ARCH 4630 - BUILDING CONSERVATION II – Spring Term – 2014

Instructor: Michael Devonshire

Schedule: The class will meet on alternating Saturdays, 9AM-12PM.

Course Goals:

To develop a general knowledge of how one investigates historic buildings, analyzes the existing conditions of building materials and systems and the interaction between the building and the outside forces acting on it, and develops and evaluates methods for restoration or conservation interventions. To develop and reinforce knowledge of terms associated with buildings, building materials and systems, investigation and analysis, and repair materials and methods.

To increase knowledge of how buildings, building systems, and building materials are assembled, function, how they deteriorate, and how one develops appropriate interventions.

Develop knowledge of basic concepts and issues in building conservation.

The class work will comprise a discussion of a material/system each session, accompanied by intervention case studies.

Course Assignments:

Assessment of a 19th/20th-Century Building at Least 30 Years Old. Due date: April 26.

Select a late 19th/20th-century building to which you have reasonable access that has some materials and/or systems not common before the start of the 20th century. Briefly describe the subject and its materials and construction. Survey and record the existing conditions of the building's exterior. Analyze the exterior conditions to determine the causes of problems. Based upon your previous knowledge, note what kinds of tests and further investigations you would recommend to completely understand the building's problems. Present the results of your research in a brief written report that describes how the building was "put together", illustrated with photographs, sketches or published material to illustrate the process of assembly.

Investigation of the Development and Use of a 19th or 20th-Century Building Material. Due date: April 26.

Select a late 19th or early 20th-century building material or system or a new way in which a traditional material has been used.

Investigate the material/system properties, methods of manufacture or extraction, history of use, ways in which it deteriorates or changes over time, ways it can be maintained and restored, and other information required to fully understand the material or system in the context of an historic building. *Note: The topics for this assignment must be approved in advance. The goal is to do original research on a specific topic and not to repeat information that is presented in the general lectures.*

Complete a Visual Glossary. Due: To be assigned for showing as PPS during the discussion periods.

Continue your compilation of a visual glossary of building materials and systems, focusing on way in which they have been successfully or unsuccessfully used, and their performance in the field.

Sources for Required and Supplemental Reading (Subject to additions or deletions)

Twentieth-Century Building Materials: History and Conservation. Edited by Thomas C. Jester. New York: McGraw-Hill, 1995. OUT OF PRINT

Weaver, Martin E., Conserving Buildings: Guide to Techniques and Materials. New York: John Wiley & Sons, 1993.

Historic Building Façades: The Manual for Maintenance & Rehabilitation. New York Landmarks Conservancy. New York: John Wiley & Sons, 1997.

U.S. Department of the Interior, National Park Service. Preservation Briefs. Numbers indicated below. Available on the web at: http://www.nps.gov/history/hps/tps/briefs/presbhom.htm .

U.S. Department of the Interior, National Park Service. Preservation Tech Notes. Numbers indicated below. Available on the web at: http://www.nps.gov/history/hps/tps/technotes/tnhome.htm .

National Research Council of Canada. Institute for Research in Construction. Canadian Building Digests. 240 short (6–8 pages each) publications on building materials and systems available on the web at: http://irc.nrc-cnrc.gc.ca/pubs/cbd/index_e.html. Several are included in required readings. Additional numbers are included in supplemental readings.

Preserving the Recent Past. Deborah Slaton and Rebecca A. Shiffer, eds. Washington, D.C.: Historic Preservation Education Foundation, 1995.

Preserving the Recent Past 2. Deborah Slaton and William G. Foulks, eds. Washington, D.C.: Historic Preservation Education Foundation, 2000.

Preserving Post-war Heritage: The Care and Conservation of Mid-Twentieth Century Architecture, edited by Susan Macdonald. Shaftsbury, Dorset, Donhead, 2001.

Class Topics and Reading Assignments

25 January

(Saturday 9-12): "**Substitute" Materials**

Case Study – 361 Broadway, NYC late 19th C; Mills Mansion, Staatsburg, NY early 20th C; the Guilin Building, 1920's, Shanghai, PRC. Case Study – The New Jersey Statehouse, early 20th C; Manitoga - the Russell Wright Studio, mid-20thC.

