The Corporation of the City of Sault Ste. Marie
Municipal Heritage Committee
Agenda

Wednesday, February 5, 2025

12:00 pm - 1:00 pm

Video Conference

Meetings may be viewed live on the City's Youtube channel
https://www.youtube.com/user/SaultSteMarieOntario

Pages

1. **Land Acknowledgement**

   I acknowledge, with respect, that we are in Robinson-Huron Treaty territory, that the land on which we are gathered is the traditional territory of the Anishinaabe and known as Bawating. Bawating is the home of Garden River First Nation, Batchewana First Nation, the Historic Sault Ste. Marie Metis Council.

2. **Welcome and Introductions**

3. **Adoption of Minutes** 4 - 6

   Mover _____

   Seconder _____

   Resolved that Minutes of Municipal Heritage Committee meeting of November 14, 2024 be approved.

4. **Declaration of Pecuniary Interest**

5. **Adoption of Agenda**

   Mover _____

   Seconder _____

   Resolved that the Agenda for Municipal Heritage Committee meeting for February 5, 2025 as presented be approved.

6. **Business Arising**

6.1 Election of Officers

Mover _____

Seconder _____
Resolved that the nominations are open for the position of Chair of the Municipal Heritage Committee for 2025.

Mover _____

Seconder _____
Resolved that _____ was declared Chairperson of the Municipal Heritage Committee for 2025.

Mover _____

Seconder _____
Resolved that nominations be open for the position of Vice-chair of the Municipal Heritage Committee for 2025.

Mover _____

Seconder _____
Resolved that _____ was declared Vice-chairperson of the Municipal Heritage Committee for 2025.

6.2 Museum Bell

7 - 29

A past report regarding the "Proposal of Conservation The Bronze Tower Bell of Sault Ste. Marie Museum" is attached for information. L. Joyal will provide an update on new developments.

6.3 Heritage Property Tax Rebate Program

30 - 31

Mover _____

Seconder _____
Resolved that the Sault Ste. Marie Municipal Heritage Committee recommend to City Council that the Designated Heritage Property Tax Rebate for 143 McGregor for the 2022/2023 tax year be paid.

7. Sub-committee / Task Force Updates

7.1 Heritage Booklet and Video Tours

7.2 Heritage Trees

8. New Business

8.1 Heritage Week

February 17 to 21, 2025

9. Correspondence

9.1 CHO News

10. Next Meeting

March 5, 2025 at noon

11. Adjournment

Mover _____

Seconder _____

Resolved that this Committee now adjourn.

The Corporation of the City of Sault Ste. Marie

Municipal Heritage Committee

Minutes

Thursday, November 14, 2024 at 2:00 pm
Video Conference
Meetings may be viewed live on the City's Youtube channel
https://www.youtube.com/user/SaultSteMarieOntario

Present:	N. Curry, M. Bifano, Councillor A. Caputo, J. van Haaften, L. Joyal, T. Johnson
Absent:	A. White, S. Walker, K. Marshall, S. Maragna, E. Boucher
Officials:	J. Cowen, V. McLeod

1. Land Acknowledgement

2. Adoption of Minutes

Moved by: L. Joyal
Seconded by: J. van Haaften

Resolved that Minutes of Municipal Heritage Committee meeting of October 2, 2024 be approved.

Carried

3. Declaration of Pecuniary Interest

N/A

4. Adoption of Agenda

Moved by: J. van Haaften
Seconded by: L. Joyal

Resolved that the Agenda for Municipal Heritage Committee meeting for November 14, 2024 as presented be approved.

Carried

5. Business Arising

5.1 Museum Bell

Lise connected with St. Mary's High School and once they have looked at the plans they will provide additional information.

5.2 Heritage Property Tax Rebate

Moved by: M. Bifano
Seconded by: J. van Haaften

Resolved that the Sault Ste. Marie Municipal Heritage Committee recommend to City Council that the Designated Heritage Property Tax Rebates for the 2023 tax year be paid to the qualified owners of designated heritage properties enrolled in the program;

1. 69 Church Street – Provincial Air Hangar
2. 875 Queen Street East – Insect Pathology Lab
3. 864 Queen Street – Algonquin Hotel
4. 119 Woodward
5. 10 Kensington Terrace – Unit #1
6. 10 Kensington Terrace – Unit #2
7. 10 Kensington Terrace – Unit #3
8. 115 Upton Road – 1902 Family Residence
9. 193 Pim Street Wellington Square Townhouses
10. 36 Herrick Street
11. 358-366 Queen Street East - Barnes-Fawcett Blocks
12. 242-246 Queen Street East – Hussey Block
13. 83 Huron Street – Machine Shop
14. 1048 Queen Street - Eastbourne
15. 54 Summit Avenue

and further that an inspection report and letter be sent to the property owners outlining the recommendations.

