blueprint for america

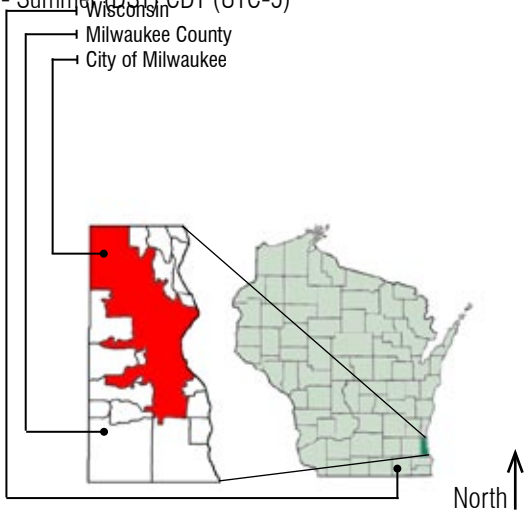
Milwaukee, Wisconsin

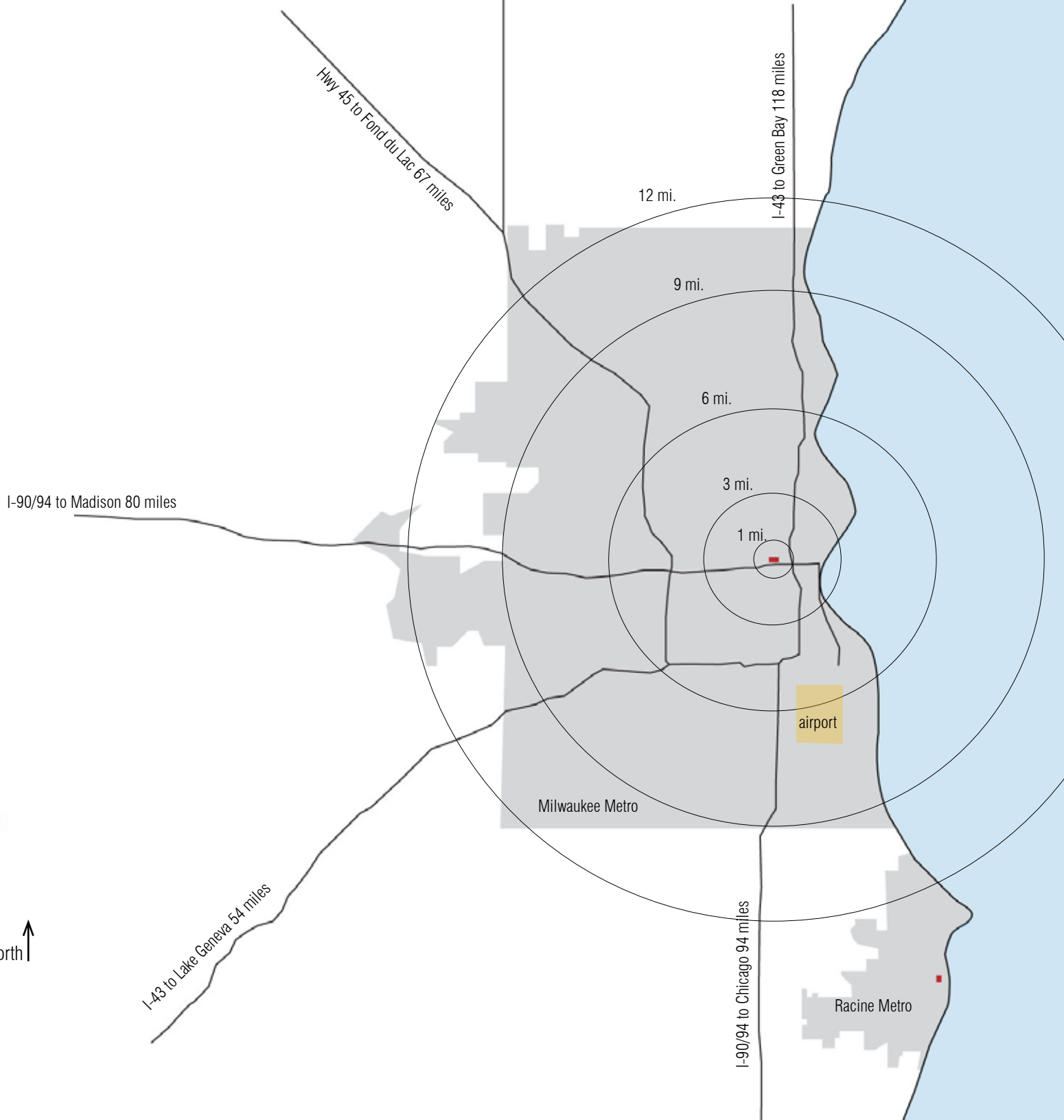
43°03’00’’N, 87°57’00’’W

County : Milwaukee
Mayor : Tom Barrett
Area
- City 96.9 mi²
- Land 95.7 mi²
- Water 0.8 mi²

Population
- City (2005) 578,887
- Density 6216/mi²
- Metro 1,753,355

Time zone CST (UTC-6)
- Summer (DST) CDT (UTC-5)





Lake Michigan

1
INTRO

Studio Purpose:

In 2007 American Institute of Architects will mark the 150th anniversary of its founding - and , in honor of this anniversary, the AIA will present the nation with a gift. The centerpiece of the yearlong observance of AIA 150 is the *Blueprint of America*, a nationwide community service program that will empower citizens to share in creating a vision for their communities' design priorities.

The goal of the Blueprint for America is to help communities see what is possible when architects, mayors and other civic leaders, and fellow citizens collaborate on a community service program that addresses a community's distinct needs and produces a shared vision for a more livable future.

Blueprint initiatives are a gift to the community from the members of the AIA, and the members' participation in the initiatives is provided pro bono.

By sharing their knowledge and experience, our nation's architects will offer communities the opportunity to celebrate their heritage while addressing emerging architectural challenges and trends. For 150 years, architects have used the design process to help citizens find their voices and realize a vision for beautiful, safe, and livable communities.

Blueprint for America initiatives, guided by and based on the AIA's "Ten Principles for Livable Communities," will tackle such issues as brownfields, accessibility, affordable housing, transportation, sprawl, and environmental sustainability. The initiatives should be innovative, design orientated, educational, ongoing, diverse, and interdisciplinary.

Blueprint initiatives may use a variety of collaborative processes and methodologies to bring diverse constituencies together, including community and neighborhood audits, town hall meetings, charrettes, visual preference surveys, sustainable design assessment teams (SDATs), and the like.

The experience gained from collaborative visioning between architects and their communities during the AIA's 150th celebration will be documented so that the experience can be refined and shared with the nation as a national mosaic called the *Blueprint for America: A Gift to the Nation.*

Celebratory events for the AIA's 150th anniversary will include National Architecture Week, April 9-14, 2007, in which architects across the country will concurrently host architecture-related lectures, exhibits, K-12 programs, and architecture week proclamation ceremonies. Visit the AIA 150 Website, www.aia150.org, for more information.

schedule :
timeline

PARTICIPANTS :

CHRIS CORNELIUS - UWM FACULTY

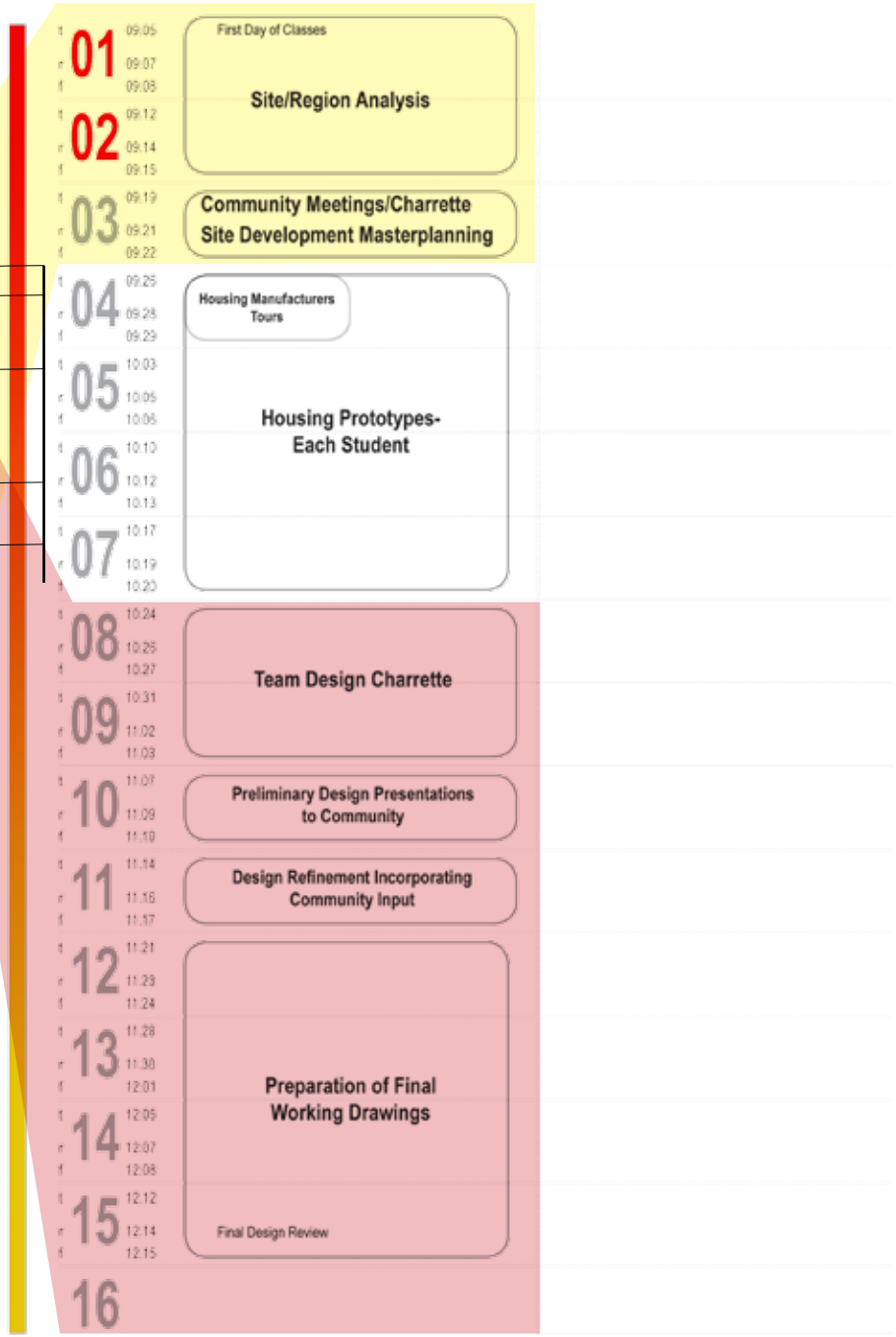
JASENKO BADIC - BSAS 2007

BRYAN FINNEGAN - M.ARCH 2008

ERIN LAWRENCE - M.ARCH 2008

RYAN O'CONNOR - M.ARCH 2007

MELANIE TAYLOR - BSAS 2007



Modular Housing Brief

TITLE OF INITIATIVE: Reweaving The Neighborhood Fabric: How Modular Housing Can Build Affordable and Dignified Communities

SUMMARY: Our initiative will bring exquisitely designed, affordable, sustainable and accessible modular infill housing to two neighborhoods in Milwaukee and Racine, where affordable housing is extremely scarce. Each will receive one or two dwellings, intended as a catalyst for future infill units in the neighborhoods, knitting them together to strengthen them as livable communities. The new housing will include a Community Room where design and construction meetings take place for future neighborhood projects, other pro-bono architectural services, and activities to benefit the community. Each will be a co-op, staffed by the home-owner. The Community Room in Milwaukee will also be the AIA Storefront Office. With it, we endeavor to raise the profile of AIA architects as advocates for the community. We will complete the dwellings and welcome their owners beginning during National Architecture Week in 2007 and it is the process itself that becomes most important. The brick and mortar results would cease to exist without it. To be documented in a publication called *Reweaving the Neighborhood Fabric*, this process will offer guidance and procedures for continued implementation in these neighborhoods as well as others across the nation.

COMMUNITY ISSUE(S): Our initiative seeks to address the critical shortage of dignified, affordable housing in our communities while strengthening neighborhoods suffering from neglect and disinvestment. Through these efforts, we seek to raise the profile and awareness of architects as advocates. In addition to housing, we will address the lack of convenient and secure meeting space, where neighbors can gather. The location of our initiative is the Milwaukee Metropolitan Area, a region with over 1.75 million people. We will focus on inner ring neighborhoods of its two largest cities: Milwaukee and Racine. 90% of our component's members live in or near these cities. Each architect is well-positioned to become an advocate for affordable, dignified housing in his or her community. The inner neighborhoods of these cities lack a cohesive sense of community and vitality. Substandard rental units, empty lots, and lack of gathering space contribute to their decline. We endeavor to reverse this by reweaving them with owner-occupied dwellings that foster a sense of pride and place. When folks own their own homes, they are more likely to work for the success of their neighborhoods. With a place to meet, they can further improve the livability of their neighborhood.

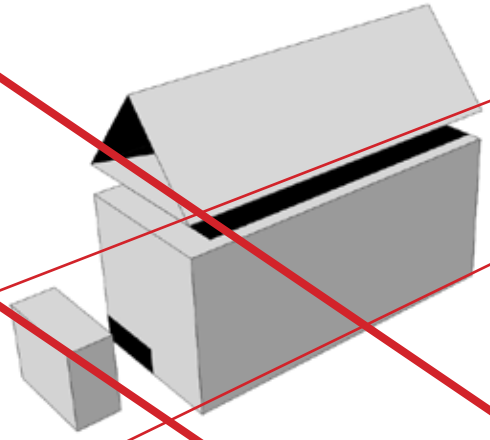
JOHN HOLZ AIA, NCARB
SENIOR PROJECT DESIGNER

INTERFACE: Our initiative is aggressive and comprehensive. It relies on a productive dialogue with and commitment from an array of policy makers, community organizations, non-profits and stake-holders. Making a compelling presentation of the initiative to each city's mayor, director of planning, housing authority, or all three, is a critical key step. Typically, we are asking these cities to donate or obtain land, rezone parcels, qualify residents, relax restrictions on creative housing, or all of the above. Without their consideration and partnering, our efforts cannot move forward. We are also forging positive relationships with the leadership of community organizations and neighborhood associations where we endeavor to implement the affordable housing by understanding their needs, goals and concerns. We will tailor the process and product to fit their communities. Third, we are forming partnerships with non-profit organizations and foundations. Their expertise in similar ventures and potential financial assistance will be vital. Fourth, we are collaborating with the leadership of the University of Wisconsin-Milwaukee's School of Architecture and Urban Planning to provide the design services for our initiative. Teams of students in a graduate level studio are developing design and construction drawings for each neighborhood. Finally our team will interface with suppliers, manufacturers and builders. We are developing relationships with leaders in the construction industry to contribute knowledge, labor, or materials to our initiative.

