



Instructor: **Dr. Sujan Shrestha**  
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Lecture class: Thursday 8:35 am to 11:25 am. Classroom: AA204

Labs:

Sctn	Day	Times	Field	Space
A2	Fri	2:35 pm – 5:25 pm	SITE	ME4342
A1	Fri	11:35 am – 2:25 pm	SITE	ME4342

Teaching Assistants:

TBD:

TBD:

Definitions: **Building Pathology** is a term "used to define a holistic approach to understanding buildings. Such an approach requires detailed knowledge of how buildings are constructed, used, occupied, and maintained. The various mechanisms by which their structural, material, and environmental conditions can be affected. It is, by necessity, an interdisciplinary approach and requires a wider recognition of how buildings and people respond and react to each other." David Watt, *Building Pathology, Principles and Practice*, 1999

**Rehabilitation** is the "action or process of making possible a continuing or compatible contemporary use of a historic place, or an individual component while protecting its heritage value." Parks Canada, *The Standards and Guidelines for the Conservation of Historic Places in Canada*, 2011.

Description: **Building Pathology and Rehabilitation** is a core course of the Bachelor of Engineering (BEng) and Architectural Studies (BAS) with a Major in Architectural Conservation and Sustainability. It is taught in the 4<sup>th</sup> year of the programme after students have been

introduced to basic conservation and sustainability principles and fundamentals of building materials, assemblies and structures. Building on the Architectural Technology courses taught throughout the BAS and BEng and using basic documentation techniques learned in the Historic Sites Recording course, students will become familiar with the skills required to investigate and address the conservation and sustainability issues of historic and modern buildings. While focused on Eastern Canada's existing building stock building technologies, the discussion and analysis will include examples of buildings of all types, sizes, and locations.

Learning Outcomes: Working individually and in teams, students will be able to:

- Explain/assess historic and modern building envelope and structural systems, assemblies and materials and their patterns and causes of decay and deterioration.
- Formulate a methodology for the assessment of the physical condition and performance of buildings in support of assessment and performance evaluation and design;
- Identify, analyze and recognize historic construction materials, assemblies and structures;
- Recognize the roles of architects, engineers, materials conservation specialists, building scientists, architectural/ building historians, traditional building trades and other disciplines;
- Design a rehabilitation treatment option based on the visual inspection and analysis of physical conditions, considering conservation principles and other criteria (health and safety, cost, accessibility, etc.)
- Describe specific historic and modern building rehabilitation issues, including preserving patina, addressing inherent vice, locating substitute materials, using modern technologies, and identifying appropriately skilled labour.

One of the underlying objectives is to help to interpret the connection between conservation and sustainability, as well as sustainable conservation strategies: Critical to the development of an integrated sustainable conservation project is the understanding of the history of the building's construction and use, its inherent environmental features, past and current performance patterns, and the types and causes of deterioration of its specific materials, assemblies and structures. Effective, affordable, and respectful means of maintaining and repairing important and well-crafted built features should continue to offer years of use – thus sustaining our built heritage and reducing the impact of new construction on the environment.

References: Through the use of a diverse range of paper and web-based references, students will also become familiar with the extent of Canadian and international resources for working on historic/ existing buildings. There is no required textbook, but many critical texts are on reserve at the library.

A list of books on reserve and Internet resources is provided below. Also, a list of weekly readings on specific topics will be provided at the first class.

Format: **This is an in-person course.** When possible, some site investigation and documentation will be conducted. Also, discussion of case studies, readings and research, essay and report writing are expected. The first weeks include a 3-hour Lecture period and a 3-hour lab led by the instructor and teaching assistants. The Lecture period will include teaching modules, discussion of assigned readings and presentations, or assignments.

Lab time will be used for fieldwork, work on assignments 2 to 5, described at the end of the outline, and meet the instructor and/or teaching assistants. Lectures/ field visits may include guest speakers. Students are encouraged to participate in analytical discussions and make links with other courses, projects, and experiences. Given that online lectures were recorded during the lockdowns, those video lectures will be provided as reference, but do not replace in person lectures, as contents might have been updated.

**Grading:** There are 4 online class quizzes (20%) and an online take-home exam (20%) dealing with in class online content, including Lectures and readings. There will be five assignments worth 50%. The description of each assessment follows the detailed course description below. The grading of the five assignments will be as follows:

Assignment 1	5% ( <i>online and signing two forms on class</i> )
Assignment 2	10%
Assignment 3	10%
Assignment 4	5%
Assignment 5	20% ( <i>this includes a dossier - 10% and a group presentation submissions – 10%</i> )
Course Quizzes	20%
Take-Home Exam	20%

The remaining 10% of the final mark is discretionary based on in class attendance (and tutorials), including participation, punctuality, and technical compliance.

The instructor might review attendance sheets signed in lectures and tutorials to evaluate the participation and interest in the course. Eventually, depending on the sources' progress, a **bonus assignment worth 5% in total of additional grades might be implemented.**

Concise and accurate technical writing is important in professional work; student writing, and verbal work will be assessed on language (grammar, spelling, structure, style) and content. Only referenced peer-review academic publications will be accepted as bibliographical support; this should be presented using appropriate academic citation styles; for this, you are recommended to consult: <https://library.carleton.ca/help/citing-your-sources> .

**See also below for more general information.**

**Emails:** Emails will be answered within 24 hours. Except for during the 30 minutes after class, meetings outside class hours will be by appointment only.

## **OVERVIEW OF COURSE CONTENT: Modules**

- 1. Introduction**
- 2. Characterization of buildings**
- 3. Building pathology**
- 4. Materials, assemblies and structures:**
- 5. Building Envelope & Introduction**
  - a. Wood**
  - b. Masonry**
  - c. Metals**

- d. Concrete
- 6. Building rehabilitation
- 7. Sustainable rehabilitation

## DETAILS ON EACH TOPIC

### INTRODUCTION

- Learning objectives, methodology, definitions
- The conservation process and values-based decision-making
- Bridging between conservation and sustainability
- Principles and practices
- The role of documentation
- Overview of principal references
- Overview of all assignments and student evaluation process
- BP&R skills assessment

### CHARACTERIZATION OF BUILDINGS

#### 1: Introduction:

- The importance of understanding/ being able to ‘read’ buildings for pathology
- Three types of characterization: construction, functional types and performance
- Sources of information: primary (site, archival documents) / secondary research

#### 2: Construction types:

- Structural systems (masonry, timber, steel, concrete, hybrid)
- Assemblies (roofs and roof related elements, exterior walls and foundations, windows and doors, interior features and finishes)
- Materials (wood, stone, brick, metals, glass, plaster, stucco, tile, etc.)
- Comfort and service systems (heating, ventilation, lighting, elevating, etc.)

