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Historic Preservation and Sustainability in Charleston: A Case Study of Meadors' 93 and 97 Broad Street projects

Historic preservationists have long sought to preserve buildings for their social, cultural and economic value, and now the environmental value of these same buildings is becoming more and more an important part of the equation. Although this argument is not entirely new, it has become more prominent within preservation circles and has only recently grown in importance in Charleston. In its recent projects at 93 and 97 Broad street, Meadors Inc. has made a large impact within the community not only by rehabilitating two badly damaged historic homes into offices but also by doing the additional work of making them the first two LEED certified historic rehabilitations in the city. Meadors Inc., the City of Charleston, and the Historic Charleston Foundation are united in the hope that these projects will serve to inspire the local community and help to shape the future of green preservation and restoration in Charleston.

Although there was a spike in interest within the field of historic preservation regarding the energy use of old buildings during the energy crisis of the 1970s, within recent years historic preservationists have become increasingly involved in establishing their place within the framework of sustainability. Proponents of environmentalism and sustainability often focus on the development and implementation of new technologies to help combat climate change as well as improve air and water quality. The apparent dichotomy between these new solutions and the preservation of old buildings may at first glance appear not only problematic, but insurmountable. However, there are in truth more philosophical and practical similarities than differences between historic preservationists and environmentalists.

The concept that the "greenest building is the one that is already built" is central to the argument preservationists make for sustainability. Existing buildings represent not only the energy that it takes to run their mechanical systems, but also the energy required to harvest, transport, process and create the structure itself. The materials in older structures are also more durable than those used in modern buildings, and were often obtained locally. When an old building is destroyed, those materials are unnecessarily added to the waste stream. Before mechanical systems existed, builders took into consideration the climate and designed and sited what they built to adapt to regional conditions. In many "green" historic retrofits, compromises can be made between green technologies and historic integrity. Although each case is specific to the building at hand, improvements in energy efficiency can make historic buildings more economically viable for the homeowners or organizations who own them.[1]

Conflicts certainly do exist, such as disagreement regarding the efficiency and durability of windows as well as the insulation of thick masonry walls, and it is a focus on concerns such as these that has led to a larger public perception that preservation and sustainability are incompatible. This has not been helped by a growing number of articles emphasizing differences rather than commonalities. In particular, historic preservation standards and guidelines have come under attack for preventing homeowners from making efficiency updates and "effectively condemn[ing] our aging buildings to hospice."[2] As one of the components of its 2008 Pocantico

[1] Nancy Solomon, "Tapping the Synergies of Green Building and Historic Preservation," *Green Source: The Magazine of Sustainable Design*, July 2003, http://archrecord.construction.com/features/green/archives/0307edit-1.asp (accessed April 30, 2010); Blair Kamin, "Historic Preservation & Green Architecture: Friends or Foes?" *Preservation* March/April 2010, 28-33.

[2] George Musser, "Solar at Home: Are old houses doomed? The conflict between historic preservation and energy efficiency," *Scientific American*, March 26, 2010, http://www.scientificamerican.com/blog/post.cfm?id=are-old-houses-doomed-the-conflict-2010-03-26 (accessed April 30, 2010); Ethan Lindsey, "Building Law Seen As Threat to California History," NPR, February 23, 2010, http://www.npr.org/templates/story/story.php?storyId=123861278 (accessed April 30, 2010).

Proclamation, the National Trust for Historic Preservation has been seeking to improve and rectify these incorrect perceptions.

The National Trust has worked closely with preservationists all over the country to help arm them with information and research about what can be effectively done with historic buildings. Their most recent initiative, Preservation Green Lab, is helping to add to current research by coordinating demonstration projects in the cities of Seattle and Dubuque. From these cases, the Green Lab will be able to help provide technical assistance and model policies for preservationists in other cities.[3] In 2006, the National Trust for Historic Preservation began actively pushing for conversation between preservationists and proponents of green building in their creation of the Sustainable Preservation Commission. In the hope of future cooperation with the U.S. Green Building Council's prominent LEED (Leadership in Energy and Environmental Design) Certification program, they invited the USGBC, the American Institute of Architects, the Association for Preservation Technology International, the National Park Service, the General Services Administration and the National Council of State Historic Preservation Offices to be a part of the Commission.[4] Since that time, this close cooperation has encouraged local organizations and contractors that projects that combine both LEED certification and restoration can be both successful and profitable. This national atmosphere contributed to and encouraged the direction that Meadors Inc. would take on the Broad street projects.

