

The Context of a Meal

Associate Professor Tricia Stuth
University of Tennessee, Fall 2006

Site: The project is located the revitalized North Knoxville community of Knoxville, Tennessee. The urban corner site completes the block occupied by an adjacent row-house community.

Program: A 9000 ft² neighborhood market and café

Concept: The façade is explored free of structural responsibilities and open to numerous expressions of interior, exterior, scalar, material, visual, and light conditions that further enhance the experience of programs and spaces. The procession of spaces is considered in relation to the process of “constructing” and consuming a meal. The façade system responds in a related manner.

Samuel Allen Mortimer

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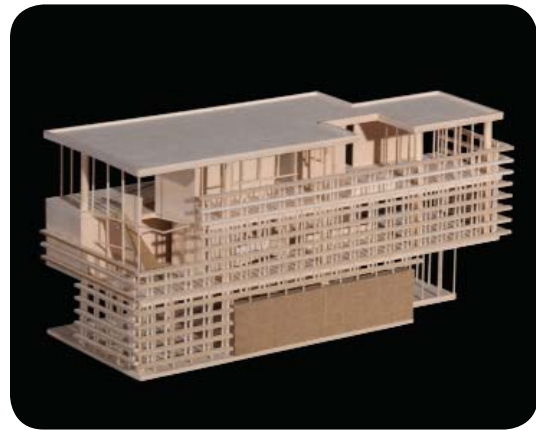


Views to exterior
The facade begins to dematerialize and offer increased transparency as it rises, as related to programmatic organization.

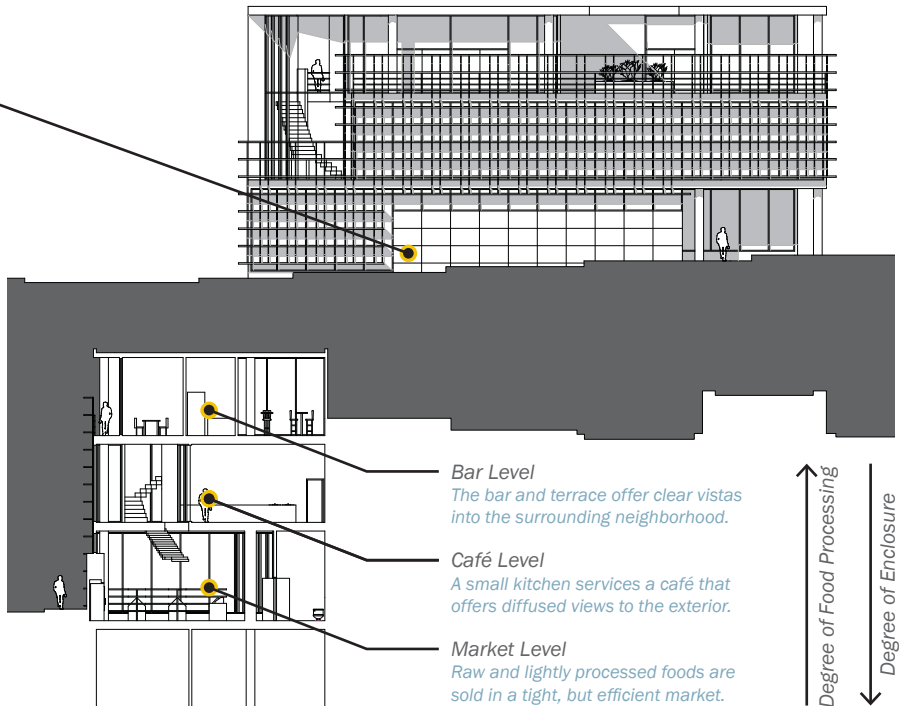
Aluminum façade screen
The system is designed to regulate interior light and enclosure. As the degree of food processing inherent in each programmatic level increases, the degree of enclosure inversely decreases and allows more views.

Perspective from street

Aluminum façade panels
The refrigerated area of the market creates a solid element on the façade to respond to the urban sidewalk and street condition.



Study model



Bar Level
The bar and terrace offer clear vistas into the surrounding neighborhood.

Café Level
A small kitchen services a café that offers diffused views to the exterior.

Market Level
Raw and lightly processed foods are sold in a tight, but efficient market.

↑ Degree of Food Processing
↓ Degree of Enclosure

Transverse section and primary elevation

Henniez Water Bottling Factory

Chair of Dr. Josep Lluís Mateo
ETH Zürich, Autumn 2009

Site: The project is located near the small village of Henniez, Switzerland. The factory itself is situated in the contemporary arcadia; countryside consisting of the protective forest, agricultural fields, and habitations situated along the tortuous roads.

