Samuel Allen Mortimer

selected works

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Henniez Water Bottling Factory

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

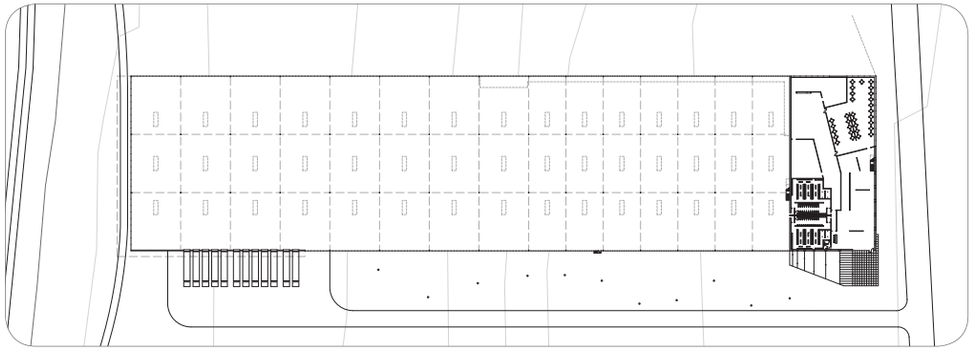
Site: The project is located near the small village of Henniez, Switzerland. The factory itself is situated in the contemporary arcadia; countryside consisting of the protective forest, agricultural fields, and habitations situated along the tortuous roads.

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.

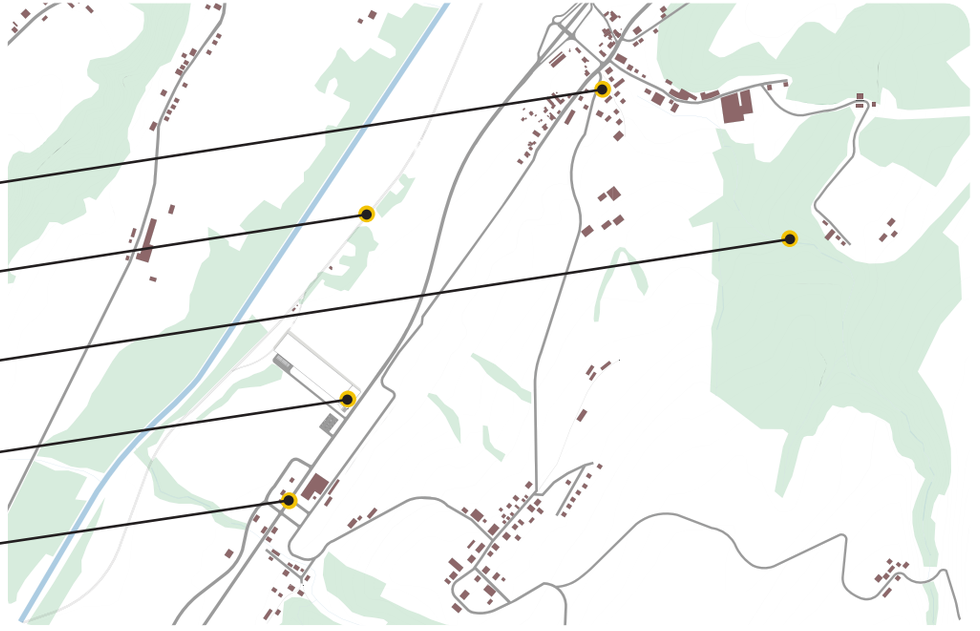
Concept: Though the bottling process has become increasingly more technological, the Henniez Company goes to great lengths to ensure that all bottled water is unaltered from the time it naturally rises to the surface level at the factory's source (1 km away) to the time it is eventually consumed. This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

