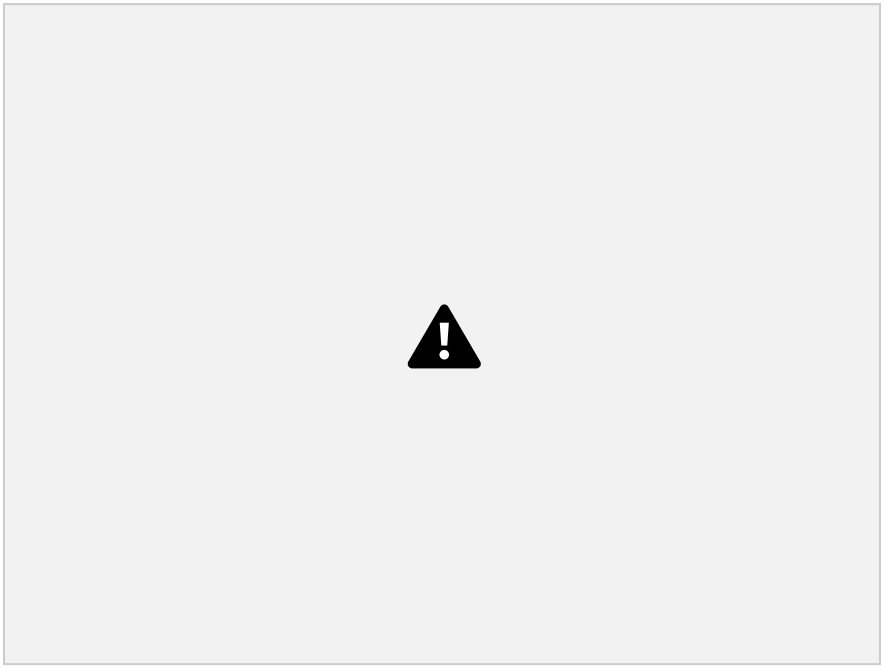
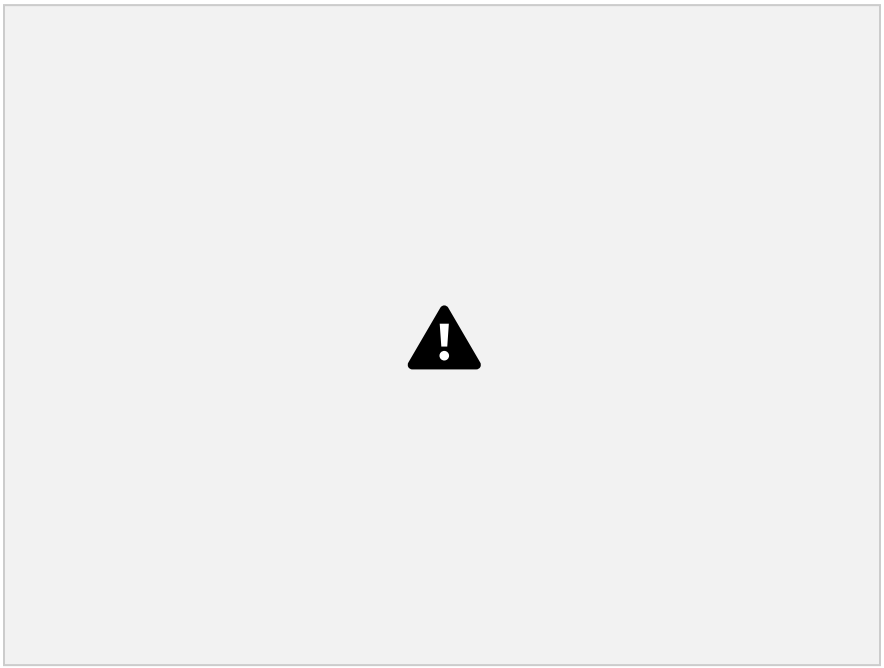
Photo 15: View of West walkway and siding.	
Photo 16: Loose, missing, and rotten wood shingles on the south face of the tower.	

