
EARTH ARCHITECTURE CONSTRUCTION AND PRESERVATION DISSEMINATION, SCHOOL OF ARCHITECTURE AND PLANNING, UNIVERSITY OF NEW MEXICO

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Abstract

The presentation proposed, Earth Architecture Construction and Preservation Dissemination, School of Architecture and Planning, University of New Mexico (UNM), will relate the many years of working with UNM students and other institutions. Many of the Historic Preservation and Regionalism Program courses intend to introduce and instruct the students in the art and craft of earth architecture as a viable and thermal passive material locally found.

The importance of these courses is to instruct local historical typologies, where earth or adobe plays an essential role in the region, as well as the soil characterization and its properties. In one of these courses, we teach students the history of earth architecture, ending in New Mexico, and how this has transformed in recent years. We experiment with various soil types through mixing, testing, and coming up with good proportions to make adobes, which are put to the test in the school courtyard. Learning the aspects of the Earth Building Code and the Historic Earth Building Code is essential for them to understand how recent changes, for the best or the worse, have affected the use of earth as a building material.

Not only do we work with adobe, but we also discuss other viable ways of building with earth, such as rammed earth construction, where we select a community site to set a rammed earth chair, designed by a colleague and friend, Eric Haskins. The other courses allow students to understand the historical use of earth in the region and the repair of these important historical structures.

In closing, I will attempt to demonstrate why the instruction of these subjects in an academic setting is vital to train and make students aware of these building technologies, presently on the rise in many countries worldwide.



Figure 1. Alternative Materials and Construction Students, holding their adobes during testing.

Introduction

The Historic Preservation and Regionalism Program was recently elevated to a Master of Science in Architecture degree. The program was initiated over 18 years ago by the former director, Chris Wilson, and is currently directed by Francisco Uviña Contreras. Excellent professors are part of the teaching staff in this program. The MS Architecture Program consists of 33 credit hours. Most course work is housed in the Historic Preservation and Regionalism Program (HP+R). Once in the program, students have two required courses but can select from others around campus and in various disciplines.

The poster presentation proposed, Earth Architecture Construction and Preservation Dissemination, School of Architecture and Planning, University of New Mexico (UNM), will relate the many years of working with UNM students, academic institutions, and communities. Many of the Historic Preservation and Regionalism Program courses are intended to introduce and instruct the students in the art and craft of earth architecture as a viable and thermal passive material historically common to this region.

The importance of these courses is to instruct students in the local historical typologies, where earth or adobe play an essential role in the region, as well as the understanding of soil characterization and properties. One of the courses teaches students the history of earth architecture and the alteration of this building technology in the present day.

The *Alternative Materials and Construction* seminar explores past and current construction methods and materials in the context of Sustainable or Green Design. It includes a historical overview of indigenous materials that have been employed in the construction of dwellings, sacred spaces, and public buildings throughout the world. Adobe rammed earth, other forms of earthen construction, straw bale, and other natural composite building materials are also explored.

The course includes lectures and field explorations for the integration and utilization of historic and contemporary building materials, emphasizing construction systems that comply with existing building codes. In addition to readings and seminar discussions, each student works on an independent project case study incorporating a selected alternative material application.



Figure 2. Rammed earth chair constructed at the Barelas Community Gardens.

Student Learning Outcomes:

Describe the importance of natural building materials to a sustainable and regional contextual identity. Understand the interrelationships of alternative materials and construction systems in a cultural and ecological regional context. Discuss the structural properties of and building code regulations covering alternative building materials, such as adobe, rammed earth, straw bale, and others. Recognize and outline sustainable or green design principles, primarily passive solar design and alternative materials in contemporary design settings. And finally, debate the advantages and disadvantages of various alternative materials and construction forms.

Students experiment with various soil types through mixing, testing, and coming up with good proportions to make adobes, which are put to the test at the school of architecture and planning building courtyard (see Figure 1). Learning the aspects of the Earth Building Code and the Historic Earth Building Code is essential for them to understand how can one interpret contemporary earth architecture design and how in can be restored or rehabilitated. The modern codes have affected the preservation and the well-being of our historic earthen building technologies; however, the recent Historic Earthen Building Code has assisted in the protection of correct intervention applied to historic earthen architecture and appropriate design intercessions.

The course format employs a variety of approaches, including readings, class discussions and presentations, guest talks, exams, field studies, and a final project. Not only do we work with adobe, and other earthen building technologies, but we also discuss other viable ways of building with earth. Rammed earth construction is one of these technologies, where we select a community site to set a rammed earth chair designed by a colleague and friend, Architect Eric Haskins. This project always seems to capture the student's interest, especially since it is placed in a community space.

The rammed earth chair is now part of many community sites throughout the city and neighboring counties. You can find them at the Barelas Community Garden (see figure 2), the Indian Cultural Center, Los Jardines Institute, the Balloon Museum, the Sawmill District, and the Town of Bernalillo. A banco (bench), also designed by Eric, has been part of the most recent student work. Besides developing this course as part of the Historic Preservation and Regionalism Program at the School of Architecture and Planning, an approach that integrates design and planning into the coursework is vital for the many students from various disciplines. This other course allows students to understand the