Carried

6. Sub-committee / Task Force Updates

6.1 Heritage Booklet and Tours

Taimi is continuing to work on the booklet, and most of the information has been transferred from the paper copies into the digital format. Jami has offered to help with any editing for proofreading. The sub-committee is meeting on November 20th.

6.2 Heritage Trees

Tim is working on confirming trees and locations. Once the information is complete, measurements of the trees can be taken.

7. New Business

7.1 Museum - Pigeon Control

The Museum will install some pigeon-controlled spikes to minimize the impact of the droppings on the building.

7.2 Municipal Heritage Committee Appointments

Applications to be received on December 6, 2024 by 4:30 to the clerks office.

7.3 Heritage Register

A copy of this document was shared, will start this in January 2025

8. Correspondence

8.1 911 Wellington Street

Virginia has met with the new property owner to provide information on the Municipal Heritage Committee programs and answer questions about the property and the Committee.

The owner indicated that they would like to get the roof replaced and possibly paint and highlight the architecture of the home.

9. Next Meeting

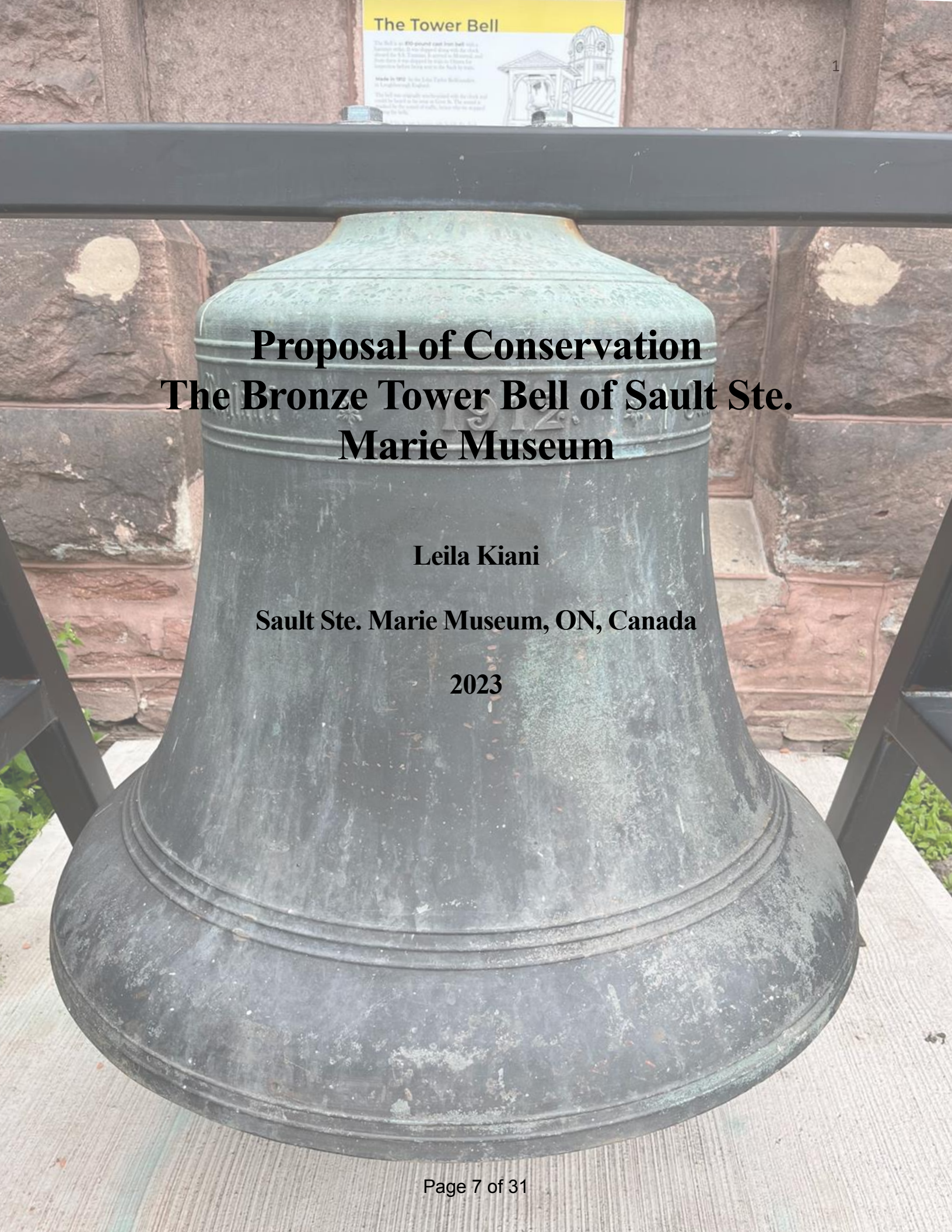
December 4, 2024

10. Adjournment

Moved by: L. Joyal
Seconded by: T. Johnson

Resolved that this Committee now adjourn.