#### 3: Functional types:

- Residential, commercial, institutional, cultural, religious
- Issues due to scale, number and location of buildings

#### 4: Performance and climate

- Standards and performance measures: comfort, security, acoustics, air quality
- Code requirements for existing buildings: fire protection, egress, accessibility
- Performance expectations: service life, obsolescence and life cycle
- Workmanship and design quality
- Site-specific, regional and climate-based conditions
- Inherent/historic environmental features: size, orientation, massing, materials, durability, natural daylight, ventilation

### BUILDING PATHOLOGY

#### I: Building deterioration: defects, damage and decay

- Definitions: defects, damage, decay
- Extrinsic versus intrinsic causes of deterioration
- Understanding weather and climate
- Natural causes: water, wind, sun, freeze/thaw, fire, earthquakes, vegetation, insects

- Human-made causes
  - Short-term deterioration (disasters)
  - Long-term deterioration (weathering or lack of maintenance)
- 2: Investigation: condition and performance assessment**
- Step-by-step procedures of investigation and diagnostics
  - The investigation team: architect, engineer, technologist, builder/ craftsman
  - Principles and proven methods
  - Tools and resources
  - Health and safety considerations
  - The roles of building historians, materials conservators, conservation scientists, building science specialists, and traditional trades in an assessment
  - Destructive and non-destructive testing
  - Performance assessment tools and methods: thermal, seismic, comfort, etc
  - Climate change considerations (impact assessment and mitigation)
- 3: Diagnostics: criteria and analysis**
- Step by step: the process of analysis
  - Review of applicable codes, standards and guidelines
  - Evaluation of previous repairs and alterations
  - Historic codes, standards and repair approaches
  - Ageing and patina
  - Durability and service life
  - Inherent vice and design "flaws."
  - Monitoring and testing
  - Establishing priorities

## **MATERIALS, ASSEMBLIES AND STRUCTURES**

### **1: Building Envelope: Roofs, Walls, Windows**

- Building envelope characteristics, objectives and typical problems or deterioration
- Roofs and rainwater controls: types, components and problems of sloped and flat roofs
- Exterior walls including foundations, cladding, curtain walls: types, components and problems
- Windows and doors, including glazing materials, frames and hardware: types, components and problems
- Key sustainability issues and typical conservation strategies

### **2: Introduction to the Materials, Assemblies and Structures (MAS) modules**

- Overview of the MAS modules. Each MAS module will address the specific:
- Examples of character-defining elements in Canadian buildings
- Key developments in the technology's history
- Material and assembly/ structure properties
- Typical deterioration and defects
- Testing for identification of materials and assessment
- Performance issues and sustainability
- Conservation guidelines
- Analysis and treatment options (Maintenance, Repair, Replacement)

- Available references
- 3: Wood materials, assemblies, and structures**
  - Including timber, wood, engineered wood products
- 4: Masonry materials, assemblies, and structures**
  - Including natural stone, brick and terra cotta
- 5: Metal materials, assemblies, and structures**
  - Including iron, steel(s), copper and alloys, and aluminum
- 6: Concrete materials, assemblies, and structures**
  - Including cast stone, terrazzo and mortar

## **BUILDING REHABILITATION**

### **I: Planning the repair approach**

- Criteria for treatment selection (e.g. heritage, health/safety, cost, sustainability)
- Level of intervention: minimum intervention in addressing causes of deterioration
- Principles of conservation repair / values-based decision-making
- Integration of performance improvement objectives
- Prioritization of proposed work
- Modern repair technologies
- Use of substitute materials, re-use of heritage materials, sourcing materials
- Integration of specific treatments in an overall conservation plan

### **2: Addressing performance issues**

- Upgrades to meet changes to codes and standards
- Addressing seismic, security & accessibility requirements
- Improving thermal performance and other sustainability upgrades
- Fire protection
- Removal and encapsulation of toxic materials
- Replacement of poor original materials or addressing poor design
- Development of integrated treatment/upgrade options
- Options analysis and recommendations

### **3: Planning repair work and upgrades**

- Step by step project planning (in public and private practice, for generalists and specialists).
- Specifications for conservation and sustainability: reduced VOCs, embodied energy, durability, local materials and waste management
- Site-specific issues
- Role of mock-ups
- Identifying appropriately skilled labour
- Pre-qualification of contractors
- Cost estimation
- Contracting considerations

## SUSTAINABLE REHABILITATION

### 1: Sustainable conservation strategies

General & specific principles for integrating conservation and sustainability, including

- The integrated design process and community consultations
- Assessment of current conditions and performance
- Understanding of historic environmental design principles and features
- Application of common principles of minimal intervention (repair before replacement)
- Using appropriate new or historic technologies
- Designing for durability, compatibility and reversibility
- Planning for long-term use, growth and change

### 2: Sustainable conservation examples

- Case studies of successful integration of conservation and sustainability, including appropriate alterations of site, building envelope, systems and interiors
- Discussion of how to use environmental rating systems in the context of rehabilitation

## REFERENCES

Readings will be identified from online sources, and the final take-home examination will include selected questions from these readings:

- Eric Arthur, Thomas Ritchie, *Iron: cast and wrought iron in Canada from the seventeenth century to the present*, University of Toronto Press, 1982 (Available online through Carleton Library's HathiTrust Access)
- John Ashurst, Francis G. Dimes, editors, *Conservation of Building and Decorative Stone*, London, Butterworths, 1990 (Available online through Carleton Library's HathiTrust Access)
- Jean Carroon, *Sustainable Preservation, Greening Existing Buildings*, Wiley, 2010 (Available online through Carleton Library's E-Book central)
- Bernard Feilden, *Conservation of Historic Buildings*, Arch. Press, 2003 (1982) (Available online through Carleton Library)
- Mark Fram, *Well-Preserved, The Ontario Heritage Foundation's Manual of Principles and Practice For Architectural Conservation*, Ontario Heritage Foundation, 2003 (1988) (Available online through Carleton Library)
- Frances Gale, editor, *Preservation Technology Primer: readings from the APT Bulletin*, 2008. (Available online through Carleton Library)
- Lisa Gelfand and Chris Duncan, *Sustainable Renovation, Strategies for Commercial Building Systems and Envelope*, Wiley, 2012. (Available online through Carleton Library)
- Georg Giebeler, et al., *Refurbishment Manual: Maintenance, Conversions, Extensions*, Birkhauser, 2009 (Available online through Carleton Library)
- Thomas Jester, editor, *Twentieth-Century Building Materials: History and Conservation*, McGraw-Hill, 1995. (Available online through Carleton Library's HathiTrust Access)
- Susan Macdonald, editor, *Concrete: Building Pathology*, Wiley-Blackwell, 2002 (Available online through Carleton Library)
- Thomas F. McIlwraith, *Looking for Old Ontario, Two Centuries of Landscape Change*, University of Toronto Press, 1997 (Available online through Carleton Library)
- Richard Oxley, *Survey and Repair of Traditional Buildings, A Sustainable Approach*, Donhead, 2003 (Available online through Carleton Library's HathiTrust Access)

