

Just a Little Nudge: How Ideas, Elbow Grease, and an Old Gas Station Canopy Turned an Eyesore into an Amenity

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This paper looks at the development of a community based amenity through the application of adaptive design thinking, cleverness in material reuse, and the tactical deployment of heterodox assembly methods as significant facets of a well-comprised architectural education. Strategies for how one may engage and enable a community to participate in the design and construction process, through means other than unskilled voluntary labor or simply making a donation, were uncovered and refined through this undertaking. The SuperUse Pavilion at the Oktibbeha County Heritage Museum, located in northeaster Mississippi in the small city of Starkville, Figure 1 outlines the location and context for the project’s development.

INTRODUCTION

The story of the Oktibbeha County Heritage Museum’s Rain Garden Program is a story of community. The Museum itself is a volunteer run organization serving Oktibbeha County, which includes Mississippi State University. In 2009, faculty

from the Mississippi State University School of Architecture and Department of Landscape Architecture sat down with the museum board and members of the allied organization, Friends of the Museum, to discuss a simple problem of uncontrolled stormwater drainage seeping under the building and into the crawl space. The result of that discussion, and the several that followed, was the generation of a new vision for the museums development, poetically captured in the slogan, “Celebrating the Past While Embracing the Future”. This newly developed vision for the Museum included a landscape design plan which would mitigate the drainage issues while adding interactive and educational landscape features to the museum grounds. The new landscape would achieve its educational intent via the demonstration of innovative stormwater management systems. Figure 2 outlines the various systems operating across the site.

The faculty involved quickly moved forward with students and Museum supporters to generate a phased approach to remaking the landscape of the Heritage Museum as a high-performance green infrastructure demonstration site. The plan called for the grounds to support students of all ages in having an interactive experience with facilities that did not exist anywhere in the region, while also serving as an example

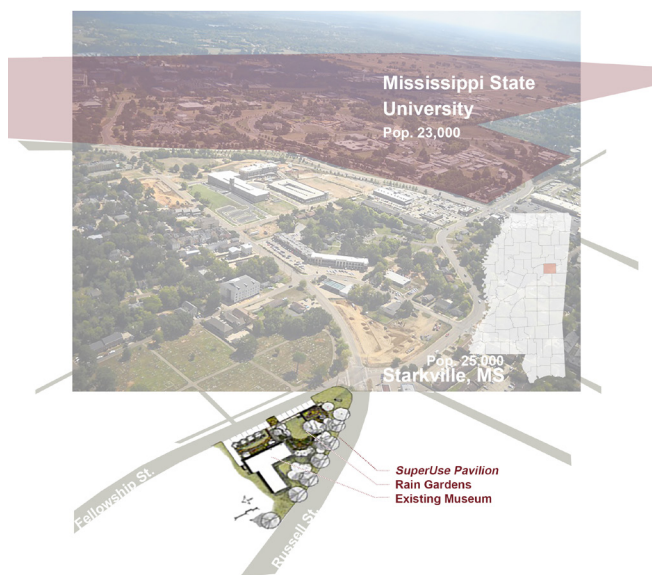


Figure 1. Project Context: State, City, Street, Parcel.

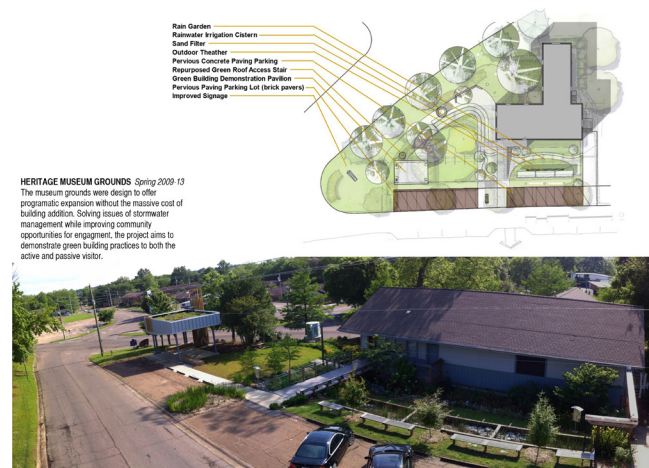


Figure 2. Stormwater Management.

for how future regional development could better manage stormwater. It is important to note that the region is known to have a chalk shelf covered by a thin layer of Yazoo clay, both of which contribute to very low levels of permeability thus making the demonstrations on this site potentially very valuable to future designers and builders.