Carried



Proposal of Conservation
The Bronze Tower Bell of Sault Ste. Marie Museum

Leila Kiani

Sault Ste. Marie Museum, ON, Canada

2023

Contents

About the Writer

Leila Kiani, Collections Manager

Education:

- Bachelor's degree in Restoration of Historical Monuments, Isfahan University of Art, Isfahan, Iran, 2008-2012,
- Master's degree in Archaeology, Isfahan University of Art, Isfahan, Iran, 2012-2015

Work Experience:

- Collections Manager, SSM Museum, ON, Canada, Apr 2023-Current
- Curatorial and Collections Assistant, SSM Museum, ON, Canada, Jun 2019- Apr 2023
- Volunteer, Educator in Training, Aga Khan Museum, Toronto, ON, Canada, Dec 2018-Apr 2019
- Volunteer, Staff member, Ontario Association of Art Gallery, Toronto, ON, Canada, Nov 2018
- Educational Assistant, Isfahan University of Art, Isfahan, Iran, Feb 2015- Sep 2018

Research Experience

- ISI Article : Kiani, L., Ghadim, F.I. & Ahmadi, H. (2018). Study on the discovered ornaments from Jafar-Abad and Tu Ali-Sofla kurgans (second phase of excavations). *Archaeological and Anthropological Sciences, 10,* 973–987
- Master Thesis: Kiani, L, (2015). Introduction to Typology and Technological Characteristics of Bronze Objects in Kurgans of Jafar Abad and Tu-ali Sofla (Second Phase of Excavations)
- Bachelor Thesis: Kiani, L, (2012). Investigation on Metalworking and Restoration of a Bronze Artifact Belonging to the Late 2nd Millennium and Early 1st Millennium B.C.

Introduction

Terminology

Bronze:

Bronze is an alloy that mainly contains copper as the base element with additions of primarily tin alongside other constituents such as aluminum, manganese, arsenic, etc. Tin increases the castability of copper by decreasing its melting point and the required temperature to complete casting. Bronze objects show higher mechanical properties and have better resistance against corrosion in comparison with pure copper.

Corrosion:

Corrosion is a chemical change in the metal's structure that affects the stability and appearance of objects and can happen either quickly or over an extended period of time. Corrosion in bronze may be considered a safe corrosion (inactive) which is called Patina or a problematic corrosion (active corrosion) which is harmful for the object and needs to be removed.

Patina:

Over time and under the influence of conditions such as humid environments that promote corrosion, bronze objects undergo chemical changes in structure and the alloy starts to oxidize and form different corrosion products. Patina is a safe product of corrosion and acts as a stable oxide layer and a barrier to hinder further oxidation. In bronze, the patina (oxide layer) usually is in dark green and blue. The difference in color depends on the weight percentage of alloying elements and the corrosive environment (soil, graves containing organic materials such as bones, underwater

acidic or basic activity, outdoor environment under sunlight and rain, indoor in normal temperature, storage in hot conditions, etc.)

Protecting the patina is important in the protection process of historical objects for two main reasons. First, the patina is the evidence of aging and needs to be protected because it shows the history of the object such as the structure and the condition of the preservative environment. As mentioned before, patina is a part of the object despite the occurred chemical changes. Second, the patina acts as a natural protection for the inner layers of the objects and prevents them from further corrosion because it limits the exposure of the inner layers of the object with water, air pollution, and other external environmental factors. As Deck (2020) mentioned, a reliable condition with Relative Humidity (RH) below 55% is the best place to keep bronze and maintain its stability by limiting the corrosion and protecting the patina layer as a safe corrosion layer. If the HR rises, even the patina can change to aggressive and harmful types of corrosion and can cause damage to the object.

Bronze Disease:

The problem is an active corrosion that can advance from the outer layers of the object and penetrate the inner parts until it reaches the core of metal. If not controlled promptly, this type of corrosion decreases the stability, function, and durability of bronze objects. The most harmful type of active corrosion is called Bronze Disease. The light green and powdery corrosion is the sign of Bronze Disease in historical bronze artifacts and has a chlorine chemical structure. Atacamite is the most dangerous Bronze Disease in historical bronze objects. According to numerous scientific papers, the main mechanism for this type of corrosion is high RH (55% and above). The high PH (acidic condition) and pollution in air and water further accelerate the process of corrosion

(https://www.getty.edu/publications/artistryinbronze/conservation-and-analysis/35-casaletto/ Deck, 2020).

