

## HSPV 741 TOPICS IN CONSERVATION: MODERN MATTERS

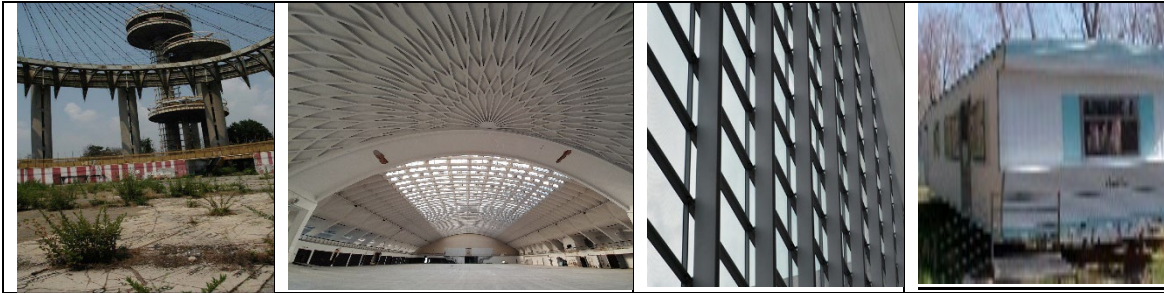
Spring 2022/ Tuesday/10:15-1:15/ MEYH B5

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**Prof. Frank Matero** ([fgmatero@design.upenn.edu](mailto:fgmatero@design.upenn.edu)) 117 Meyerson/tel.215.898.3169  
Office hours: Wednesday 10:00-12:00. Sign up for appointment in person or remote at <https://calendly.com/fgmatero> Other times by email request.

**Prof. Irene Matteini** ([imatteini@gmail.com](mailto:imatteini@gmail.com))  
Office hours: Tuesday 2:00-4:00. Sign up for appointment in person or remote at <https://calendly.com/imatteini/hsvp741> Other times by email request.

TA: Dadawala Namrata Dewang ([namratad@design.upenn.edu](mailto:namratad@design.upenn.edu))



### **Description**

This research seminar will address the thorny issues surrounding the conservation of modern built heritage. The course will begin with a discussion about the definitions and challenges of the ‘recent past’ within the framework of contemporary conservation philosophy and practice and then move into issues related specifically to the technology, performance, deterioration, and intervention of modern heritage as understood through historical and scientific inquiry. Lectures will focus on a select number of common materials, systems, and practices that defined the latter 20th century.

### **Structure**

Weekly lectures will introduce the basic organizational framework of the course modules: *Histories/Theories of the Recent Past*, *Concrete*, *the Curtain Wall*, and *Prefabrication*. Students will explore specific topics of their choice through research contributing toward a greater understanding of modern heritage and the conservation challenges today.

### **Requirements**

Grades will be based on the completion of all course components and especially the two research papers and class discussions on the readings. Grading will be in accordance with general academic policies: a grade of A/A- will represent exceptional work, B/B+ will represent good work that meets the academic standard set for the course, and B- will represent work that is just under the established standard. C and C+ are barely passing

for graduate courses and will indicate work that is less than satisfactory. Failure to meet the minimum requirements will result in an F. All work is to be delivered on the dates described in the syllabus or agreed upon in class if changed. Final grades will be based on contribution to class discussions (20%), Exercises (20%) and Research Papers 30% each). More detailed specifications for the Research Papers are in separate guidelines and at the end of the syllabus.

Students are expected to attend all classes for the entire scheduled meeting time and are responsible for completing assignments and for knowing the material covered in class. Students will be allowed one absence without a final course grade reduction. After the allowed absence the final course grade will be reduced one-half level for each additional absence (e.g. A to A-).

Students are asked to contribute to a positive learning environment and to review the school's guidelines on academic integrity at:

[http://www.upenn.edu/academicintegrity/ai\\_codeofacademicintegrity.html](http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html)

Representation of someone else's work as your own, without proper attribution, is a serious breach of these guidelines. Cell phones are prohibited during class and are to be put away except during break time. Laptops are allowed for class notes only. Use will be discontinued if the policy is abused. Discussion leaders will be selected each week to lead the class in the assigned readings.

### **#AskMe**

In order to insure an open and respectful learning environment, we invite you all to email us as to how you identify: name to use in class, preferred pronouns, anything that will allow us to create the best classroom environment possible to learn together. You can also use designations after your name id in Zoom, for example: Frank Matero (he/him/his)

For more information:

<https://www.design.upenn.edu/student-services/student-names-and-pronouns>

### **Format**

Classes will be held in person other than the first class and unless University regulations dictate otherwise and follow a lecture/seminar format. Most topics will be introduced by an illustrated lecture followed by discussion of the lecture and readings. All students are expected to come prepared and on time. Please bring notes on the readings so we can have a meaningful conversation in the time available. If time and weather permit we will make several trips to nearby sites/projects as well as have invited lecturers to speak on case studies in person and remote.