Program: A 240,000 ft² water bottling factory to replace the aging facility of the Henniez Company, an established mineral water producer in the Canton Vaud of Switzerland.

Concept: Though the bottling process has become increasingly more technological, the Henniez Company goes to great lengths to ensure that all bottled water is unaltered from the time it naturally rises to the surface level at the factory's source (1 km away) to the time it is eventually consumed. This business model is the core of the Henniez Company.

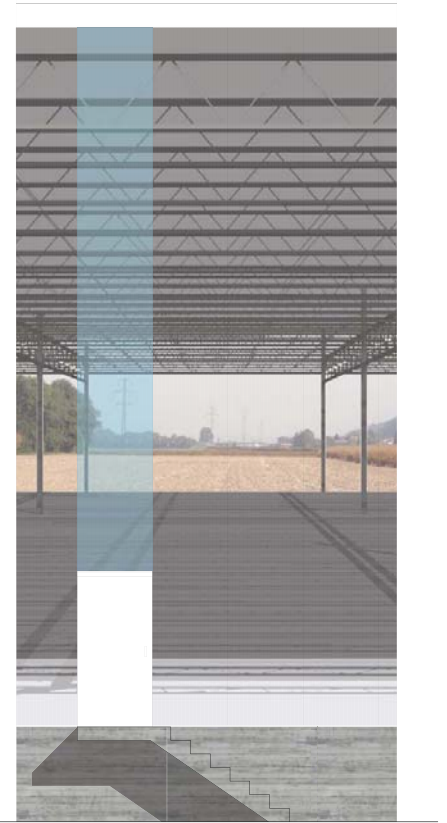
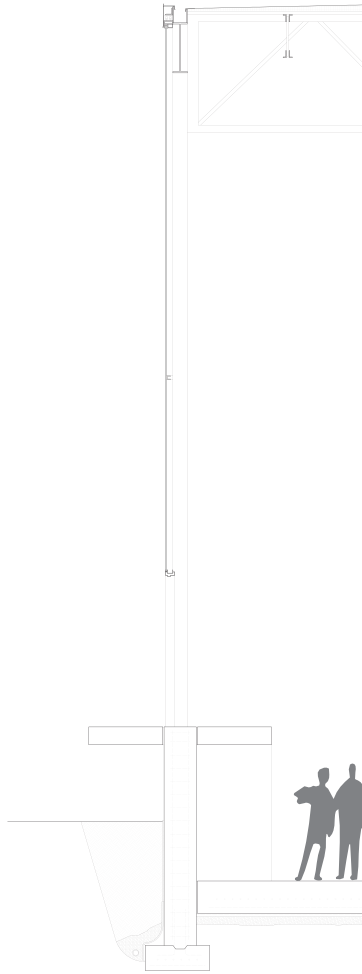
The built response replicates the pureness of this concept by creating a simple, flexible production space with functional site connections to rail and roadway infrastructures. The façade treads as lightly as possible on the rolling landscape.

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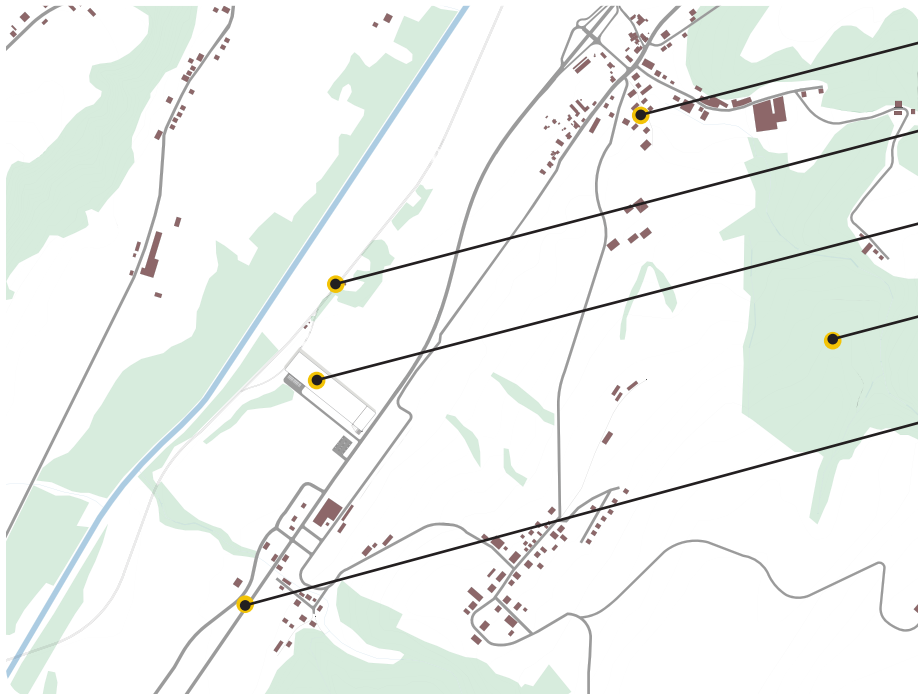
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Landscape surrounding factory hall (existing)