Chemical Compound	Mineralogical Name	Chemical Formula	Color
Oxides	Cuprite	Cu_2O	Red/Orange
	Tenorite	CuO	Black Gray
Carbonates	Malachite	$CuCO_3\ Cu(OH)_2$	Green
	Azurite	$2\ CuCO_3Cu(OH)_2$	Blue
	Chalconatronite	$Na_2(CuCO_3)_2\ 3\ H_2O$	Green/Blue
Chloride	Nantokite	CuCl	Green/White
*Basic Chlorides	*Atacamite	$Cu_2(OH)_3Cl$	Green
	*Paratacamite	$Cu_2(OH)_3Cl$	Pale Green
	*Botallakite	$Cu_2(OH)_3Cl$	Pale Green/Blue
Sulphides	Chalcocite	Cu_2S	Black
	Covellite	CuS	Black
Sulphate	Brochantite	$CuSO_4\ 2\ Cu(OH)_2$	Green

Figure 1:List of the most common copper corrosion products, (https://www.getty.edu/publications/artistryinbronze/conservation-and-analysis/35-casaletto/)

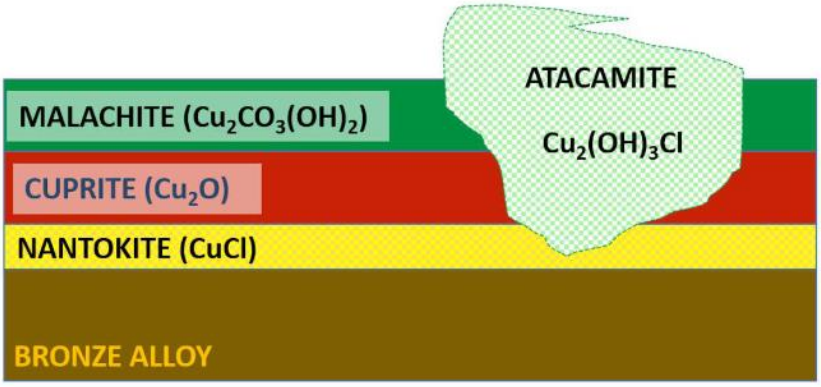
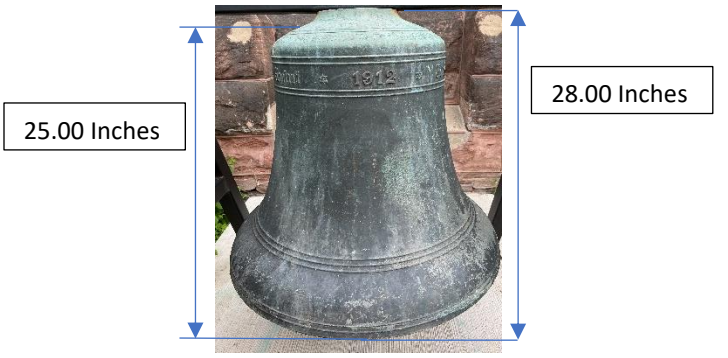
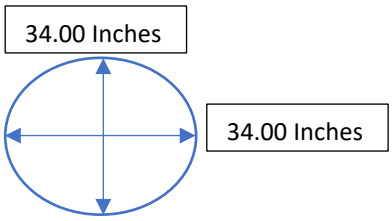


Figure 2:Corrosion of archaeological bronzes: schematic illustration of "bronze disease", (https://www.getty.edu/publications/artistryinbronze/conservation-and-analysis/35-casaletto/)

History of the Bell

According to the SSM archive, the bell was built in 1912 in England and moved together with the clock tower to the building which was a post office during that time. The description on the top of the bell mentions the name of the builder and the date of making. It states "John Taylor – Founders – Loughborough – England – 1912". The bell of the clock is an 810-pound bronze bell with a hammer strike. As for the other measurements, outer length is 28.00 Inches, inner length is 25.00 Inches, and the diagonal length is 34.00 inches.