SUSTAINABILITY: Our initiative will feature environmentally responsive housing added to an existing infrastructure with in-place public transportation, public utilities and network of connected pedestrian pathways and streets. They will not be built on green-field sites far from established services. They will fit in the gaps of inner neighborhoods of the largest cities in our components where libraries, fire departments, financial institutions, and post offices already exist. They will feature materials that are derived from renewable resources in structures that draw minimally from the energy grid. Passive and active solar design will reduce reliance on fossil fuels. The dwellings will provide their residents with employment in the attached community room. Through skills training, the community room will provide opportunity to improve the residents' positions at adjacent factories, distribution facilities, service establishments, and professional firms in the area.

COLLABORATION: We are teaming with the University of Wisconsin's School of Architecture and Urban Planning by offering a graduate studio where three teams of five students will design a dwelling for two neighborhoods. Led by and experienced and energetic studio professor in Chris Cornelius, these students' projects will be reviewed at critical phases by stakeholders, architects, engineers, and city leaders before they are constructed by a modular housing manufacturer and ultimately placed on-site. AIA 150 Champion, John Holz, will teach a follow up course to the design studio that focuses on the construction and delivery process of these dwellings in their neighborhoods.

2
DIAGRAMS



Facade Case Study - Merrill Park Neighbourhood

Individual Features

Multy-family residence with two entrances

Distinct brick veneer in combination with wooden siding

Strong emphasis on attic space created by the change in material and reference to historical ornamentation.

Combination of commercial space on 1st floor and single-family residential on second floor

Distinct corner condition with emphasis on the main commercial entrance

Complex roof arrangement created by the choice of architectural style and the emphasis on the corner condition

Multy-family residential home with seperate entrances

Strong emphasis on front porch that stretches accross the entire lenght of the building

Front porch forms a second story balcony

Symmetry is only broken by the addition of seperate entry stair and second story balcony door

Third Storey Attic Space - This space is usually not a living area; however, it is commonly used for storage. External emphasis on this zone is achieved through centralized apartures, often with some sort of architecture feature that sets it apart from other facade openings.

Combination of commercial on 1st floor and residential above

Distinct brick veneer with emphasis on openings and store-front

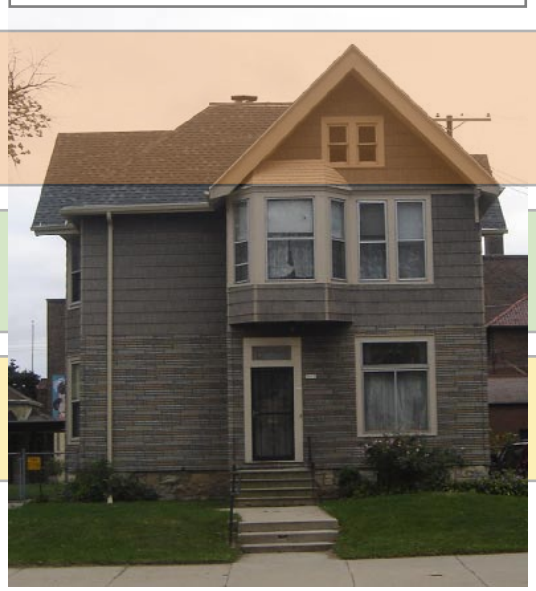
Arched window openings with historical reference to the use of brick - very unique feature

Appears to be a larger single-family residence

Only one visible entry

Brick veneer on 1st floor and asphalt siding on 2nd floor and attic

Linear organization in multiple directions

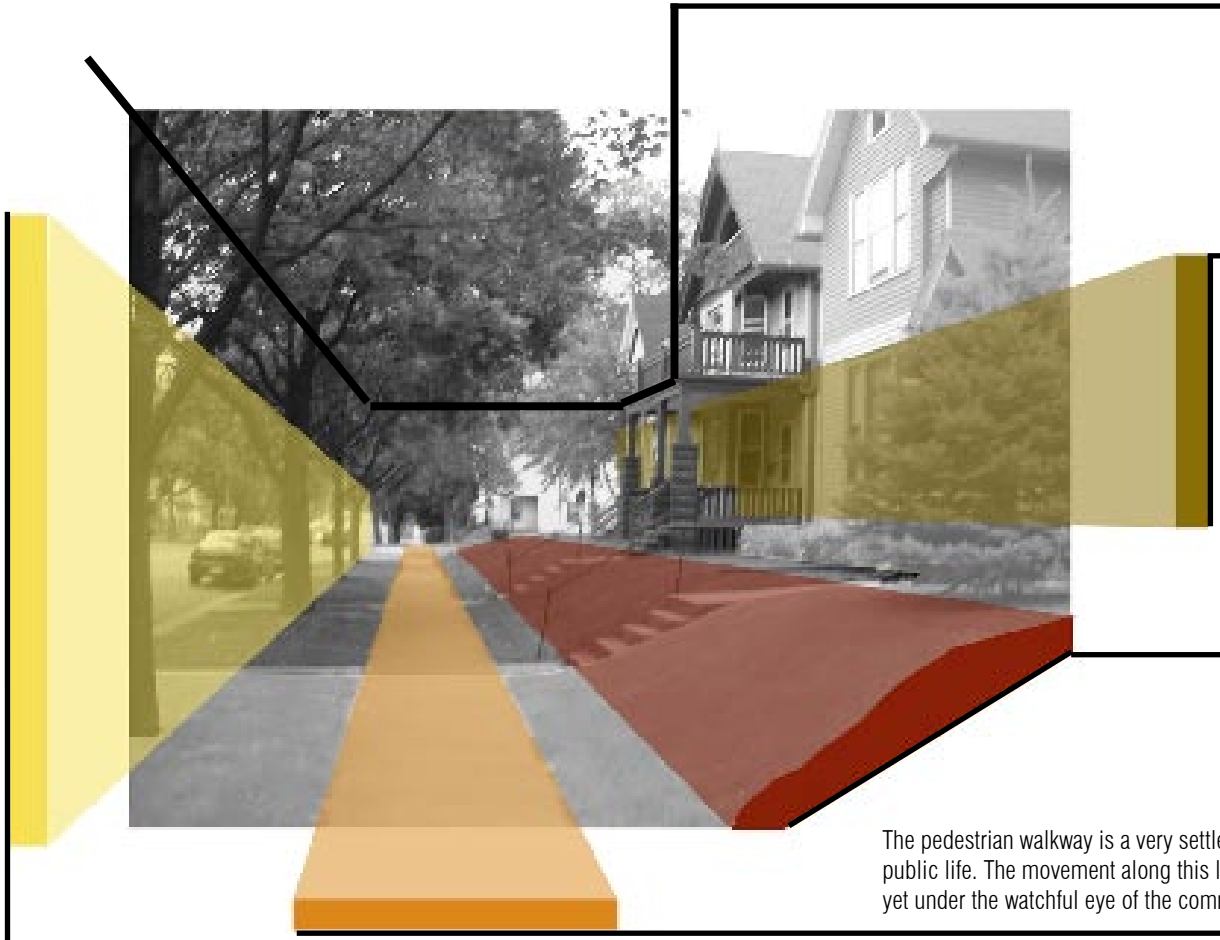


Ground Floor - The character of this zone is dependent on the housing type. It can be very distinct from the upper elevation if the first floor is commercial. If the unit is fully residential, a main entry porch serves as a buffer for control of privacy .

Second Storey Living Space - This is the main residential living area; usually consisting of multiple bedrooms and main living room. Its floor layout depends on if the unit is a single or multy-family residence. Emphasis on the exterior is given to the main living room with some sort of facade extrusion.

Privacy Gradient and Spatial Layering

The natural ceiling that is created by the tree crowns interacts with the facades of the houses to create a distinct composition of an enclosed space between the street and the houses itself. The experience as one walks down these streets is tunnel-like.



The porch or entry-condition is a private realm - completely detached from the public layers. It is an extension of the interior and therefore clearly off limits for the public .

The approach to the residence serves as a filtering device. It is a cruical buffer between the public walkway and the porch or entry-condition of the unit. The change in grade has a perceptual influence on the public mind.

The pedestrian walkway is a very settle layer that represents the final line of public life. The movement along this layer is slow and controlled - it is public, yet under the watchful eye of the community.

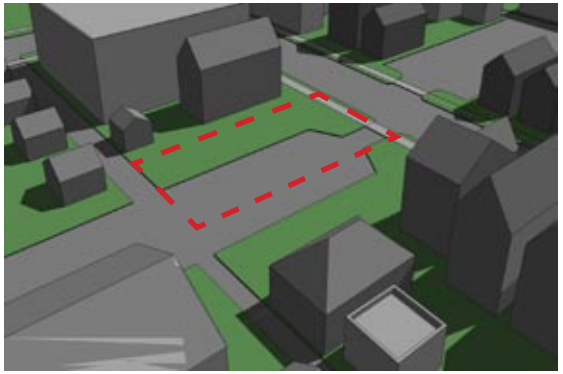
The line of trees creates a natural barrier that seperates not only cars from pedestrians, but it also slows down the movement pattern in order to increase the sense of control over one's environment and, with it, the sense of comfort.