Over the next five years, six faculty members from three departments worked with more than two hundred students to develop detailed plans, source materials, and implement the improvements. The museum board and Friends of the Museum worked to secure funding that ultimately equaled to over \$140,000 in value. The monies collected in this effort however only amounted to \$18,000 of the total amount which was largely comprised of pro-bono services such as construction equipment operation, engineering, architectural and landscape architectural design, transportation of materials and site work. In addition to the donated services, and where this project separates itself from a typical community project, was the donation of pre-existing building components such as a circular staircase, light fixtures, railroad rails, and even old parts of agricultural implements, all of which were repurposed for use in the project. The largest and most profound of these donations being a former gas station pump canopy that was built of steel and located two blocks from the museum site. This project, unlike most, was designed to engage the community through the incorporation of its cultural artifacts. Much like the Museum collection itself, the principle materials that allowed this project to be manifest were not purchased but rather given and rearranged to generate an entirely new way of seeing/experiencing the history and vernacular of north eastern Mississippi and the Black Prairie region. The designers used elements that had meaning to the local community to develop a language and aesthetic for the project while serving the performance criteria of high-performance stormwater management. Students, faculty, and community members worked together to resourcefully compose a landscape of both function and memory that was capable of telling a story about both the past and the future.

The improvements to the museum have created new life for the museum and its volunteers. Some visitors come to see the culture of the region and find out about green infrastructure, while others come to learn about green infrastructure and are exposed to the heritage of the county. Visits to the museum have doubled since the rain garden program began in 2009 and the Museum now offers programs on soil and water conservation to cub scouts, garden tours to garden clubs, and fieldtrips for schools. Beyond the green infrastructure improvements, the site offers opportunities for the community to come together. The site has an outdoor amphitheater which student organizations use for movie nights and faculty for lectures about the garden. The SuperUse Pavilion, which capped the project as the centerpiece of phase five, offers an eye-opening look into how adaptive reuse in architectural design and construction reduces energy use while offering



Figure 3. The SuperUse Pavilion as an event center.

exciting and unique spaces and places. The pavilion is available for families and organizations to use while enjoying and learning about the garden including examples like the AIAS Beau's Art Ball pictured in Figure 3.

PROCESS & REARRANGEMENT

The SuperUse Pavilion was conceived and designed as an act of contingency. Both the means and materials for construction were little known when the project was undertaken making for a truly open-ended design inquiry. Working in a mode of blended opportunism and improvisation, the design process is best characterized as an act of full-scale bricolage. Like with any work of design, the project team needed a place to begin. In the case of the SuperUse Pavilion, the beginning was prompted by the donation of a green roof system. Having witnessed the prior phases of the project, Hydrotech roofing stepped forward and offered a green roof as a way to showcase their product and contribute to the stormwater management demonstrations occurring on the site. The museum, with the green roof donation in-hand, set to work finding an appropriate location for the system. The inadequate roof structure on the museum meant that it could not be fitted to the existing building so an accessory structure was brought into the equation.

Beginning the fifth and final phase of the work, the design/build team knew that the accessory building (pavilion) had many functions to perform however, they also knew that funds would be very limited. What's more, the project team with the museum board and members of the Friends of the museum, had decided the museum desperately needed more visual presence on the street and in the city. The modest former rail depot building that housed the museum, while quaint and well-kept, did little to draw the eye of passersby. It was struggling to earn patronage and needed something new and more public to pull it out to the street where the public could interact with the grounds and eventual museum. While



Figure 4. Former fuel canopy being dismantled, cleaned, reinforced, and erected.

the design team considered the project necessities, members of the museum board and Friends of the Museum worked to gather \$15,000 for the project. Their hope, at this point unendowed to the design team, was to purchase a small premanufactured gazebo structure as the accessory building to host the green roof system.