Transverse wall section and façade study



- Village of Henniez**
The small village in the French speaking region is closely linked with the company
- Rail Connection**
A crucial SBB freight and passenger rail is connected directly to the factory
- Proposed Henniez Factory**
The factory hall and corporate headquarters sit in a rolling agrarian landscape
- Mineral Water Source**
Water naturally percolates to surface in a small forest 1 kilometer east of the factory
- Roadway Connection**
Route 1 is the primary vehicular connection to the factory and larger district of Broye-Vully

Site plan (including village of Henniez and source spring)

A New Norris House

Associate Professor Tricia Stuth and Assistant Professor Robert French
University of Tennessee, Spring 2009 - Fall 2011

Samuel Allen Mortimer

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Site: The project is located in Norris, Tennessee. In 1933 the Tennessee Valley Authority constructed this model community as part of the Norris Dam construction project. A key feature of this New Deal village was the Norris House, a series of homes built as models for modern and efficient living.

Program: In light of the 75th anniversary of the Norris Project, an interdisciplinary team of students and faculty reinterpreted the Norris paradigm and created a New Norris House — an 800 ft² sustainable home designed for the 21st century.

Concept: As with the original Norris designs, the New Norris House uses state of the art technologies and techniques. The house incorporates green materials, leverages energy conscious design strategies, and utilizes off-site construction methods. Yet the challenge goes beyond the creation of a model home design. The house design responds and is reforming community and legal constraints that currently deter sustainable home construction. To accomplish this, the project team consulted with community residents, researched local codes and worked with local and state government. The project also addresses affordability and “fit” in light of median home prices and the town’s status on the National Register Historic District. The project thus confronts and resolves not only technological or scientific challenges; but also legal, social, and aesthetic issues that currently restrict green construction. The New Norris House is registered with the US Green Building Council and is certified LEED for Home Platinum.



View of parking court and south facade of home. (above)



Incomplete modular units are delivered to site for custom interior and exterior finishes. (left)
View of finished interior of the home. The marriage wall acts as the primary organizer of spatial functions. (right)

As a member of the original student design team, I have been working on the project continuously since its inception (with the exception of fall 2009). I helped lead the first full studio of architecture students refine the construction document set for submission to the Tennessee State Fire Marshal. Upon graduation, I was hired as a researcher with the college to help lead a group of students in a 12 credit-hour design/build course setting. I performed many roles and had a hand in most processes, but primarily my responsibilities included coordinating with Clayton’s design team to complete the construction document set for initial modular fabrication; coordination and oversight of building systems and MEP sub-contractors; coordination and oversight of the LEED for Homes submission and corresponding work on-site; aiding in regulatory and permitting needs; and aiding in the management of on- and off-site personnel and scheduling.

Selected Design Awards

- ACSA Design-Build Award (2012)
- Merit Award - Residential Architect Design Awards (2012)
- Merit Award - AIA Gulf States Design Awards (2012)
- NCARB Prize Recipient (2011)



A New Norris House: Post-Occupancy

Associate Professor Tricia Stuth and Professor Dr. Richard Kelso
University of Tennessee, Fall 2011 - Fall 2013