The most significant feature of the bell is that it was originally synchronized with the clock and could be heard from as far away as Gore Street. The original location of the bell was on the museum's roof by the clock tower. It was kept underneath a gable roof which protected it from rain and sunlight. It was stored in the same spot until 2017, after which during roof maintenance, it was moved to storage and was kept there for almost five years. In 2023, it was moved outside the building and is has been there as a symbol of the building and represents the history of Sault St. Marie. According to the communication between the writer and the manufacturer, the company is still active in building bells, and they have a museum of the history of the company as well. The result of the communication confirmed that the bell was built by John Tylor in England in 1912. Below is the script of an email by Archivist of Loughborough Bellfoundry Trust with acknowledgment to the Loughborough Bellfoundry Trust: "The bell will be listed in our records

under the name of the clockmaker rather than the destination. The job book shows some 12 bells supplied to Smith of Derby for clocks for Canada, the places listed individually on page 228. Your bell was order no.126 (or K) in the list, diameter 34" (86cm) weight 7 cwt 0 qr 6 lbs (358kg), note 909hz (B flat minus 44 cents of a semitone). The metals book shows that the bells were dispatched

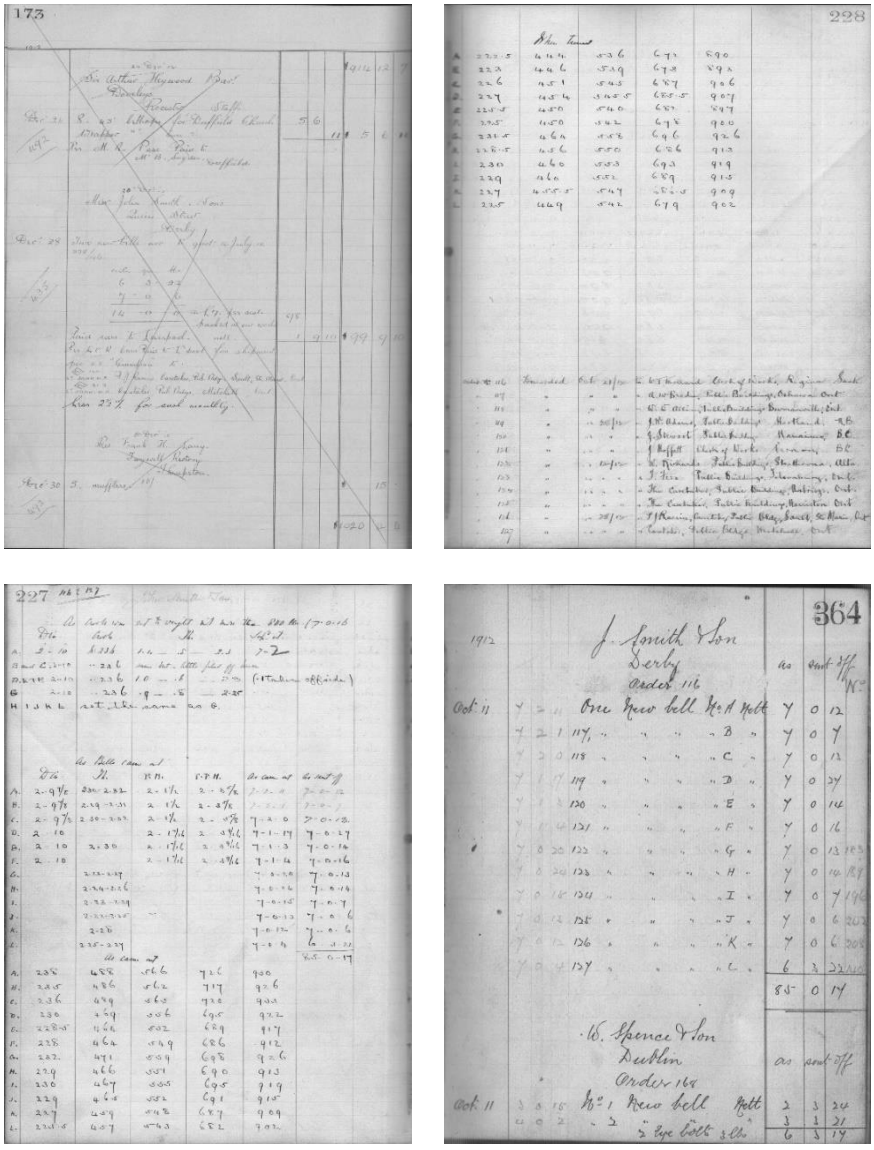


Figure 3: Document of Loughborough Bellfoundry Trust that shows the data and manufacturing location of the bell

to Smiths on 11 October 1912. The daybook shows that your bell (and a second one) was invoiced to Smiths on 28 December 1912 – and records the shipping details and destination"

Figure 4: Before conservation process- photos above from front and rear view of the bell before the second vandalism event and the photo below of the front side of the bell after the second vandalism (photo by the writer, summer 2023)

The Necessity of Conservation and Preservation

The environment in which a brass or bronze piece is used or stored plays a significant role in its health and longevity. Moisture can be particularly destructive. Keeping humidity levels below 55% and avoiding rapid fluctuations in temperature is essential. Temperature changes cause metals to contract and expand, weakening the surface and encouraging protective coatings to fail. Air pollution, such as car exhaust fumes, cigarette smoke, dust, and debris are also detrimental. These can accumulate on the surface, attracting moisture and promoting corrosion. Mishandling of brass or bronze objects can cause denting, breakage, bending or cracking. Lifting should be avoided from the extended areas, such as the edge or handle. Also, skin contact is not safe for bronze objects as oils and moisture from human skin will be absorbed in the metal surface and cause corrosion. It is necessary to use clean cotton gloves when handling.