- J. Stanley Rabun, *Structural Analysis of Historic Buildings: Restoration, Preservation and Adaptive Reuse Applications for Architects and Engineers*, Wiley 2000. (Available online through Carleton Library's HathiTrust Access)
- John Rempel, *Building with Wood, and Other Aspects of Nineteenth-century Building in Central Canada*, University of Toronto Press, 1980 (Available online through Carleton Library's HathiTrust Access)
- Thomas Ritchie, *Canada Builds, 1867-1967*, University of Toronto Press, 1967 (Available online through Carleton Library's HathiTrust Access)
- Susan M. Ross (2017) Sustainable conservation strategies for Canada's modernist wood legacy, *Journal of Architectural Conservation*, 23:3, 171-189, DOI: 10.1080/13556207.2017.1330385 (Available online through Carleton Library)
- David Watt, *Building Pathology, Principles and Practice*, Wiley-Blackwell, 2008 (1999) (Available online through Carleton Library)
- Martin Weaver, *Conserving Buildings, A Manual of Techniques and Materials*, Wiley, 1997 (1992) (Available online through Carleton Library's HathiTrust Access)

Also, the following references are available online:

- EWAGLOS – *Illustrated Glossary of Conservation Terms for Wall Paintings and Architectural Surfaces* - <http://heritageportal.eu/Resources/Useful-Links/EWAGLOS---Illustrated-Glossary-of-Conservation-Terms-for-Wall-Paintings-and-Architectural-Surfaces.17783.shortcut.html>
- Parks Canada, *The Standards and Guidelines for the Conservation of Historic Places in Canada* <http://www.historicplaces.ca/en/pages/standards-normes.aspx>  
NB. Also, the bibliography includes references from provincial heritage departments and organizations across the country.
- Canada Mortgage and Housing Corporation – Better Buildings Case Studies [www.cmhc-schl.gc.ca/en/inpr/bude/himu/bebu/bebu\\_001.cfm#CP\\_JUMP\\_189275](http://www.cmhc-schl.gc.ca/en/inpr/bude/himu/bebu/bebu_001.cfm#CP_JUMP_189275)
- Canada Mortgage and Housing Corporation – Con Ed Articles for Architects: Building Envelope [www.cmhc-schl.gc.ca/en/inpr/bude/himu/coedar/coedar\\_001.cfm](http://www.cmhc-schl.gc.ca/en/inpr/bude/himu/coedar/coedar_001.cfm)  
Online damage-expert for monumental buildings system <http://mdcs.monumentenkenis.nl>
- APT Bulletin articles (through Jstor) [www.apti.org/bulletin-index/](http://www.apti.org/bulletin-index/)
- APT Publications – Historic Trade Publications [www.apti.org/publications/apt-building-technology-heritage-library/](http://www.apti.org/publications/apt-building-technology-heritage-library/)
- USA National Parks Service Preservation Briefs and Tech Notes [www.nps.gov/tps/how-to-preserve/briefs.htm](http://www.nps.gov/tps/how-to-preserve/briefs.htm)  
[www.nps.gov/tps/how-to-preserve/tech-notes.htm](http://www.nps.gov/tps/how-to-preserve/tech-notes.htm)
- USA GSA HP Technical Procedures
- <http://www.gsa.gov/portal/hp/hpc/category/100371/hostUri/portal/searchBy/ALL>
- Getty Conservation Institute publications [www.getty.edu/conservation/publications\\_resources/pdf\\_publications/index.html](http://www.getty.edu/conservation/publications_resources/pdf_publications/index.html)  
Myers, D. Smith, S.N. Shaer, M. A Didactic Case Study of Jarash Archaeological Site, Jordan: Stakeholders and Heritage Values in Site Management, The Getty Conservation Institute, [http://www.getty.edu/conservation/publications\\_resources/pdf\\_publications/jarash\\_case\\_study.html](http://www.getty.edu/conservation/publications_resources/pdf_publications/jarash_case_study.html)
- National Institute of Building Sciences – Whole Building Design Guide [www.wbdg.org/design/historic\\_pres.php](http://www.wbdg.org/design/historic_pres.php)  
[www.wbdg.org/design/sustainable.php](http://www.wbdg.org/design/sustainable.php)  
[www.wbdg.org/resources/sustainable\\_hp.php?r=historic\\_pres](http://www.wbdg.org/resources/sustainable_hp.php?r=historic_pres)
- Historic England publications <https://www.historicengland.org.uk/images-books/publications>  
<https://www.climatechangeandyourhome.org.uk>



## Tentative schedule

The Lectures and activities might change over the weeks, given the availability of guest Lecturers and the unprecedented effect of COVID pandemic or weather conditions on the course progress.

Week	Tutorial	Class	Contents and tasks
1		Jan 11	Lecture 1: Introduction to Building Pathology & Rehabilitation. Lecture 2: Course Introduction, Outline and available Historic Sites. Lecture 3: Characterization of buildings; construction types; functional types; inherent environmental features
	Jan 12		No Tutorials
2		Jan 18	Lecture 4: Building deterioration: Defects, damage and decay. Lecture 5: Investigation: Condition & Performance Assessment. Lecture 6: Values centred assessments <b>Guest Lecture (TBD)</b> Introduction of Assignment 2 Review suggested readings at Brightspace.
	Jan 19		Group Meetings with Teaching Assistants
3		Jan 25	Lecture 7: Diagnostics, Criteria & Analysis. Lecture 8A: Repairs: Planning the conservation approach. Lecture 8B: Adaptive Reuse - Preparation of a Conservation Management Plan Review suggested readings at Brightspace. <b>Quiz 1 on Building Pathology concepts starts at 8:30 am to 5:00 PM</b>
	Jan 26		Tutorial 1: Preparing Site Reconnaissance <b>Submit Assignment 1 due January 26 (5 PM)</b> <b>Submit you teams' site and composition (5 PM)</b>
4		Feb 1	<b>Lecture 10: Preparing a Statement of Significance in Canada (Guest Lecture by L. Smith) TBD</b> <b>Lecture 11A - Structural Assessment of a Historic Buildings TBD</b> <b>Lecture 11B – Structural Assessment of a Historic Buildings TBD</b> Introduction to Assignment 3 and 4 Review suggested readings at Brightspace.
	Feb 2		Group Meetings with Teaching Assistants and working on Assignment 2
5		Feb 8	Lecture 12: Introduction to Materials. Lecture 13A: Introduction to masonry, metals, Earth, Wood and Concrete. Lecture 13B: Masonry materials, assemblies, and structures <b>Guest Lecture: Historic Mortars (Guest Lecture Alex Blades) TBD</b> Review suggested readings at Brightspace.
	Feb 09		R01: (A2 and A1): Review A02 Draft with TA Tutorial 2: Preparing an essay for Building Pathology relevant to Assignment 3
6		Feb 15	Lecture 14: Metal materials, assemblies, and structures. Lecture 15: Earth: materials, assemblies, and structures Lecture 16: Rehabilitation 2: Upgrades: addressing performance objectives <b>Guest Lecture: Stone Conservation (Guest Lecture: Aliaksei Fedarenka) TBD</b> Review suggested readings at Brightspace.
	Feb 16		<b>Submit Assignment 2 due Feb 16 (5 pm)</b> Site visit (pending permissions)