7'-0"
porch
7'-0"
yard
12'-0"
sidewalk
4'-0"
treezone
4'-0"
street

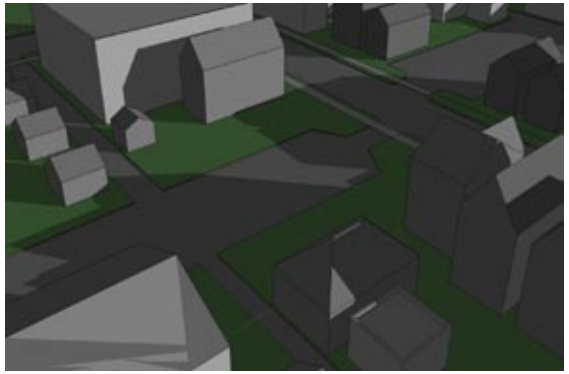
Site Shadows

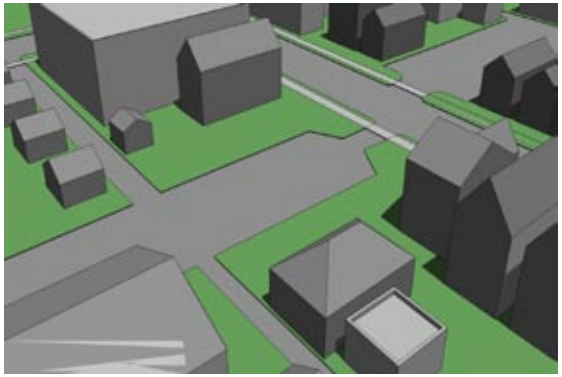
Summer

Winter

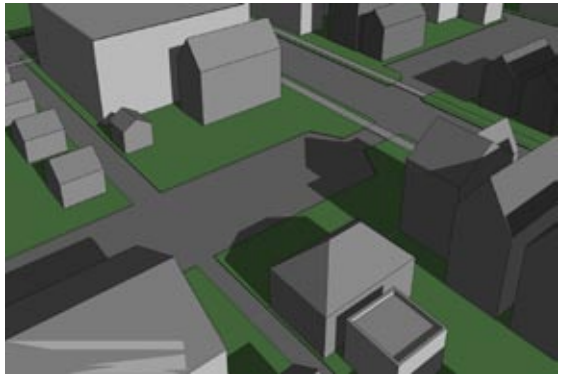


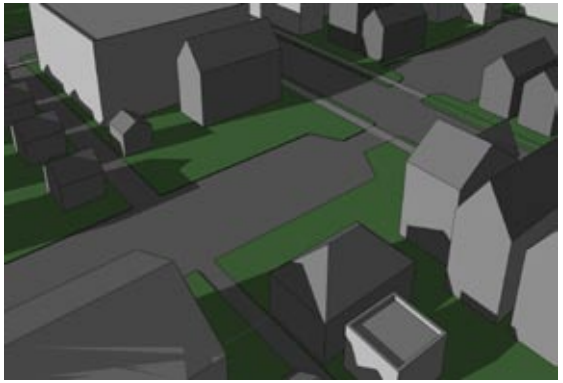
Morning



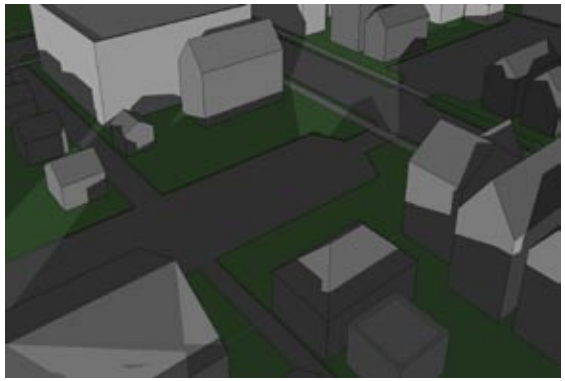


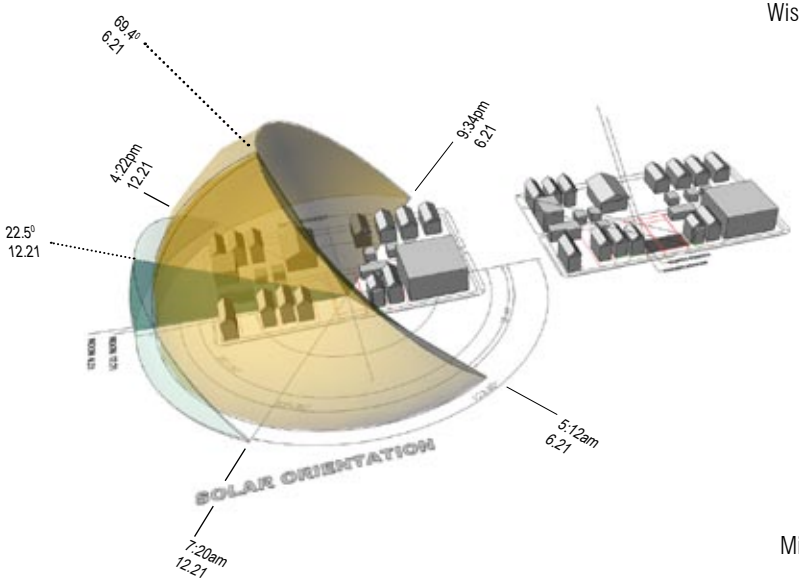
Noon

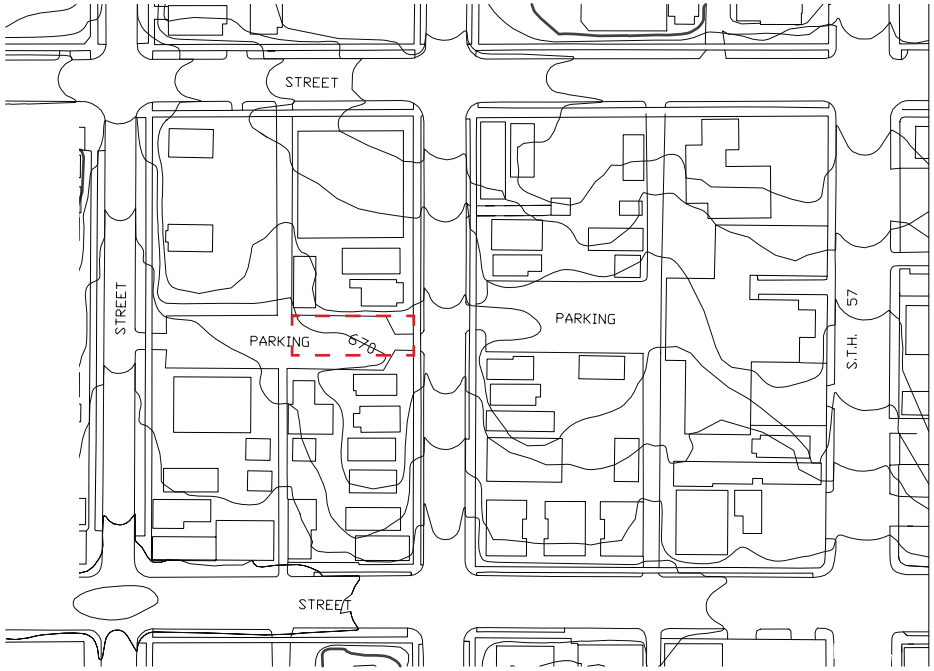


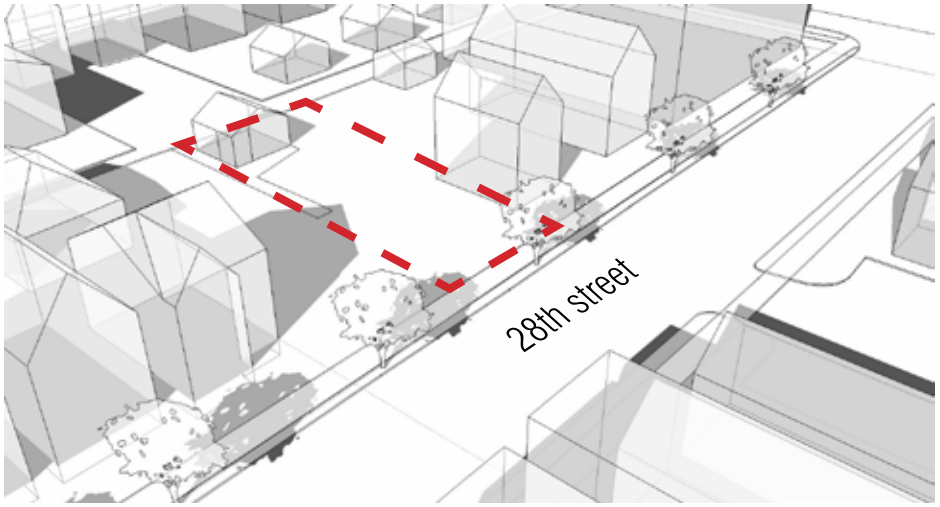


Evening









site within context


















3
HOUSING TYPOLOGY

1. FULL PORCH

The semi-public space of the open porch is a prominent feature of the houses in the Merrill Park area. The most common variation spans the entire length of the house, serving as a buffer between the public realm of the street and the private realm of the home.

The full-length porch provides a sheltered outdoor space that protects users from inclement weather, as well as protecting the front of the house from the elements. An important characteristic of the original porches in the neighborhood is that they are broad enough for social activity, while the porches added to newer homes tend to be too small and narrow to promote gathering.

2. DOUBLE PORCH

One variation of the full-length porch includes a full second-level balcony. Many times, this feature occurs on flats or duplexes, allowing each unit to have an outdoor space.

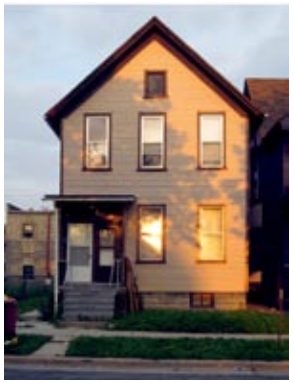
These porches are a minimum of eight feet wide, which is enough to accommodate furniture and serve as an exterior room of the house. The lower porch provides shelter, and both are enclosed by a substantial smount of railing, which provides security and offers a bit of privacy.

5. MULTIPLE MATERIALS

Many houses in the neighborhood use multiple materials which display the hand-made quality of these homes. Most of the homes get their unique character though this strategy. Many share similar qualities of size, proportion, and porch organization, however the small details found in material texture, color and detail set off otherwise similar homes.

4. FENESTRATION

The use of fenestration on these homes is related to the use of multiple materials. Fenestration creates the unique details on the facade corners, eaves, window openings and porch railings, stairs, and supports. Like the material usage, fenestration differs from house to house and gives a unique look and feel, supporting the idea of 'home' and pride in owner occupied housing.



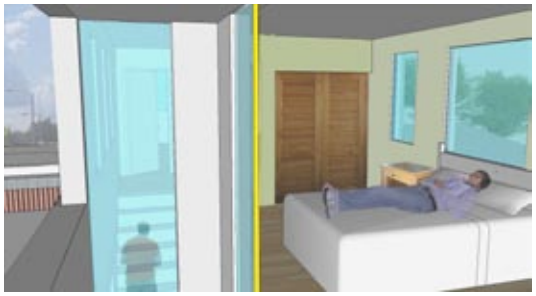
4
INDIVIDUAL PROTOTYPES

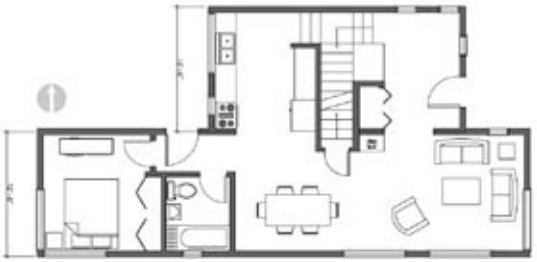
MO - DUS

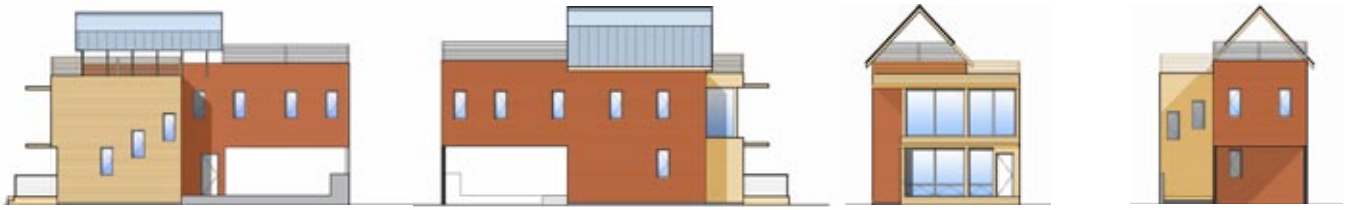
JASENKO BADIC

Mo – dus, [latin] the arrangement of, or mode of expressing

The design rationale of this house is a direct reflection of the above definition. The perception that guides the design of standard modular homes is one which underlines the concealment of its modularity and openly expresses the deceptive appearance of a singular unit. The volumetric shape of this unit is very clearly subjugated by its modular arrangement. Geometry and basic dimensions of the individual modules become the primary design element. Spaces that are created on the outside are directly framed and embraced by the 3-dimensional interaction of individual parts. Economic factors have strong consideration; standard stick construction in combination with affordable materials and standard dimensions create an environment that is both aesthetically pleasing and financially affordable. The material pallet is kept to a creative minimum; that is, each material serves a very specific purpose – structurally and architecturally. The envelope is defined by an intricate interaction between standard sized “hardie” panels and corrugated galvanized metal. While the panels serve a more structural purpose, metal cladding is primarily a design element. It wraps around the building in a manner which embraces the different modules and allows them to join into a cognitive whole. As the eye follows the movement of the metal, the geometry and volumetric fusion becomes prominent. The blocks are separated, yet joined. The truthful expression on the exterior reflects the functionality on the interior. The daily living quarters (living, dining, kitchen) flow smoothly through the first floor as they surround the main poche zone of circulation and structure. A private zone of space is pushed to the background. On the second floor the unit shifts 90 degrees creating a very strong element that seems to be sliding across the first story. As a result, a spacious sun terrace is created above the living room with a clear view to the streets and surrounding neighborhood. Because of this volumetric expression, various additions and accessories can be easily added without great structural changes. This can range from simple shading louvers and screens on the terrace and porch to glass sunrooms, and even entire units that could potentially replace the terrace or flat roof.







modERNA 150

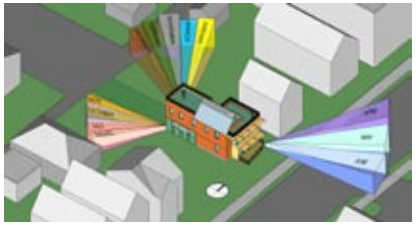
BRYAN FINNEGAN

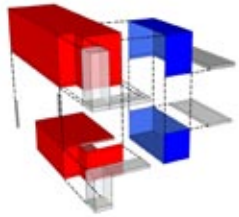
modERNA 150 prototype house asserts itself as a catalyst for the upcoming development of the Merrill Park Neighborhood on Milwaukee's near West side. It brings forth a blend of both modern and traditional elements, subtly setting it apart on the micro level while still blending into the urban fabric at the macro level. Targeting how living trends have changed, modERNA 150 offers greater visual display and access from the exterior, merger of Kitchen and Dining spaces, and curiosity of rooftop terrace happenings.

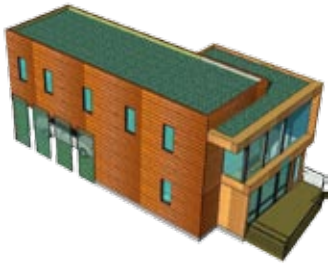
The modern expression of glass on the front façade brings forth greater visual access to neighborhood happenings outside and is viewed as an illuminated lantern of activity from the exterior. Visual intrigue to the roof level reveals rooftop access with usable social space and the implementation of a green roof system, aiding in heat gain/loss. Multiple other elements help bring the idea of sustainability to the Merrill Park Neighborhood, such as window placement to facilitate passive ventilation in the summer and solar heat gain in the winter, a sunscreen to limit solar heat gain in the summer, potential for photovoltaic panels and grey water retention/irrigation, and the use of "Grasspave" porous driveway surface limiting surface run-off.

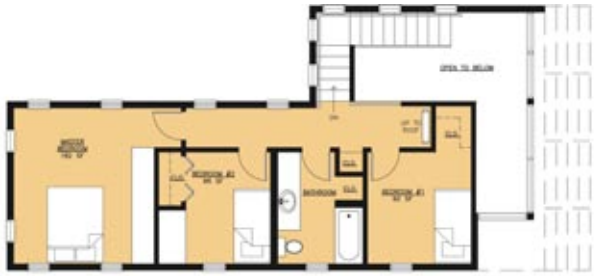
Along with a double story entry/living space, interior interest is developed with two primary design elements. The first is an open stair leading up and around a seemingly free standing wall plane offering a palette for artistic expression allowed to be seen by the outside world. The second is a floating translucent cube that the staircase seems to lead to. The volume elegantly sits above the living space and sits shy of touching the front façade. Silhouettes of objects and activities develop from the spaces beyond when illuminated.

modERNA 150 is designed as a prefab urban dwelling. Four modules (two 15' wide & two 8' wide) are shipped, stacked, and trimmed to set up the overall framework of the dwelling. The shorter volume represents the two story portion of the circulation and living space with all plumbing utilities centralized vertically within the taller volumes, limiting materials waste. As a prefab, modERNA 150 is designed with three cost levels in mind. Each level maintains the major design elements making up the form of the building with variations in accessory appendages. Design Option "A" is made up of the primary forms with the addition of a full standard gable roof at the larger volume. Design Option "B" maintains the primary forms with accessible flat roofs (green) throughout. The final, Design Option "C", offers a blend of the two with the primary roof structure as flat with a deconstructed gable roof covering half of this space and the inclusion of sunscreens over the front facing windows. All designs offer carport shelter without any additional structure. Screening devices to harbor the growth of vines are used as a visual screen between this space and the surrounding green spaces.









MODULAR PROTOTYPE

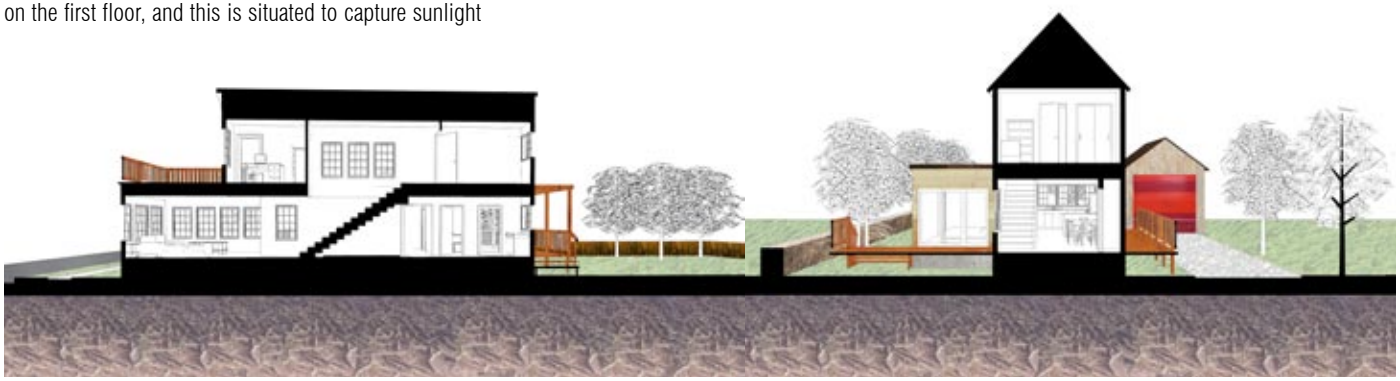
ERIN LAWRENCE

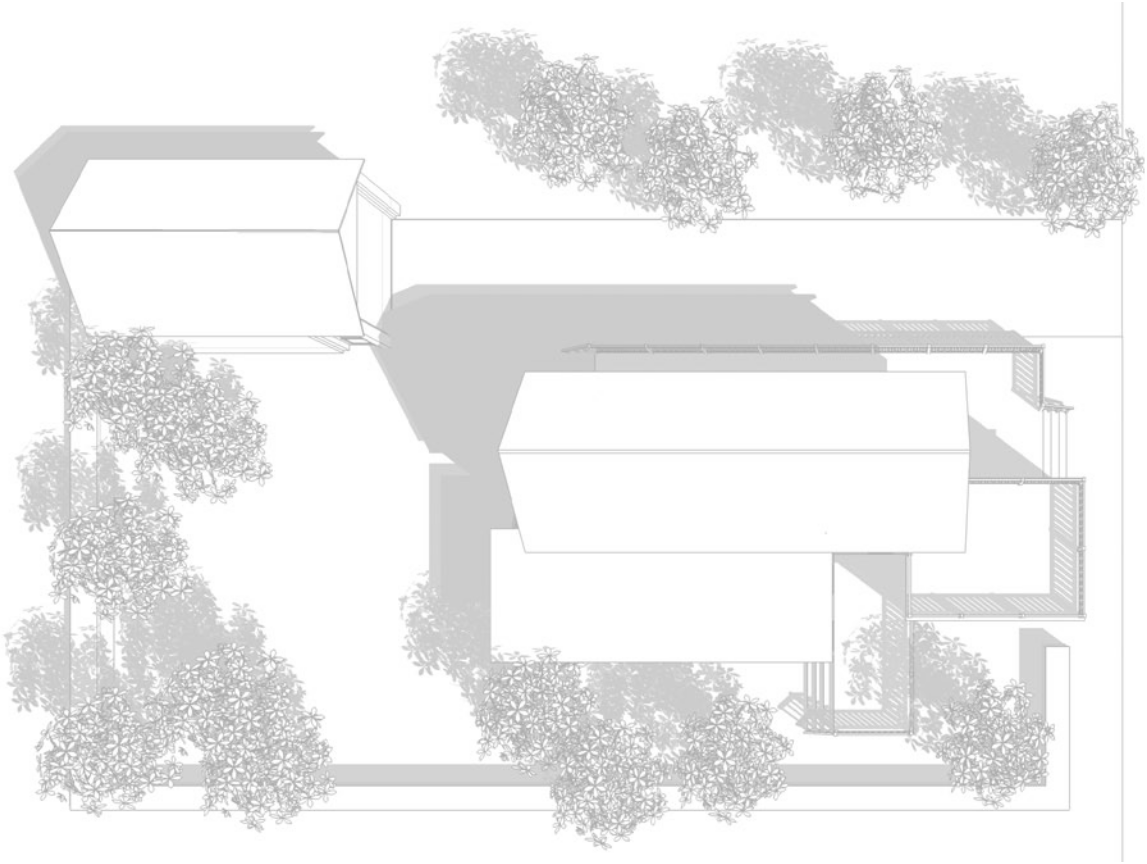
PROBLEM: Design an affordable building strategy for a 1400-square foot home that both respects the context of the century-old neighborhood it is sited in and explores the modern possibilities of modular construction.

