House + Home

Integrated Approaches to Affordable Housing

Thomas Barrie, AIA

School of Architecture | NC State University

NC State University College of Design Publication
Raleigh, NC
2011
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Contents

Introduction
Project Description and Background
Home + Homelessness
Project Goals and Process

Best Practices, Contemporary Models, and Prototypes of Affordable Housing
National Best Practices
Habitat for Humanity of Wake County Contemporary Models
Prototypes of Affordable Housing

The Longacres Community, by Ryan Wallace
Existing Conditions Community Inventory
Proposed Connections, Parks and Green Spaces
Community Streets Plan Proposal

The Longacres Affordable Housing Project
4 Sites–4 Solutions

Appendix
Housing Survey
Project Team
Service Learning Projects and North Carolina State University

North Carolina State University is North Carolina’s largest comprehensive university. Founded in 1887 as a land-grant institution under the Morrill Act of 1862, NC State has a three-part mission: instruction, research, and extension. The latter describes the unique model of land-grant universities that were founded following the Civil War. Congress deeded land to establish new universities that would not only educate students but would serve their citizenry. This unique American model has the goal of accessible education paired with an extensive outreach and service mission.

Like other land grants, NC State began by serving the agricultural needs of the mostly-agrarian state through its schools of agriculture and veterinary medicine. Today all 100 counties continue to be served through the County Extension program. As the state’s demographics and industrial profile have changed, however, so have the services provided by NC State. Its broader service mission now includes economic development, re-tooling industry, technology transfer, urban affairs, community services, housing and urban design. Where in the past a farmer might contact a County Extension Officer to seek answers to a problem, now it is municipal and business leaders who come for the expertise that only a Research I institution can provide.

Increasingly NC State is serving more and more cities, small towns and communities in areas of housing and urban design—most of which is performed in the College of Design’s Office of Research, Extension and Engagement. Through a diverse group of initiatives and faculty, issues such as environmental health, universal design, landscape urbanism, community art programs and the design of home environments are addressed. The Affordable Housing and Sustainable Communities Initiative, founded in 2008 by Thomas Barrie, focuses on research, community-based demonstration and service-learning projects, and the development and dissemination of a knowledge base in its subject area. Its mission is primarily educational—to provide educational resources for government, non-profit and community leaders, students and the general public, and innovative and applicable solutions to the housing and urban challenges that North Carolina communities face. Traditional research and applied research through funded projects and service-learning studios are potent means to produce substantive, applicable and measurable outcomes. The education of qualified practitioners and future leaders in the profession remains central to our mission, and therefore the integration of professional education and research is essential.
NC State University is a member institution of the sixteen-campus University of North Carolina system and has a long and distinguished history. When it opened in 1889 as the North Carolina College of Agriculture and Mechanic Arts it offered courses in agriculture, horticulture, pure and agricultural chemistry, English, bookkeeping, history, mathematics, physics, practical mechanics, and military science. During the ensuing 120 years, its leadership has established new programs and expanded the breadth and scope of the institution, and in 1917 the institution's name was changed to North Carolina State College of Agriculture and Engineering. The faculty and student population more than doubled during the post–World War II period, and in 1965 the name of the institution was changed a final time to North Carolina State University, signifying its new role as a comprehensive university. Since its founding, NC State has been a nationally recognized leader in science and technology with historic strengths in agriculture and engineering. But NC State has evolved into a comprehensive community of scholars that also has outstanding degree programs in design, the humanities and social sciences, education, life sciences, management, natural resources, physical and mathematical sciences, textiles and veterinary medicine. NC State serves all North Carolina communities through statewide research, extension and engagement activities.

The School of Design was established in 1948 with two original academic components: the Department of Architecture and the Department of Landscape Architecture. In its early years the School of Design experienced a remarkable period of creative and intellectual development. Designers and theorists such as Buckminster Fuller, Matthew Nowicki, Lewis Mumford, and Eduardo Catalano joined the faculty and helped build a reputation for innovation and experimentation. Frank Lloyd Wright, Mies van der Rohe, Walter Gropius, Louis I. Kahn, Pier Luigi Nervi, Charles Eames, Marcel Breuer, and numerous other internationally prominent figures came to lecture, to conduct design experiments, and to inspire a new generation of designers. The legacy of imagination, diversity, and excellence set by this first generation has continued throughout the school's history.
Acknowledgements

This project was the result of a unique partnership between Habitat for Humanity of Wake County and the School of Architecture at NC State. Community-based projects of this type provide special research and educational opportunities and depend on the sustained efforts of many. The following are those who gave their time and expertise in ways that were essential to its success.