Reading Week (Feb 19-23)			
7		Feb 29	Lecture 17 on Adaptive Reuse - <b>Preparation of a Conservation Management Plan (Guest Lecture -TBD)</b> <b>Lecture 18: Energy Modelling for Existing Buildings (Guest lecture TBD).</b> <b>Lecture by Guest Practitioner: TBD</b> <b>Quiz 2 on topics covered until Feb 15 starts at 8:30 am to 5:00 PM</b>
	Mar 1		Tutorial 3: Introduction to Assignment 4 and 5 (Condition assessment, values assessment and photogrammetry)
8		Mar 7	Lecture 20: Rehabilitation 3: Projects: Planning repair and upgrades Review suggested readings at Brightspace. <b>Lecture 21: Wood materials, assemblies, and structure and Waste Heritage (Guest lecture by S. Ross) TBD</b>
	Mar 08		Working session on Assignment 4 and 5 Site visit (pending permission) <b>Submit Assignment 3 due Mar 10 (5 pm)</b>
9		Mar 14	Lecture 22: Thermal Photography: Introduction for Building Pathology and Rehabilitation Lecture 23: Concrete materials, assemblies, and structures. Lecture 24: Sustainability of Historic Buildings. <b>Guest Lecture: TBD</b> Review suggested readings at Brightspace.
	Mar 15		Working session on Assignment 4 and 5 Site visit (pending permissions)
10		Mar 21	Visit to the Global Pluralism Center (9 AM to 11 AM) <b>Quiz 3 on topics covered until March 15 starts at 8:30 am to 5:00 PM</b>
	Mar 22		Working session on Assignment 4 and 5 Site visit (pending permissions) <b>Submit the name of the team member that will upload data into dataverse by email to instructor (5 PM)</b>
11		Mar 28	<b>Lecture 26: Introduction to Climate Adaptation: what does it mean to Historic Places (Guest Lecture: TBD)</b> Lecture 27 – Emerging challenges in Conservation of Modern Historic Places Lecture 29 - Key messages Tutorial: How to submit your course data and report on dataverse for posterity
	Mar 29		Good Friday
12		Apr 04	Working session on Assignment 4 and 5 <b>Submit Assignment 5 Task 1 - Presentation PPT/PDF (5 pm)</b>
	Apr 05		Working session on Assignment 4 and 5 <b>Submit Assignment 5 Task 1 - Presentation PPT/PDF (5 pm)</b>
		Apr 11	Assignment 5 presentations (Questions & Answers + feedback) <b>Final Exam – Take home exam using Brightspace – it will open at 11:25 am until April 18 at 11:25 am (30 minutes duration)</b>
			<b>Submit Assignments 4 and 5 due April 18(11:59 pm), but late submissions until April 19 (11:59 pm) will not be penalized.</b>

## ONLINE CLASS QUIZZES

Students are expected to read class readings. They provide useful and important information about illustrating the performance, condition and potential conservation strategies for historic buildings. Four class quizzes (each worth 5%) will be conducted during the course. Questions will cover essential issues; the instructor will indicate potential topics throughout the course.

## **ASSIGNMENTS**

Part of the evaluation of student work will be based on the following four assignments. For final details, see the instruction sheets provided when the assignment is introduced. The submission schedule will be described in the draft course schedule. An assignment handed in late will be deducted 10% per day from the assessed grade.

### **Assignment 1: Introduce Yourself and Logistics Compliance:**

Individually submit a personal introduction (see Brightspace for details). Also, include the following statement at the end of your post: "I (insert name), confirm that I have read and understood the entire syllabus for this course. If I have questions about the course, I promise to check the syllabus, the online material (assignment guides, tutorials, examples, etc.) before emailing Professor and/or Teaching Assistants."

Furthermore, fill and sign the forms: (1) Student Consent to Publish and (2) Informed Consent agreement, provided to you during the first lecture on January 11, 2024.

### **Assignment 2: Building characterization**

Students will work in teams of 5/6 students and will select a site to study for the entire course. Each team selects a building from a list of buildings and prepares a visual survey/building characterization sheet, which provides an overview of its site context, general history, character-defining elements, its construction, and functional types, and identifies inherent environmental features. Due to COVID-19 post-pandemic situation, the scope will be limited to the external envelope of the building. Students can use files provided by the professor's dataverse dataset to make this assignment and the GIS data available at [MacOdrum Library](#). Note that only one submission per group is expected for this assignment and submission of supporting material used to prepare this assignment is expected to be uploaded on Dataverse at the end of the course, please read paragraph on dataverse.

### **Assignment 3: Conservation technology essay**

Each student selects a type of (historic or modern) building material, assembly or structure from the site being studied and will write a brief essay on this technology. The essay should provide a brief history of the technology's development and use in Canada and identify pathological conditions and sustainable interventions applicable to that material.

### **Assignment 4: A surface condition report**

Teams will produce two measured elevation drawings: a materials inventory drawing and a surface conditions drawing. The purpose of this exercise is to reinforce the use, benefits, and constraints of recording techniques, in this case, photogrammetry or rectified photography (learned on CIVE3207), to prepare an elevation drawing, as well as, to prepare a surface condition representation.

Each team will prepare a measured drawing of at least one elevation, dataverse data can be used if available, some sites were assessed by students in the fall 2023. They will use the data provided to

produce photogrammetric models to prepare an ortho-corrected image, which will form the basis of their two drawings. Note that only one submission per group is expected for this assignment and submission of supporting material used to prepare this assignment is expected to be uploaded on Dataverse at the end of the course, please read paragraph on dataverse.

### **Assignment 5: Conservation Investigation**

This is the main course assignment, and it is developed in two task submissions. It includes site visit(s) (depending on permissions and may be limited to the external envelope), investigation and recording of observed conditions, analysis of the causes of deterioration and recommendations for repair of the envelope and interiors.

Task 1: In the presentation, groups are expected to produce a recording of 10 minutes underlying the dossier's conservation investigation outcomes and contents to be submitted later, which will be presented in class on the last day of the course. Each group is also expected to ask one question to their fellow teams. Teams will respond to questions asked during the presentation. Note that only one submission per group is expected for this assignment and submission of supporting material used to prepare this assignment is expected to be uploaded on Dataverse at the end of the course, please read paragraph on dataverse.

Task 2: Teams will perform a site investigation to assess the physical condition of their building. Teams will conduct a values-centered analysis and observe and identify the types of deterioration, assess their probable causes and severity, and propose recommended conservation work. Teams will present their findings in a formal report. Note that only one submission per group is expected for this assignment and submission of supporting material used to prepare this assignment is expected to be uploaded on Dataverse at the end of the course, please read paragraph on dataverse.