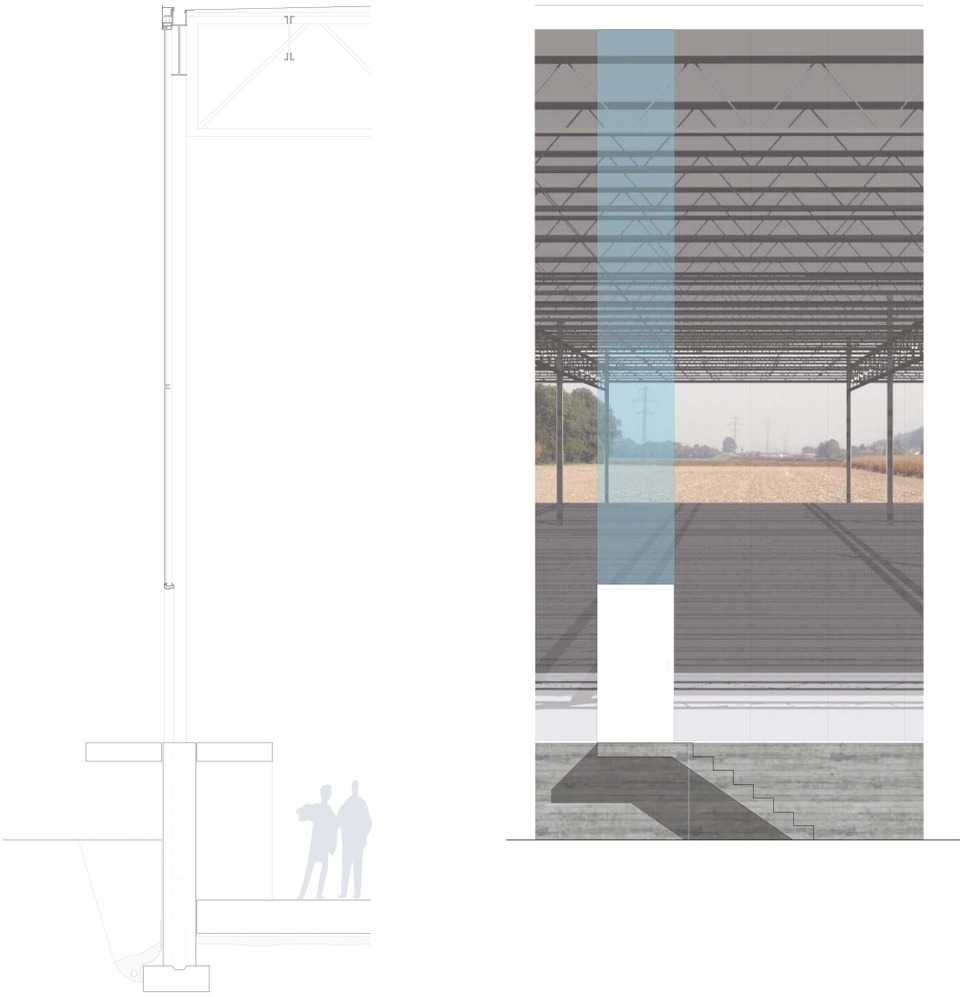
Existing Henniez bottling facility



Floor plan



Site plan



Typical wall section and detailed elevation

View of factory hall interior and storage area

Museum for the U.S.S. Undine

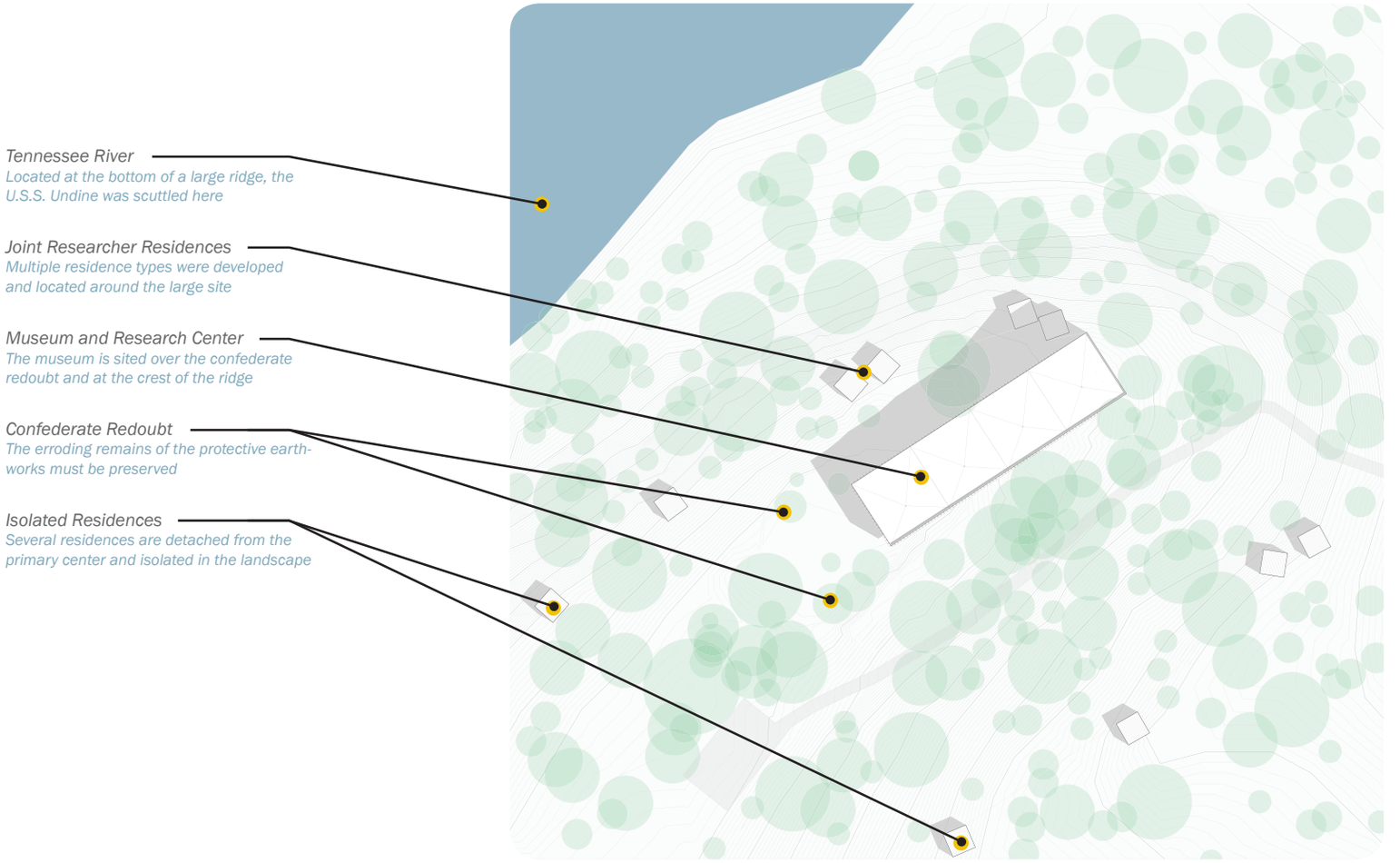
Assistant Professor Ted Shelton
University of Tennessee, Fall 2008

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.

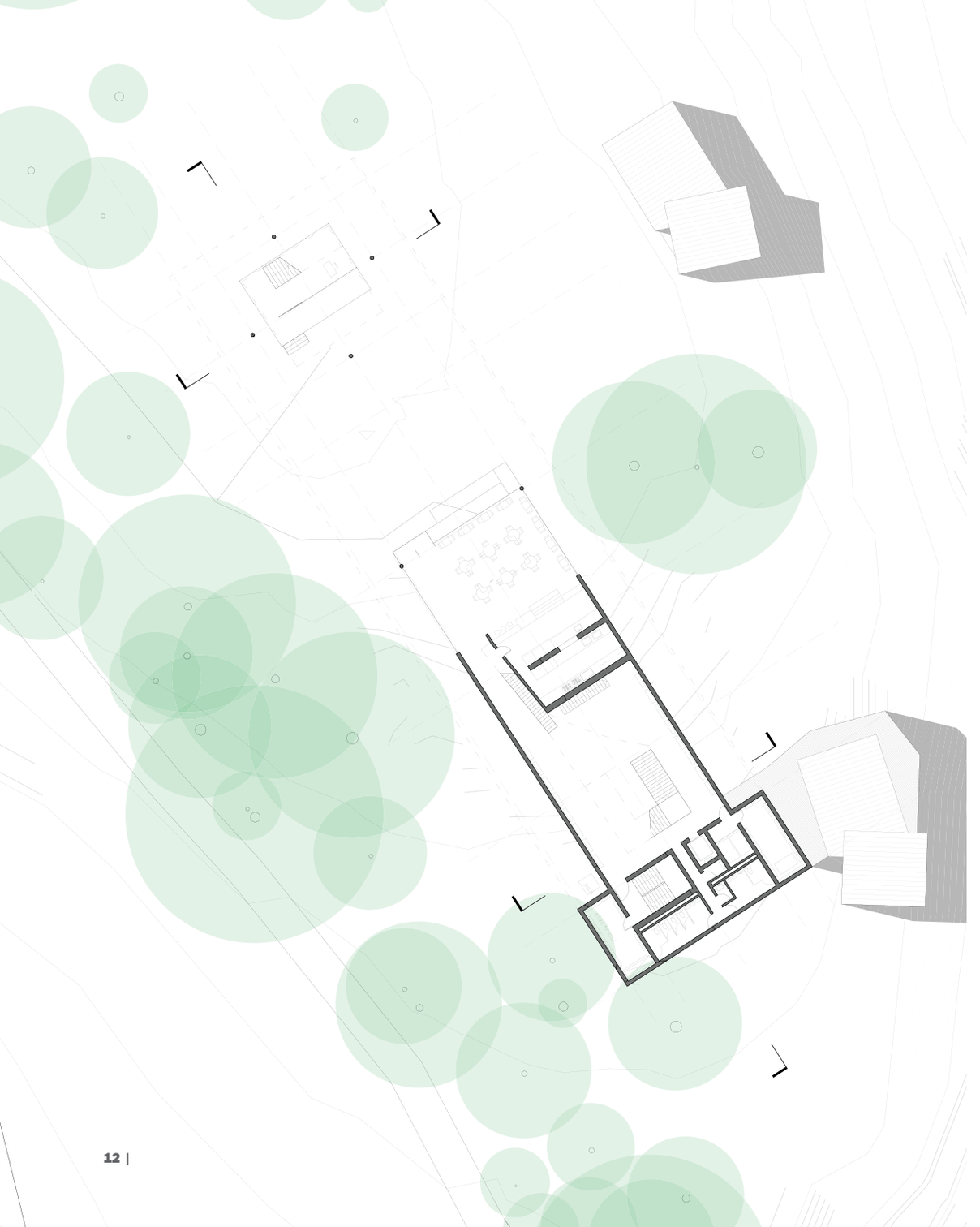
Program: A 25,000 ft² museum and research center to house the remains of a recovered Civil War era gunboat, the USS Undine. Residences and related programming for visiting scholars is also included.

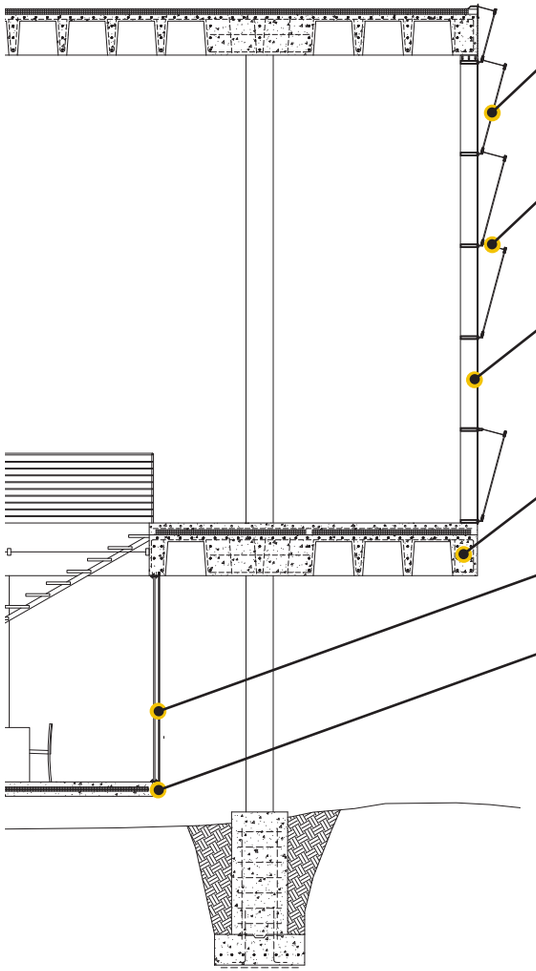
Concept: The design solution stems from research into the protagonist of the Undine's tale, General Nathan Bedford Forrest, who was responsible for capturing and later scuttling the ship. As highly controversial (though highly influential and effective) battlefield leader, General Forrest's role in history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