Required Reading

• Park, Sharon C. The Use of Substitute Materials on Historic Building Exteriors. Preservation Brief 16.

08 February

(Saturday 9-12): Introduction to Architectural Metals - Ferrous, Non-ferrous

Case Studies – Battery Maritime Building, NYC; Bow Bridge, NYC.

Required Reading

• Sereda, P. J. Atmospheric Corrosion of Metals. Canadian Building Digest 170.

• Zahner, L. William. Architectural Metals: A Guide to Selection, Specification, and Performance.

• Montagna, Dennis R. "Twentieth-century Ornamental Metals and Their Care." In Preserving the Recent Past, IV-27–IV-32.

22 February

(Saturday 9-12): Architectural Terra Cotta

Case Study – The Audubon Ballroom, early 20th C

Required Reading (to be distributed)

• Paulson, Conrad. "Structural Clay Tile." In *Twentieth-Century Building Materials*, 150–155.

• Slaton, Deborah, and Harry J. Hunderman. "Terra Cotta." In *Twentieth-Century Building Materials*, 156–161.

08 March

(Saturday 9-12): Cementitious Materials – Stucco, Cast Stone

Case Study - Chesterwood Studio, early 20th C

Required Reading

• Cowden, Adrienne B., and David P. Wessel. "Cast Stone." In *Twentieth-Century Building Materials*, 86–93.

• McKee, Ann Milkovich. "Simulated Masonry." In *Twentieth-Century Building Materials*, 174–179.

• Pieper, Richard. The Maintenance, Repair and Replacement of Historic Cast Stone. *Preservation Brief 42.*

29 March

(Saturday 9-12): **Stone Masonry – Introduction to non-load bearing construction**

Case Study – St. Mary Times Square, NYC; Church of the Holy Family, NYC

Required Reading

• Scheffler, Michael J., and Edward A. Gerns. "Thin Stone Veneer", in Twentieth-Century Building Materials, 168–173.

12 April

(Saturday 9-12): Concrete; Case Study - Bannerman Castle residence; Guggenheim Museum of Art

Required Reading

• Coney, William B. Preservation of Historic Concrete: Problems and General Approaches. Preservation Brief 15.

• Newlon, Howard, Jr. "Prestressed Concrete." In Twentieth-Century Building Materials, 114–117.

• Simpson, Pamela H., Harry J. Hunderman, and Deborah Slaton. "Concrete Block." In Twentieth-Century Building Materials, 80–85.

• Slayton, Amy E. "Reinforced Concrete" In Twentieth-Century Building Materials, 94-101.

26 April

(Saturday 9-12): Windows Case Study

"Hands-on" Window Restoration Workshop at HSV.

3 May

(Saturday 9-12): Window Replication Case Study

Field visit to Architectural Components, Montague , MA.

Suggested Supplementary Reading

• Bussell, Michael. "The Use of Concrete in the Post-war Era." In Preserving Post-war Heritage, 83–103.

• Fadayomi, Jimi. "The Deterioration of Reinforced Concrete: An Introduction." In *Preserving Post-war Heritage*, 104–115.

• Lambert, Paul. "Repairing Reinforced Concrete: An Overview." In *Preserving Post-war Heritage*, 116–127.

• Freedman, Sidney. "Architectural Precast Concrete." In *Twentieth-Century Building Materials*, 108–113.

• Broomfield, John. "The Repair of Reinforced Concrete" (http://www.buildingconservation.com/articles/concrete/concrete.htm).

• Swenson, E. G. Portland Cements in Building Construction. Canadian Building Digest 145.

• Weaver, Conserving Buildings, Selected Portion of Chapter 7 on Concrete (pages 141–147).

• Kaese, Diane. "Concrete." In *Historic Building Façades* (Chapter 8).

• Plewes, W. G. Cladding Problems Due to Frame Movements. Canadian Building Digest 125.

• Crocker, C. R. Influence of Orientation on Exterior Cladding. Canadian Building Digest 126.