Description	Photograph

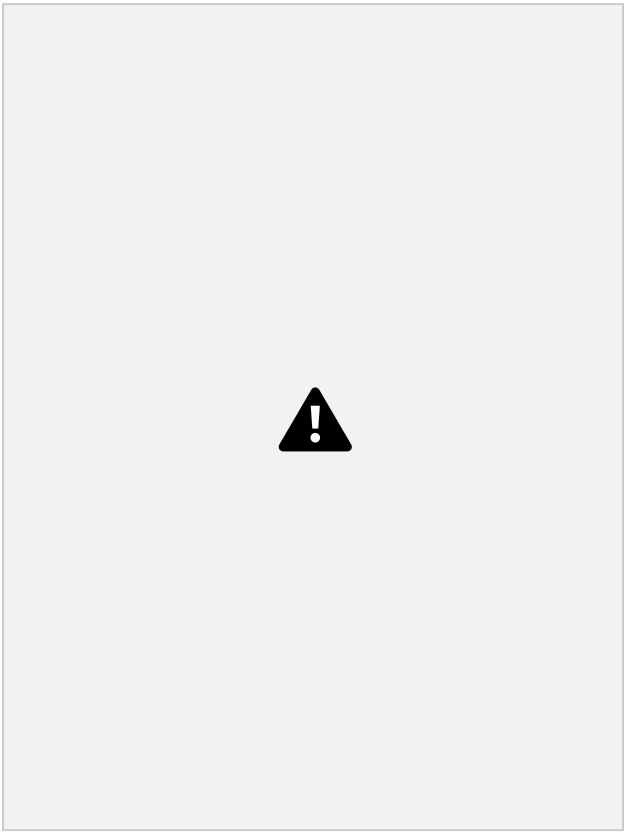
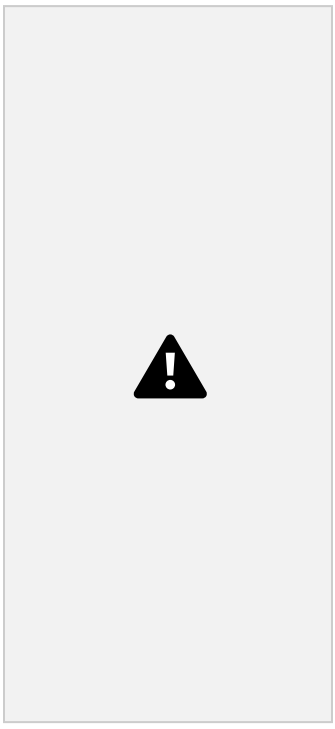
Photo 17: Loose and rotten wood shingles on the south face of the tower	
Photo 18: View of the north side of the tower from below	

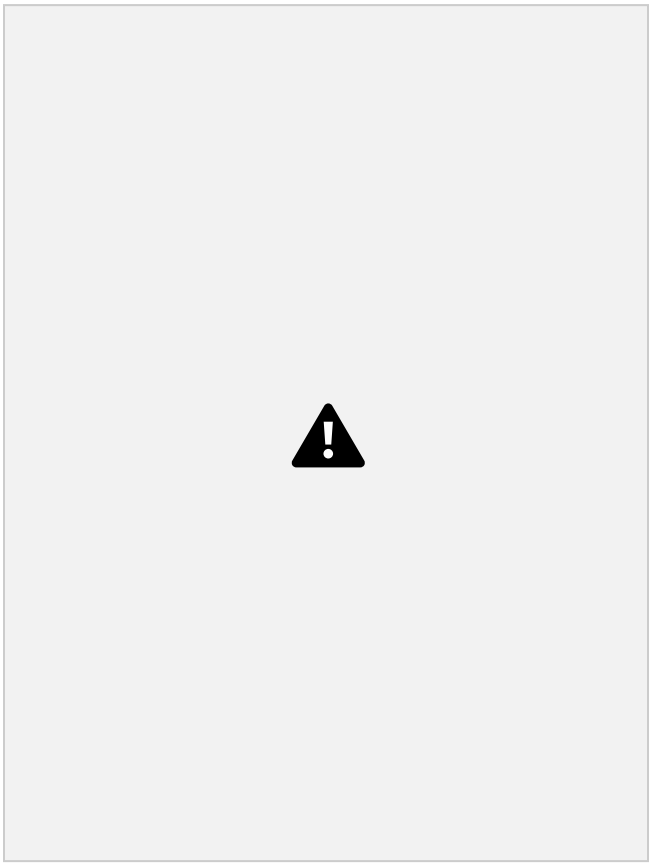
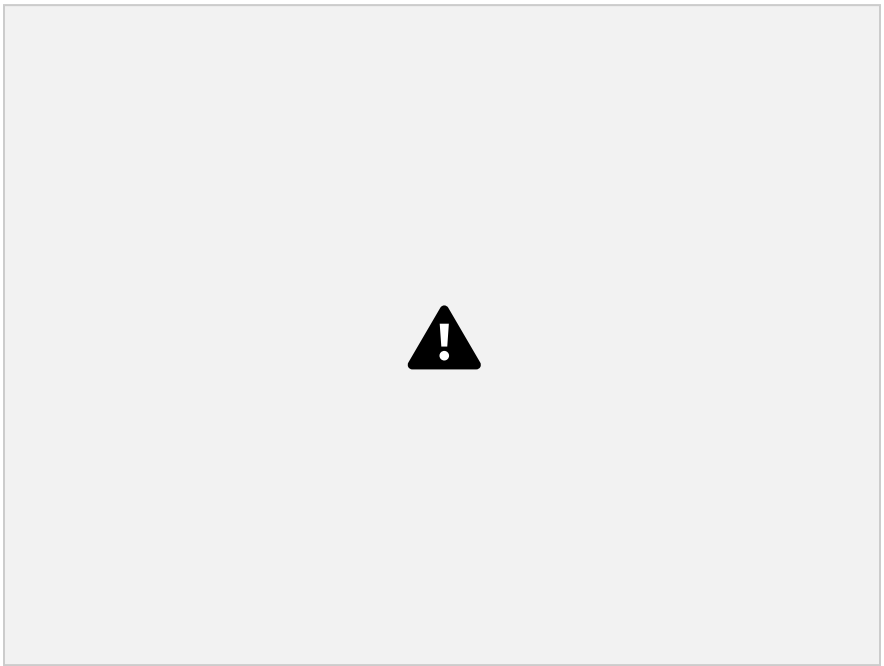
Description	Photograph