Site plan of New Johnsonville State Park





Translucent polycarbonate panels
Allow diffused light and only a highly distorted view of the ship from the exterior

Aluminum façade system
Angle away from the structure and allow interior views only towards the sky

1” Double-paned glazing units
Only selective, framed vistas are allowed from the interior to the exterior

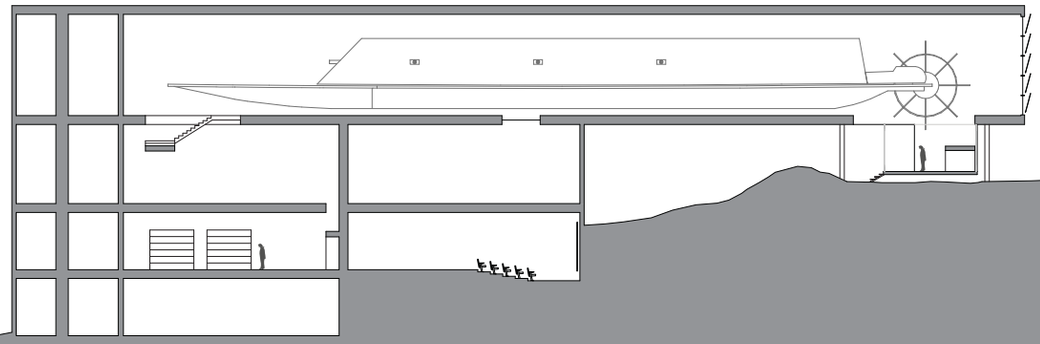
28”, Two-way concrete waffle slab
Exposed structure is used throughout as a metaphor for honesty and nonpartisanship

Frameless glazing units
Face-applied sill and saw-cut head details enhance the starkness of the entrance

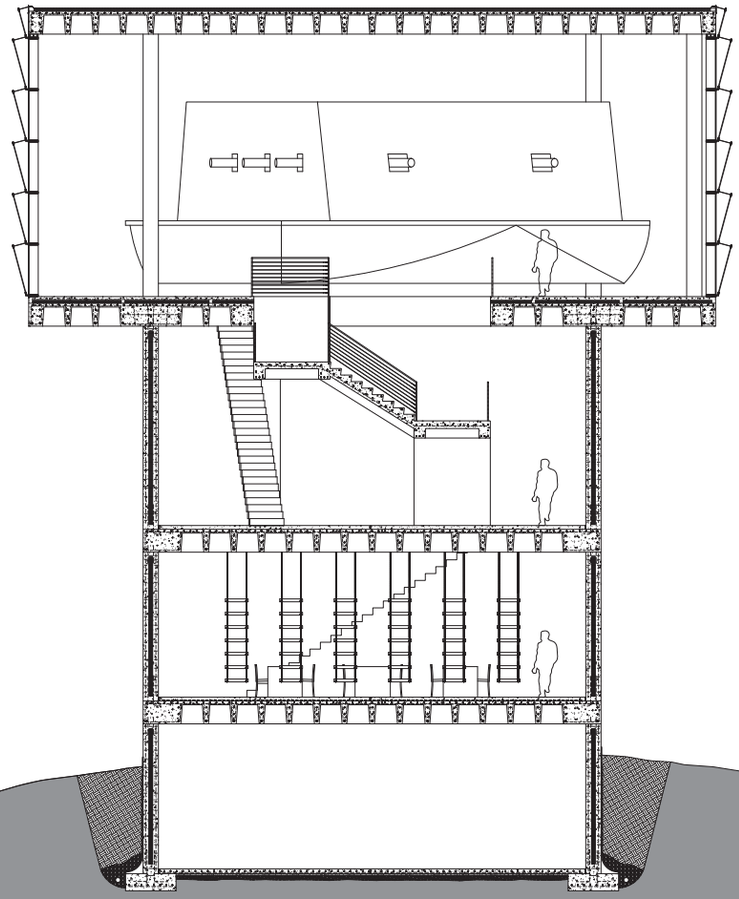
Pre-cast, insulated flat slab
The reception entrance is hung with steel tension rods which suspend the structure delicately above the ground plane of the remaining Confederate earthworks

Ground level plan (left)
Transverse section through redoubt and processional entry (above)

Interior of boat-room



Longitudinal section through museum



Transverse section through boat-room, museum, and library

Ceremonial entrance to museum drops into redoubt without engaging the ground

The Context of a Meal

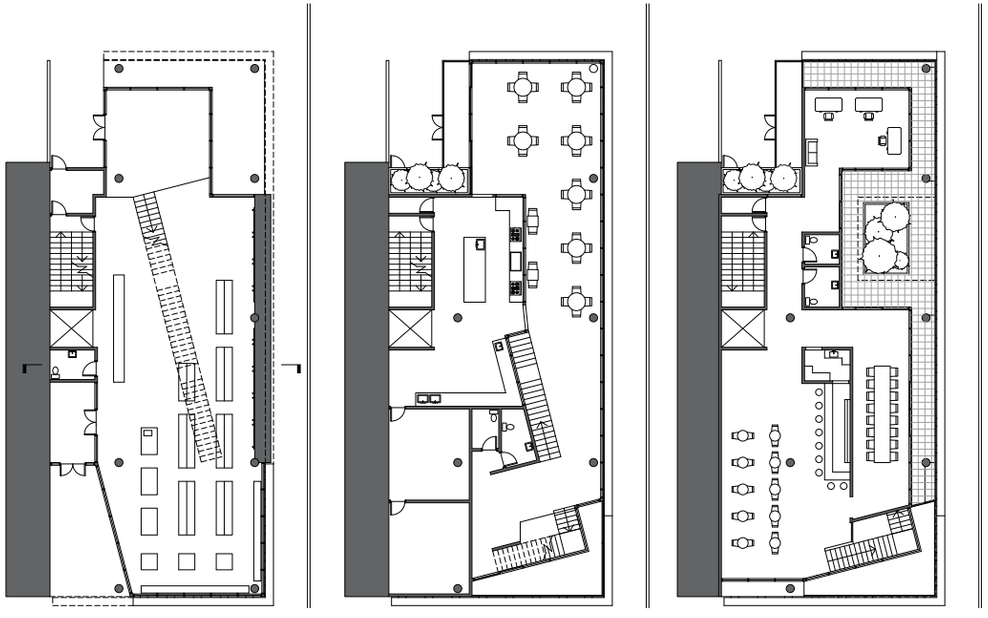
Assistant Professor Tricia Stuth
University of Tennessee, Fall 2006

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

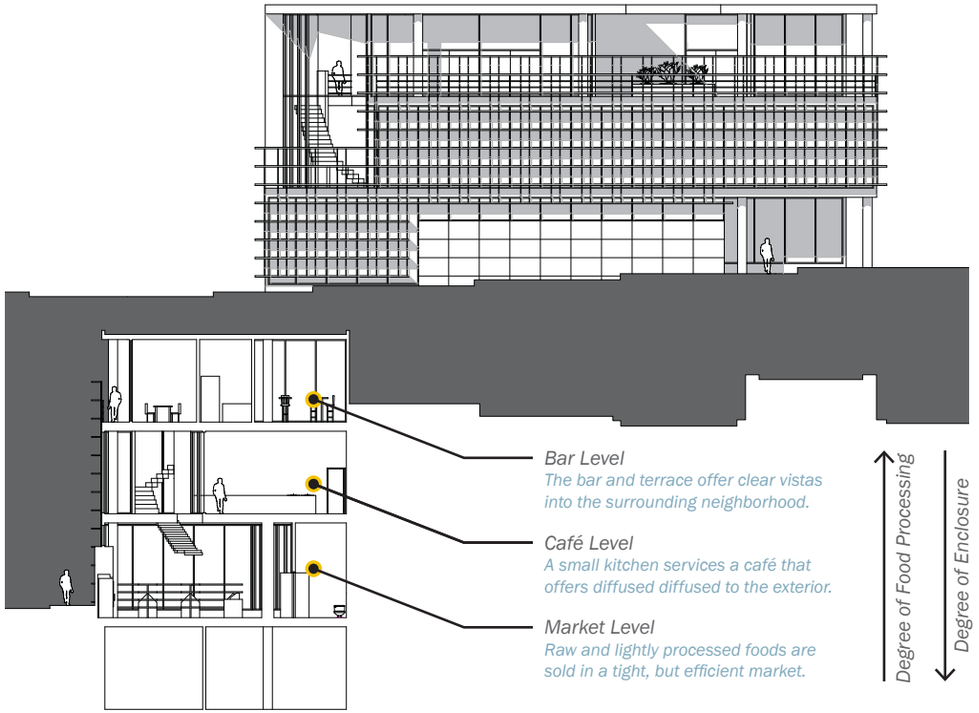
Concept: The façade is explored free of structural responsibilities and open to numerous expressions of interior, exterior, scalar, material, visual, and light conditions that further enhance the experience of programs and spaces. The procession of spaces is considered in relation to the process of "constructing"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