The SSM Museum's bronze bell is important because of its history and is a magnificent symbol of the SSM Building and former post office. In addition, this historic object represents the trade communication between Canada and bell clock builders in England. Furthermore, external factors such as the environment and vandalism have demonstrated the necessity to protect the bell from more damage.

As this object has been placed outside the building with no roof or shelter, it faces different temperatures and weather condition vary from approximate 30° C in summer to -30° C in winter under direct sunlight, rain, and snow. The overall condition of the bell is fair, and therefore there is a need to protect it. More details and pictures about the current condition of the bell is provided in the "Before Conservation and Preservation" section. Although the patina is still in good shape, vandalism damages its homogeneity and protective function. As a result, it is vital to start the conservation and preservation process as soon as possible.

Conservation Planning

The three main causes of damage to metal objects are corrosion, mishandling and poor environment. The conservation plan includes steps to clean and protect the object during its lifetime. In this section, the process and materials that need to be prepared are presented. For more clarification, the process and the materials are divided into three parts which include before conservation and preservation, during conservation and preservation, and after conservation and preservation

Before Conservation and Preservation

This is the first step in the process of conservation and includes research and data gathering about the history of the object, past and current conditions of the bell, the physical appearance and features such as different layers of corrosion, vandalism and any changes in stability and structure of the object. Documenting via taking photos and research plays a key role in this step before further process. The photos below displays the current condition and environmental factors as well as the appearance of the bell. Based on the research, different corrosion types and damage on the bell are shown in the chart below.

Type of corrosion/damage	Location	Photo
Bronze disease	On the top of the bell	
Damage related to the iron frame corrosion	On the top of the Bell	
Traces of rain and snow and washing of corrosion material from top of the bell	On the surface of the bell	 

Scratch on the surface because of vandalism	On the surface of the bell	
Corrosion of bronze, This dark layer is part of patina	All the surface of the bell but more concentrated on the middle and bottom of the object.	
Scratch on the surface due to vandalism. In this picture the green ring below the bell on the ground is also recognizable. This is the part of patina that was washed by water to clean the initial vandalism.	On the surface of the bell	

Trace of birds' excreta on the bell	On the top of the bell	
Damage to the patina with water pressure conducted to clean the graffiti (vandalism)	On the front side of the bell	 After water pressure  Before water pressure

Dust and insect	On the surface of the bell both inside and outside	 
Picture of inside of the bell: corrosion of bronze on the edge	inside	
Scratch and contamination inside the bell	inside	

Conservation and Preservation

This step is the main part of the conservation process and applies to necessary materials using conservation procedures. It involve removing dust and corrosion (cleaning), stabilizing damaged and broken parts with adhesive (conservation), rebuilding the missing parts for stability and aesthetics purposes (restoration), and designing an appropriate condition with relative humidity (RH) below 55% to prevent Bronze Disease (preservation).

Cleaning:

In the cleaning phase the focus is on cleaning the bell from dust and air pollution, and traces of markers and pen resulted by vandalism. In addition, corrosion with the sources of chlorine (light green powder) should be removed. Physical cleaning for removing dust and traces of vandalism from the surface is the first treatment in this phase. For this purpose, dusting with brush can clean the inside and outside of the bell from dust, insects, and spider net. This is the action with the lowest risk in this step. There may even be the need to use a vacuum cleaner to clean the inside of the bell from dust. For this purpose, in regards to not scratching the bell, a piece of clean cotton cloth will be attached to the vacuum cleaner to avoid direct touch with the object. If the first stage of cleaning was not enough, mix of deionized water and isopropyl rubbing alcohol 70% with cotton swabs could be used to clean the stuck dust and greasy residues to complete the cleaning process. If still some dirt remained, the cleaning could be further continued with Vulpex as an approved conservation soap in a 3% solution in deionized or distilled water to remove the dirt and grime with lint-free cloth or natural soft bristle brush (Deck, 2020).