The City of Charleston obtained the houses at 93, and 97 Broad street in 1984, and for the next twenty years the structures were seen as eyesores and served as the source of controversy in Charleston. The fate of these homes was tied to federal court complex expansion plans nearby.

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[3] National Trust for Historic Preservation, "Preservation Green Lab," http://www.preservationnation.org/issues/sustainability/green-lab/ (accessed April 30, 2010).

[4] Barbara A. Campagna, "How Changes to LEED Will Benefit Existing and Historic Buildings," *Practicing Architecture*, http://www.aia.org/practicing/groups/kc/AIAS076321 (accessed April 30, 2010).

93 and 97 Broad had been damaged by Hurricane Hugo and citizens of Charleston could not help but notice the deterioration of these two homes on one of the most prominent streets in town. In the early 2000s, the ire of Historic Charleston foundation and local residents was stirred when a City crew with a backhoe came to 97 Broad street on a Saturday afternoon and destroyed the rear kitchen building with a backhoe. After this episode, HCF confronted the City and demanded a stake in the future of the houses. The City agreed to sell 93 and 97 Broad street at public auction to a restoration firm with a protective easement from HCF.[5]

When the properties came up for sale, James Meadors decided that it was the right move for both Meadors Inc. and the larger Charleston community to buy and restore them. For years, people had complained that "somebody needs to do something" with the two buildings, and Meadors Inc. was one of the few local firms that had the resources to do the kind of extensive rehabilitation that would be required, particularly for 97 Broad street. After purchasing the structures in 2006, Meadors Inc. had the uncommon opportunity of having no formal client. As such, James Meadors decided that, in line with the philosophy of the company, he would take on the additional challenge of pursuing LEED certification. Although some firms had begun to use LEED standards as a guide, no one had chosen to combine formal certification and restoration. By following these strong ethical motivations, Meadors Inc. hoped to build upon its image as a leader in restoration and also be seen as a leader in green and sustainable construction.[6]

97 Broad street is a Charleston single house and tenement building originally constructed in the 1830s. By the time Meadors acquired the project, however, it was being held up almost entirely by modern scaffolding and bracing. As so much of the building had fallen in on itself

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[5] Katherine Saunders, interviewed by the author, Charleston, SC, April 19, 2010; "Historic Structures set to undergo renovations," *Charleston Regional Business Journal* http://www.charlestonbusiness.com/news/20283-historic-structures-set-to-undergo-renovations (accessed April 30, 2010).

[6] Fillmore Wilson, interviewed by the author, Charleston, SC, February 19, 2010; Meadors Inc., "Thinking Green," http://meadorsinc.com/thinkinggreen.html (accessed April 30, 2010).

due to water infiltration and structural failure, much care was taken to find original materials that could be reused. Original windows were repaired and retained, when possible, and the rest were made in Meadors' shop with matching materials; all of these windows were well-sealed with weatherstripping and caulk for maximum efficiency. However, Meadors' motivation in this case was the overall integrity of the structure as the percentage could not be met to qualify for LEED's reuse credit. The lower floors of the building were replaced with reclaimed pine that matched the size and color of the original floorboards that remained on the third floor.[7]

The mechanical systems were added in the attic to both maintain the exterior visual integrity of the property and keep them running most efficiently. Because all of the exterior walls of the building are of solid masonry construction, the only insulation that was added was a layer of rigid foam board in the roof. The kitchen building that had been destroyed by the city crew was rebuilt based on material and photographic evidence. Although it contained a modern steel structure, the original brick was reused both on exterior and interior parts of the building.[8]

93 Broad street was originally built in 1783, and was significantly updated in 1856. The rear section of this building was destroyed before the City acquired the property, and Meadors reconstructed it with modern materials. Most of the original windows were retained, including the triple-sash windows on the second floor. To improve efficiency, the upper two windows were fixed. Films were added to the single-pane glass on these windows as well as those at 97 Broad to improve their U value. Unfortunately these improvements were not sufficient to garner points. The original slate roof on the front section of the house was replaced and the rear section was

[7] Fillmore Wilson, interviewed by the author, Charleston, SC, February 19, 2010; Fillmore Wilson and Becky Fenno, interviewed by the author, Charleston, SC April 13, 2010.