Study model (basswood and chipboard)

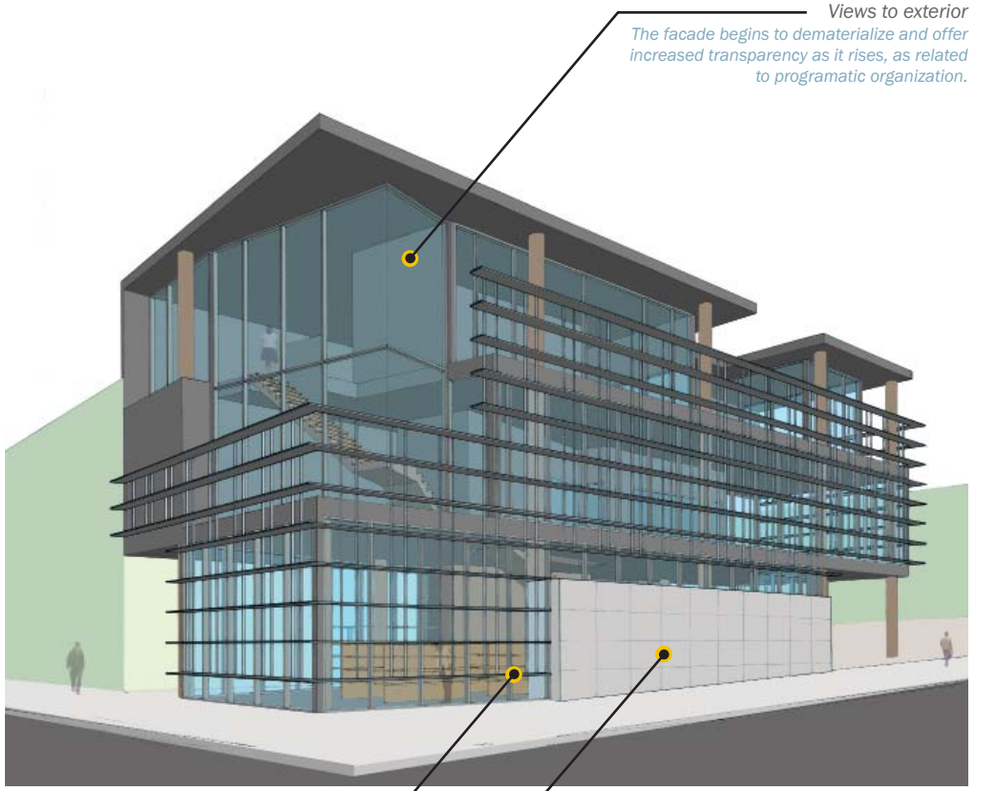


Level 1 *Level 2* *Level 3*

Selected for College of Architecture and Design's student-work archive
Published in the College of Architecture and Design's student work journal: *CURRENT*, Vol. I
Rendering published online as featured image for McGraw Hill Construction's "Student Showcase Gallery" since 2007



Primary elevation and transverse section



Perspective from street

A New Norris House

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

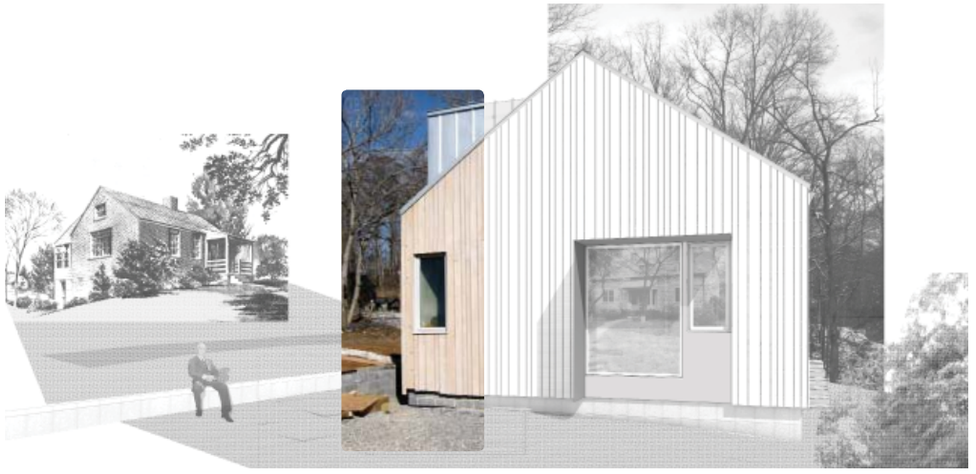
Site: The project is located in Norris, Tennessee. In 1933 the Tennessee Valley Authority constructed this model community as part of the Norris Dam construction project. A key feature of this New Deal village was the Norris House, a series of homes built as models for modern and efficient living.

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.

The Norris Dam; Norris, Tennessee

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

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). As a student I helped the first full studio of architecture students refine the construction document set. 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 setting. I preformed many roles and had a hand in many processes, but primarily my responsibilities included coordinating with Clayton's design team to complete the construction document set; coordination of building systems and MEP subcontractors; 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.

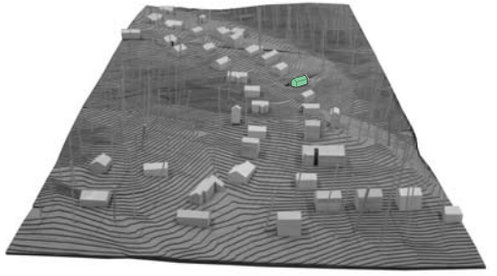
Historically, construction workers for public works lived in temporary camps. Norris Dam workers were joined by technical and professional staff and their families, and remained for longer. The TVA built a permanent town that would, at a smaller scale, reflect its larger vision of stewardship and innovation for the betterment of society. The town is one of the first “planned communities” and “garden cities” in the US.

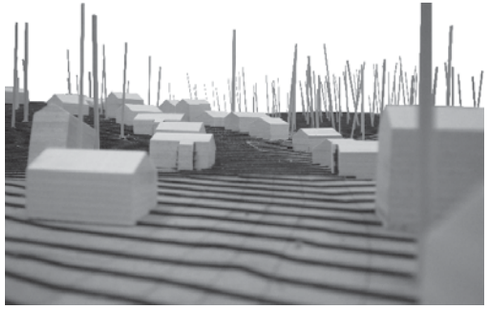
Supported by a strong community center, Norris was originally planned to operate economically around several small cooperative industries. The original Norris plan accommodated shared garages, which were utilized by the surrounding cluster of homes and connected by a network of walking paths. While the garages no longer exist, the walking paths remain.

Today, Norris is largely a bedroom community for nearby Oak Ridge and Knoxville. Many original homes have been enlarged and modified to accommodate more contemporary lifestyles.

An original 1933 Norris home clustered around a shared green space. Most homes in Norris do not address the street, but rather community spaces that sit adjacent. (above)

A shared parking garage as it existed in 1933. No garages remain, but their existence served as a source of inspiration for the home as a prime example of shared resources amongst the community. (left)





The New Norris House seeks to become anonymous in the context of a historic town— the form of the house echoes the form, scale and materiality of original Norris Cottages. The siting of the home responds to the dominant pattern of existing homes along Oak Road. The new home orients similarly to the road and maintains a similar, minimal footprint. The home is then shifted toward the middle of the site, opening up a front courtyard for the accommodation of a car. The use of gravel softens the nature of the courtyard and allows water to drain through its surface.