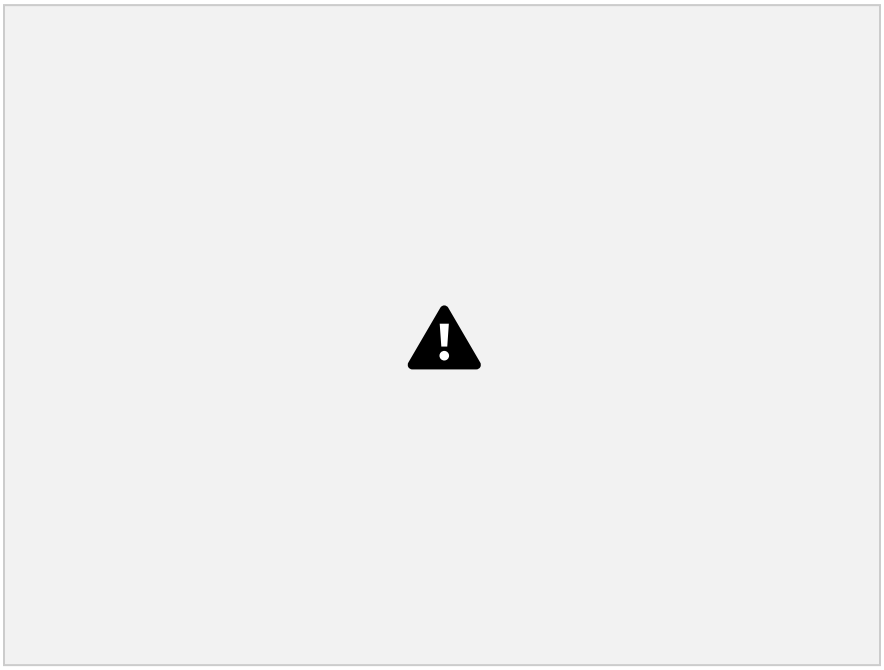
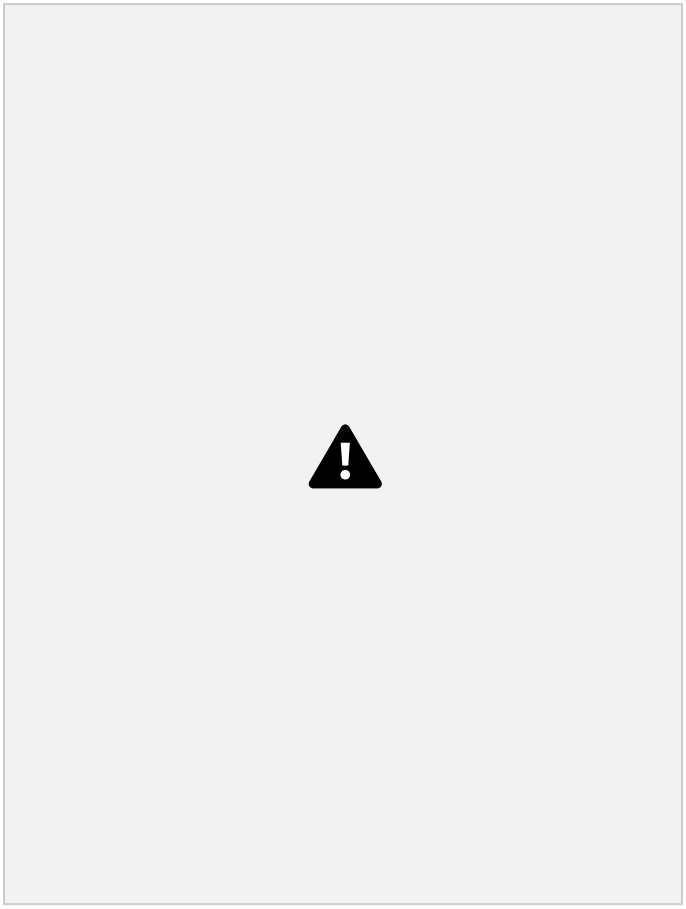
Photo 19: View of the south side of the tower from below	
Photo 20: View of the north side of the perimeter walkway that is partially covered by moss.	