[8] Fillmore Wilson, interviewed by the author, Charleston, SC, February 19, 2010; Fillmore Wilson and Becky Fenno, interviewed by the author, Charleston, SC April 13, 2010.

replaced with copper roofing. Slate and copper are both very durable materials, but copper has a higher solar reflective index than did the slate and as such received more points.[9]

Throughout the process, Meadors had to navigate between the need to maintain the integrity of the buildings that they were restoring as well as complete LEED requirements. Meadors' collegial relationship with their partners at the Charleston Board of Architectural Review and the Historic Charleston Foundation was helpful in creating new solutions as well as making compromises to help the buildings receive certification. However, while these local organizations were used to understanding buildings as individual cases and willing and able to compromise, the LEED point system does not work in the same way. For example, best practice in restoration specifies that solid masonry walls have an amount of insulative value and should not be further insulated. Insulating masonry walls is problematic in that it can trap moisture and damage the brick, ruin interior proportions and is not very reversible. Depending on the thickness of the masonry walls, they will have a thermal resistance value of about 7.5R. This thickness also lends them thermal inertia. In comparison to wood-framed walls which will heat very quickly from the sun, heat from the sun cannot easily transfer through solid masonry walls. As the sun moves throughout the day, its heat is never able to make a significant impact on the interior temperature of the building.[10]

Meadors registered these projects under LEED for New Construction v.2.2. LEED-NC is somewhat of a misnomer as it is also the product used for commercial renovations. However as they went through the process, it became obvious that the system was designed for an office building of at least 20,000 sq. ft. rather than converted former residences. When working with

[9] Fillmore Wilson, interviewed by the author, Charleston, SC, February 19, 2010; Fillmore Wilson and Becky Fenno, interviewed by the author, Charleston, SC April 13, 2010.

[10] Fillmore Wilson, interviewed by the author, Charleston, SC, February 19, 2010

houses at about 8,000 and 12,000 sq. ft., the costs can balloon out of proportion with their small scale.[11]

Although Meadors did not choose to upgrade to v.3, which came out in 2009, this change represents a step forward in terms of cooperation between sustainability and preservation goals. This most recent version includes the same categories as 2.2, but more points are available. The additional points were distributed based on the impact that each category would have on high priority environmental and human health issues. The sections on development density and public transportation received a large share of these additional points. As many historic buildings are located in dense communities, this will have a significant impact. Regionally-focused bonus points also encourage taking the local climate and environmental concerns into consideration. Based on rough calculations, 93 Broad would have received a rating one level higher if it was completed in v.3. Another revision is planned for 2010, and will include an alternate compliance path based on life cycle anaylsis and potentially categories for consideration of social and cultural value. An LCA calculator is being developed that will help simplify the process, and the National Trust for Historic Preservation's Visitor Education Center at the Lincoln Cottage in Washington D.C. is being used as a pilot project for this path.[12]

Based on these national changes as well as increasing local awareness, the future of sustainability and preservation in Charleston looks bright. The new Charleston Preservation Plan,

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[11] Fillmore Wilson and Becky Fenno, interviewed by the author, Charleston, SC April 13, 2010.

[12] U.S. Green Building Council, "LEED 2009: Technical advancements to the LEED rating system," http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1971 (accessed March 30, 2010); Barbara Campagna, "The draft version of LEED V.3 2009 DOES NOT Include the Existing Building Changes – from Barbara and Patrice," PreservationNation Blog, June 12, 2008, http://blogs.nationaltrust.org/preservationnation/?p=625 (accessed April 30, 2010); Amanda Sturgeon, "Hello LEED v3!" *Architecture Week*, June 3, 2009, http://www.architectureweek.com/2009/0603/news_5-1.html (accessed April 30, 2010); Barbara Campagna, "New Version of LEED to incorporate better metrics for historic and existing buildings," PreservationNation Blog, March 24, 2008, http://blogs.nationaltrust.org/preservationnation/?p=525 (accessed April 30, 2010); These calculations were done by the author, who is not a LEED AP. They were based on scoring of the two buildings under 2.2 and adapted to 3 assuming that all factors remained the same. Calculations for both 93 & 97 Broad can be made available upon request.

completed in 2007, included a section on sustainability that incorporated a thoughtful discussion of what sea level rise would mean for the city, as well as for its architectural heritage. This year, Charleston released its first sustainability plan. The people on the committee who created it are all members of local organizations, and James Meadors is serving as chair. The plan is meant to serve as a list of suggestions rather than a mandate for what must be done. However, this plan is being taken very seriously by the city and community. The chapter on the built environment reflects a desire to improve and preserve historic buildings and insists that old buildings are inherently energy efficient. Charlestonians want "better buildings" to slow climate change but demand that their cultural identity is also protected. Such a strong preservation focus is certainly unique to Charleston, and will continue to be important in any future discussion of sustainability.[13]