## Products

Each student will be required to identify a topic of interest related to the course focus for further research. Individual work will be original research in the form of two written papers, visuals, and in-class presentations. These will be delivered by each student at the mid-term and final week of the course.

### *Research Papers (40% each)*

The goal of the research papers is to expand the subject matter of the course for all through individual student research. Research themes for each paper will be organized into two themes: Research Paper 1 will focus on a specific material/construction technology; Research Paper 2 will present one or more case studies that expand upon the subject(s) of Research Paper 1. Each paper will contain a bibliography of relevant sources on the topic. Both research papers will be preceded by one Research Proposal no later than the third week of class to allow sufficient time to prepare.

A typical research proposal includes the following components:

1. Introduction
2. Justification
3. Research methodology
4. Discussion
5. References
6. Appendices (if needed)

In addition to the submission of the written and illustrated Research Papers, two classes will be dedicated to individual presentations of each paper allowing all students to share and discuss their individual research. (see schedule for presentation and research report due dates)

## Critical Dates

- 02/08 Initial Research Topic Selection
- 03/01 Research Paper 1 and presentations due
- 04/26 Research Paper 2 and presentations due

Class Schedule (All guest lectures provisional until confirmed)

01/18 **HISTORIES/THEORIES OF CONSERVING THE RECENT PAST**

Introduction to the course: objectives, methodologies & structure

*Lecture:* A historiography of conservation of the 'Recent Past'-F. Matero

01/25 **CONCRETE I**

*Lecture:* Introduction to reinforced concrete and its principle deterioration mechanisms-  
I. Matteini

Video lecture on precast concrete: Jack Pyburn

*Exercise 01 on concrete survey distributed*

02/01 **CONCRETE II**

*Lecture:* How to detect problems?

Case Studies: Pier Luigi Nervi's Torino Esposizioni

*Exercise 01 presented in class*

02/02 09:00 - 12:00 pm Lab: Practical Session of Field NDT Techniques presented by  
Proceq (Darrell Stanyard & Giovanni Tambellini) in person

*Exercise 02 on lab testing distributed*

02/08 **CONCRETE III**

*Lecture:* An overview on repair strategies and techniques for reinforced concrete - Case  
Studies-I. Matteini

John Puttnick – Case Study: The Rehabilitation of Preston Bus Station

*Exercise 02 presented in class*

02/15 **CONCRETE IV**

*Lecture:* The concrete surface-historical and technical issues of conservation and  
interpretation-F. Matero

Case Studies - Wright's Guggenheim Museum and Underwood's Jackson Lake Lodge

02/22 **LESSONS FROM THE FIELD**

*Lectures:*

- The Restoration of Carlo Scarpa's Tomba Brion  
Prof. Paolo Faccio & Greta Bruschi -IUAV Venezia (live Zoom)
- The Beira Station in Angola  
Prof. Paulo Lourenco-University of Minho, Portugal, SAHIC Program (live  
Zoom)

### 03/01 Research Report 1 Presentations

#### 03/15 CURTAIN WALL I

*Lecture:* The curtain wall: design, deterioration, and repair  
Ed Meade, Silman Assoc. (in person)

#### 03/22 CURTAIN WALL II

*Lecture:* Case Study-Louis Kahn's Richards Medical Research Laboratories  
Guest Lecturers: Bill Whitaker, David Hollenberg, Maureen Ward, AOS Architects  
Sessions in the Architectural Archives and on site at Richards Labs  
3700 Hamilton Walk

For location and image of building:

<https://www.facilities.upenn.edu/maps/locations/richards-medical-research-laboratories>

#### 03/29 THIN STONE VEENER

*Lecture:* History, deterioration mechanisms, and conservation challenges-F. Matero

#### 04/05 THE ANONYMOUS AND THE EVERYDAY

*Lecture:* Unloved and out of sight: the manufactured house-F. Matero

#### 04/12 MANAGING THE MODERN

*Lecture:* The two Taliesins  
Gunny Harboe and Fred Prozzillo (in person)

#### 04/19 THE FUTURE OF THE MODERN IN THE ANTHROPOCENE

A discussion around the issue of climate change and how it is impacting the performance and durability of modern materials. The discussion will also touch base on the importance of Structural Health Monitoring.  
Prof. Thomas Schumacher, Portland State University, Oregon (Live Zoom)