#### **Dataverse:**

All assignments are to be submitted as a pdf on Brightspace. All supporting material used in assignments 2, 4 and 5 are to be submitted to Dataverse. For the submission of supporting material, please follow the digital file format and naming protocols provided on Brightspace under the course outline. You will need to upload the data onto dataverse, a team member should be appointed to upload to Dataverse. Please send an email to the professor before March 31, 2024 – 5 PM with the name of the person, remember that a dataverse login is required. See appendix 1 and 2 for more information.

### **TECHNICAL PREREQUISITES**

To be able to take the course and produce assignments, students are required to have:

- Laptop / Desktop computer minimal configuration (recommended):
- CPU: Intel VT-x 64bit Processors - i5/i7/i9 7th Gen or more (minimum)
- Memory: 8GB RAM (minimum) Strongly recommend 16GB or more
- Drive: 256GB or Larger SSD (Solid State Drive)
- GPU: Nvidia Quadro, GeForce GTX, Radeon Pro, (>2GB Graphics Card)
- Networking: WIFI (AC or AX) Recommend a 1Gig or Faster Ethernet Port or Adapter (Use a USB 3.0 to ethernet adapter, so you do not need a physical ethernet port on your laptop)
- Audio & Video: Camera, Microphone & Speaker

Software: the following software may be used during the course, and is downloadable to students for free:

- Get AutoCAD 2020 through 2023 and Autodesk Recap (latest version). Free copies of AutoCAD and Recap release are available for download by registering at the Autodesk Education Community (<http://students.autodesk.com>). AutoCAD is also available at the computer lab if you do not have a laptop computer.
- Get the latest ArcGIS Pro license from the Carleton University Library, read <https://library.carleton.ca/services/arcgis-student-edition>. Alternatively, students can use Quantum GIS, an open-source and free GIS package available at <http://www.qgis.org>.
- Get Bentley Context Capture (version v10.15.0.76), also bear in mind that an update of Bentley CONNECTION Client (to v10.0.19.27) <https://education.bentley.com/Products> is needed and
- an update of the NVIDIA GTX 1050 Ti video card driver (to 451.48 “standard”), a tutorial will be organized to install and get a license from Carleton to use this software.

Students are also expected to know the two-dimensional drawing features of the Computer-Aided Design (CAD) application. For tutorials, Carleton offers free access to LinkedIn Learning <https://carleton.ca/learninganddevelopment/linkedinlearning/> here; you can find CAD and other digital tools tutorials. Limited classroom instruction in the elements of CAD may be offered, depending on demand, but will not occur during course time.

It is highly recommended for the course to complete the following training:

- Learning AutoCAD (2h) Shaun Bryant
- AutoCAD 2020 Essential Training (3h 25m) Shaun Bryant
- AutoCAD: Construction Drawings (3h 18m) Shaun Bryant
- Learning FARO: Laser Scanning (39m) Dustin Manning
- 3D Scanning with a Camera (57m) Kacie Hultgren
- ReCap Workflow for Reality Capture (2h 52m) Paul F. Aubin

To access these training, read <https://students.carleton.ca/services/linkedin-learning/>.

Depending on permissions, the following equipment may be provided by the Department of Civil and Environmental Engineering:

- A camera tripod.
- Hand recording kits (measuring tape, Disto (electronic distance meter (EDM)), plumb bob and string.
- DSLR digital cameras: Nikon D5300 + 18-55 mm Nikkor Lens;
- Laser level;
- Total Station kit with the tablet.

## TAKE HOME EXAM

A take-home exam will cover a basic understanding of material performance, condition and potential conservation strategies to maintain historic buildings. It builds upon the two quizzes conducted during class. This exam will be launched online on the last day of class, and it will be available for 7 days to answer. It is worth 20%. It will consist of one question-related material conditions, one question about performance and one question about a potential conservation strategy. When starting the online session, the length to answer 10 questions will be 30 minutes.

## GRADUATE ATTRIBUTES (GAS)

GAs are assessed in preparation for accreditation by Engineers Canada. It is to ensure that authorities recognize our graduates as meeting the academic requirements for licensure. This Winter, CIVE4601 is tasked with evaluating student performance in 1 attribute 1.13.C-GASSS Discipline-specific concept CEE-13 Building pathology & restoration. The following is the designed plan for evaluating the GA during the fall term. GA will be quantified using the average of two course activities, each will count for 50%:

- The grade achieved in the presentation of Assignment 4 (Conservation Investigation: preliminary results). In the first deliverable, a team of students will present the preliminary proposals to rehabilitate a historic structure based on condition assessment. Student submissions will be evaluated according to the rubric, about the rigorous assessment of conditions in the historic building and how group rehabilitation proposals effectively meet the requirements by the Standards and Guidelines for the Conservation of Historic Places in Canada.
- The grade achieved in the Take home examination. This rubric will allow to assess individually the compliance and understanding of building pathology and rehabilitation concepts.

## ACADEMIC DATES

Students should be aware of the academic dates (eg. last day for academic withdrawal) posted on the Registrar's office web site <https://carleton.ca/registrar/registration/dates/academic-dates/>

## ACADEMIC INTEGRITY AND PLAGIARISM

- a) Please consult the Faculty of Engineering and Design information page about the Academic Integrity policy and our procedures: <https://carleton.ca/engineering-design/current-students/fed-academic-integrity> Violations of the Academic Integrity Policy will result in the assignment of a penalty such as reduced grades, the assignment of an F in a course, a suspension or, expulsion.
- b) One of the main objectives of the Academic Integrity Policy is to ensure that the work you submit is your own. As a result, it is important to write your own solutions when studying and preparing with other students and to avoid plagiarism in your submissions. The University Academic Integrity Policy defines plagiarism as “presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.” This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source.
- c) Examples of violations of the policy include, but are not limited to:
  - any submission prepared in whole or in part, by someone else;
  - using another’s data or research findings without appropriate acknowledgement;
  - submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
  - failing to acknowledge sources of information through the use of proper citations when using another’s work and/or failing to use quotations marks.

## COPYRIGHT

The materials (including the course outline and any slides, posted notes, videos, labs, project, assignments, quizzes, exams and solutions) created for this course and posted on this web site are intended for personal use and may not be reproduced or redistributed or posted on any web site without prior written permission from the author(s).

## **INCLUSIVITY IN THE CLASSROOM**

We will strive to create an environment of mutual respect for all through equity, diversity, and inclusion within this course. The space (physical or virtual) which we work in will be safe for everyone. Please be considerate of everyone's personal beliefs, choices, and opinions.