The project also uncovers a long forgotten walking path that once connected Oak Road to the greater network of pathways. Before the automobile, citizens of Norris used these pathways to move between their homes and shared amenities throughout the town. The reconstruction of the pathway furthers a return to a more local lifestyle free of the automobile and further connects the project to the urban scale of Norris.

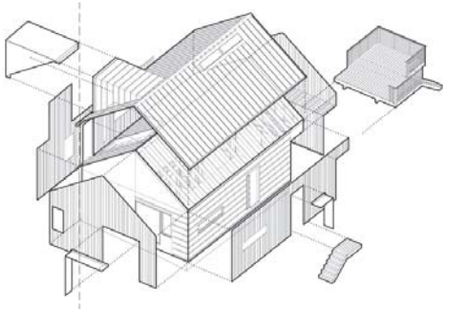
The house siting works with existing topography and mediates the street and the wilderness behind. The house is neither at odds with the site or part of it, rather in the in between. It seeks a sensitive relationship to the site, leveraging the normative quality of the typical form of Norris homes, and a subtle understanding of environmental issues and systems integrated for performance and experience.

The site and landscape design integrate performance and aesthetics - improving on-site species diversity while maintaining a modern aesthetic. Rain and grey-water storage and filtration is combined with traditional strategies, such as a hand pump and raised vegetable beds, to create a simple, efficient, on-site water management system. Texturally and chromatically interesting plantings filter and absorb storm water on site, prevent soil erosion, and provide diverse habitat and forage for other forms of life.

A series of terraced bio-retention beds is designed to process all greywater and stormwater on-site. (above)

A walking path once existed on the site to connect Oak Road to a larger city-wide network of trails. The path has been re-consituted as part of the site efforts. (left)

I designed and assembled a garden irrigation system that accepts overflow water from the primary cistern in the home. This secondary cistern will overflow (or be manually diverted) to the bio-retention beds where it naturally infiltrates. (center)



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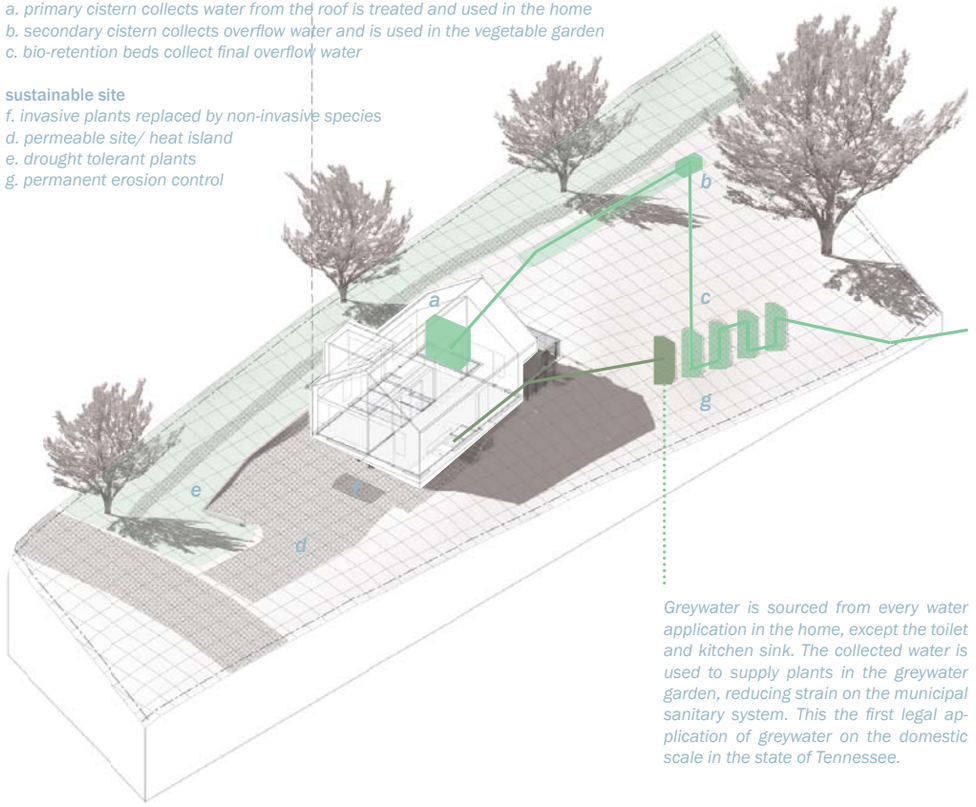
rainwater harvesting
a. primary cistern collects water from the roof is treated and used in the home
b. secondary cistern collects overflow water and is used in the vegetable garden
c. bio-retention beds collect final overflow water

sustainable site
f. invasive plants replaced by non-invasive species
d. permeable site/ heat island
e. drought tolerant plants
g. permanent erosion control



Greywater is sourced from every water application in the home, except the toilet and kitchen sink. The collected water is used to supply plants in the greywater garden, reducing strain on the municipal sanitary system. This the first legal application of greywater on the domestic scale in the state of Tennessee.

Spatial Design

The recognizable aspects of original Norris homes and their settings is retained – a simple, rectangular volume with a gable roof is placed within the context of Oak Road. The interior of the home departs from the traditional, opening up the volume and allowing views and natural light to define new relationships between interior and exterior.

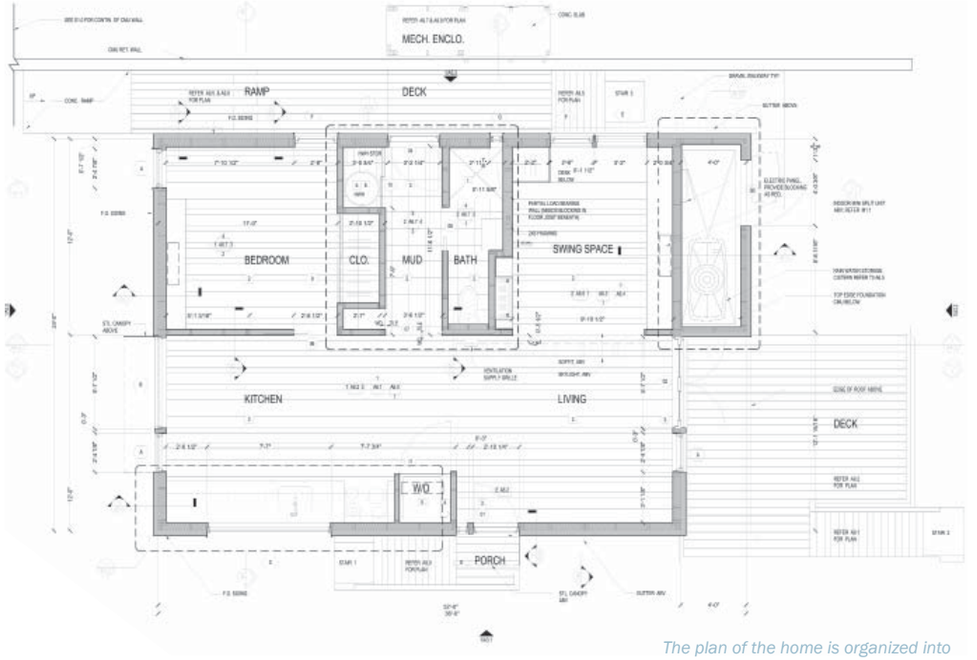
The plan of the home separates private and public. The living space becomes an extension of public activity within the home and in the site. A front picture window and rear exterior porch reinforce these connections. Adjacent spaces contain the bedroom, a bathroom, and a loft. These spaces offer the residents a retreat from the compact urbanism of Norris.

The location of windows and doors reinforces intended degrees of privacy, and transforms traditional placement to maximize passive environmental response and views. Refined contemporary detailing reinforces spatial concepts.