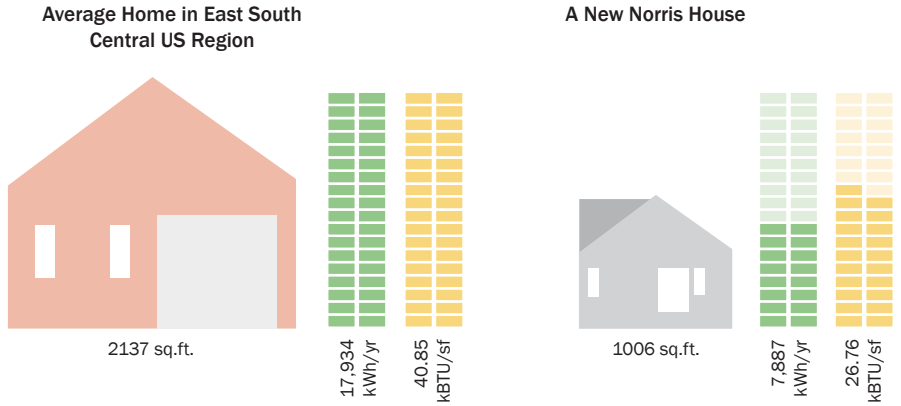
At the conclusion of the home's construction period, I helped begin and later led a sophisticated monitoring and evaluation effort focused around a two year post-occupancy period of the home and landscape. My primary responsibilities included:

- Development of evaluation criteria
- Installation and troubleshooting of instrumentation
- Oversight and management of database
- Analysis and interpretation of results
- Dissemination of findings

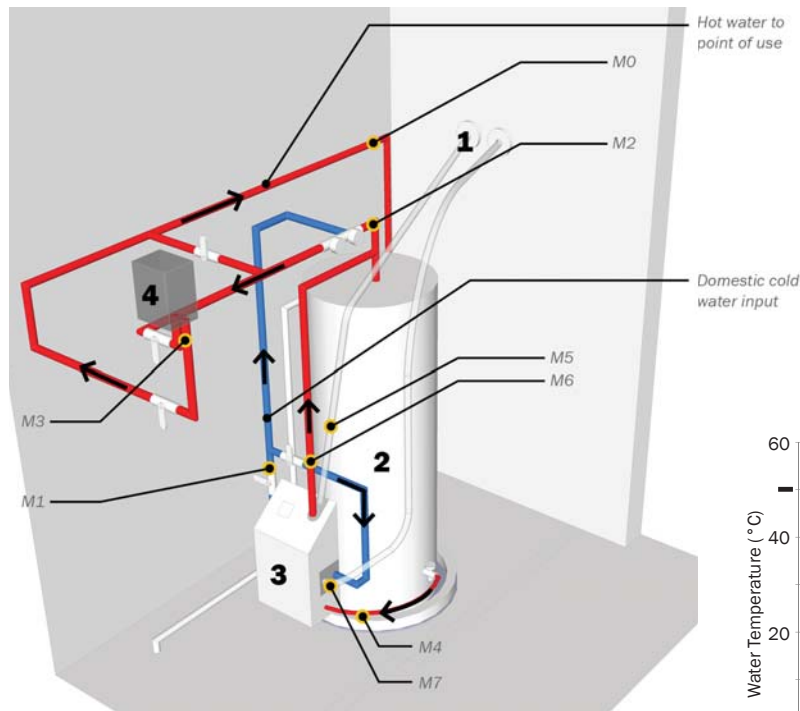
Though the study is ongoing, intermediary findings have indicated the home is largely performing as modeled. These conclusions have been included in multiple peer-reviewed articles as well as subject of an AIA sponsored continuing education webinar.

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A comparison of whole house energy use after 12 months of study— a 56% reduction in kWh consumption and a 44% reduction per square foot.



A study of the solar hot water system and its role in whole house hot water production (right)
Instrumentation of the hot water system (left)

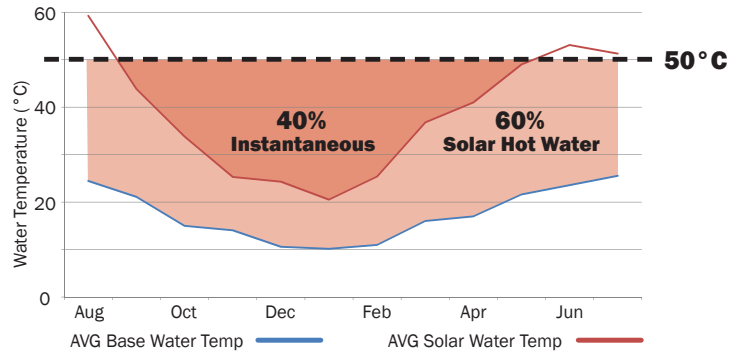
Monitoring Channels

- M0 Total hot-water volume used in the home
- M1 Base cold water (before entry to system)
- M2 Post solar hot-water (en route to end use)
- M3 Post electric makeup water heater (en route to end use)
- M4 Pre heat exchanger loop (water)
- M5 Pre heat exchanger loop (glycol)
- M6 Post heat exchanger loop (water)
- M7 Post heat exchanger loop (glycol)
- M8 Instantaneous water heater electrical consumption (not shown)
- M9 Solar Thermal electrical consumption (not shown)