## **ADDRESSING HUMAN RIGHTS CONCERNS**

The University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the Department of Equity and Inclusive Communities at [equity@carleton.ca](mailto:equity@carleton.ca)

## **ACADEMIC ACCOMMODATIONS**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

- **Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca).
- You should request your academic accommodations in the Ventus Student Portal, for each course at the beginning of every term. For in-term tests or midterms, please request accommodations at least two (2) weeks before the first test or midterm. For final exams, the deadlines to request accommodations are published in the University academic calendars for both undergraduate and graduate students.
- **Accommodation for Student Activities:** Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the Senate Policy on Accommodation for Student Activities (PDF).
- **Pregnancy Obligation:** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the Student Guide to Academic Accommodation (PDF).
- **Religious Obligation:** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the Student Guide to Academic Accommodation (PDF).

- **Survivors of Sexual Violence:** As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit the Sexual Violence Prevention & Survivor Support.

## ENGINEERING ACADEMIC ADVISING

[The Engineering Academic Support Service](#) assists undergraduate engineering students with course selection, registration, and learning support from first-year through to graduation. Academic Advisors Contact can be found here: <https://carleton.ca/engineering-design/current-students/undergrad-academic-support/undergraduate-advisors/>.

## STUDENT MENTAL HEALTH AND WELLNESS

As a university student you may experience a range of mental health challenges that can significantly impact your academic success and overall well-being. Carleton's Wellness Services Navigator is designed to help students connect with mental health and wellness resources.

If you need to talk to someone from the department for more information and support with connecting to resources, you can contact the following faculty members, depending on your program. Or contact the department at [or CEEUGChair@cunet.carleton.ca](mailto:CEEUGChair@cunet.carleton.ca).

ACSE: Prof. Scott Bucking

Email: [scott.bucking@carleton.ca](mailto:scott.bucking@carleton.ca), Office: 5209 Canal Building

CIVE: Prof. Heng Khoo

Email: [heng.khoo@carleton.ca](mailto:heng.khoo@carleton.ca), Office: 3364 Mackenzie

ENVE: Prof. Shoeleh Shams

Email: [shoeleh.shams@Carleton.ca](mailto:shoeleh.shams@Carleton.ca), Office: 4242 Mackenzie

Here is a list of on-campus and off-campus recourses:

1. **Carleton's Wellness Desk:** Located at 204A MacOdrum Library, is a space for students to learn about resources, connect with our Wellness Coordinator, and decompress during stressful times of the year. You can pop into the Wellness Desk any time during its hours of operation – no appointments necessary! <https://wellness.carleton.ca/mental-health/wellness-desk/>
2. **Carleton's Health and Counselling Services:** To book an appointment contact the main clinic by calling (613) 520-6674. If urgent, let the Patient Care Coordinator know or go in person to the main clinic (2500 Carleton Technology and Training Centre Building) and indicate that they are in crisis and need to speak to someone right away. For more information, please see <https://carleton.ca/health/>
3. **Emergencies and Crisis and Emergency Numbers**
4. **Good2Talk (1-866-925-5454):** Good2Talk is a free, confidential helpline providing professional counselling and information and referrals for mental health, addictions and well-being to post-secondary students in Ontario, 24/7/36 <https://good2talk.ca/>
5. **Empower Me:** Undergraduate students have access to free counselling services in the community through Empower Me, either in person, by telephone, video-counselling or e-



- counselling. This free service is accessible 24/7, 365 days per year. Call 1-844-741-6389 (toll free) to make an appointment with a counsellor in the community. More information is available <https://students.carleton.ca/services/empower-me-counselling-services/>
6. The Walk-In Counselling Clinic (off-campus community resource): The walk-in Counselling Clinic have offices in various locations across Ottawa and the greater Champlain region that are open 7 days a week. Individuals will be assisted, with no appointment, on a first-come, first-serve basis during the Walk-in Counselling Clinic hours. The Walk-in Counselling Clinic offers services in many languages and is free and confidential. More information can be found at: <https://walkincounselling.com/>
  7. Distress Centre of Ottawa and Region: Available 10am-11pm, 7 days/week, 365 days/year. Distress Line: 613-238-3311, Crisis Line: 613-722-6914 or 1-866-996-0991, Text: 343-306-5550. <https://www.dcottawa.on.ca/>
  8. Distress and Crisis Ontario, Available for chat 2 pm – 2 am EST. <https://www.dcontario.org/>
  9. BounceBack Ontario (Toll-Free: 1-866-345-0224) is a free skill-building program managed by the Canadian Mental Health Association (CMHA). It is designed to help adults and youth 15+ manage low mood, mild to moderate depression and anxiety, stress or worry. Delivered over the phone with a coach and through online videos, you will get access to tools that will support you on your path to mental wellness. <https://bouncebackontario.ca/>.

## **SPECIAL INFORMATION FOR PANDEMIC MEASURES**

1. It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are a number of actions you can take to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.
2. Feeling sick? Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you must follow Carleton's symptom reporting protocols.
3. Masks: Carleton has paused the COVID-19 Mask Policy, but continues to strongly recommend masking when indoors, particularly if physical distancing cannot be maintained. It may become necessary to quickly reinstate the mask requirement if pandemic circumstances were to change.
4. Vaccines: Further, while proof of vaccination is no longer required as of May 1 to attend campus or in-person activity, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible, and submit their booster dose information in cuScreen as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.
5. All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 response and health and safety requirements please see the University's COVID-19 website and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact [covidinfo@carleton.ca](mailto:covidinfo@carleton.ca).

## **SECURITY AND SAFETY**

Avoid Working Alone After Hours · In Case of Emergency, Dial Extension 4444 from any campus phone.

## APPENDIX 1: DIGITAL FILES FORMAT AND NAMING

The following guidelines pertain to the creation and manipulation of digital files for the historic site recording assessment course; the purpose is to provide a framework for appropriate storage, retrieval and provenance of files prepared during the course. The data produced in the course will be stored for posterity on Carleton's dataverse system: <https://library.carleton.ca/services/dataverse> . This will make it available to the university community.

### Digital Images

File Name

Image files should be named according to the following format:  
BP \_ SITE# \_ YEAR \_ PHOTO# . EXTENSION

The following explains each site within this file naming convention:  
BP: Letter “AC” precedes SITE# to indicate ARCN /CIVE course.

SITE#: 3-digit acronym, which indicates the acronym assigned to each of the groups in the course. Your group will decide this suffix on Assignment 1. For example, a Bytown museum can be BTM or Mayfair building could be MFB.

YEAR: 4 digit number indicating the year in which photo was taken (i.e., created).

INITIALS: 3-digit acronym, indicating the author's name taking a photograph (i.e., MSQ).

PHOTO#: 4 digit number assigned to the photo to distinguish it from other photos of the same site created in the same year. If the number is less than 4 digits, it should be preceded by an appropriate number of 0's.

EXTENSION: The file type, such as JPG.

The following is an example of an image file name following this convention:  
BP \_MFB\_2016\_ARCH0002.jpg

### File Format

It is recommended that image files be in the JPG format to minimize file size.

### File Size

It is recommended that image files be no larger than one megabyte (12 MB) in size.