The design team up to this point had been focused on completing the transformation of the grounds from an inert forecourt of turf to a living exhibition with gardens and beds that drew in the rain while adding depth and character to the experience of the museum. The new landscape thus prompted the team to consider a means of framing its beauty and functional properties, making the yet to be accessory structure (pavilion), the means by which this could be achieved. The new pavilion, through this adjustment in scope and programming was saddled with the tasks of not only supporting/displaying the green roof but also offering new forms of exhibition for the museum and most critically, framing and showcasing the stormwater management systems in action. Thinking about the many parameters of the project, it became clear that a small wooden prefabricated gazebo would not suffice. Looking to accommodate the needs of the museum and requirements of the new structure, an alternative means of project funding moved to the forefront of consideration. While it was obvious that no one would be writing a big check to support the project, the team knew that the community was interested in helping, and that if they had something to give, they would likely step forward. Mississippi, while consistently ranked one of the poorest states in the union, is also consistently the state in which more charitable donations are given than any other. This generosity and dedication to community would soon come into play to make the SuperUse Pavilion project a reality.

A NEW/OLD IDEA

Building on what the team knew about the character of the community the decision was made to solicit donations of materials. As one might expect, new, clean unused materials were difficult to procure. What the team did not anticipate however was that the community offered alternative materials such as remnants of building materials, components of abandoned structures and random parts and pieces of equipment and local historical artifacts for repurposing and appropriation. This discovery redefined the design process and reshaped the pedagogy employed by the faculty teaching the courses that would ultimately complete the construction.

The largest and most profound of the donated materials was stumbled upon one day by Professor Herrmann while traveling along University Boulevard in downtown Starkville, MS just two blocks from the project site. Driving to lunch, he noted a traffic nuisance being caused by the presence of a former fuel pump canopy obstructing flow in the parking area of the former Maroon and White service station aptly named for the Mississippi State University Bulldogs who wear maroon and white. The station's fuel pump canopy and drive/lot had long been converted to a new use; it was now a favorite hangout of students who frequented the pizzeria that occupies the former gas station building. The canopy, which obstructed the parking area traffic flow causing issues along University Boulevard struck him as the perfect solution to the project's major concerns and goals. The canopy was large, strong, demountable, and likely free if we could convince the owner that the space below would be better used as customer parking. Through conversation the owner eventually agreed that the canopy needed to be removed with the condition that he would bear no expense in the canopy's removal. Soon a small team, led by a local contractor who was building a nearby bank, was dismantling the structure and transporting it to be sandblasted. While the sandblasting was being completed an engineer was approached about the project and again services were offered pro bono in support of the project. It was determined that because the old fuel canopy was built of a lower carbon steel than current standards allow, some reinforcing and strengthening had to be done. In addition, anyone familiar with green roof systems understands that they generally require a more robust structural system to support the added weight, figure 4. Working with students and a certified welder, the structure was strengthened and eventually repainted and made ready for erection. By reconfiguring the structural members and adding stronger cross members to support the roof loads, the team was able to repurpose the pump canopy to serve as a much larger and more visually appropriate pavilion while also improving the pizzerias' parking and cleaning up the rather unsightly street front elevation

With this element of the design resolved the landscape architecture and contracting students set to work designing and building the foundations while the architecture students