First of all I would like to thank my students whose sustained and committed efforts throughout the semester-long design project exceeded the requirements of the course. A special thanks to Habitat for Humanity of Wake County and to Executive Director Kevin Campbell who participated in the project from its initial planning stages to completion, Construction Manager Brad McHue who conducted a tour of Habitat homes and participated in reviews of student designs, and Family Support Manager Syretta Hill who served as community liaison and organized information sessions and tours. Funding for the project was provided by a Faculty Development Grant from the College of Design at NC State.

Others generously provided their time and expertise during the design and research phases of the project. Professor Georgia Bizios, Emily Fischbein, Community Development Specialist at Wake County Human Services Housing and Community Revitalization Division, Professor Kay Bea Jones from the Ohio State University, Professor David Hill, Damon Leverett, Design Director at Einhorn Yaffee Prescott, and David Maurer, Principal of Tightlines Design/Maurer Architecture, served as design critics and provided invaluable input at critical points throughout the semester. And sincere thanks to Graduate Architecture student Ryan Wallace who served as a Research Assistant for the project and produced the Urban Design Strategies and Housing Survey sections of this publication, and to Graphic Design alumns Riley Huston for the design of the publication you hold in your hands.

The project is also an outcome of my College of Design Research, Extension and Engagement appointment in Affordable Housing and Sustainable Communities. A special thanks to Dr. Jim Zaiches, Vice Chancellor for the NC State Office of Research, Extension and Economic Development for his support.

Thanks to all for our collective efforts to find answers to the housing and community-building challenges we face.

Thomas Barrie
Professor of Architecture
The need for home lies deep in the human heart: when our homeland is threatened we go into action to defend it, and when our family house is violated we are profoundly offended. We spend our lives trying to “make a home”–building, buying, renting, borrowing houses, staying in the old family homestead or moving from house to house according to the winds of fate. Few things are more important than finding a home and working at it constantly to make it resonate with deep memories and fulfill deep longings.

Thomas Moore
The Re-enchantment of Everyday Life

Introduction

Project Description and Background

The House + Home: Integrated Approaches to Affordable Housing project was a research and design project conducted by faculty and graduate students from the School of Architecture at NC State University. The multifaceted project aimed to incorporate integrated approaches to affordable housing and included research on recent and emerging trends in affordable housing appropriate to the needs of Wake County, the design of housing prototypes, and site-specific proposals for Habitat for Humanity of Wake County. It included explorations of the ontological significance of home, reviews of current research on a broad range of issues germane to affordable housing, analysis of best practices in affordable housing and typical Habitat for Humanity single family home designs, urban design strategies for the Longacres community, proposals for affordable housing prototypes, and the design of single-family homes on four sites in the Longacres community of East Raleigh. Issues such as “tipping points” of community redevelopment, cultural and economic sustainability, and the interrelationship of sustainable development, multi-modal transit options, building energy performance, and affordability, were intrinsic to the project. It is hoped that the project outcomes will provide useful research outcomes for housing advocates and providers, and assist Habitat for Humanity of Wake County in their efforts to provide affordable housing in Wake County.
Home + Homelessness

Everyone, no matter what socio-economic status, deserves well-designed and affordable housing. But what we all want most of all is a home, a place to call our own, a center for our lives that shelters our bodies and nurtures our souls. To be homeless is to be uncentered, disoriented and bereft of these essential physical and psychic needs.

The studio began with an exercise entitled Home + Homelessness that explored ideas and imagery regarding the multiple aspects of being at home and of homelessness – the homely and the unhomely. Through sketches, paintings and other two-dimensional media, the students defined, depicted and delineated their interpretations of these separate but often-paired conditions.
Project Goals

The overall goals of the project included the following:

- To provide the students with the enriched educational experience of a real-world project, as part of their education as future leaders in the profession.
- To provide the public with research on, and the design of, prototypical single and multi-family affordable housing models.
- To provide Habitat for Humanity of Wake County national best practices and leading-edge strategies and models for affordable housing as a foundation for further research and the professional design of future projects.