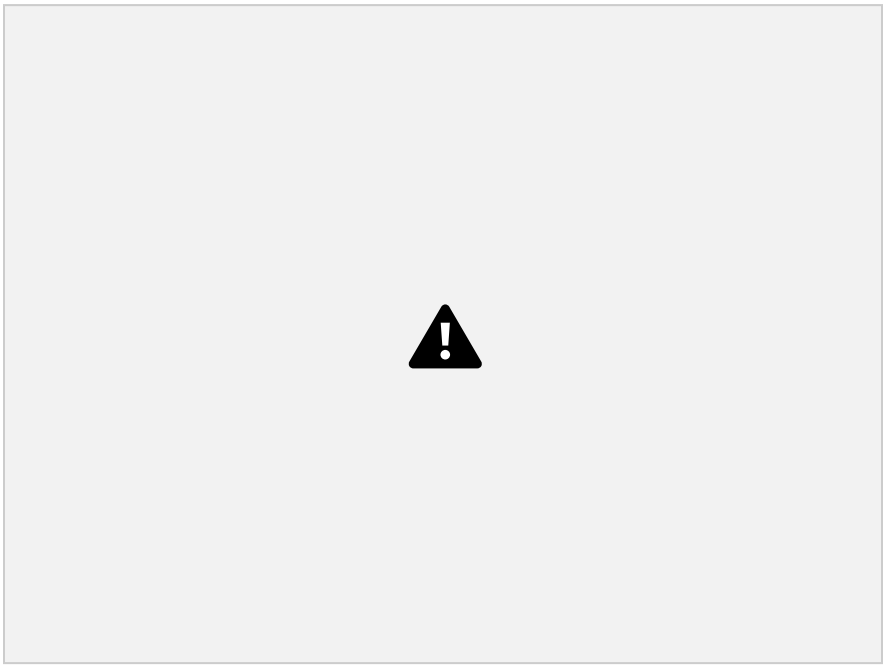
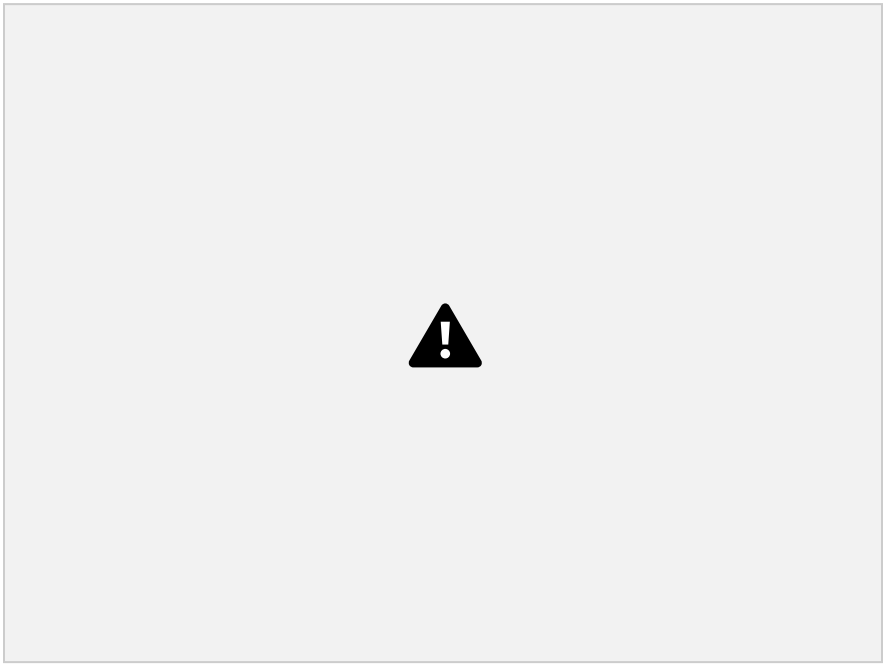
Description	Photograph
Photo 21: View of the tower level 1 interior space.	
Photo 22: View of the tower level 1 interior space.	