### Description Information

The following information should be recorded to describe the photograph in the accompanying spreadsheet:

- Specific date photo was taken/created (in the following format): YEAR (4 digit number) MONTH (3 digits alphabetic abbreviation) DAY (2 digit number; if a date is only 1 digit, then precede with a 0);
- Photographer name (in the following format): SURNAME, GIVEN NAME

- Image copyright holder: indicate the name of institution(s) or individual(s) holding image copyright; if copyright no longer held (e.g., expired), then indicate "no copyright", in most cases indicate Carleton University.
- Site name: indicate the site's primary name in agreement with instructors.
- The subject of photograph: indicate the subject of the photograph, which should describe the reason for taking the photo; the following are examples:
  - Context photography: interior and exterior (e.g. Situating the site in its environment, west facade, general exterior view, etc.)
  - Character defining elements (e.g. Ornamentation, hardware, etc.)
  - Condition photography (e.g. Disturbances, threats, decay).

## **CAD drawings, point clouds and other electronic files**

### **File Name**

AutoCAD files should be named according to the following format:  
BP \_ SITE# \_ YEAR \_ DRAWINGNAME# . EXTENSION

The following explains each site within this file naming convention:  
BP: Letter "BP" precedes SITE# to indicate ARCN /CIVE course.

SITE#: 3-digit acronym, which indicates the acronym assigned to each of the groups in the course. Your group will decide this suffix on Assignment 1. For example, a Bytown museum can be BTM, or a Mayfair building could be MFB.

YEAR: 4 digit number indicating the year in which photo was taken (i.e., created).

DRAWINGNAME#: 4 digit number assigned to the drawing to distinguish it from other drawings of the same site created in the same year. If the number is less than 4 digits, it should be preceded by an appropriate number of 0's.

EXTENSION: The file type, such as DWG.

The following is an example of an image file name following this convention:  
BP \_001\_2012\_0002.DWG

### **Description Information**

The following information should be recorded to describe the photograph in the accompanying spreadsheet:

- The specific date when the drawing was last updated (or created) (in the following format): YEAR (4 digit number) MONTH (3 digits alphabetic abbreviation) DAY (2 digit number; if the date is only 1 digit, then precede with a 0);
- Author name (in the following format): SURNAME, GIVEN NAME
- Drawing copyright holder: indicate the name of institution(s) or individual(s) holding image copyright; if copyright no longer held (e.g., expired), then indicate "no copyright", in most cases indicate Carleton University.
- Site name: indicate the site's primary name in agreement with instructors.
- The subject of the drawing: describe the context and contents of the drawing (e.g. Plan section: level 1: condition assessment)

Guidelines for the layer naming and structure will be discussed during the class and agreed upon to submit the assignments.

**Other electronic files' submission**

Students are expected to submit all the files used to produce the different assignments and course report in digital format. Please consider using similar naming guidelines for digital images and CAD drawings to name and organize all your files. The provenance information of your files is crucial for the storage, management and retrieval of these files in the future.

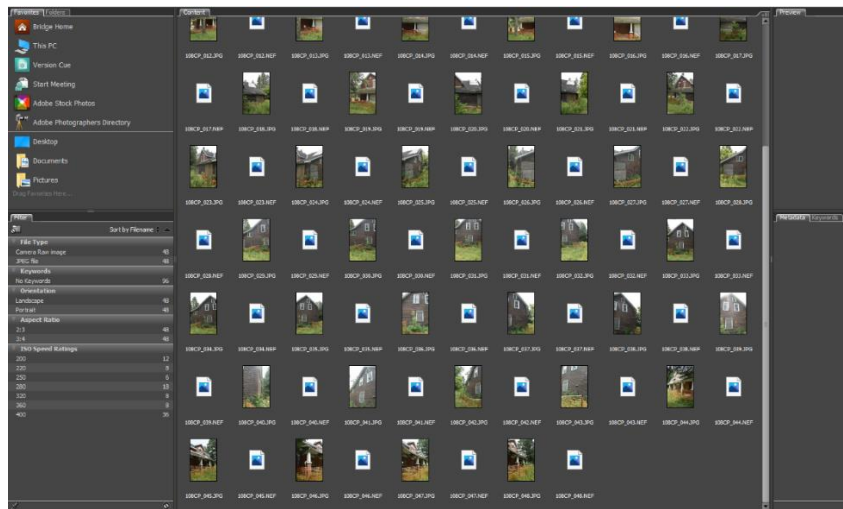
## APPENDIX 2: UPLOAD PROTOCOL FOR DATAVERSE

### Prepare Data for Upload

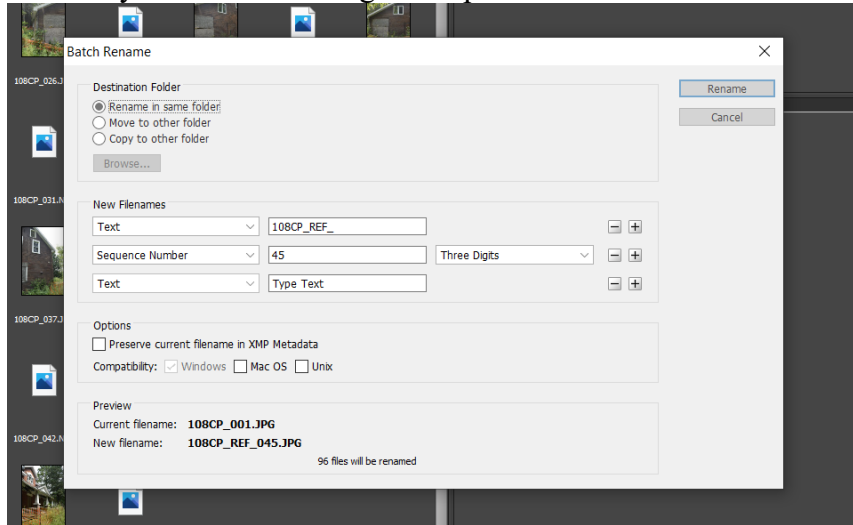
**Remember to send an email to the instructor with the person's dataverse login that will upload the data before March 31, 2023 - 5 PM.**

Before the dataset is uploaded to Dataverse one must ensure that the data is clear so others may use it in the future. Remember that you need to upload your Integrated Project Dossier, assignments and all the accompanying files that were used to prepare these deliverables (e.x. Indesign files, PPT; DWG, PDF, Illustrator, Photoshop, etc).

1. Ensure that your files comply with the digital file formatting and naming protocol in Appendix 1. If mass renaming is needed use Adobe Bridge for efficiency.
  - a. Open adobe bride opens your file containing your data right click and choose batch rename



- b. Rename your files according to the protocol.



2. Compress your files. Dataverse will unzip your files upon uploading so zip the files twice.
- Remember each file should be less than 3 GB in size. If you need more than one zip file, just use a sequence in the numbering of the directories.
  - Compress the directory using a Zip file format
  - Right click on the file >send to> compressed (zipped) file
  - Renamed the Zip file according to the suggested protocol (see following part) If you need more than one zip file, just use a sequence in the numbering of the directories.