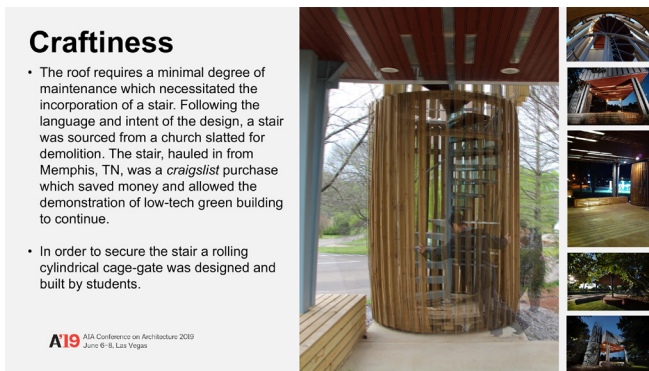


Figure 5. Rotating gate at base of stair.

designed and constructed the pavilion's fascia and ceiling systems. With the foundations and floor in place the steel was quickly set in place and the roof and fascia were installed. As a means of accessing the roof for maintenance and viewing, a stair was necessary. Here again funding became an issue and once more an unlikely solution was found, a steel circular staircase was procured at a "friends and family" cost via a craigslist connection. The stair was reclaimed from a Memphis, Tennessee area church slated for demolition. To meet safety and security needs the stair was clad in wood fins and elevated to create a tower like structure that served as a focal point of the pavilion's composition (Figure 5).

Working in the 90+ degree heat and humidity of Mississippi, the structure was erected, painted, and clad with students soon installing the green roofs built up layers and sedum plantings. A custom blanket of sedum plants was grown and delivered for the project by Hydrotech, in association with the Mississippi State University College of Agriculture who had performed detailed research on the optimal sedum species for the project climate. Eluding to the unseen greenery above, vines drape from the roof edge as part of a green wall. The planted wall is placed in alignment with the stair behind to emphasize the cross axis terminating one's approach.

Figure 6 provides a view of how the SuperUse Pavilion was designed to display and make present the stormwater management systems at work. With foraged and donated building materials and a program of support/placement of a green roof, the pavilion responds to the situational logic of the site by offering a backstop to the gardens which are surrounded on three sides by busy city streets. The wedge shaped lot is bookended by the pavilion's lower back edge which drops slightly to signify the terminus of the pedestrian grounds. In doing so, the central gathering space of the nearby museum lawn is reinforced as the hub of activity. Below the sweeping ceiling of the pavilion, integrated furniture including benches and a stage bound the pavilion floor offering a public venue for concerts, gathering, exhibitions, and other forms of outdoor event. Bands of acrylic replace ceiling boards and



Figure 6. SuperUse Pavilion green roof and planted wall system hinting at what lies above.

bench board to offer low-level accent lighting which may be supplemented by spot and task lighting as needed by the user. Various rain sculptures are placed around the grounds to showcase the movement of water with a large scale rain sculpture made of an old agricultural tilling machine serving to receive the pavilion's green roof runoff. Lastly, salvaged local historical artifacts were placed out and into the landscape as art installations/outdoor exhibits.

BIGGER PICTURE & AGGREGATED EFFECTS:

Abandoned infrastructure is everywhere around us and designers make decisions every day on the design of the most mundane artifacts of human civilization. From roads to sanitary sewers, infrastructure is often utilitarian at best. However, each element is an opportunity to either degrade or improve our environment. Taken in isolation, a single gas station awning is almost inconsequential, but collectively every awning in the U.S. is something to be considered. If every one of the 120,000 gas station awnings in the U.S. were to have a green roof like the one on the SuperUse Pavilion, they would be more than mundane infrastructure, they could be part of the green networks

of cities. Based on existing research, if the 120,000+/- canopies were green roofed systems, they would create 15 square miles of habitat, which is equal to about half the area of Manhattan. The habitat would be used by birds and insects while drivers would be filling vehicles twenty feet below. They would also help to improve watershed health by filtering pollutants and retaining over 3.6 billion gallons of rain per year. That amount of water could fill the Empire State Building over 14 times. With some irony, the canopies would also help to eliminate pollution by absorbing over 15 tons of carbon per year, or the equivalent of over 11,000 cars. Figure 7 illustrates the potential of this approach to fueling station design.