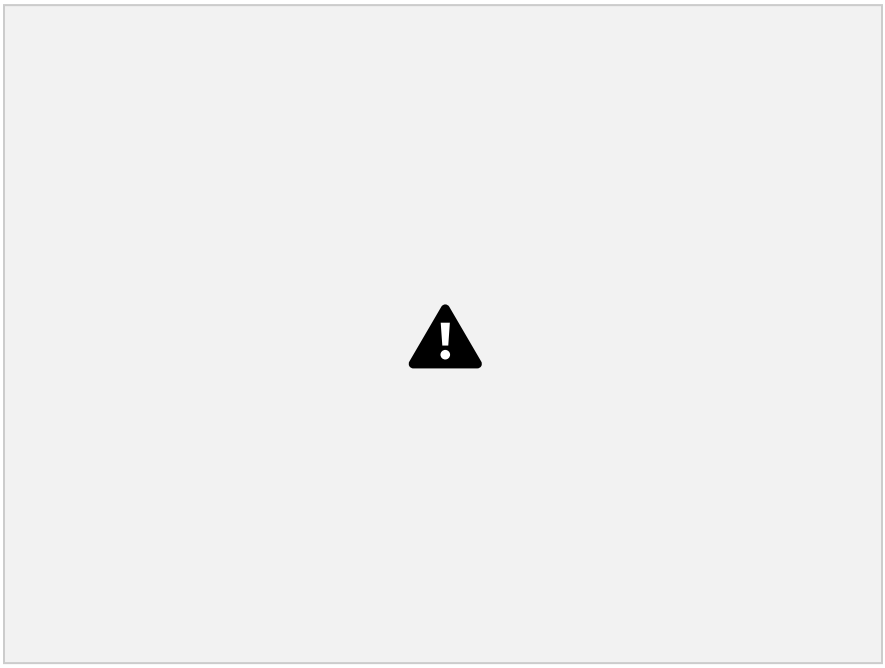
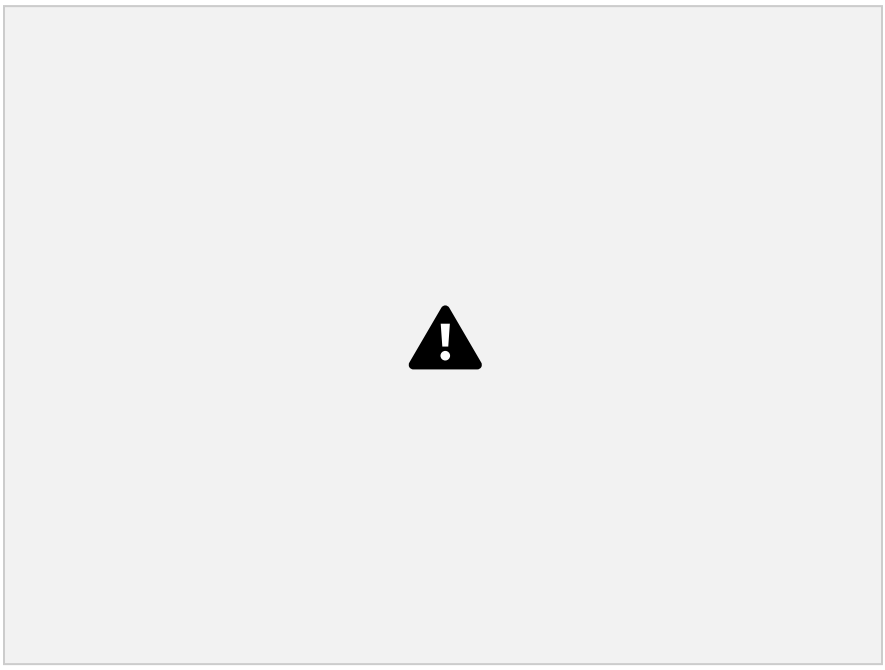
Description	Photograph