Equipment

- 1 Glycol lines to 2.88m² Enerworks solar hot-water panel on roof
- 2 Rheem 303 L (80 gallon) solar storage tank (no elements)
- 3 Enerworks Energy Pack (heat exchanger and system controller)
- 4 42.5MJ (11.8kW) Eemax instantaneous thermostatic water heater

Hot Water Production (Solar vs. Electric)



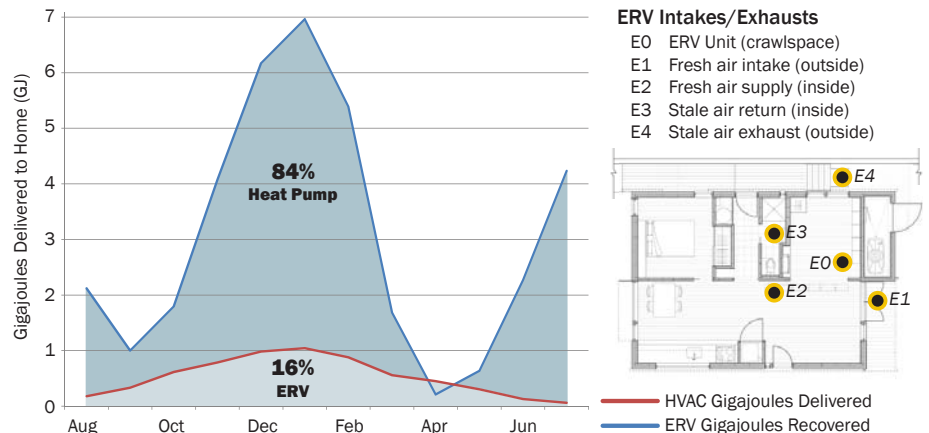
Selected Citations of Publication and Presentation

Mortimer, Samuel. "A New Norris House: Achieving LEED for Homes Platinum and Beyond", International PLEA Conference 2013. (Abstract under review)

Mortimer, Samuel. "Lessons Learned: A New Norris House", CLIMA 2013 Congress - Energy Efficient, Smart and Healthy Buildings. (Accepted and forthcoming)

Stuth, Tricia, and Samuel Mortimer, Valerie Friedman, Dr. John Buchanan. "A New Norris House: Making Criteria for Sustainable Landscapes Visible", 2013 ARCC Architectural Research Conference. (Accepted and forthcoming)

Stuth, Trica, and Samuel Mortimer. "A New Norris House." American Institute of Architects Housing Knowledge Community Webinars. 12 Nov 2012. web.



A study of the energy recovery ventilator (ERV) and its role in whole house conditioning

Museum for the U.S.S. Undine

Associate Professor Ted Shelton
University of Tennessee, Fall 2008

Site: The project is located in the New Johnsonville State Park in East Tennessee. The site overlooks the Tennessee River and includes the remains of a Confederate redoubt which was used as an earth shelter during the course of battle.

Program: A 25,000 ft² museum and research center to house the remains of a recovered Civil War era gunboat, the USS Undine. Residences and related programming for visiting scholars is also included.

Concept: The design solution stems from research into the protagonist of the Undine's tale, General Nathan Bedford Forrest, who was responsible for capturing and later scuttling the ship. As highly controversial (though highly influential and effective) battlefield leader, General Forrest's role in history is often debated and presents a clear example of the importance of impartial research and dissemination.