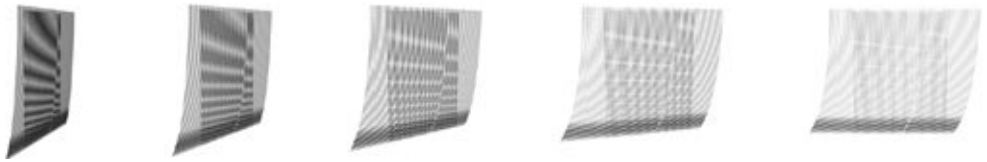
SOLUTION: Using the idea of modularity as an advantage allows living spaces to be both flexible and efficient. Each of the major functions of the first floor – living, eating, bed/bath – is contained in a separate module, and any of these can be independently scaled up or down without compromising the integrity of the whole. More importantly, these modules lend themselves to a free arrangement that greatly reduces dedicated circulation areas while creating usable exterior spaces, both of which maximize the home's living space. The second floor module contains two additional bedrooms as well as a full bath, and this piece can also be enlarged or reduced to suit the family's needs and budget.

The front porch is a vital part of the Merrill Park neighborhood, functioning both as a distinctive visual element that unites its homes aesthetically and a connective social element that joins individual families into a cohesive community. The porch is a throwback to a time when a neighborhood functioned as a defined social unit, an idea that has been all but lost in modern society. Yet, residents of Merrill Park today use their porches in much the same way as the original inhabitants did at the turn of the last century – they are places to cool off in summer, relax, and socialize. This is one of the things that makes the area unique – Merrill Park has retained some of the old-fashioned values contained in its architecture in spite of its urban location.

Because of this, the porch is a significant design element in ___ House. Exterior spaces are carved out of, notched into, and wrapped around the modules of the main house, extending the home's square footage and mediating between interior/exterior and public/private. The front porch is open to both the street and the home, offering a welcoming entry and a space for social gathering. This area extends along the north side of the house, acting as a buffer zone between the home and its neighbors. The upper level front porch opens off one of the children's bedrooms, providing extra space for play that is exposed to the activity of the street, yet protected by its removal. A third terrace opens off of the master bedroom on the first floor, and this is situated to capture sunlight







MOIRÉ HOUSE

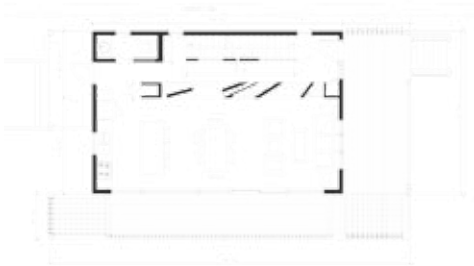
RYAN O'CONNOR

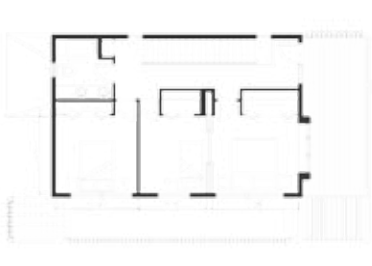
Their exists an inherent, albeit imposed, distinction between ideas of modularity, affordability and modern aesthetics. As it stands, design is thought in and either/or mentality, specifically; affordable ("cheap") or modular ("trailer home") or modern ("expensive and boxy"). This house proposes an alternative solution to these naive either/or assumptions.

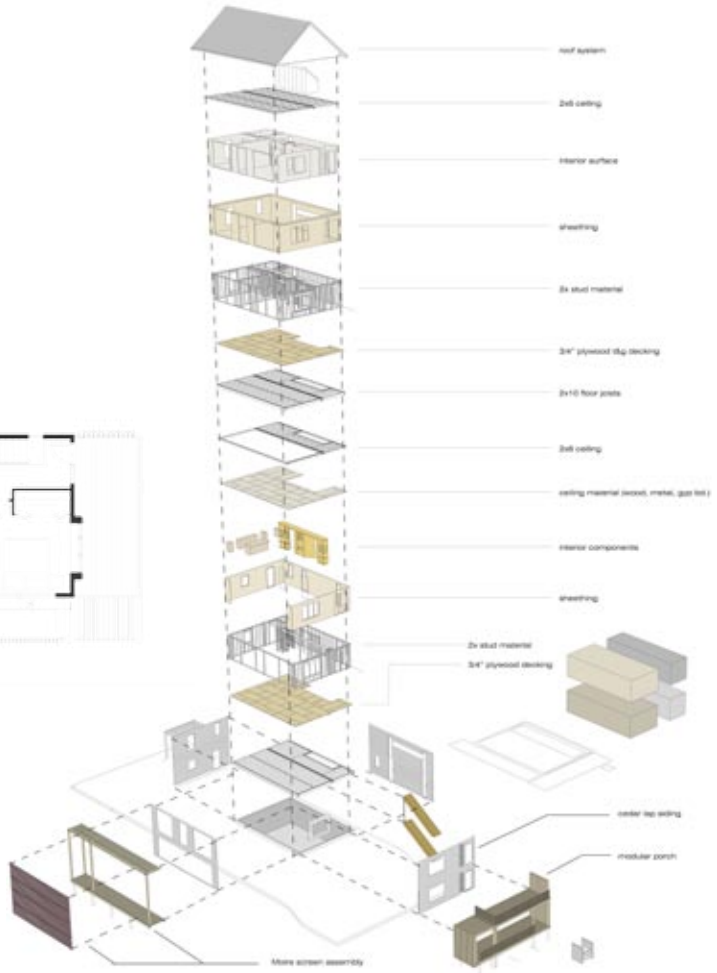
The concept of the Moire pattern, a visual complexity that emerges from the overlapping of self similar patterns, creates a framework and metaphor both literally in the making of the southern screen wall and figuratively in the reconciliation of the above mentioned assumptions. It is my contention that the overlapping of affordability, via the modular construction technique, can produce an aesthetically, functionally and technologically 'modern' home. The limitations imposed through low square footages, contextual mating and construction techniques can produce a uniquely modern typology, one that has the potential to be transformed and ultimately constructed on alternative sites around Milwaukee. Specifically, at the site scale the plan can be mirrored and rotated to fit the site conditions with secondary adjustments through the making and positioning of the porch appendages.

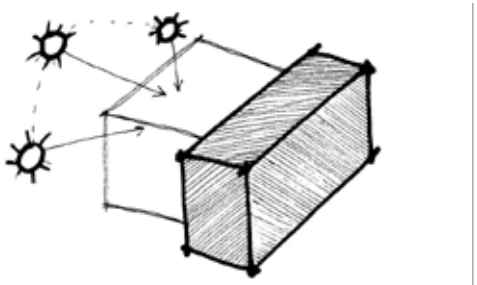
Customization and personalization exist in various interior and exterior components. Examples include; porch 'kits' from standard low-cost models to customer designed models, each of which utilizes the truss making industry to produce efficient, repetitive frames that are bolted together onsite. Other examples offer a customizable interior partition wall on first floor and, alternativley, a low cost option of rolling IKEA cabinets. Exterior material choices can be either cedar lap siding or a Hardiplank lap siding for low maintenance.

The modern trend toward respecting the natural systems and flows, called "sustainable" or "green" design, are integral to the design concepts of the moiré house. The siting of the house accounts for the passage of prevailing winds in warmer seasons and protection from the colder, prevailing winter winds. The position also situates a southern facing wall for maximum solar exposure, diffusing this light through a controllable sun screen. Photovoltaic cells could potentially use the large surface area of the southern facing roof to generate electricity or heat for the home. The roof sheds water into gutters then to rain barrels for slow release back into the ground or for outdoor use, i.e. watering plants, washing cars. Interior materials and systems would be chosen for sustainable attributes such as bamboo flooring, recylcle wood doors and a smart HVAC system that could monitor use of spaces and living patterns, adapting to sustain a maximum energy savings.






roof system
2x6 ceiling
interior surface
sheathing
2x stud material
3/4" plywood dbg decking
2x10 floor joists
2x6 ceiling
ceiling material (wood, metal, gyp bd.)
interior components
sheathing
2x stud material
3/4" plywood decking
cedar lap siding
modular porch
Mono screen assembly



City House

MELANIE TAYLOR

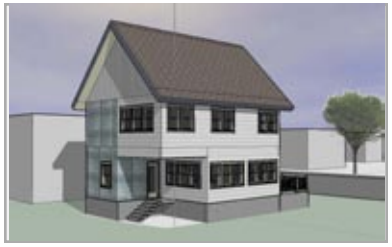
The modules of the house stack in a way, that each half contains it's own function. One side houses the living quarters and served rooms. The second part holds the circulation and serving spaces. The living spaces are oriented to accomodate the greatest use of solar orientation. The poarch in the front and the covered out door area in the rear function as extensions for the common areas on the first floor. The bedrooms are located on the second floor to enhance privacy, while still allowing for natural light to enter.

On the other hand the circulation area is isolated in the more opaque part of the house, the space is vertically tied toghether by a stairwell that reaches from the basement to the second floor.

The shafts created by the hallways and the stair case allow for good ventilation on each floor as well as between the stories.

Each of the two parts of the house are emphasised through their exterior treatment. The living quarters are represented by a smaller, more common treatment, where as the other part surrounds it selfe with a larger scaled paneling, which isn't as common in use on residential bueldings.

The basement rises above the actual terrain of the site to provide the poarch and zoning that is so typical for the neigborhood. The elevated poarch offers an additional threshold after stepping foot on the property, which is quite level at our site.



FOM

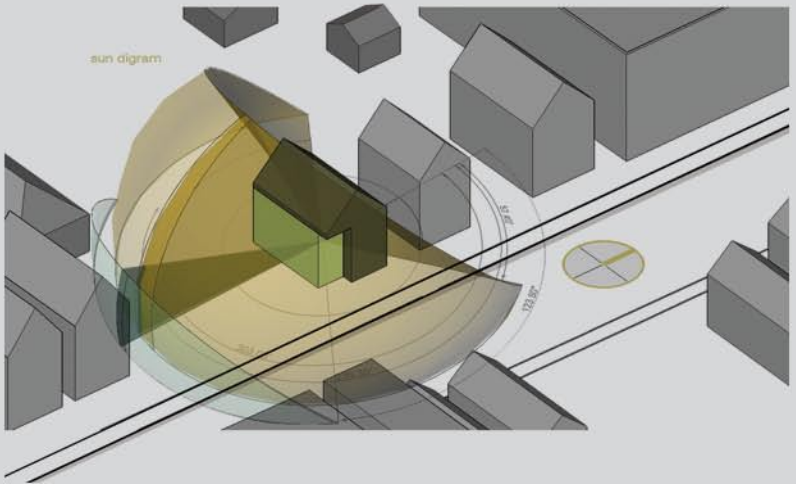
friends of modules

5
GROUP PROTOTYPE

VEIL HOUSE

TEAM FŌM PROTOTYPE

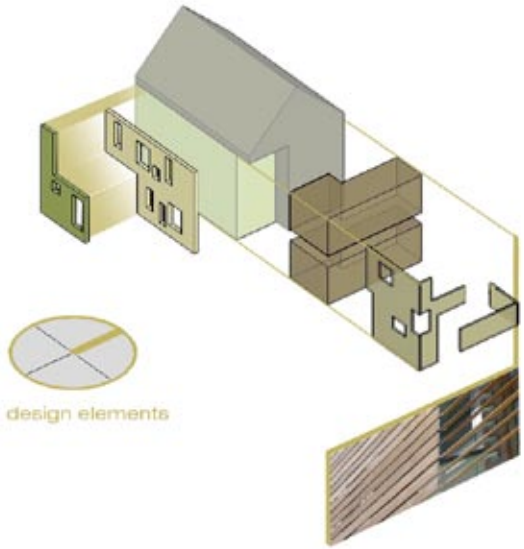
Modularity and affordability are terms not usually associated with the modern aesthetic. This house design seeks to unite the efficiency of modularity, the mass marketability gained by affordability, and the modern aesthetic. A mating of these concepts with the local context and historical framework produce a complex and dynamic whole. The Veil House takes its name directly from an obvious physical attribute, the veil along the southern wall, but also indirectly from a literal interpretation of 'veil'- one that suggests a fineness and beauty, a fabric to hide and reveal or a controllable, ephemeral surface - qualities we feel that contribute to the eventual use, appearance and neighborhood integration that the house offers.