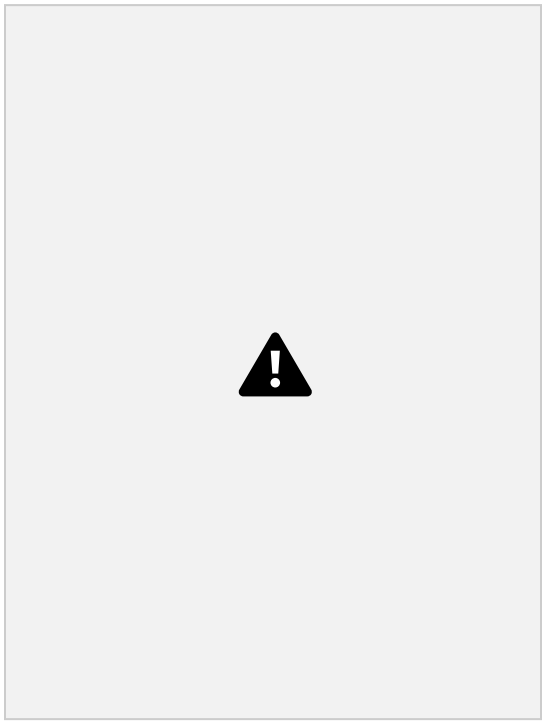
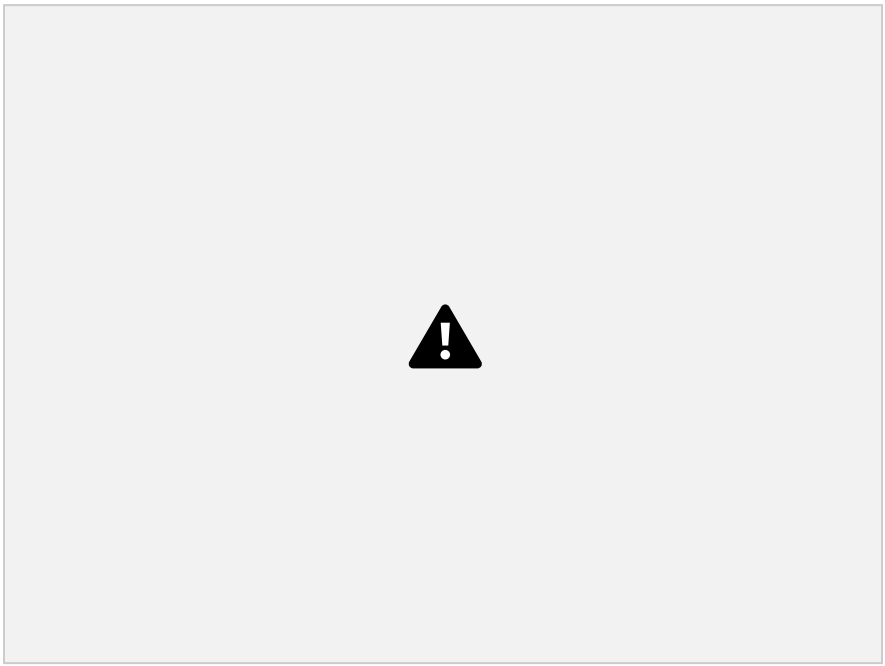
Photo 23: Interior view of the foundation showing the concrete walls with signs of efflorescence and calcification. The cross steel bracing is severely corroded.	
Photo 24: Large cracking in foundation walls typically extending up from the cross rails. Deterioration and loose concrete at the top of the concrete wall.	