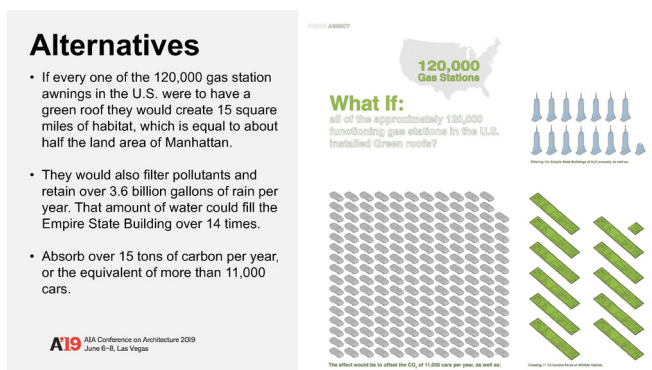


Figure 7. Policy changes could reshape the environment.

All evidence suggests the sag in annual American gasoline sales is not a fluke but rather a maintained trend that has been steadily held, if not made more rapid by EV and hybrid technologies in recent years. Subsequently the number of fueling stations around the country is declining as citizens turn to mass transit or other sources of transportation fuel. While industry statistics are a bit mercurial, in the US the number of gas stations has dropped by an average of 3,800 gas stations per year from its highest total of just above 205,000 stations in 1994 to approximately 120,000 today. This means approximately 80,000 former fueling stations are now either sitting idle in a state of slow decline or they have been raised to the ground to make way for new construction. These former fuel stations, while potentially problematic, offer a unique resource. Their owners often do not value them for resale and their scrap value is generally not worth the cost and effort to dismantle and haul away. In this lies a silver lining, because the canopies are often built of steel and made to be bolted together, they are just as easily unbolted and reused for a new purpose.

DISCUSSION & USER FEEDBACK:

The superuse methodology attempts to demonstrate that being environmentally accountable does not require additional expense only additional consideration. This technique was used to both educate designers and the public about how one might approach a project, or potential project, without

a previously held concept of the final aesthetic, budgetary requirements, and performative potential. The beginning of the work is an act of pure fiction, we made a project when one didn't exist by simply recognizing a need and deciding to address it. Everything after that leap of faith was driven by informed thinking, chance, and the notion that we all want this to happen and need to seek potential means and materials to manifest the project. Our team believes that in this way, any group, no matter the size and backing, could realize a similar work of design.

As evidence of our pedagogy and design philosophies potential, we offer the following user feedback:

I have watched the activity of MSU's faculty and students as they worked tirelessly to enhance the grounds around the museum. Since this project began, visitation to the museum has doubled with many of the visitors coming to view the landscape and water saving features demonstrated. This media coverage has made the museum more visible to the Starkville community.

— Mr. William Poe, Former member of the Board of Directors - Grounds Coordinator, Oktibbeha County Heritage Museum

Prior to the work of MSU faculty and students the exterior of the museum was very mundane. With the revitalization of the exterior, more visitors stop to see what the museum has to offer. Now not only does the museum tell the history of the local area, it is a showcase for best practices in landscape design and management. The students also solved a major drainage problem for the museum. Rain water settled under the museum, causing considerable interior problems. The museum now stays dry during the Mississippi rainy days. We at the museum feel very fortunate to have had the relationship with Mississippi State University to move the museum to a new level.

— Ms. Joan Wilson, Board of Directors - President, Oktibbeha County Heritage Museum

MSU students and faculty have transformed the Starkville-Oktibbeha County Heritage museum grounds into a showcase of innovative stormwater techniques and sustainable methods of stormwater management. This site is very important for our community as it does provide real examples for developers and contractors of alternatives to the traditional stormwater detention ponds. What was once simply an uninteresting exterior site is now a destination and an exhibit in of itself.

— Mr. Edward Kemp, PE City Engineer & Sustainability Coordinator, City of Starkville, MS