#### Suggested data structure

- 01\_BP\_2023\_BTM\_BCHARS:** here include the Assignment 2 PDF and all the files to prepare the sheets (e.g. photoshop, indesign, PPT, etc)
- 02\_BP\_2023\_BTM\_REPORT:** here include the Assignment 4 report PDF and all the files to prepare the report (e.g. photoshop, indesign, PPT, etc)
- 03\_BP\_2023\_BTM\_PHOTOS:** digital photos that you might have used for the condition assesment
- 04\_BP\_2023\_BTM\_GIS\_files:** GIS files and data for the preparation of the Site Plan
- 05\_BP\_2023\_BTM\_CAD:** including AutoCAD files, ortho-corrected images, photogrammetry, point clouds, etc. used to create measured drawings;
- 06\_BP\_2023\_BTM\_PDF:** PDF of the AutoCAD files
- 07\_BP\_2023\_BTM\_POINTSC:** include here all the 3D Scanning and Photogrammetry that you use in the assignment (Recap, E57);
- 08\_BP\_2023\_BTM\_FPRES:** here include the PPT and all the files to prepare the final presentation (e.g. photoshop, indesign, PPT, etc)
- 09\_BP\_2023\_BTM\_OTs:** a folder containing other relevant files you consider to be needed to support your report.

## Uploading the Data

Once the data is ready it's time to upload it to Dataverse.

1. Ensure you have the proper permissions to contribute **to the dataset of your site**. If not, you must request access from the owner (Mario Santana Quintero).
2. With this permission you are free to upload the dataset.

### 108 Chemin Pine House (Chelsea)

Version 1.0

Santana Quintero, Mario; Phillips, Hannah; Kang, Abi, 2021, "108 Chemin Pine House (Chelsea)", <https://doi.org/10.5683/SP2/ZJKRAD>, Scholars Portal Dataverse, V1

Cite Dataset ▾ Learn about Data Citation Standards.

Access Dataset ▾  
Edit Dataset ▾  
Link Dataset  
Contact Owner Share

Description ⓘ This is a dataset of information compiled for Courses CIVE3207 (ARCN4100), CIVE4601 (ARCN4200), CIVE 5603 Course on Advanced Building Characterization, Conservation and Rehabilitation, or any other for students of the Architectural Conservation and Sustainability Program (Engineers and architects) at Carleton University. Students of the Architectural Conservation and Sustainability Program (Engineers and architects) at Carleton University will use these data to produce a Heritage Recording Dossier of this important Site. This material can not be used for commercial purposes or use in any form without the permission of Dr. Mario Santana, the authors and site custodians. (2021-08-03)

Subject ⓘ Arts and Humanities; Engineering; Social Sciences

Keyword ⓘ NCC, Historic House

Files Metadata Terms Versions

Change View Table Tree

Search this dataset... Find

Upload Files

- a. Select the upload button
- b. From here you can and either drag and drop your files or find them on the computer.

[CIVE3207\\_ARCN4100\\_Historic\\_Site\\_Recording\\_Fall2021](#) (Carleton University)

Scholars Portal Dataverse > Carleton University Dataverse > CIVE3207\_ARCN4100\_Historic\_Site\_Recording\_Fall2021 > 108 Chemin Pine House (Chelsea) >

Upload Dataset Files – For more information about supported file formats, please refer to the User Guide. ✕

Files

Upload with HTTP via your browser ^

Select files or drag and drop into the upload widget. File upload limit is 3.0 GB per file.

+ Select Files to Add

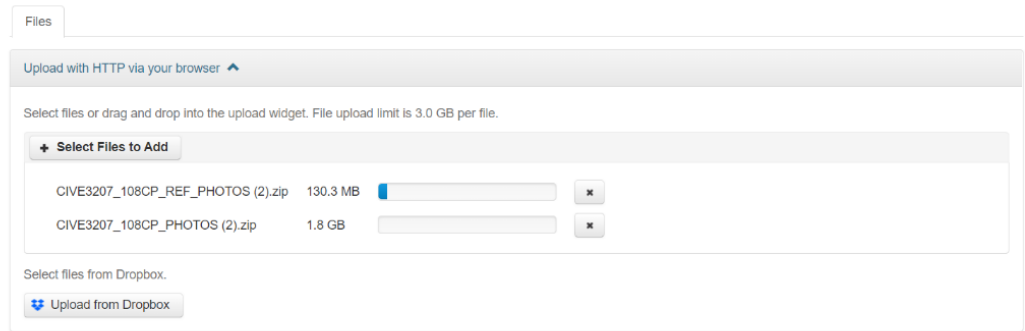
Drag and drop files here.

Select files from Dropbox.

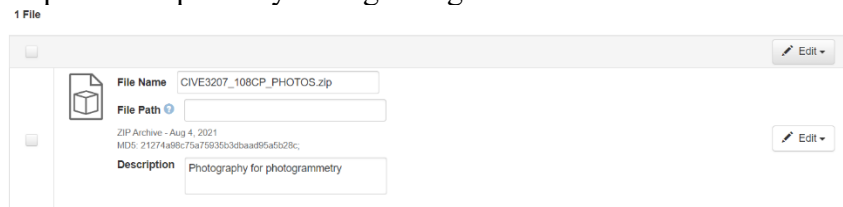
Upload from Dropbox

- c. Wait for the files to upload

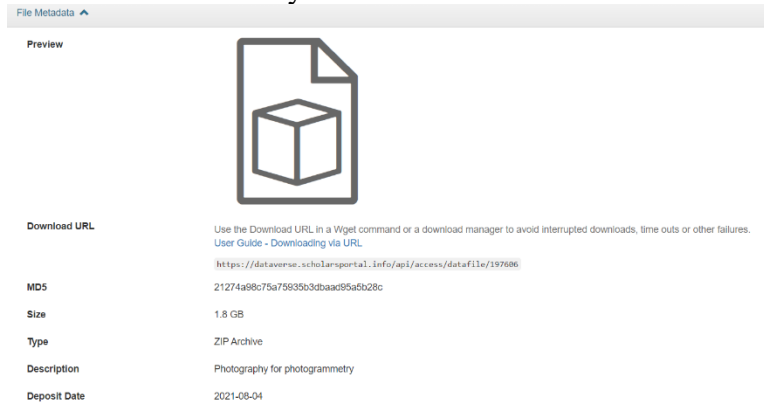




3. Write a description for your dataset. Ensure this is clear so future downloaders understand exactly what files they are getting.
  - a. Complete the upload by saving changes.



4. Ensure your dataset is complete and to your liking and uploaded properly.
  - a. You will be brought to the main page for that data set. Click on the data and check that it is to your satisfaction.



5. Send an email to your instructor and Teaching Assistant that the data has been uploaded correctly.