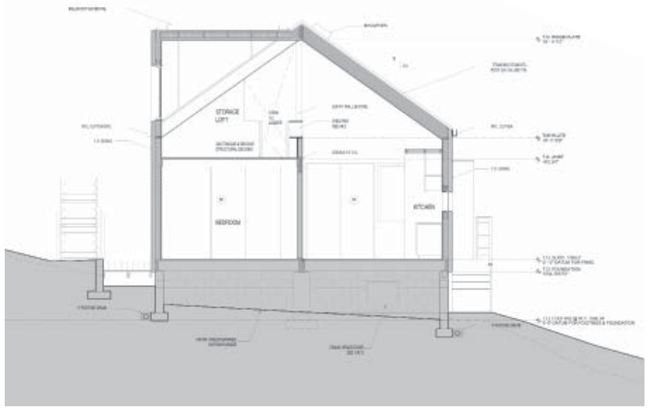
The marriage wall acts as the primary organizer of space in the home. (above)

In the afternoon light, the locations of windows and carefully placed moments of color create distinctly different moods in each spatial zone. (left)

Skylights along the ridge-line provide an abundance of natural daylight to the living and kitchen spaces. (right)



The plan of the home is organized into public and private halves. Partitioned spaces, smaller windows, and the placement of the service core help designate the private zone. In contrast, the public half is open to the lofted ceiling above, is spatially very fluid, and flows into the outdoors through the placement of large windows. (above)

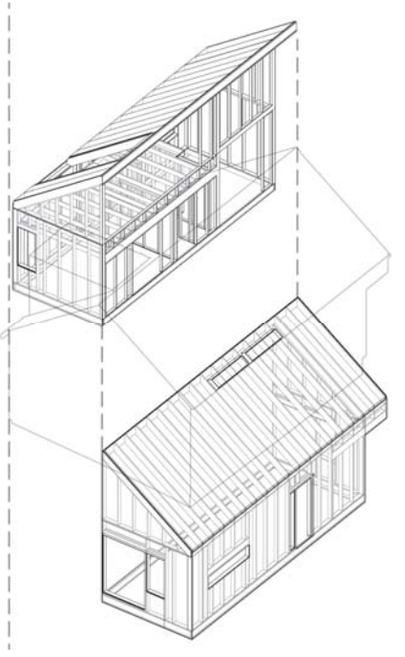


Transverse section through dormer. (left)

Modular Partnership with Clayton Homes

The TVA used the original Norris houses to experiment with new materials, technologies and building techniques of the era, such as precast concrete beams, plywood interiors, and modular construction. The New Norris House expands on this history of innovation by partnering with Clayton Homes (the largest modular builder in the US) to construct the shell of the home. The majority of framing, insulating, sheathing, and MEP rough-in work was completed off-site in a controlled environment, and was finished in five days with minimal waste.

After the modular units were delivered to the site, the design/build project team began the task of completing custom interior and exterior finishes. As an infill site, phasing of on-site and off-site work required careful phasing and coordination. Furthermore, the necessary hinging of the roof structure for shipping and building with zero collar ties pushed the modular partner to new limits and innovations.



The home was built in two modules. As the primary design contact with Clayton, I was responsible for the coordination of our construction documents with Clayton's designers. Through this process, the design team modified the home to conform with Clayton's manufacturing process, and created a clear scope of work to designate where production work would end and on-site work would begin. (above)

I spent five days in the production facility conducting construction administration in collaboration with Clayton engineers. (left)

The transport and installation of the modules required careful staging of on-site work (primarily the partial completion of the foundation). After the two units were backed into place and married together, the home was lowered onto the finished foundation two weeks later. (above)

The high pitch of the roof necessitated the hinging of the roof structure. (left)

Once the home had been set on the foundation, the design/build team began installing missing building components (windows, doors, roof, etc), collaborating with MEP sub-contractors, and working to complete custom interior and exterior finishes. (right)

Exterior

The recognizable aspects of original Norris homes and their settings is retained – a simple, rectangular volume with a gable roof is placed on the hillside between street and Forrest, largely conforming but subtly adjusting to better relate to access, sun and view. A dormer lends space, light, and air filling traditional roles and the added role of supporting passive solar water heating– its proportions and detailing adding a contemporary edge to the traditional form.

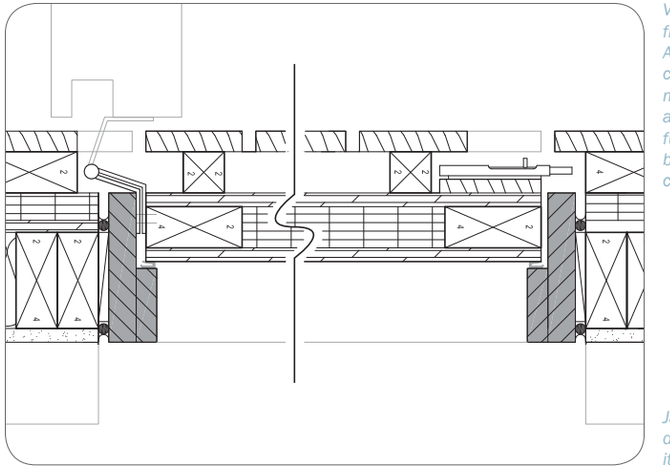
Natural materials, textures and color, hand crafted details where the hand and foot touch, and an intimate scale provide further opportunities to speak to the everyday objects and to the spirit and physicality of the original cottages. Yet, it is also hoped that visitors might realize special attention, exaggeration, and craftsmanship in designing, detailing and making that put the New in this Norris House.

French doors in the rear of the home extend the living space into the landscape. I was responsible for the design and detailing of the soffit, which is clad in Atlantic White Cedar and creates a sense of continuity between the two planes. (above)

The atypical roof slope, prefabrication requirements, large window on the north side, and operable ventilation shutter all contributed to the complexity of the dormer's detailing and fabrication. (left)

The door to the mechanical room. (right)

View of the parking court and home from the street. The home is clad in Atlantic White Cedar, a regional material chosen for its natural resistance to moisture damage and weathered grey appearance. The steel canopy provides functional shading to southern glazing, but also acts as a formal element in the composition of the façade. (above)



Jamb details of the mechanical room door. I designed the door to conceal itself into the rainscreen façade. (left)

Modest entries from the side continue efficient planning of the original Norris model, but upon entry the soaring, light filled space and its extension into the street and landscape is a welcome departure from the models of old.

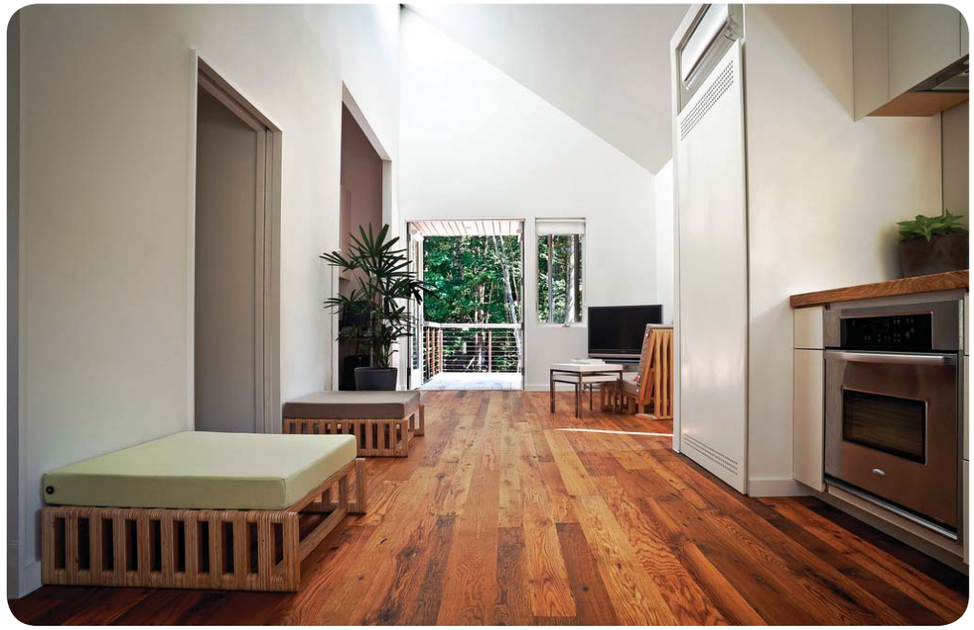
A continuous ridge-beam and advanced framing techniques allows for large vaulted interior with no collar ties. To make the most of the small footprint, built-in cabinetry in the kitchen, swing-space, and bedroom is treated as furniture rather than an enclosed space— concealing appliances and storage in order to make more room for living.