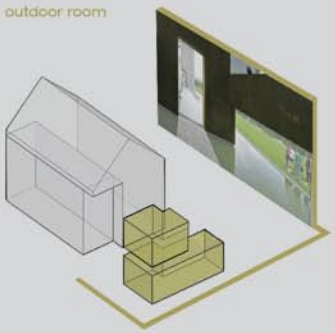
DOUBLE PORCH

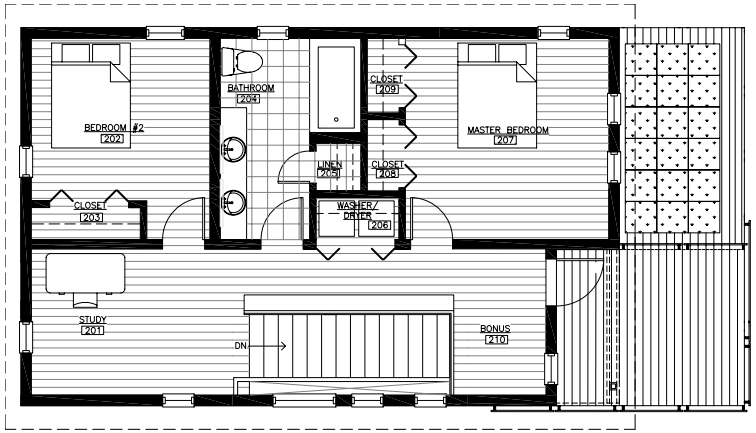
FENESTRATION

MULTIPLE MATERIALS

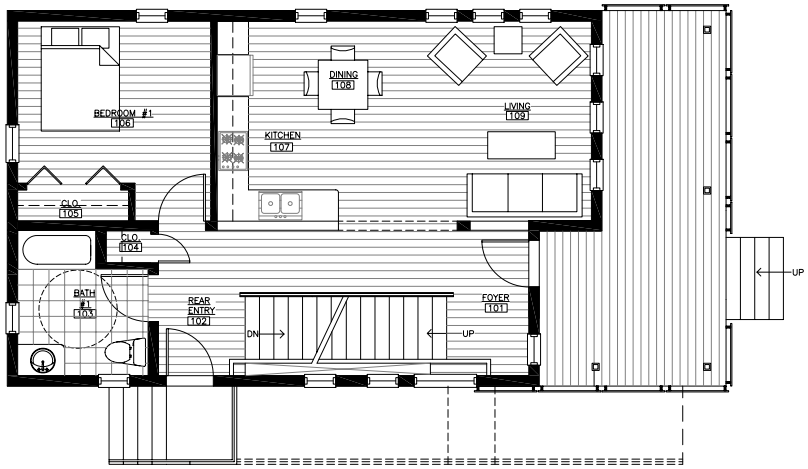


The house uses an efficient organization in plan and expands this reserved presence through the material usage and site orientation. The width of the site is significantly larger than typical mid-block sites within Merrill Park which allows the house to push to the northern edge of the site and take advantage of southern exposure. This southern exposure is expressed through an increase in the number of glazed surfaces on this elevation and also in the placement of the staircase – the double height nature of stairs allow light to bleed further into the first floor living spaces. Material usage reinforces these larger organizational moves and creates a unique and expanded presence along the street. The southern wall collects all three types of exterior materials used in the project; HardiPlank Siding, HardiPanels, and a Trex rail system to make the veil, which overlap and layer to


outdoor room

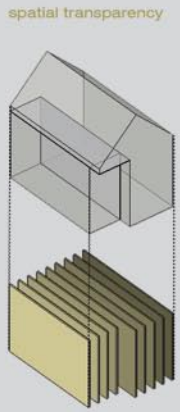


second floor plan



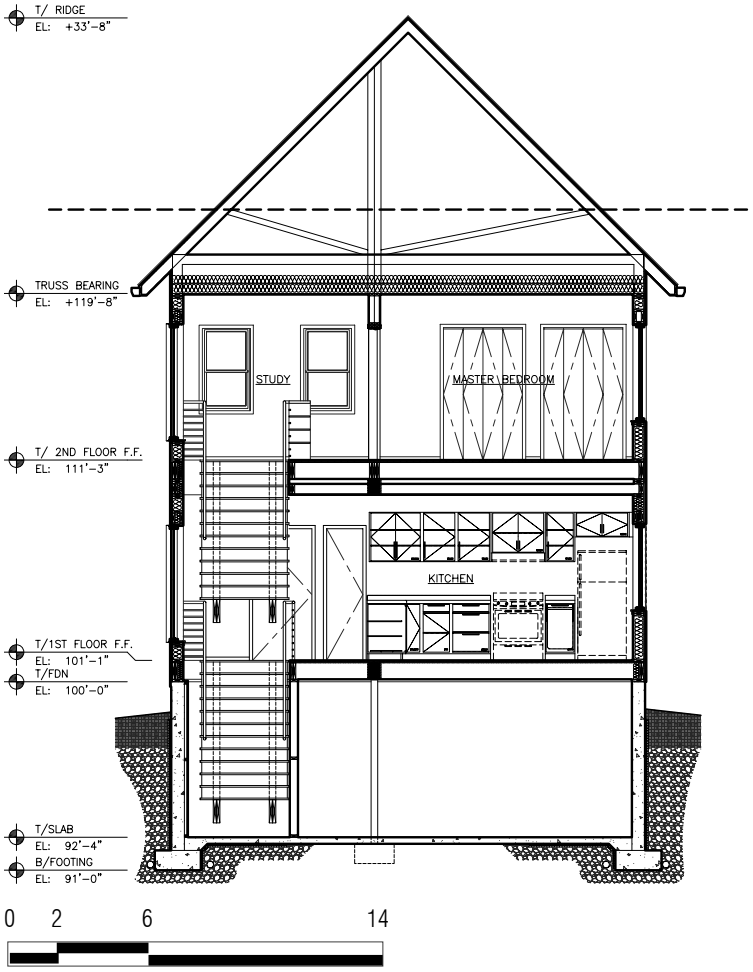
0 2 6 14

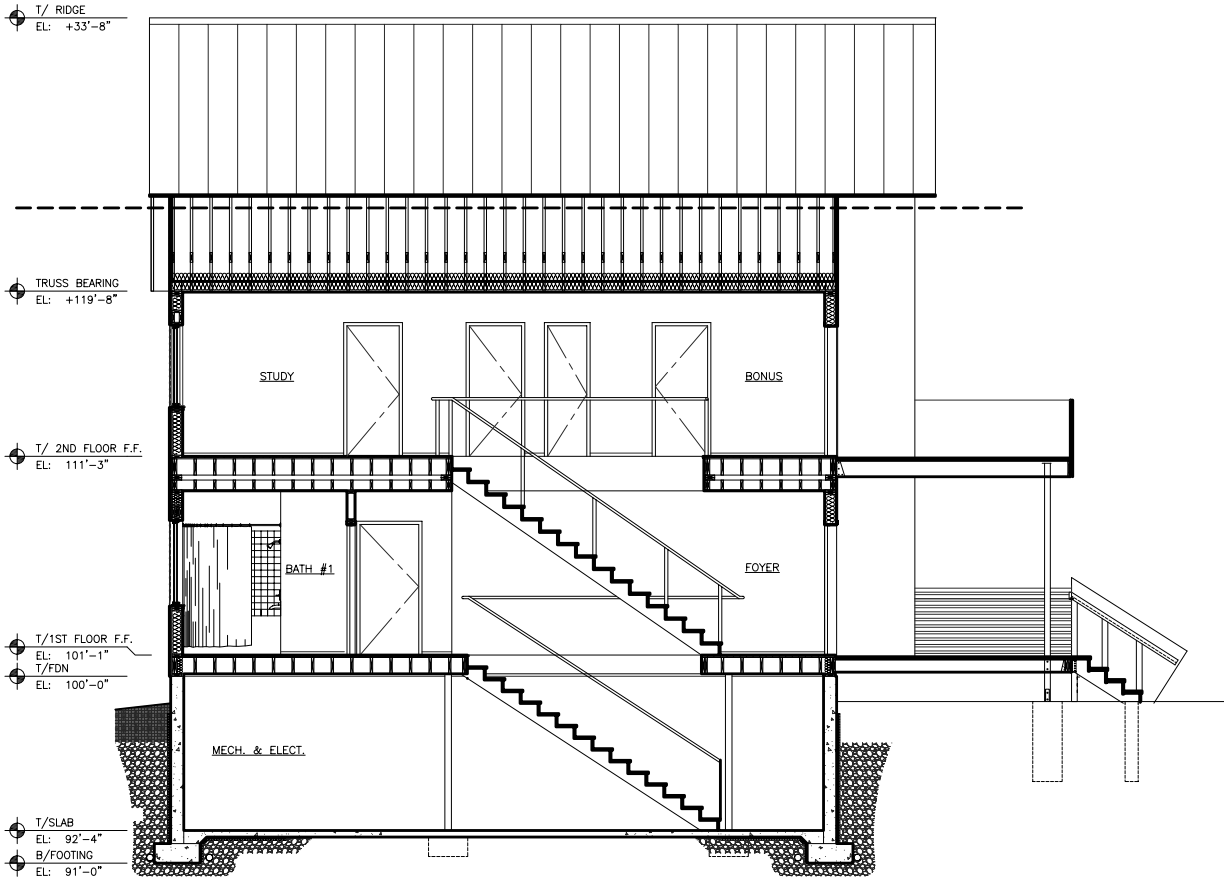
first floor plan



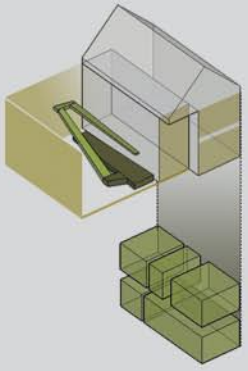
reveal interior organizations and help integrate the essential front porch. A standing seam metal roof completes the material quartet reinforcing issues of sustainability by extending the lifespan of the roof over thirty years, shedding cleaner water for collection, and using a recycled material.

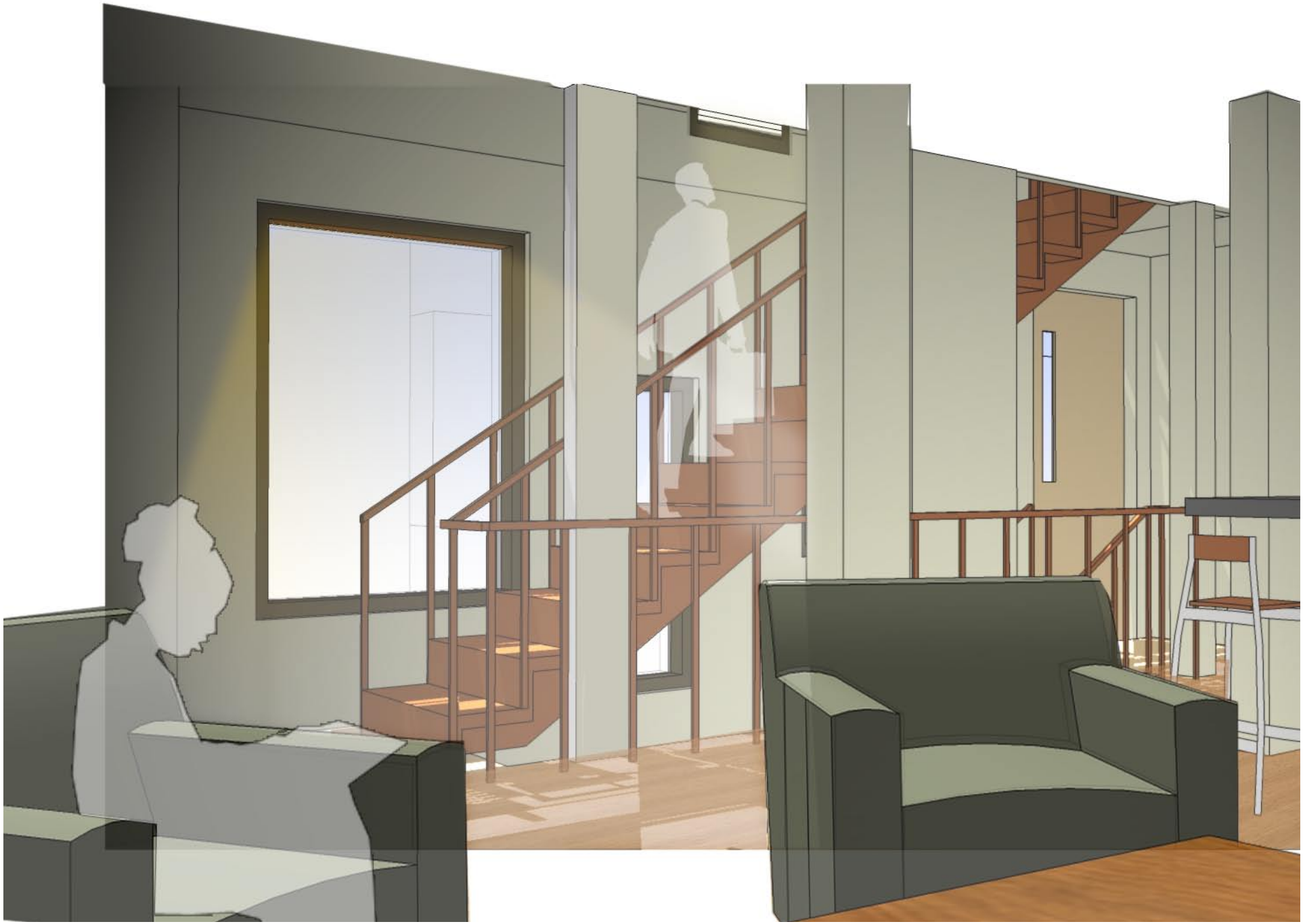
The modern trend toward respecting the natural systems and flows, called “sustainable” or “green” design, are integral to the design concepts of the Veil House. Photovoltaic cells could potentially use the large surface area of the southern facing roof to generate electricity or heat for the home. The roof sheds water into gutters, then into rain barrels for slow a release back into the ground or for outdoor use, i.e. watering plants, washing cars. Interior materials and systems (such as the Terrace Homes use of Energy Star appliances and windows) would be chosen for sustainable attributes, with examples like; bamboo flooring, recycled wood doors and a ‘smart’ HVAC system that could monitor use of spaces and living patterns, adapting to users’ lifestyles producing a maximum energy savings. These sustainable features along with the organization of plan and material manipulation add up to a complex whole, encompassing affordability, modular technology and a modern aesthetic, together, situated in an historical context experiencing a 21st century revival.