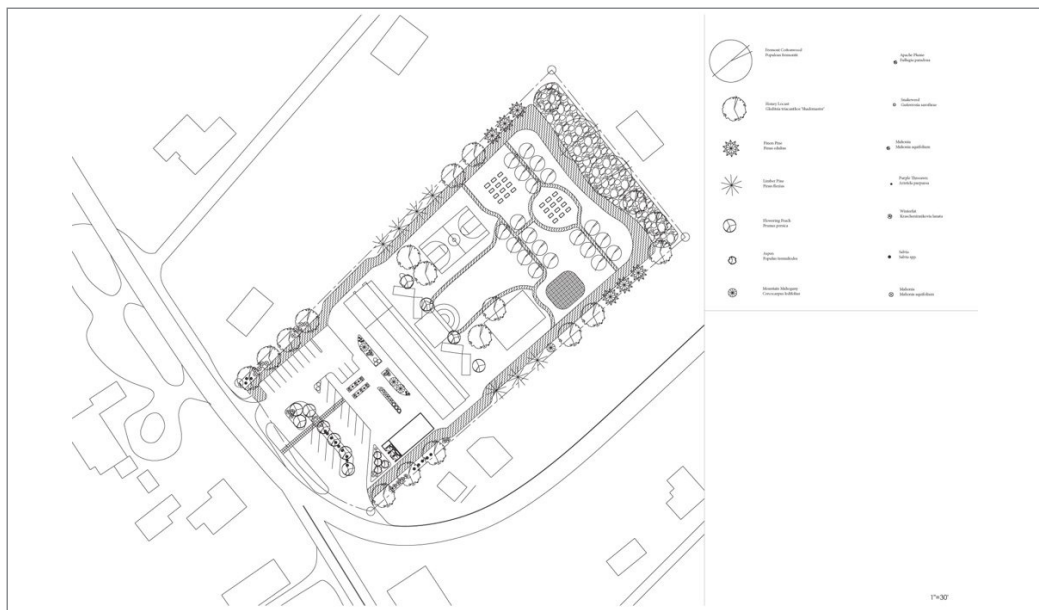


Figure 3. Peñasco Schoolhouse final site design presented to the community, spring semester 2022.

historical use of earth in the region, the theory and standards of preservation, distinguishing pathologies, documentation, and its appropriate interventions of historic structures and properties.

The *Preservation Technologies and Adaptive Reuse* course gives an overview of the theory and applications of preservation technologies and the practices commonly used in managing and rehabilitating historic buildings, structures, and landscapes. The course integrates preservation's scientific, aesthetic, managerial, and legal dimensions. Case studies illustrate critical historic preservation and adaptive re-use issues, highlighting the vast array of participants and stakeholders involved in this process. The course learning objectives give students the tools to deal with communities, seeking possible scenarios and rehabilitation strategies for re-using their historic properties.

Instructional and learning objectives pursued in the course are to familiarize the student with the theory, issues, and techniques of preservation technologies and the adaptive re-use of historic structures. Courses usually take place through class lectures, presentations of case studies, field trips, readings, research assignments, and a final term project. At the end of the semester, students will have a good understanding of the breadth of issues and the possibilities for solutions that preserve our built cultural resources and heritage.

This specific Spring 2022 semester class project entailed the assistance of the Peñasco Schoolhouse. The Community of Peñasco approached the instructor, Francisco Uviña, with a request to rehabilitate their Adobe Historical Schoolhouse in Peñasco, New Mexico. "La Parroquial" is what the community calls their Parochial School for those community members whose memories are housed in this particular building and site. It was recently purchased by the community of Peñasco, who formed a non-profit to obtain this property from the Archdiocese (see Figure 3).

The instructor was familiar with the property and the community when he used to work for Corner-

stones Community Partnerships, a non-profit organization located in Santa Fe, New Mexico, which assists in many preservation and restoration projects in this region.

The eager community members received the students in their community and housed and fed them. At the same time, they documented and collected the memories of the community members who had a connection with the schoolhouse. The work required of all the disciplines students brought to the table. Students could organize themselves and contribute their specific knowledge to develop this rehabilitation project.

They came up with different strategies that could best serve the community members, neighboring communities, and most importantly, the local youth, who now need to build their own memories around this building to upkeep and safeguard it. The class was able to create a final presentation for the community that was well attended and also could visit the community to present the exhibition and adaptive re-use strategies during summer 2022. The students analyzed, created an architectural description of the building, evaluated its condition, collected the history available, came up with treatments, and suggested recommendations for a new use for the space and site. This project will be submitted to an international online archive, where the class instructor is part of this network.

The schoolhouse is a project that could be added as a case study to the *Patrimonio Historico + Cultural Iberoamericano* PHI – USA platform. The Universidad Politecnica de Madrid UPM founded this PHI network initiative as a form of networking with all Spanish-influenced sites worldwide. This network began in 2008, when many universities, particularly in Latin America, joined the ambitious project of collecting student work and uploading it into an international online platform website.

In conclusion, earth architecture, its building technology, design, preservation, and application, has a vast potential in an academic setting. Students were introduced to the malleable and millenary earthen building material that has for years shaped this region and the world of architecture in many parts of the world. The Historic Preservation and Regionalism Program introduces many students to the preservation and the application of earth in contemporary architecture. An extensive amount of modern design work is built out of earth and requires the basics to understand the unique properties of this material. The courses taught at the School of Architecture and Planning at UNM compliment design studios, as well as other courses in the program. All the students that have been part of these courses and/or seminars have the basic knowledge, and tools when it comes to the preservation and design strategies in a contemporary architecture.

Francisco Uviña Contreras received his Master of Architecture and Masters Certificate in Preservation and Regionalism in 2009 from the University of New Mexico where he graduated with distinction. Francisco worked for Cornerstones Community Partnerships, a non-for-profit organization, from 1994 to 2008 to assist with field assessments, documentation of historic buildings, adaptive re-use design, and new design work utilizing traditional building methods as the Architectural/Technical Manager. He currently serves as the Director of the Historic Preservation and Regionalism Program at the School of Architecture and Planning at the University of New Mexico.