Conservation:

Based on the research of Molina et al (2023) at the Canadian Conservation Institute, after 12-15 years of artificial light exposure with filtered fluorescent lamps, which is equivalent to

approximately 45 years in a museum, most “acrylics” show in general good aging behavior in terms of pH stability, minimal discoloration to yellow, and mechanical properties. Paraloid B72, Paraloid B-44 and Incralac are common types of acrylics in metal conservation. For outdoor applications “Incralac” is the best option with a life duration of around 3-5 years. The main ingredients of Incralac are Paraloid B-44 (ethyl methacrylate/methyl methacrylate copolymer), leveling agent, epoxidized soybean oil, an ultraviolet stabilizer, toluene, ethanol, and the corrosion inhibitor benzotriazole (BTA) (Molina et al, 2023). Wolfe & Grayburn (2017) concluded that Incralac is an ideal air-drying clear coating lacquer based on acrylic resin and it is removable using laser and carbon dioxide blasting techniques. Incralac is a solvent-based, clear, very high gloss, air-dry coating for copper and copper-based alloys such as bronze. According to the International Copper Research Association (INCRA), Incralac was found to provide the best protection for copper and brass of all air-dry coatings tested. It is stated that spraying the chemical material on the historical bronze yields better results in providing a whole coverage with homogenous thickness on the object (International Copper Research Association. 1966a, b). This coating lacquer provides protection against bronze disease and any type of corrosion including Chloride-based degradation.

After Conservation and Preservation

As this bronze object will stay outdoors, it is impossible to control the temperature and the weather conditions. But we can design and build a protective roof to prevent any damage from rain, snow, and direct sunlight on the bronze. For this purpose, it is suggested to build a wooden gable roof with four columns similar to the original gable roof when the bell was kept on the roof of the museum's building.

Figure 5: The sketch of the original location of the bell on the roof of the museum's building (SSM Museum, http://www.saultmuseum.ca/)

Please note that a written conservation treatment report will be provided after the process of conservation is completed. The report will include the treatment process that has been done, condition assessment/report, photos of before and after the treatment to track the process, and recommendations for handling, storage, and/or display in outdoor and indoor settings.

The Expected Budget

Material/tool	Purpose	Expenses
Conservation Dusting Brushes	Mechanical cleaning	CA$54.40 https://www.carrmclean.ca/conservation-dusting-brushes.html
OLFA® Art Knife	Mechanical Cleaning, to remove thick corrosions and germ	CA$10.75 https://www.carrmclean.ca/olfar-art-knife.html
Vulpex Soap	Gentle chemical cleaning **if required	CA$160.00 https://www.carrmclean.ca/vulpex-soap.html
Water	Mix with Vulpex Soap	CA $19.95 x 2 https://www.amazon.ca/RippleFX-Eye-Skin-Rinse-Deionized/dp/B08SJQ5KSL/ref=asc_df_B08SJQ5KSL/?tag=googleshopc0c-20&linkCode=df0&hvadid=459346594777&hvpos=&hvnetw=g&hvrand=15529804847523320606&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9001156&hvtargid=pla-1184112125980&psc=1
Cotton		
Cleaning Swab Kit	Cleaning wet and dry	CA$24.80 https://www.carrmclean.ca/cleaning-swab-kit.html
Incralac-Solvent Base 1 gallon		CA $197.00 https://conservationsupportsystems.com/product/show/incralac-solvent-based/metal-coatings
Filter Mask		CA $30.99 https://www.amazon.ca/Respirators-dustproof-Formaldehyde-Prevention-Decoration/dp/B087FCW79Y/ref=sr_1_8?crid=1Y3KCN9R5L7XV&keywords=filtered+mask+for+chemical+material&qid=1691260684&sprefix=filttered+mask+for+chemical+material%2Caps%2C112&sr=8-8
Safety glass		CA $19.79 https://www.amazon.ca/3M-Protective-Eyewear-Scotchgard-Anti-fog/dp/B016KZ2APQ/ref=sr_1_10?crid=2W9T3LD53QN46&keywords=safety+glasses+for+women&qid=1691260873&sprefix=safety+glass%2Caps%2C124&sr=8-10
Spray container	Spraying Incralac	CA $119.99 https://www.amazon.ca/Chapin-Industrial-3-Gallon-Sprayer-1352/dp/B00002N8O5/ref=sr_1_35?crid=2BX9YR57M4IU5&keywords=chemical+material+spray+container&qid=1691260426&sprefix=chemical+material+spary+countainer%2Caps%2C110&sr=8-35&ufe=app_do%3Aamzn1.fos.b06bdbbe-20fd-4ebc-88cf-fa04f1ca0da8