The home makes extensive use of environmentally preferable products, using local, recycled, reclaimed, or low-VOC materials almost exclusively. These efforts played heavily into the home's LEED for Homes rating, which is projected to acheive a Platinum level. This will be the first project built by the University of Tennessee to acheive such a status.

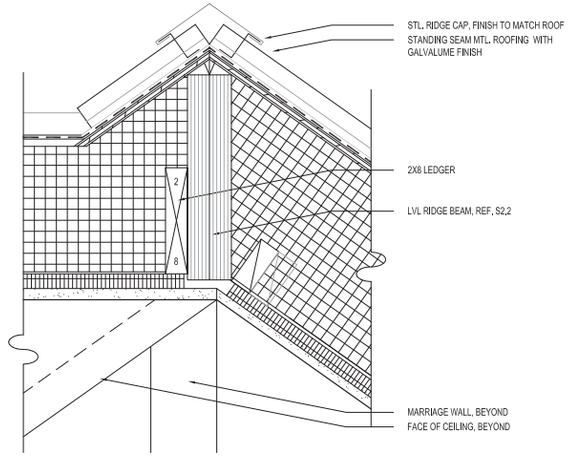
View of bedroom. Exposed structural wood ceiling becomes floor of the storage loft above. Built in cabinetry attempts to be anonymous, yet functional. (above)

A dormer in the storage loft meets the ridge-line. The dormer was custom designed and fabricated off-site to accommodate a non-traditional roof pitch. (left)

A window in the kitchen frames a view into the landscape. All cabinetry in the home was custom designed and built by the project team. (right)



The public half of the home supports the kitchen/dining area and living space. A large picture window on the front of the home provides literal and phenomenal transparency through the home towards the landscape in the rear. (above)



One of four ridge details that I carefully developed to allow for the interior ridge-line to precisely meet the dormer, marriage wall, and skylight along a singular, crisp path. (left)

The Importance of Seeing, Grand Tour 2006: Switzerland

Professors Katherine Ambroziak and Edgar Stach
University of Tennessee, Summer 2006

At the end of my first year of architectural studies, I was privileged enough to travel to Switzerland as part of a three week sketching tour of Switzerland led by two University of Tennessee architecture professors. Though I had been studying architecture for a full year, I can honestly say I had not truly experienced architecture (let alone architecture of extraordinary conception) until this point.

As I began to amass a sketchbook full of drawings, I found that when I looked back my favorite sketches were the ones with rain drops and smeared ink, sketches of light qualities and texture, sketches of my friends and others around me-- engaged sketches. When architecture engages us it does something different that mere buildings could ever do. Architecture allows us to experience it and in turn creates moments that are both memorable and valuable to all human beings alike.

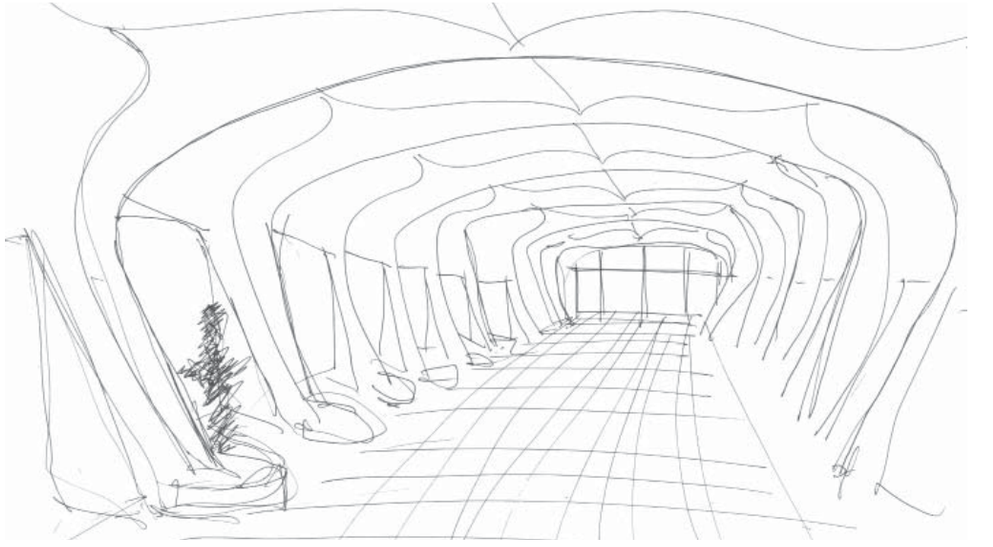
Suffice it to say, the tour was extremely influential on me and would later influence my decision to return to Switzerland and study at the ETH Zürich during the autumn of 2009. During the trip, we were primarily based in three locations - Zürich, Flims, and Bellinzona. From these points, we completed day trips by bus to nearby places of interest. All in all, I cannot imagine a better way to spend nearly a month that drawing all day, eating nutella, and experiencing the architecture and culture of such a beautiful country.

Sketching on Zürichsee (Lake Zürich)

Goetheanum, Rudolf Steiner; Dornach, Switzerlånd; May 17, 2006; pen

Castelgrande; Bellinzona, Switzerland; May 25, 2006; chalk pastel

Medieval Bridge; Luzern, Switzerland; May 19, 2006; pen



Zürich Stadelhofen, Santiago Calatrava; Zürich, Switzerland; May 15, 2006; pen

Saint Benedict Chapel, Peter Zumthor; Sumvitg, Switzerland; May 22, 2006; pen

Grand Tour 2007: The Gulf of Finland

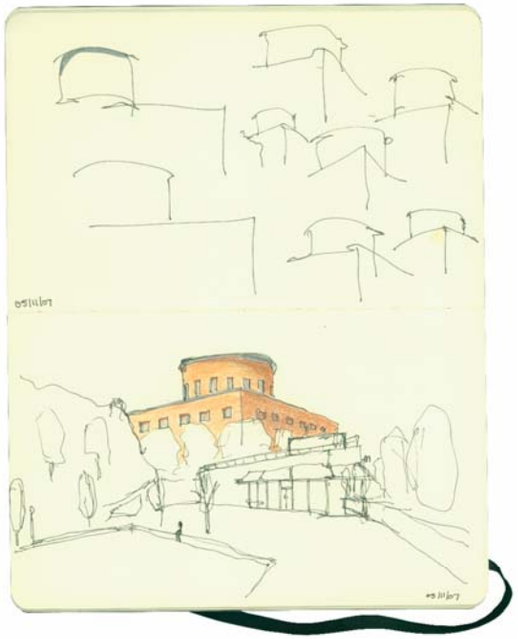
Professors Tricia Stuth and Ted Shelton
University of Tennessee, Summer 2007

In the summer of 2007 I was privileged again with the opportunity to travel abroad with the College of Architecture and Design for a three week sketching tour— this time traveling around the Gulf of Finland. Through the course of our travels we visited Sweden, Finland, Russia, and Estonia examining architectural and cultural conditions of “palimpsest”. A palimpsest by definition is a used piece of parchment that has been scraped clean or simply faded, allowing additional levels of information to be layered on top.

The once turbulent region around the Gulf of Finland exhibited this condition almost immediately. Places of unrest such as historical military embattlements (now romanticized as pastoral landscapes) of Helsinki and Tallinn rang the most clearly of a history of occupation and subsequent liberation. Others such as the Palace Square in St. Petersburg evoked a similar emotion, but are masked by a sense of nationalism and tourism. Though subtle, the palimpsest does exist, and knowledge of the scale and brutality of events such as the October Revolution allow access to the cultural history of the space.

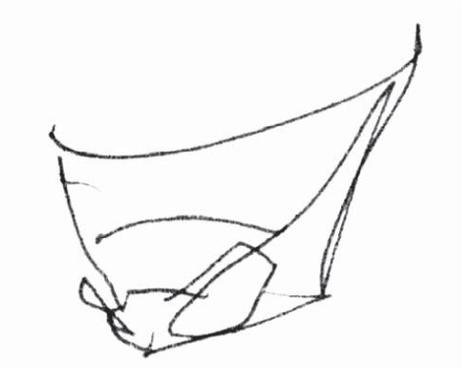
Times of peace in recent era have brought prosperity to the region. Contemporary structures are melded within the historical context— sometimes forcibly (see McDonalds placed directly underneath Asplunds library to right), but often with greater care and success; adding again to the palimpsests and layers of available understanding.