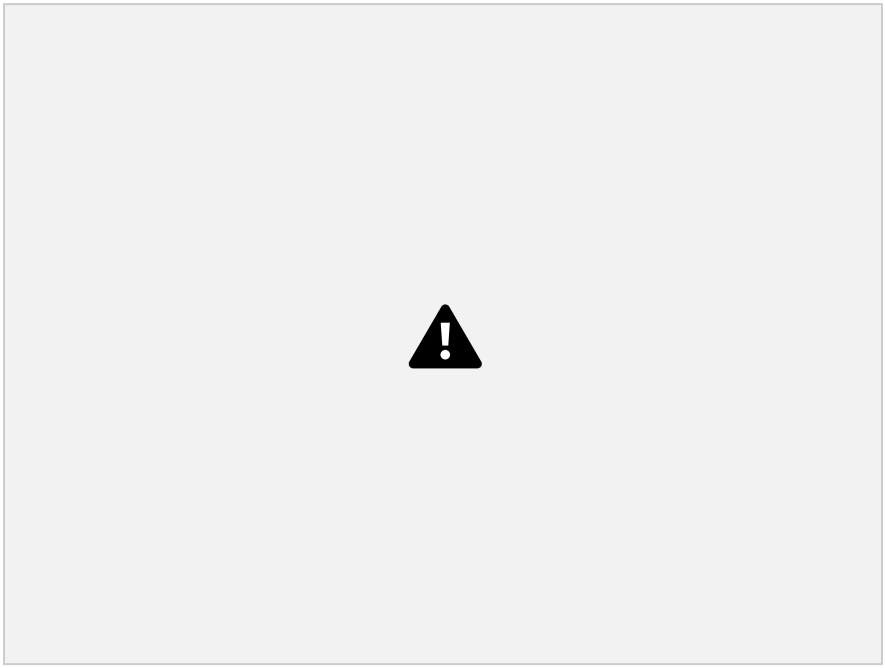
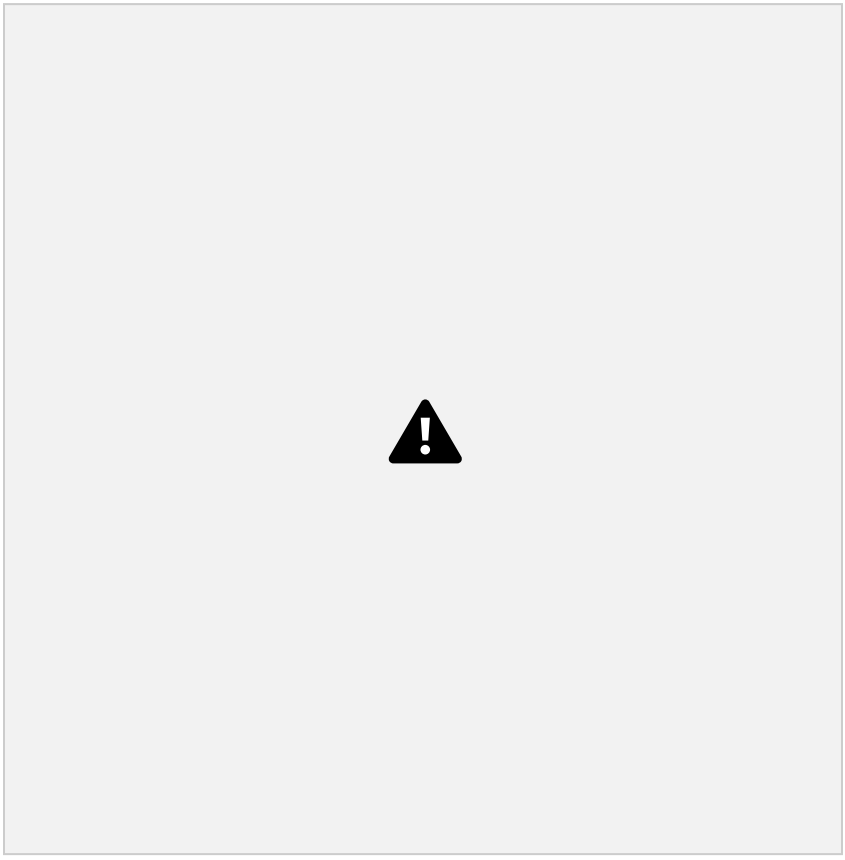
Description	Photograph
Photo 25: Large cracking in foundation walls near the connection to a very severely corroded steel rail with signs of Alkali-Aggregate Reactivity or corrosion causing expansion in the concrete.	
Photo 26: Large cracking in foundation walls typically extending up from the cross rails.	

Description	Photograph
Photo 27: Large cracking in foundation walls near the connection to a very severely corroded steel rail.	
Photo 28: Large cracking in foundation walls typically extending up from the cross rails.	

Description	Photograph
Photo 29: View of the base conditions within the foundation area with very severely corroded steel rails.	
Photo 30: Spalling of the concrete foundation walls.	

Description	Photograph
Photo 31: View of the lantern room.	
Photo 32: Typical example of severely corroded steel framing in the lantern room. Thick cracked paint likely due to expansion or corrosion.	