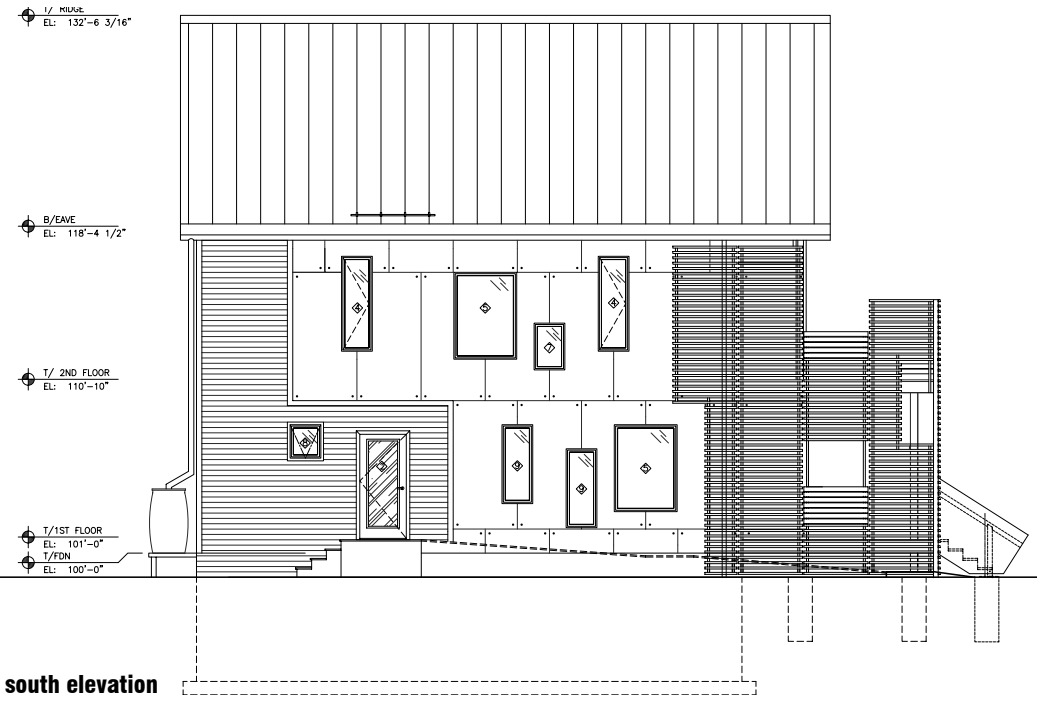




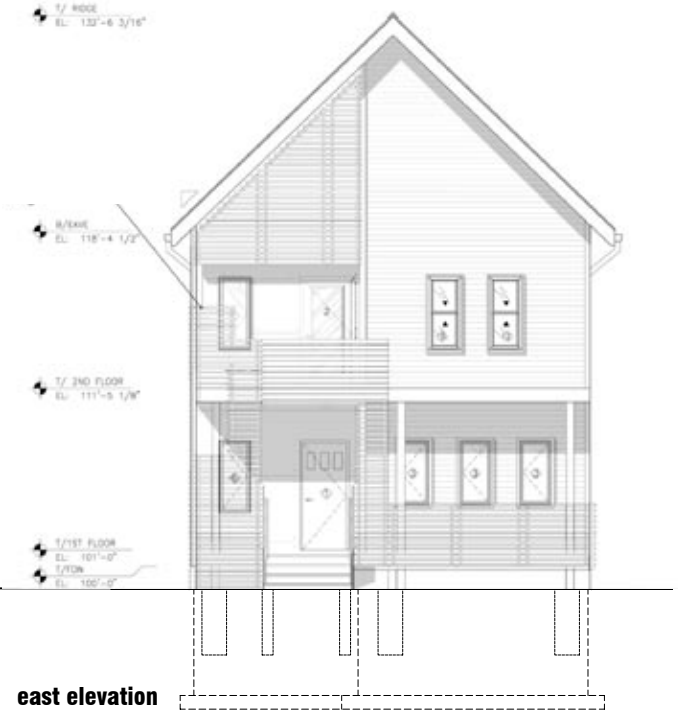
dynamics and spatial layering



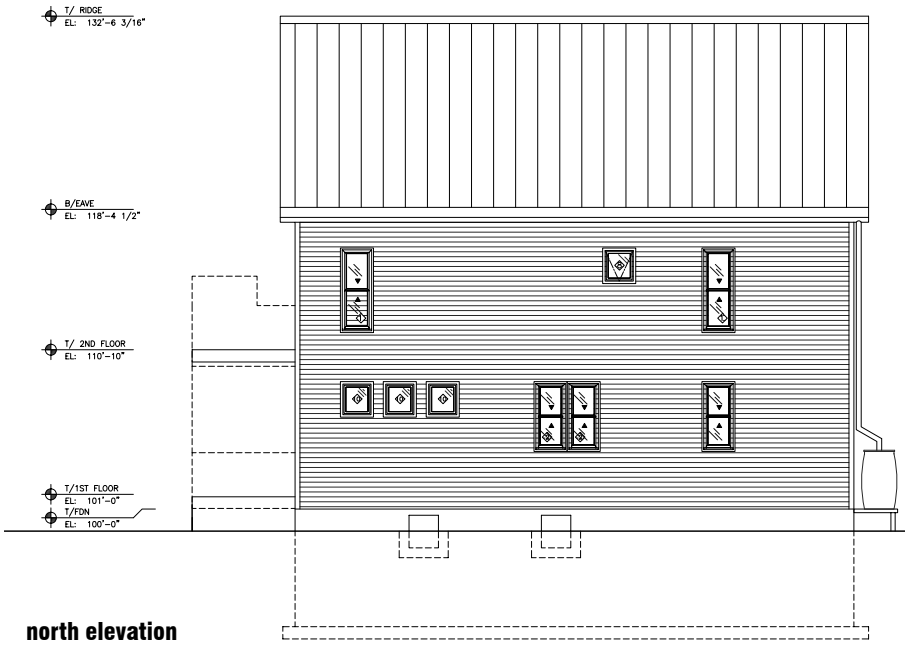




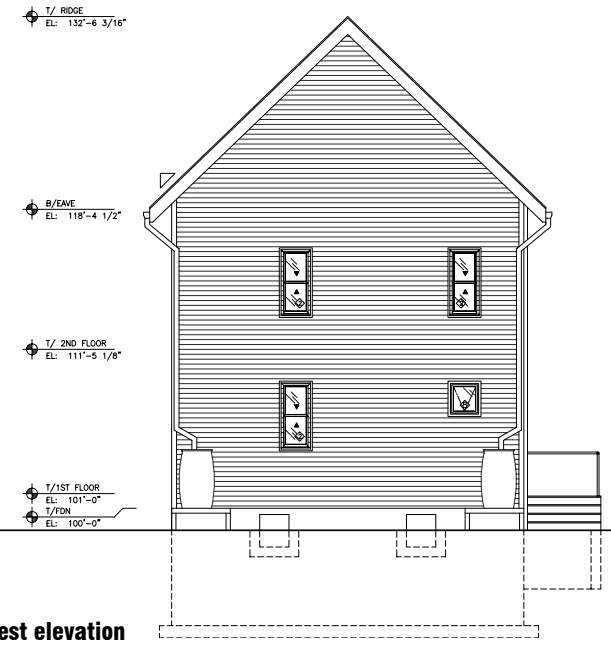
south elevation



east elevation



north elevation



west elevation

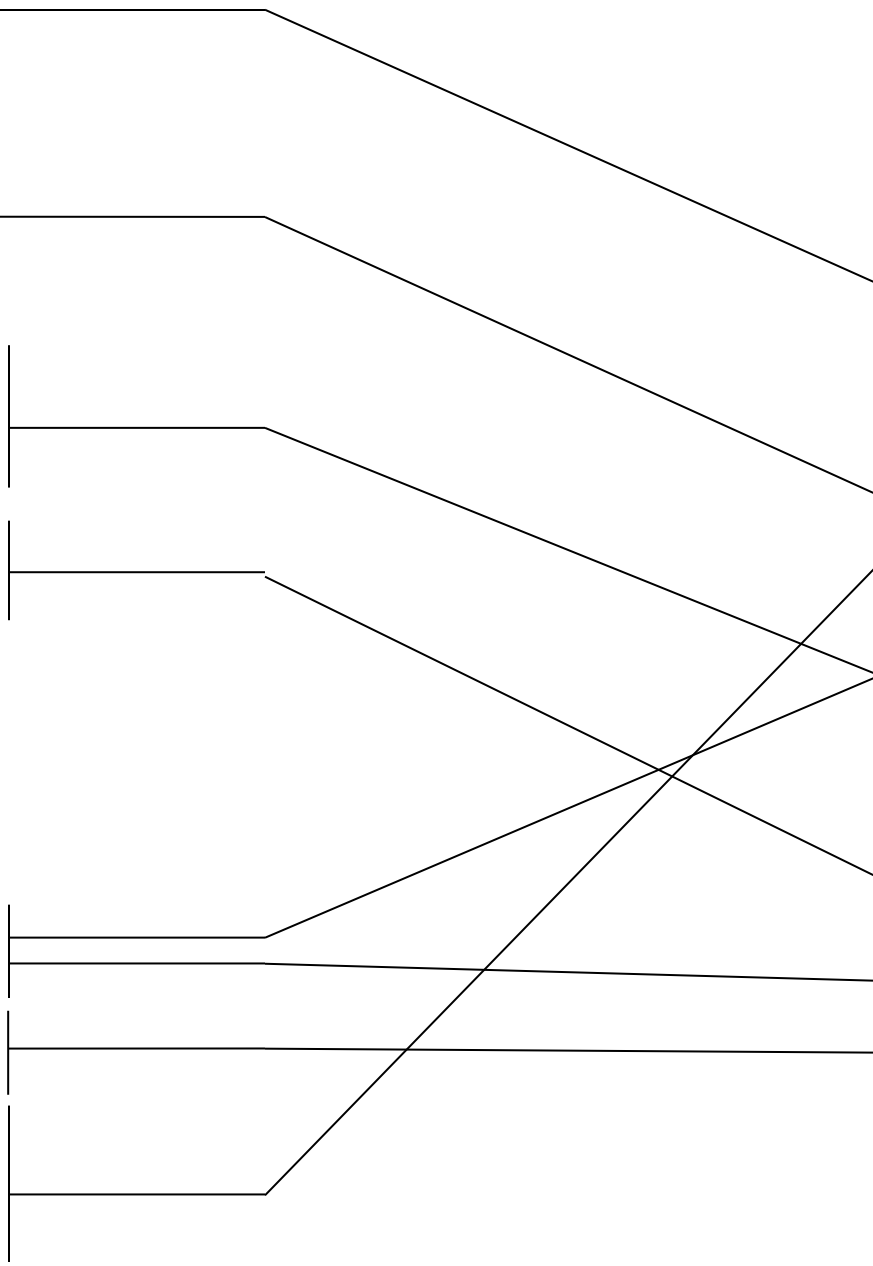
0 2 6 14

SYSTEM OPTIONS: veil house modular prototype

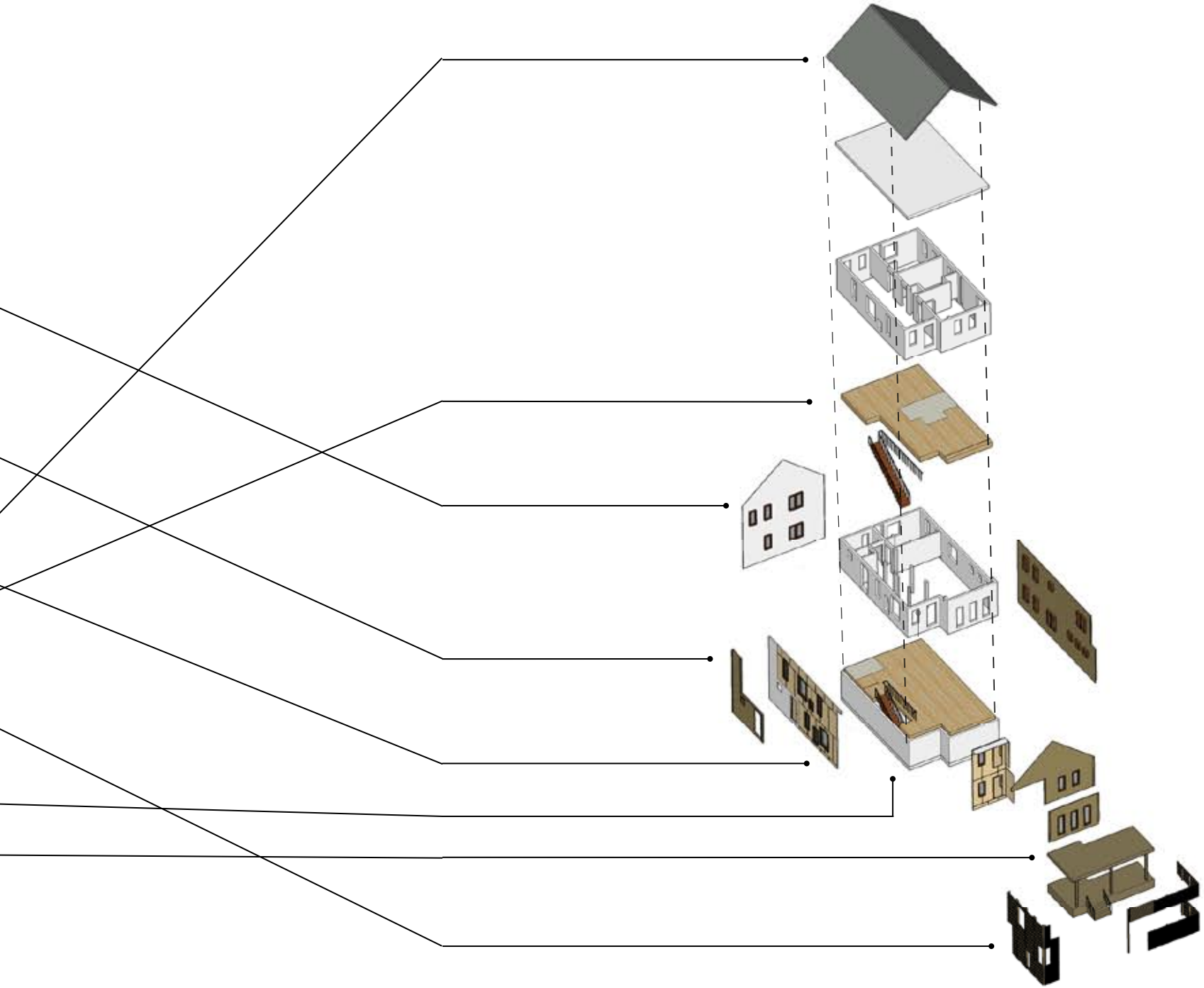
	low-range option	mid-range	high-range option	
wall system 1		**1/2" gyp board** vapor barrier 2x6 wood stud @ 16" o.c. batt insulation r19	1/2" gyp board w/ skim coat plaster (onsite)	**benefit: smoother finish**
	3/8" OSB sheathing	**1/2" OSB sheathing** air infiltration barrier 6" cementitious siding with 4" reveal	1/2" exterior grade plywood sheathing	**benefit: plywood is stronger than OSB**
	4" rubber baseboards	**4" oak baseboards**	4" bamboo baseboards	**benefit: bamboo is a sustainable resource**
wall system 2		**1/2" gyp board** vapor barrier 2x6 wood stud @ 16" o.c. batt insulation r19	1/2" gyp board w/skim coat plaster(onsite)	**benefit: smoother finish**
	3/8" OSB sheathing	**1/2" OSB sheathing** air infiltration barrier 1.5" furring strips @ 16" o.c. 1" rigid insulation between furring	1/2" exterior grade plywood sheathing	**benefit: plywood is stronger than OSB**
		3/8" OSB sheathing (addt'l) 6" cementitious Siding - with 4" revea	1/2" exterior grade plywood sheathing	**benefit: plywood is stronger than OSB**
	4" rubber baseboards	**4" oak baseboards**	4" bamboo baseboards	
wall system 3		**1/2" gyp board** vapor barrier 2x6 wood stud @ 16" O.C.	1/2" gyp board w/ skim coat plaster(onsite)	**benefit: smoother finish**
		batt insulation r19	mineral wool batt insulation r19	**benefit: mineral wool is recyclable**
	3/8" OSB sheathing	**1/2" OSB sheathing** air infiltration barrier 1/2" cementitious panels	1/2" exterior grade plywood sheathing	**benefit: plywood is stronger than OSB**
	4" rubber baseboards	**4" oak baseboards**	4" bamboo baseboards	**benefit: bamboo is a sustainable resource**
wall system 4 (porch)		2x4 Trex trim - see sheet A610 1 -3/8" x 1-3/8" baluster - see sheet A610 Simpson strong ties - see sheet A610 for specifics		
ceiling system 1		**1/2" gyp board** 3/4" grid system (Terrace) 2x6" framing - Terrace Home Standard 1/4" sheathing	1/2" t&g bamboo	
ceiling system 2		**1/2" gyp board** 3/4" grid system (Terrace) vapor barrier Pre engineered roof truss bottom chord @ 24" O.C.- specified on sheet A300 R-44 Insulation	1/2" t&g bamboo	
floor system 1	T&G hardwood flooring	**t&g bamboo flooring** 3/4" APA Rated sturdi- floor decking 2x10 framing @ 16"O.C.		
floor system 2	5/4" x 6" pressure treated decking	**5/4" x 6" trex decking - color TBA** 2x10 framing @ 16" O.C.		
roof system 1		pre engineered roof truss top chord @ 24" O.C. - specified on sheet A300 1/2" APA structural roof sheathing w/ clips TITANIUMTM-UDL roofing underlayment		
	245# self-cleaning fiberglass shingles	aluminum standing seam roof w/18" sheets	copper standing seam roof with 18" sheets	**benefit: aesthetics**

benefit: bamboo is a sustainable resource

bamboo is a rapidly renewable resource, in other words, it matures much faster than other materials used in similar applications. A new bamboo shoot will be mature in a mere 5 years. Bamboo is a grass rather than a tree, and this means it grows much faster. In fact, bamboo grows over a foot a day, and is thought to be the fastest-growing plant in the world. With proper management, a bamboo forest will produce a yearly harvest with very little impact on the local ecosystem.