Toluene	To make the Incralac more liquid if it is necessary to cover the surface of the bell	CA $59.99 43071169118415?q=toluene+fortal++conservation+metal+canada&rlz=1C1ONGR_enCA1025CA1025&biw=1707&bih=821&oq=toluene+fortal++conservation+metal+canada&gs_lp=Egtwcm9kdWN0cy1jYyIpdG9sdWVuZSBmb3J0YWwgIGNvbnNlcnZhdGlvbiBtZXRhbCBjYW5hZGFI1bQBUKEQWLimAXAGeACQAQCYAY4BoAHmI6oBBTEwLjMxuAEMyAEA-AEBwgIKEAAYGBiABBiwA8ICCxAAGAgYHhgYGLADwgIEECEYCsICBRAhGKABwgIHECEYoAEYCogGAZAGAg&sclient=products cc&prds=eto:17396447392419795028_0,local:1,pid:1826425577078 3808199,prmr:2&sa=X&ved=0ahUKEwjq8MTF3sWAAxWHMDQIHcGUDAsQ8wIItwE
Total Cost		**$557.57 (**excluding $160.00)**
Conservator's wage		**$50.00/hr**

**Material costs are tentative and may be affected by change in the amount depending on the process and the result of each step.*

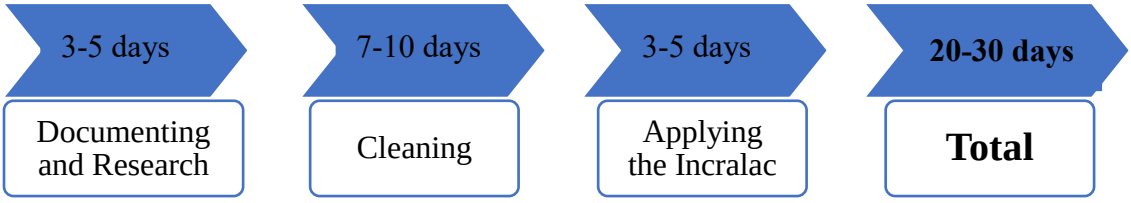
Cupola for Museum Bell (prepared by Nicole Curry)

Materials

Peak 4 x 4 Heavy duty steel bolt down post support		$23.57 ea	4pcs	$94.28
3/8 x 3 inch steel hex head sleeve anchor	15 pack	$24.34	1pc	$24.34
3/8 x 3 inch " " " " " "	1 pc	$ 2.27	1pc	$ 2.27
Paulin 1/4 x 1-1/2 inch black hex lag bolt	5 pc	$2.68	7pcs	$18.76
Paulin 1.6"x3"x1/8" black corner brace	each	$7.85	4pcs	$31.40
1-1/4 inch roofing nails	box	$5.20	1pc	$ 5.20
4"x4"x8 foot pressure treated post	each	$16.78	4pcs	$67.12
2"x4"x8 foot pressure treated	each	$7.47	8pcs	$52.29
1"x6"x 6 foot pressure treated	each	$6.00	8pcs	$48.00
GAF Timberline UHDZ Weathered Wood Algae resistant shingles	bndl	$59.49	1	$59.49
Behr Solid stain white	gallon	$31.97	1	$31.97
Assorted fasteners, brushes, misc		$75.00		$75.00
				$510.12

Plus tax

Timetable of the Process



**The duration of the process may be affected by weather conditions, as the process will be conducted in an outside environment.*

References

Deck, C., (2020). The Care and Preservation of Historical Brass and Bronze, *Benson Ford Research Center*, 1-9

https://www.getty.edu/publications/artistryinbronze/conservation-and-analysis/35-casaletto/

Loughborough Bellfoundry Trust, Archive documents

Molina, M., T., Cano, E., Ramírez-Barat, B. (2023). Protective coatings for metallic heritage conservation: A review, *Journal of Cultural Heritage 62*, 99–113

Wolfe, J. & Grayburn, R. (2017). A review of the development and testing of Incralac lacquer, *Journal of the American Institute for Conservation*, DOI: 10.1080/01971360.2017.1362863

Sandell, E.R, (2018). New Materials for the Coating of Outdoor Bronze, Submitted in partial fulfillment of the requirement for the degree Master of Science in Historic Preservation, *Columbia University*

International Copper Research Association. 1966a.Development of an aerosol INCRALAC. INCRA Project 96. New York: David Litter Laboratories

International Copper Research Association. 1966b.Development of clear coatings for protection of copper base alloys: Project report 1960–1965. INCRA Project 16(d). Waterbury, CT: Chase Brass & Copper

143 McGregor Avenue - McLeod Family Residence

Tax rebate recommended.

Recommendations:

- Spalling on south side requires some point work.
- Re-mortaring noted in past report on the Upper turret is completed.