### 04/26 Research Report 2 presentations

05/01-

05/04 DO.CO.MO.MO USA Conference - Philadelphia

## Readings:

### **01/18 INTRODUCTION**

- Prudon, Theodore H. M. *Preservation of Modern Architecture*. Hoboken: John Wiley, 2008. Chapters 1 and 2 (1-52).
- Vidler, Anthony. *Histories of the immediate present*. Cambridge, MA: MIT Press, 2008. Introduction (1-16) and Postmodern or posthistoire? (191-200.)
- Wolfe, Tom. *From Bauhaus to our house*. New York: Farrar, Straus & Giroux, 1981.

### **01/25 CONCRETE I**

- Catherine, Croft. 2004. *Concrete Architecture*. London: Laurence King. Chapter 1: *"The Challenge of Concrete"*
- Susan, Macdonald. 2003. *Concrete Building Pathology*. Oxford: Blackwell Science. Chapter 4: *"The Identification and Assessment of Defects, Damage and Decay"* – John Broomfield
- Deborah, Slaton, Paul, Gaudette. 2007. *Preservation of Historic Concrete. Preservation Brief 15*. Washington, DC: National Park Service, Heritage Preservation Services.

### Additional Resources:

- Collins, P. 1959 (Re-printed in 2004) *Concrete, The Vision of a New Architecture*. McGill Queen's University Press.
- Neville, A.M. 1982. *Properties of Concrete*, 3<sup>rd</sup> ed. Pitman London. [Chapter 1,2,3]
- Urquhart, Dennis. 2013. *Historic Concrete in Scotland*

### **02/01 CONCRETE II**

- NDT Techniques – ACI 228.2R-13. Report on Nondestructive Test Methods for Evaluation of Concrete in Structures.
- Elizabeth Marie-Victoire, Annie Texier. 1999. *Alterations in Old Concretes*. Architectural Culture Around 1999 ICOMOS Symposium.
- Urquhart, Dennis. 2013. *Historic Concrete in Scotland. Investigation and Assessments of Defects. Short Guide*

### **ASTM Reference Standard:**

#### **Field:**

**Ground Penetrating Radar:** ASTM D6432-11 Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigation

**Half Cell Potential:** ASTM D4580/D4580M-12(2018) Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding

**Ultrasonic:** ASTM C597-16 Standard Test Method for Pulse Velocity Through Concrete

**Sounding Concrete:** ASTM D4580/D4580M-12(2018) Standard Practice for Measuring Delamination in Concrete Bridge Decks by Sounding

**Laboratory:**

**Petrographic Examination:** ASTM C856/C856M-20 Standard Practice for Petrographic Examination of Hardened Concrete.

**Chlorides:**

ASTM C1152/C1152M-03 Standard Test Method for Acid-Soluble Chloride in Mortar and Concrete.

ASTM C1218/C1218M-17 Standard Test Method for Water-Soluble Chloride in Mortar and Concrete

**02/08 CONCRETE III**

- L. Bertolini, M. Carsana, M. Gastaldi, F. Lollini and E. Redaelli, *Corrosion assessment and restoration strategies of reinforced concrete buildings of the cultural heritage*. Materials & Corrosion 02-2011.
- English Heritage, Concrete -Practical Building Conservation, An Ashgate Book. 2<sup>nd</sup> Edition 2018. Chapter: Treatment & Repair.
- Susan Macdonald and Ana Paula Arato Gonçalves, 2020. Conservation Principles for Concrete of Cultural Significance. Getty Conservation Institute.

**Additional Suggested Readings:**

- **Concrete Inhibitors:** SINTEF Building and Infrastructure, Corrosion Inhibitors – State of the art COIN Project report 22 – 2010.
- **ACI 546 REFERENCE:** CONCRETE REPAIR GUIDE ACI 546

**Additional Resources:**

- ACI American Concrete Institute ([www.aci-int.org](http://www.aci-int.org))
- Concrete Repair Association ([www.concretereport.org.uk](http://www.concretereport.org.uk))
- ICRI International Concrete Repair Institute ([www.icri.org](http://www.icri.org))
- English Heritage ([www.english-heritage.org.uk](http://www.english-heritage.org.uk))
- ICOMOS ISC20 ([www.icomos-isc20c.org](http://www.icomos-isc20c.org))
- Docomomo USA ([Home - Docomomo International](http://Home-DocomomoInternational))
- APTi Association for Preservation Technology
- Twenty-Century Society ([www.c20society.demon.uk](http://www.c20society.demon.uk))