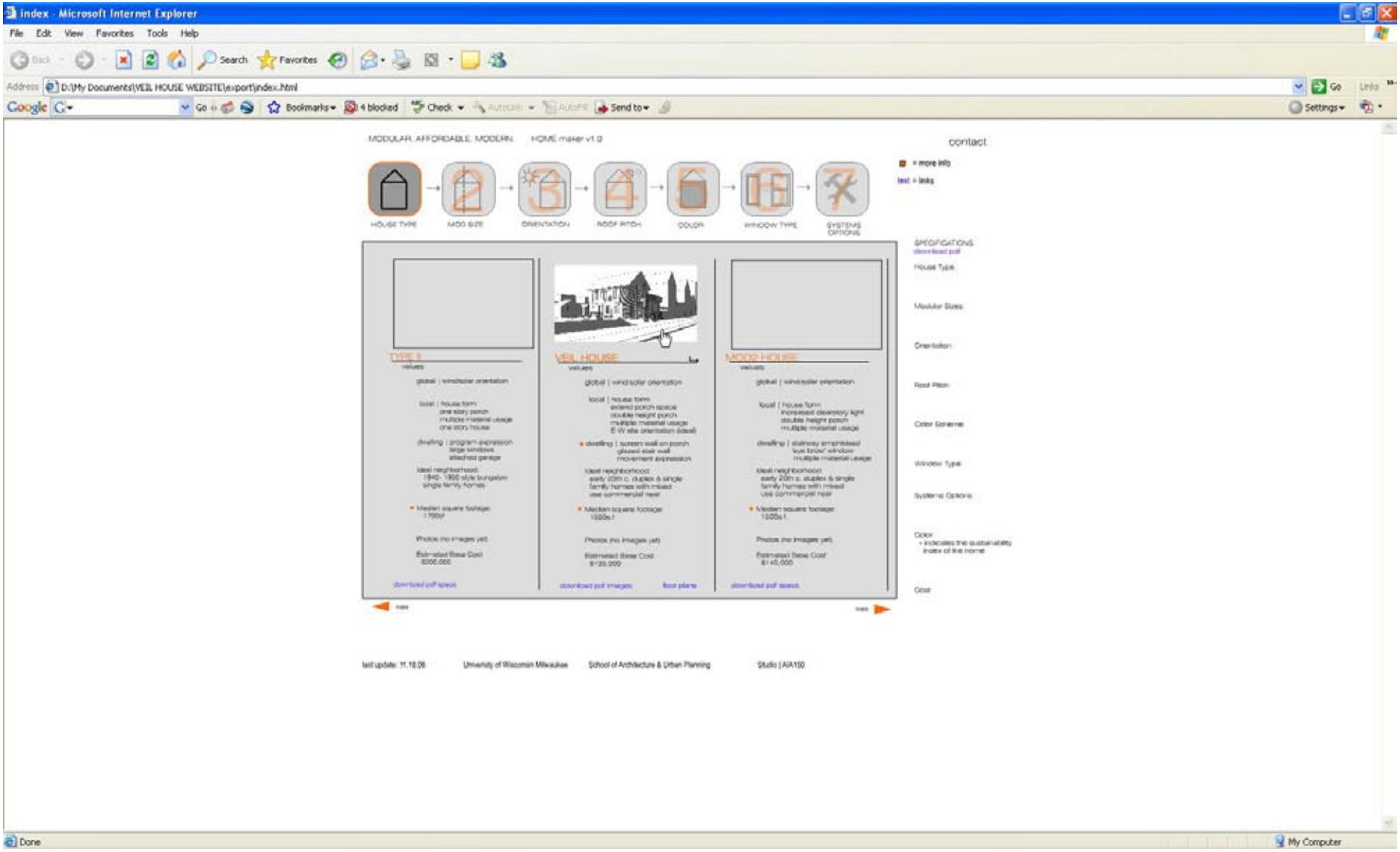
cost estimate | $152,800 = $87 / sq.ft.

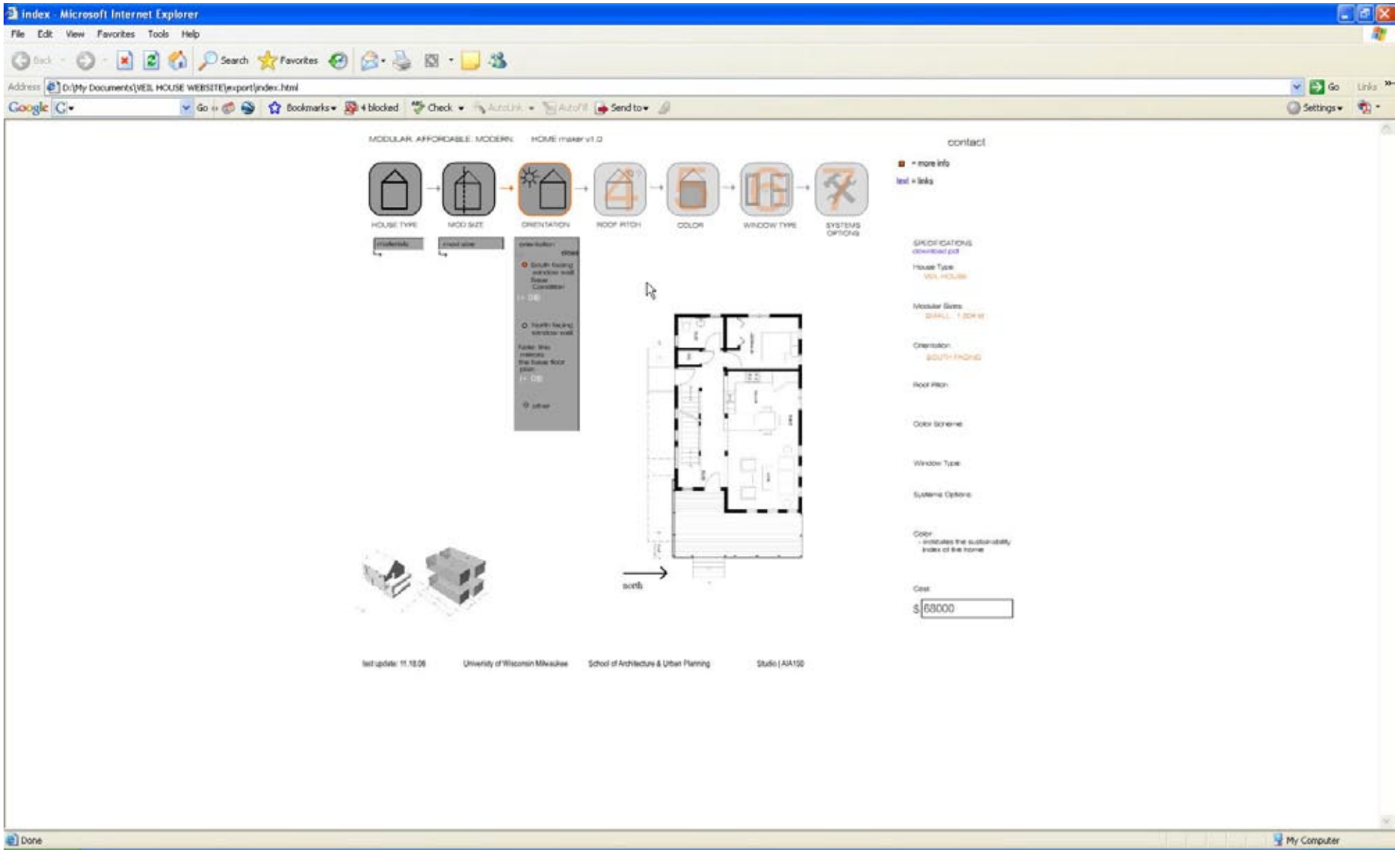


\website

\\customized modular house

\\\ http://www.uwm.edu/SARUP/gallery/aia150studio/index.html

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School of Architecture & Urban Planning
Studio | AIA150
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BUDGET WORKSHEET : veil house modular prototype

WALL SYSTEMS

wall system 1 (exterior lapped siding)			l: 160.00	h: 8.60			total sf: 1376.00
			unit cost	unit	$ per lf	x .$	1.07
06100.6110.550.0802	STUDS	2X6 8' h, 16" oc, pn	$ 12.70	lf	$ 12.70	$	13.59
06100.06160.800.3600	SHEATHING	Wood fiber, vapor barrier 1 side, 1/2"	$ 1.17	sf	$ 10.06	$	10.77
06200.06220.200.0000	BASEBOARD	Bamboo baseboard 4"	$ 6.08	lf	$ 6.08	$	6.51
07200.07210.950.0141	INSULATION	Fiberglass batt, kraft-faced, 6" thick, R19	$ 0.71	sf	$ 6.11	$	6.53
07200.07260.100.0480	VAPOR RETARDER	Housewrap, exterior, polypropylene, lg roll	$ 0.20	sf	$ 1.72	$	1.84
07400.07460.000.0000	SIDING	Hardiplank Lap Siding	$ 2.28	sf	$ 19.61	$	20.98
09200.09250.700.0350	DRYWALL	1/2" thick on walls, taped and finished	$ 1.04	sf	$ 8.94	$	9.57
		total $ per linear foot:	**$ 69.79**		**x 160 lf =**		**$ 11,165.66**

wall system 2 (exterior lapped siding w/furring)			l: 21.00	h: 8.60			total sf: 180.60
			unit cost	unit	$ per lf	x .$	1.07
06100.6110.550.0802	STUDS	2X6 8' h, 16" oc, pn	$ 12.70	lf	$ 12.70	$	13.59
06100.06110.600.0012	FURRING	Wood strips, 1"x2", on walls, on wood, pn	$ 0.69	lf	$ 0.69	$	0.74
06100.06160.800.3600	SHEATHING	Wood fiber, vapor barrier 1 side, 1/2"	$ 1.17	sf	$ 10.06	$	10.77
06200.06220.200.0000	BASEBOARD	Bamboo baseboard 4"	$ 6.08	lf	$ 6.08	$	6.51
07200.07210.900.0040	INSULATION - RIGID	Fiberglass, 1.5#/CF, unfaced, 1" thick,R4.1	$ 0.76	sf	$ 6.54	$	6.99
07200.07210.950.0141	INSULATION - BATT	Fiberglass batt, kraft-faced, 6" thick, R19	$ 0.71	sf	$ 6.11	$	6.53
07200.07260.100.0480	VAPOR RETARDER	Housewrap, exterior, polypropylene, lg roll	$ 0.20	sf	$ 1.72	$	1.84
07400.07460.000.0000	SIDING	Hardiplank Lap Siding	$ 2.28	sf	$ 19.61	$	20.98
09200.09250.700.0350	DRYWALL	1/2" thick on walls, taped and finished	$ 1.04	sf	$ 8.94	$	9.57
		total $ per linear foot:	**$ 77.52**		**x 21 lf =**		**$ 1,627.86**

wall system 3 (exterior panel siding)			l: 67.00	h: 8.60			total sf: 576.20
			unit cost	unit	$ per lf	x .$	1.07
06100.6110.550.0802	STUDS	2X6 8' h, 16" oc, pn	$ 12.70	lf	$ 12.70	$	13.59
06100.06160.800.3600	SHEATHING	Wood fiber, vapor barrier 1 side, 1/2"	$ 1.17	sf	$ 10.06	$	10.77
06200.06220.200.0000	BASEBOARD	Bamboo baseboard 4"	$ 6.08	lf	$ 6.08	$	6.51
07200.07210.950.0141	INSULATION	Fiberglass batt, kraft-faced, 6" thick, R19	$ 0.71	sf	$ 6.11	$	6.53
07200.07260.100.0480	VAPOR RETARDER	Housewrap, exterior, polypropylene, lg roll	$ 0.20	sf	$ 1.72	$	1.84
07400.07460.000.0000	SIDING	Hardipanel Siding Panels - 4' x 10'	$ 2.28	sf	$ 19.61	$	20.98
09200.09250.700.0350	DRYWALL	1/2" thick on walls, taped and finished	$ 1.04	sf	$ 8.94	$	9.57
		total $ per linear foot:	**$ 69.79**		**x 67 lf =**		**$ 4,675.62**

wall system 4 (interior walls)			l: 115.00	h: 8.60			total sf: 989.00
			unit cost	unit	$ per lf	x .$	1.07
06100.06110.550.0207	PARTITIONS	2X4 studs, 8' h, 16" oc, pn	$ 9.70	lf	$ 9.70	$	10.38
06200.06220.200.0000	BASEBOARD	Bamboo baseboard 4"	$ 12.16	lf	$ 12.16	$	13.01
09200.09250.700.0350	DRYWALL	1/2" thick on walls, taped and finished	$ 2.08	sf	$ 17.89	$	19.14
		total $ per linear foot:	**$ 42.53**		**x 115 lf =**		**$ 4,890.99**

WALL SYSTEM TOTAL: **$ 22,360.14**

BUDGET WORKSHEET: veil house modular prototype

CEILING SYSTEMS

ceiling system 1			module 1: l: 38.00 w: 14.00	module 2: l: 34.00 w: 10.00	total sf: 872.00			
			unit cost	unit	$ per ft	x .5	1.0?
06100.06110.510.6102	CEILING FRAMING	Suspended 2x6	$ 1.50	lf	$ 13.50	$ 14.45	
06100.06160.800.3000	SHEATHING	Wood fiber, regular, no vapor barrier, 1/2" thick	$ 1.17	sf	$ 14.04	$ 15.02	
09200.09250.700.1050	DRYWALL	1/2" thick on ceilings, taped and finished	$ 1.22	sf	$ 14.64	$ 15.66	
				total $ per linear foot:	$ 45.13	x 72 lf =	$ 3,249.55

ceiling system 2			module 1: l: 38.00 w: 14.00	module 2: l: 34.00 w: 10.00	total sf: 872.00			
			unit cost	unit	$ per ft	x .5	1.0?
06100.06110.510.6102	CEILING FRAMING	Suspended 2x6, 16" oc	$ 1.50	lf	$ 13.50	$ 14.45	
06100.06160.800.3000	SHEATHING	Wood fiber, regular, no vapor barrier, 1/2" thick	$ 1.17	sf	$ 14.04	$ 15.02	
07200.07210.950.0141	INSULATION	Fiberglass batt, kraft-faced, 12" thick, R38	$ 1.19	sf	$ 14.28	$ 15.28	
09200.09250.700.1050	DRYWALL	1/2" thick on ceilings, taped and finished	$ 1.22	sf	$ 14.64	$ 15.66	
				total $ per linear foot:	$ 60.41	x 72 lf =	$ 4,349.68