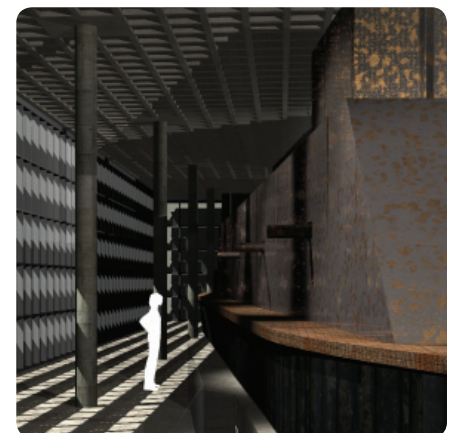
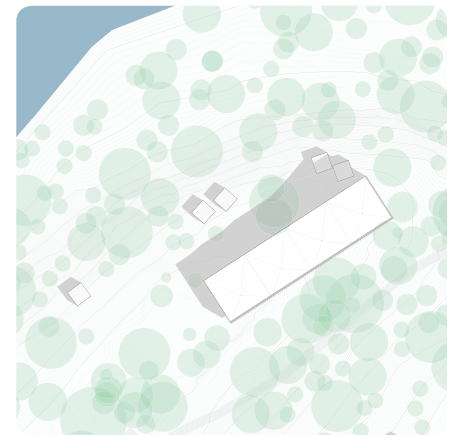
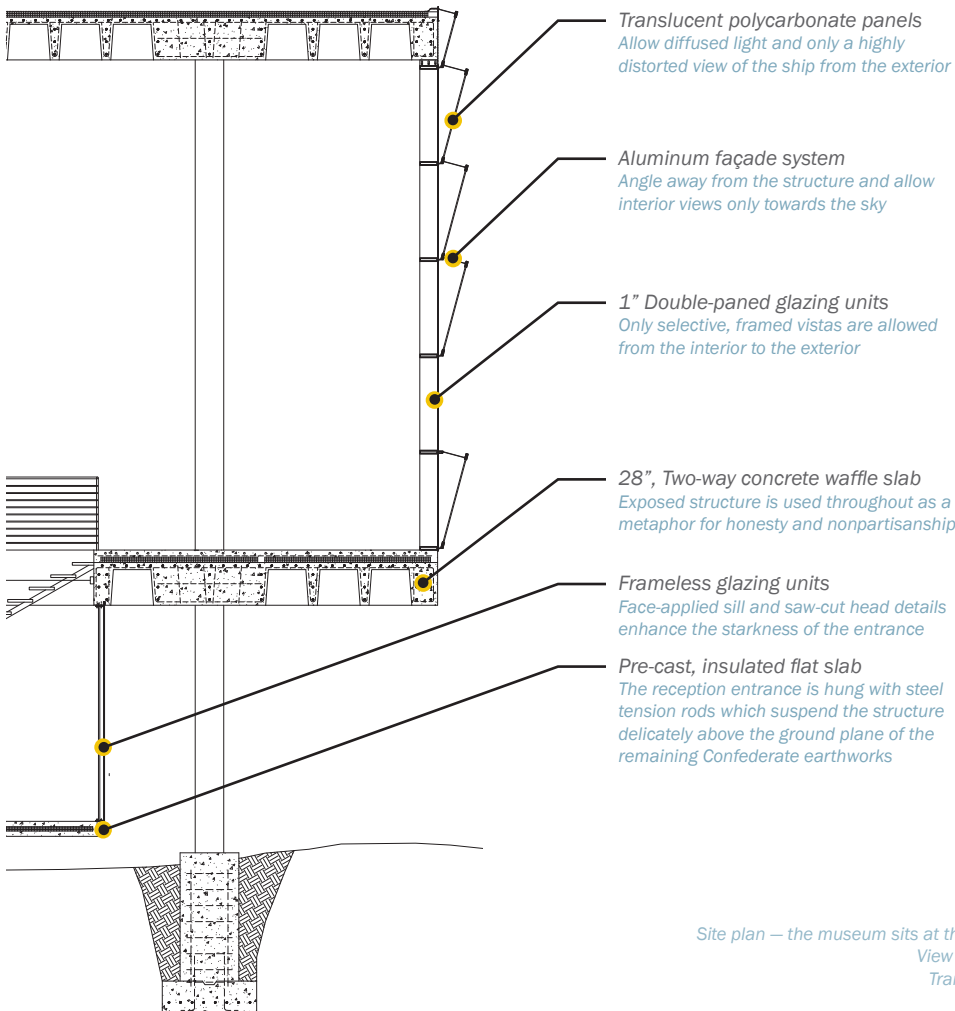
The built response illustrates this through the structural system, material selection and detailing, and the interior exhibit design. Conversely, the project's siting, the organization of program, and the design of the façade systems are used to selectively allow and deny specific views to and from the landscape — an attempt to further depict the effects of bias distortion.

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The ceremonial entrance to the museum hangs in tension within the eroding Confederate redoubt.



Site plan — the museum sits at the top of a large hill overlooking the Tennessee River (top right)
View of interior of boatroom and diffused light quality (bottom right)
Transverse section through facade and ceremonial entrance (left)