Description	Photograph
Photo 33: Typical example of severely corroded steel framing in the lantern room. Thick cracked paint likely due to expansion or corrosion.	
Photo 34: Corrosion of the steel floor in the lantern room.	

Description	Photograph
Photo 35: View of cut membrane on the north-west corner.	
Photo 36: View of top of steel lantern roof with paint peeling, corrosion, pitting, and delamination of roof.	

Appendix B

Visual Classification

Visual Classification

Sandy Point Lighthouse

For the purpose of our visual review and this report, the condition of the elements is classified below based on the material type. Observation of the structural elements was primarily visual in nature and classification regarding section loss was based on visual estimates. Since the level of deterioration is not uniform throughout the length of an individual member, the worst condition at any section of a member is reported.

Element Condition

- Very Good Condition

  Very Good Condition refers to an element (or part of an element) that appears “new” (as constructed), meaning no visible deterioration type defects are present and no remedial action is required. Minor construction defects do not count as visible deterioration type defects. [1]

- Good Condition

  Good Condition refers to an element (or part of an element) where the first signs of minor defects are visible. This usually occurs after the structure has been in service for a number of years. These types of defects would not normally trigger any remedial action since the overall performance of the element is not affected. [1]

- Fair Condition

  Fair Condition refers to an element (or part of an element) where medium defects are visible. These types of defects may trigger a “preventative maintenance” type of remedial action where it is practical to do so. [1]

- Poor Condition

  Poor Condition refers to an element (or part of an element) where defects that have impacted the structural integrity are visible. In concrete, any type of spalling or delamination would be considered “poor” since these defects usually indicate more serious underlying problems in the material. These types of defects would normally trigger rehabilitation or replacement if the extent and location affect the overall performance of that element. [1]

Structural Steel Elements

For the purpose of our visual review and this report, corrosion was classified based on the following classification system:

- Light: Loose rust formation and pitting in the paint surface, without noticeable section loss.
- Medium: Loose rust formation with scales or flakes forming. Definite areas of rust are noticeable. Up to 10% section loss.
- Severe: Stratified rust with pitting of the metal surface. Between 10% – 20% section loss.

- Very Severe: Extensive rusting/corrosion with local perforation or rusting through. In excess of 20% section loss.

Glossary

Alkali-Aggregate Reactivity (AAR): A chemical reaction between alkalis in the cement fraction of concrete mortar and certain types of siliceous aggregates. Resulting in the expansion and cracking of the concrete.

Calcification: Accumulation of calcium-based deposits resulting from water carrying dissolved minerals

Corrosion: Destruction of metal by chemical, electrochemical, and electrolytic reaction within its environment.[3] Damage: Permanent consequence of an action that reduces the serviceability of a structure or one of its components or finishes.

Delamination - Delamination is the separation of concrete usually at the level of the reinforcement in a plane roughly parallel to the upper surface, and is caused by the corrosion of the steel. The term delamination

for steel elements refers to severe to very sever stratified rust causing the steel to expand and split into layers.

Displacement: The distance an element or particle has moved from its original position.

Distress - Physical manifestation of cracking or distortion in a structure as the result of stress, chemical action, or both.[3]

Efflorescence - A deposit of salts, usually white, crystallizing on a surface, the substance having emerged from below the surface in solution with water.

Weathering - Degradation in colour, texture, strength, chemical composition or other properties of a material caused by exposure to weather.[3]

Wood Brown Rot - Brown rot is commonly known as dry rot and tends to affect softwoods such as pine and spruce, which is used for most wood construction in North America. The affected wood becomes dry, cracked, and crumbly, often taking on a dark brown or reddish color. Brown rot typically progresses rapidly, leaving the wood weak and brittle.

Wood White Rot - White rot attacks hardwoods such as oak, ash, and maple. As the name suggests, it appears as a whitish or yellowish discoloration on the wood's surface. Unlike brown rot, the affected wood retains its moisture and becomes spongy, stringy, and fibrous. White rot tends to spread slowly and can lead to significant structural damage over time.

References

[1] Professional Engineers Ontario, “Structural Condition Assessments of Existing Buildings and Designated Structures Guideline,” Nov. 2016. [Online]. Available: http://peo.on.ca/index.php/ci_id/23427/la_id/1.htm.

[2] American Society for Civil Engineers, “Guideline for Structural Condition Assessment of Existing Buildings,” New York, New York, 1991.

[3] International Concrete Repair Institute, “Concrete Repair Terminology” Saint Paul, Minnesota, 2022.

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