The sketches completed during the tour attempted to capture experiential and representational quailities of these spaces and conditons.



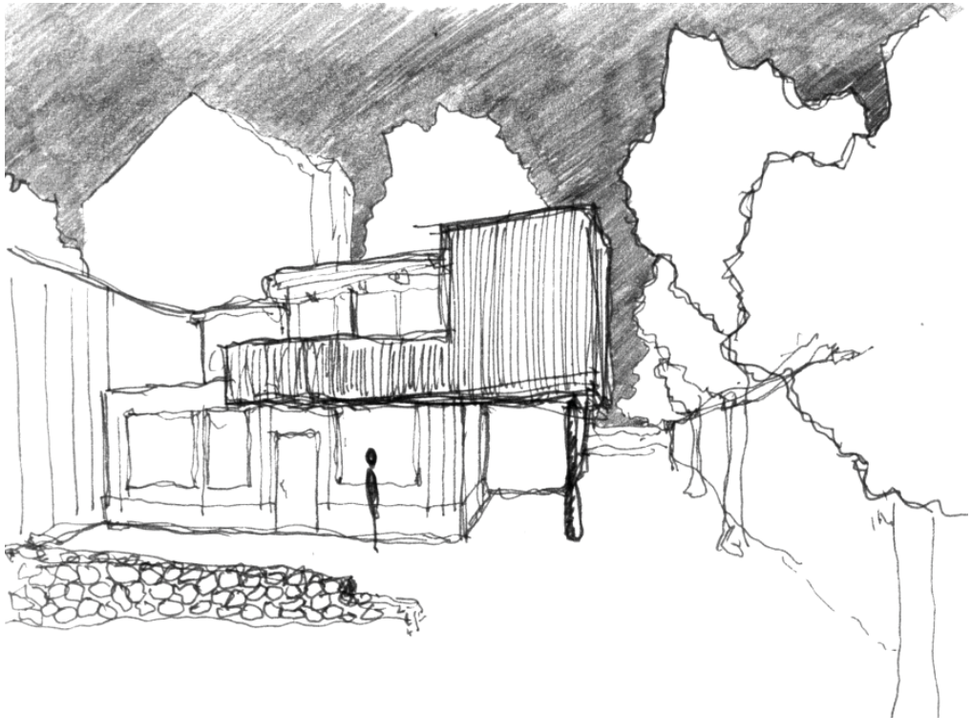
Stockholm Public Library, Asplund; Stockholm, Sweden; May 11, 2007; pen and colored pencil

Photo montage and associated sketches

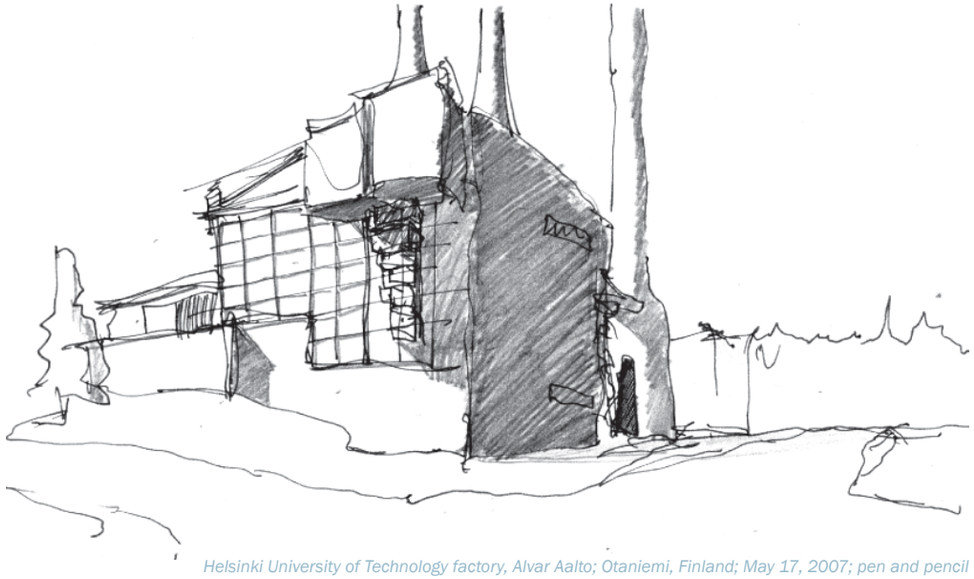


Helsinki University of Technology Auditorium, Alvar Aalto; Otaniemi, Finland; May 17, 2007; pen (above)

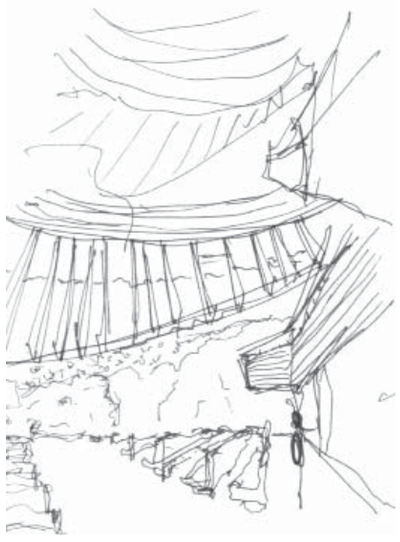
St. Isaac’s Cathedral; St. Petersburg, Russia; May 21, 2007; pen and marker (left)



The Aalto House, Alvar Aalto; Helsinki, Finland; May 16, 2007; pen and pencil



Helsinki University of Technology factory, Alvar Aalto; Otaniemi, Finland; May 17, 2007; pen and pencil



Tallin, Estonia; May 25, 2007; chalk pastel (above)

Church in the Rock, Timo and Tuomo Suomalainen; Helsinki, Finland; May 15, 2007; pen (left)

Semester Abroad: Switzerland

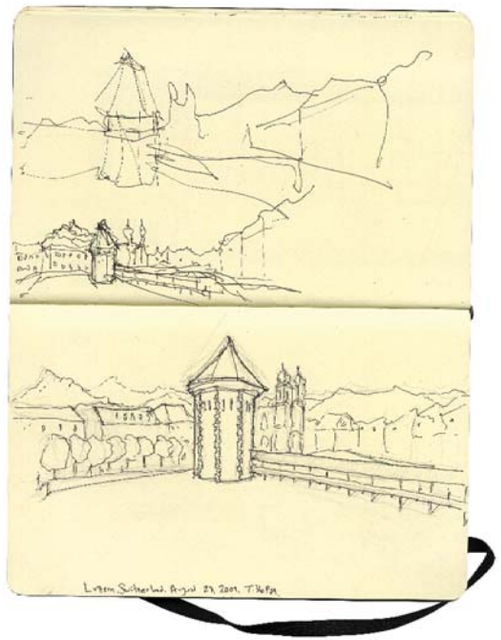
Zürich, Luzern, Basel, Dublin, Paris, etc
Self guided, Fall 2009

My travels in Switzerland during the summer of 2006 directly influenced my decision to return there as a fifth year and spend the autumn semester enrolled at the ETH in Zürich. I was intrigued by the integration of contemporary design into the historical fabric, cultural regionality, unique system of governance, effectiveness of many national infrastructures and programs, and (of course) the picturesque landscape. Suffice it to say, what I found did not disappoint.

I am still decoding the experience to a certain degree, but I left Switzerland with a new sense of the regionalism that has shaped the architectonic landscape of the country. Issues such as increasing globalization of international economies, growth in immigration rates, and the rise of the European Union are certainly shaping the nation and made it an exciting time to be a resident.

Through extensive journaling, sketching, photography, and video I kept a detailed archive of my day to day experience. I traveled a bit outside of the country, but found myself moving around primarily within the national borders. Though I traveled extensively, I feel as though there was much I did not see or experience— particularly within the French and Italian regions.

This is perhaps the intrigue of the country to me. Much like falling in love, I think I will find myself always desiring a bit more— the opportunity to see it all; to possess the country in its entirety. Though this romantic compulsion may never be fully satisfied, I will find great pleasure returning again and again in the years to come.



Medieval Bridge; Luzern, Switzerland; August 23, 2009; pencil and pen

Heidi Weber Pavilion, Le Corbusier; Zurich, Switzerland