Fillmore Wilson and Becky Fenno of Meadors Inc. are encouraged by growing local awareness and interest in combining preservation and sustainability, not only from citizens but also from other restoration firms and contractors. They noted that among the latter it is becoming more common to learn from LEED certification guides, as well as those from other certification organizations, and apply them without formally getting certification. Meadors Inc. is active in the USGBC and supportive of its aims, and Fillmore Wilson suggested that the organization was in the best position to help create a consistent national standard. Unlike 93 and 97 Broad street, the majority of projects that the company takes on have a formal client. Meadors always brings up LEED certification as a possibility on all of its projects, and is sure to have an honest discussion about the system and its costs, as well as educate about its benefits. If the client is unwilling to pay the additional cost for certification, they sometimes choose to incorporate sustainable

[13] "New Paths for Preservation," *Vision-Community-Heritage: A Preservation Plan for Charleston, South Carolina* (Charleston: Page & Turnbull, 2008), 114-117; "Better Buildings," *Charleston Green Plan: A Roadmap to Sustainability* (Charleston, RISO Inc., 2010), 32-49.

practices based on this discussion. Meadors has found that clients with historic homes are generally more uncomfortable with LEED. [14]

The Historic Charleston Foundation is in the position to help these homeowners become more familiar and comfortable with these ideas. Although they have not yet created a formal position on sustainability, they are becoming active in the discussion locally through participation on the Charleston Green Committee and through the creation of an in-house sustainability committee. They have taken on several new initiatives in the last year through cooperation with The Sustainability Institute. To obtain more information regarding the energy efficiency of historic homes in Charleston, SI performed energy audits on five homes that HCF holds easements or covenants on. The homeowners were pleased to participate and HCF hopes to continue to follow up with them as well as do energy audits of more homes. SI was also able to audit HCF's historic house museums and improvements have been made as a result.[15]

April Wood, who does technical outreach at HCF, has been encouraged to hear more and more questions from the public regarding efficiency. In the future, she plans to create sustainability briefs to help direct and educate people about their choices. She is strongly supportive of the new turn toward sustainability and hopes that preservationists in Charleston as well as throughout the country will become more prominent in these discussions. The success of 93 and 97 Broad street serves as concrete proof that LEED can be used on historic buildings in Charleston while maintaining integrity. To help draw attention to this groundbreaking work, the

[14] Fillmore Wilson and Becky Fenno, interviewed by the author, Charleston, SC April 13, 2010.
[15] April Wood, interviewed by the author, Charleston, SC, April 19, 2010.

Historic Charleston Foundation awarded Meadors Inc. its Robert N.S. and Patti Foos Whitelaw Award for preservation advocacy for its work on 93 and 97 Broad on April 20, 2010.[16]

Although the projects at 93 and 97 Broad have been very successful, neither Meadors Inc. nor the Historic Charleston Foundation are choosing to rest on their laurels. As Patrice Frey recently wrote on the National Trust for Historic Preservation's blog, it is important that preservationists become involved in sustainability more than ever. She asserts that a preservationist's job now includes becoming active participants in the discussion on sustainability as well as becoming retrofit experts.[17] Great strides have been made, but in the end it will still come down to the choices that preservationists make in the coming years. The focus on technological improvement of buildings could prove dangerous to the buildings that define communities not just in Charleston, but all over the United States. If preservationists become stronger advocates for the interconnections and intersections of sustainable principles and historic preservation, green building proponents could become some of preservation's strongest allies. There is no question that Americans need to become more aware of the impact that buildings have on the environment, but through the efforts of preservationists these strides can be made while embracing historic fabric that makes communities like Charleston unique.

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[16] April Wood, interviewed by the author, Charleston, SC, April 19, 2010; Dierdre Mays,"Cathedral Wins HCF Award," *The Catholic Miscellany: Official Newspaper of the Diocese of Charleston, South Carolina*, April 22, 2010, http://www.themiscellany.org/index.php/news/3205-cathedral-wins-hcf-award (accessed April 30, 2010).

[17] Patrice Frey, "Old Homes in a Sustainable World: A New Job Description for Preservationists," PreservationNation Blog, April 22, 2010, http://blogs.nationaltrust.org/preservationnation/?p=9601 (accessed April 30, 2010).

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