CEILING SYSTEM TOTAL: $ 7,599.23

FLOOR SYSTEMS

floor system 1			module 1: l: 38.00 w: 14.00	module 2: l: 34.00 w: 10.00	total sf: 872.00			
			unit cost	unit	$ per ft	x .5	1.0?
06100.06110.530.2207	FLOOR FRAMING	Joists 2x10 Pneumatic nailed 16" oc	$ 2.07	lf	$ 18.63	$ 19.93	
06100.06110.560.4101	RIM JOIST	2x10 sill	$ 2.92	lf	$ 7.79	$ 8.33	
06100.06160.850.0017	SHEATHING	Plywood, CDX, 1/2" thick, pneumatic nailed	$ 1.04	sf	$ 12.48	$ 13.35	
06100.06160.900.0000	UNDERLAYMENT	Sound Solution Underlayment	$ 0.59	sf	$ 7.08	$ 7.58	
09600.09648.000.0000	FLOORING	5/8" x 3-5/8" x 6' Bamboo vertical grain strip flooring	$ 4.59	sf	$ 55.08	$ 58.94	
				total $ per linear foot:	$ 108.13	x 72 lf =	$ 7,785.41

floor system 2			module 1: l: 38.00 w: 14.00	module 2: l: 34.00 w: 10.00	total sf: 872.00			
			unit cost	unit	$ per ft	x .5	1.0?
06100.06110.530.2207	FLOOR FRAMING	Joists 2x10 Pneumatic nailed 16" oc	$ 2.07	lf	$ 18.63	$ 19.93	
06100.06110.560.4101	RIM JOIST	2x10 sill	$ 2.92	lf	$ 7.79	$ 8.33	
06100.06160.850.0017	SHEATHING	Plywood, CDX, 1/2" thick, pneumatic nailed	$ 1.04	sf	$ 12.48	$ 13.35	
06100.06160.900.0000	UNDERLAYMENT	Sound Solution Underlayment	$ 0.59	sf	$ 7.08	$ 7.58	
09600.09648.000.0000	FLOORING	5/8" x 3-5/8" x 6' Bamboo vertical grain strip flooring	$ 4.59	sf	$ 55.08	$ 58.94	
				total $ per linear foot:	$ 108.13	x 72 lf =	$ 7,785.41

FLOOR SYSTEM TOTAL: $ 15,570.81

SUPPORT STRUCTURE

support structure									
			ft	unit cost	unit	subtotal	x .5	1.0?
06100.06110.505.1007	FRAMING - BEAMS	Single, 2" x 6", pn	24.00	$ 1.48	lf	$ 35.52	$ 38.01	
06100.06110.515.0351	FRAMING - COLUMNS	0351: 6x10 column	8.60	$ 16.50	lf	$ 141.90	$ 151.83	
							$ 189.84	

SUPPORT STRUCTURE TOTAL: $ 189.84

BUDGET WORKSHEET : veil house modular prototype

PORCH

length must be multiple of 4

porch screen - side piece			l: 16.00	h: 20.00		total sf: 320.00
			unit cost	unit	$ per ft	x $ / 1.07
	SUPPORTS	2" x 4" x 16' Trex	$ 0.93	lf	$ 9.30	$ 9.95
	SCREEN	2" x 2" x 12' Trex	$ 2.99	lf	$ 134.55	$ 143.97
		total $ per linear foot:	**$ 153.92**		**x 16 lf =**	**$ 2,462.71**

porch - 1st	module 1: l: 14.00	w: 12.00	module 2: l: 10.00	w: 8.00		total sf: 248.00
			unit cost	unit	$ per ft	x $ / 1.07
06100.06110.530.2207	JOISTS	Joists 2x10 Pneumatic nailed 16" oc	$ 2.07	lf	$ 15.53	$ 16.61
06100.06110.560.4101	SILL	2x10 sill	$ 2.92	lf	$ 10.71	$ 11.46
09600.09648.000.0000	DECKING	5/4" x 6" x 16' Trex decking	$ 2.62	lf	$ 52.35	$ 56.01
	RAIL SUPPORTS	2" x 4" x 16' Trex	$ 0.93	lf	$ 1.40	$ 1.49
	RAIL SCREEN	2" x 2" x 12' Trex	$ 2.99	lf	$ 22.34	$ 23.90
	ROOF	$4500 Green Roof 1/2 porch			$ 187.50	$ 200.63
		total $ per linear foot:	**$ 310.10**		**x 24 lf =**	**$ 7,442.37**

porch - 2nd	module 1: l: 14.00	w: 12.00				total sf: 168.00
			unit cost	unit	$ per ft	x $ / 1.07
06100.06110.530.2207	JOISTS	Joists 2x10 Pneumatic nailed 16" oc	$ 2.07	lf	$ 18.63	$ 19.93
06100.06110.560.4101	SILL	2x10 sill	$ 2.92	lf	$ 10.85	$ 11.60
09600.09648.000.0000	DECKING	5/4" x 6" x 16' Trex decking	$ 2.62	lf	$ 62.82	$ 67.22
	RAIL SUPPORTS	2" x 4" x 16' Trex	$ 0.93	lf	$ 1.40	$ 1.49
	RAIL SCREEN	2" x 2" x 12' Trex	$ 2.99	lf	$ 26.91	$ 28.79
		total $ per linear foot:	**$ 129.04**		**x 14 lf =**	**$ 1,806.60**

porch supports			#: 6.00	h: 11.00		total sf: 66.00
			unit cost	unit	$ per ft	x $ / 1.07
06100.06110.552.0100		Treated lumber posts or columns, 4x4	$ 3.28	lf	$ 216.48	$ 231.63
						$ 231.63

PORCH TOTAL: $ 11,943.32

BUDGET WORKSHEET: veil house modular prototype

DOORS AND WINDOWS

doors

			unit cost	#	subtotal	x .5	1.07
08100 08110 600 1440	FRONT DOOR	Prehung, insul, ext, flush-face, half-glass, 3' x 6'-8"	$ 330.00	1	$ 330.00	$	353.10
08100 08110 600 1340	SIDE DOOR	Prehung, insul, ext, flush-face, 3' x 6'-8"	$ 283.00	1	$ 283.00	$	302.81
08200 08210 930 0440	PORCH DOOR	Exterior, pine, full lite, 6'-9" h, 3' w	$ 405.00	1	$ 405.00	$	433.35
08200 08210 930 2740	MSTBDRM CLOSET 1	Int, closet, bi-fold, flush, birch, 6'-8" h, 3' w	$ 110.00	1	$ 110.00	$	117.70
08200 08210 930 2760	1STBDRM CLOSET	Int, closet, bi-fold, flush, birch, 6'-8" h, 4' w	$ 162.00	1	$ 162.00	$	173.34
08200 08210 930 2780	2NDBDRM CLOSET	Int, closet, bi-fold, flush, birch, 6'-8" h, 5' w	$ 169.00	1	$ 169.00	$	180.83
08200 08210 930 2800	MSTBDRM CLOSET 2	Int, closet, bi-fold, flush, birch, 6'-8" h, 6' w	$ 182.00	1	$ 182.00	$	194.74
08200 08210 930 7720	2ND HALL CLOSET	Passage, flush, birch, hollow-core, 6'-8" h, 2' w	$ 81.50	1	$ 81.50	$	87.21
08200 08210 930 7760	INTERIOR DOORS	Passage, flush, birch, hollow-core, 6'-8" h, 2'-6" w	$ 88.00	5	$ 440.00	$	470.80
08200 8210 960 0400	PORCH DOOR FRAME	Exterior frame incl. ext trim, pine, 4-9/16" deep	$ 118.40	1	$ 118.40	$	126.69
08200 08210 960 3000	INTERIOR FRAMES	Interior frame, pine, 3-5/8" deep	$ 104.80	6	$ 628.80	$	672.82
06200 06220 800 3150	EXT DOOR TRIM	Door trim set, 1 head/2 sides, pine, 2-1/2" w	$ 81.50	3	$ 244.50	$	261.62
06200 06220 800 5300	INT THRESHOLD	Threshold, oak, 3' long, inside	$ 19.10	3	$ 57.30	$	61.31
06200 06220 800 5400	EXT THRESHOLD	Threshold, oak, 3' long, inside	$ 59.50	3	$ 178.50	$	191.00
06200 06220 800 3150	INT DOOR TRIM	Door trim set, 1 head/2 sides, pine, 2-1/2" w	$ 81.50	15	$ 1,222.50	$	1,308.08
							$ 4,935.38

windows

			unit cost	#	subtotal	x .5	1.07
DOUBLE-HUNG ALUM CLAD WOOD	2' x 5'6"	E 2056-1		2	$ -	$	-
DOUBLE-HUNG ALUM CLAD WOOD	2' x 4'6"	E-2046-1		7	$ -	$	-
CASEMENT ALUM CLAD WOOD	2' x 4'	E-2040-1		3	$ -	$	-
CASEMENT ALUM CLAD WOOD	2' x 6'	E 2060-1		2	$ -	$	-
FIXED ALUM CLAD WOOD WINDOW (tempered)	4' x 5'6"	E 4056		2	$ -	$	-
CASEMENT ALUM CLAD WOOD (tempered)	2' x 4'6"	E 5046-1		2	$ -	$	-
FIXED ALUM CLAD WOOD WINDOW (tempered)	2' x 3'	E 2030-1		1	$ -	$	-
AWNING ALUM CLAD WOOD WINDOW	2' x 2'	E 2020-1		3	$ -	$	-
FIXED ALUM CLAD WOOD WINDOW (tempered)	2' x 5'	E 2050-1		2	$ -	$	-
FIXED ALUM CLAD WOOD WINDOW	2' x 2'	E 2020-1		3	$ -	$	-
RVRS AWNING ALUM CLAD WOOD WINDOW	2' x 2'	E 2020-1		4	$ -	$	-
06200 06220 800 5910	WINDOW TRIM	Window trim set, 2-1/2" w, minimum			$ -	$	-
					$ -	$	-
							$ 14,077.00

DOOR AND WINDOW TOTAL: $ 19,012.38

ROOF

roof system l: 40.00 w: 18.00 total sf: 1440.00

			unit cost	#	subtotal	x .5	1.07
06100 06170 980 5400	ROOF TRUSSES	6/12 pitch, 1' overhang, 24' span		21	$ -	$	-
06100 06160 800 0103	SHEATHING	Plywood on roof, CDX, 1/2" thick, pn	$ 1.08		$ 1,555.20	$	1,664.06
06200 06220 900 1000	SOFFITS	Exterior AC plywood, 1/4" thick	$ 2.44		$ 370.88	$	396.84
07400 07460 300 0200	FASCIA	Aluminum, residential type	$ 2.98		$ 452.96	$	484.67
07500 07580 200 0000	ROLL ROOFING	TITANIUM-UDL underlayment	$ 90.00	14	$ 1,296.00	$	1,386.72
07600 07610 000 0000	ROOFING	Standing seam metal roof - supplier tbd	$ 350.00	14	$ 5,040.00	$	5,392.80
							$ 9,325.09

BUDGET WORKSHEET: veil house modular prototype

ROOF TOTAL: $ 9,325.09

BUDGET WORKSHEET: veil house modular prototype

STAIR

open stair — linear feet of railing: 50.00

			unit cost	subtotal	x $	1.07
06400.06430.500.0020	RAILING	Custom design, arch grade, hardwood	$ 30.00	$ 1,500.00	$	1,605.00
06400.06430.620.4200	STAIRS	Residential stair, oak treads, built in place	----	$ 3,650.00	$	3,905.50
						$ 5,510.50

basement stair — # of stairs: 14.00 — linear feet of railing: 18.00

			unit cost	subtotal	x $	1.07
06400.06430.500.0020	RAILING	Custom design, arch grade, hardwood	$ 30.00	$ 540.00	$	577.80
06400.06430.620.1700	STAIRS	Basement stairs, prefab, pine treads/risers	$ 63.50	$ 889.00	$	951.23
						$ 1,529.03

STAIR TOTAL: $ 7,039.53

CABINETRY

kitchen

			unit cost	#	subtotal	x $	1.07
06400.06410.100.1060	BASE CABINET	Base cabinet w/4 drawers, 24" wide	$ 365.00	1	$ 365.00	$	390.55
06400.06410.100.1200	BASE CABINET	Base cabinet w/2 top drawers, 2 doors below, 27" w	$ 330.00	1	$ 330.00	$	353.10
06400.06410.100.1500	SINK BASE	Range or sink base, 2 doors below, 33" wide	$ 315.00	1	$ 315.00	$	337.05
06400.06410.100.2100	LAZY SUSAN	Lazy Susan w/revolving door	$ 460.00	1	$ 460.00	$	492.20
06400.06415.100.0400	COUNTERTOP	Custom plastic, 7/8", aluminum molding, cove splash	$ 37.00	9	$ 349.90	$	374.39
							$ 1,947.29

CABINETRY TOTAL: $ 1,947.29

OTHER CONSTRUCTION COSTS

site and foundation work		
	land cost ($2500 - donated)	$ -
	lead requirements	$ 400.00
	landscaping	$ 2,000.00
	excavate/backfill/trucking	$ 1,300.00
	concrete-flatwork	$ 4,000.00
	concrete - block wall	$ 8,000.00
systems		
	plumbing	$ 3,226.40
	utility connections/laterals	$ 7,000.00
	electrical	$ 2,500.00
	heating and cooling	$ 3,500.00
transportation and setting		
	transportation	$ 4,000.00
	set crew and crane	$ 4,000.00

OTHER COSTS TOTAL: $ 39,926.40

BUDGET WORKSHEET: veil house modular prototype

SOFT CONSTRUCTION COSTS

soft costs		
	design fee - donated	$ -
	DILHR	$ 50.00
	DILHR Register of Deeds	$ 100.00
	recording fees	$ 90.00
	property title	$ 60.00
	appraisal fee	$ 275.00
	application fee	$ 350.00
	rental recording fee	$ 30.00
	occupancy permit	$ 75.00
	title co draws	$ 900.00
	title insurance	$ 400.00
	certified survey map	$ 400.00
	site plan	$ 500.00
	plan review and permit	$ 275.00
		$ 3,505.00

holding costs (3 months)		
	electric	$ -
	gas	$ 50.00
	water/sewer	$ 100.00
	insurance	$ 90.00
	interest	$ 60.00
	taxes	$ 275.00
	maintenance	$ 350.00
		$ 925.00

SOFT CONSTRUCTION COSTS TOTAL:	$ 4,430.00

hard construction costs:	$ 134,914.02
add 10% contingency	$ 13,491.40
TOTAL HARD CONSTRUCTION COSTS:	$ 148,405.42
TOTAL SOFT CONSTRUCTION COSTS:	$ 4,430.00
TOTAL COST:	$ 152,835.42
cost per sf:	$ 87.63

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- Jim
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