Project Process

The House + Home: Integrated Approaches to Affordable Housing Project included directed research by a Graduate Research Assistant and a semester-long graduate design studio conducted during the 2011 spring semester. The project had a particular focus on home qualities, plan efficiencies, adaptability, materials and assemblies, energy efficiency and performance, and sustainable building practices and development. The students critically analyzed examples of single and multifamily housing that integrated a broad range of issues regarding affordability, and examples of a current Habitat for Humanity of Wake County designs. Concurrently, leading edge research on trends and approaches to housing in general, and affordable housing in particular, were researched, summarized and discussed in studio colloquia. These preliminary exercises then led to the development of affordable housing prototypes—all of which were reviewed at mid-term.

The second half of the semester was devoted to site-specific proposals for four Habitat for Humanity of Wake County sites in the Longacres community. A bus tour of the area provided by Habitat and an information session at the Ralph Campbell Community Center in Apollo Heights initiated the project. The students then engaged in documentation and analysis of the specific sites. Concurrently, the project research assistant documented and analyzed the physical conditions of the community and developed urban design strategies for the future. Site-specific proposals for single family homes were then developed in the context of the community, urban design proposal, specific site conditions, and Habitat for Humanity conventions—all of which were brought to the mid-project and final reviews.

Best Practices, Contemporary Models, and Prototypes of Affordable Housing
National Best Practices

Successful precedents and best practices can provide valuable resources and assist in developing appropriate strategies for affordable housing. The following are selected examples that provide a range of approaches germane to the project.

### Tesoro Grove Apartments

**PROJECT DATA:**
- **DESCRIPTION:** Affordable Multi-Family Housing
- **TYPE:** Affordable apartment community

**CONTENT:**
- Site is a corner parcel between a major freeway and a smaller arterial street.

**ARCHITECT:** Studio E Architects, San Diego California

**UNIT LOCATION:**
- 100 two-bedroom units, 10 one-bedroom units, 20 one and two-bedroom units, 26 one and two-bedroom units

**HOME QUALITIES:**
- Buildings are strategically located to create usable spaces and high-quality outdoor spaces. Parking, outdoor and interior space is incorporated into the design.

**MATERIALS AND ASSEMBLIES:**
- Studio E's signature is the design of each unit. The project took the form of the buildings and the materials used.

**SUSTAINABILITY:**
- A special feature of the development is the common building area. A special feature of the development is the common building area.

### 11th Avenue Townhomes

**PROJECT DATA:**
- **DESCRIPTION:** 11th Avenue Townhomes
- **TYPE:** Townhome and Flat Community

**CONTENT:**
- Studio E Architects, San Diego, CA
- **UNIT LOCATION:** 1 acre = 22 units/acre

**UNIT BREAKDOWN:**
- 2 = 3 BR FLAT
- 14 = COMMON
- 2 = 3 BR TOWNHOUSE

**HOME QUALITIES:**
- The units are arranged along an avenue that encourages community activity. The shared space is oriented to the front of the units. The units have a controlled green space along with a pedestrian walkway.

**MATERIALS AND ASSEMBLIES:**
- A mixture of 3 bedroom townhomes and 3 bedroom flats.

**SUSTAINABILITY:**
- The project meets the strict Title 24 California energy code that has some of the most stringent energy use codes in the country. Operable windows are used to allow for the use of natural ventilation for most of the southern Californian year.
**HomeSafe**

**PROJECT DATA:**

**DESCRIPTION:** This project explores the co-housing model as an environment. The shared housing scheme creates a safe and uplifting atmosphere for senior and children living in its various areas.

**TYPE:** Multi-Family

**CONTEXT:** An area that consists of four suites and shared living, cooking, and eating areas, plus common areas for socializing and spending time together.

**ARCHITECT:** Jeana Kim, Studio E Architects

**TOTAL SF:** 13,488 sq. ft

**UNIT/ACRE:** 1.1 acre

**UNIT BREAKDOWN:**
- 360 to 560 square feet per unit (sleeping area plus one-quarter of common living area)
- Cost: $185 per square foot
- Rental price: $390 to $410 per month
- Units in project: 25

**HOME QUALITIES:**
- Six “big” houses consisting of four suites and shared living, cooking, and eating areas are gathered around a communal outdoor space.
- Multi-Family
- A daycare and counseling facility stands watch at the “front door” to the project. Careful consideration was given to the creation of thresholds of privacy for the recovering families. Homesafe divided the development’s 25 units into three main residential buildings, layering common kitchen, dining, and living areas with private bedroom suites for each resident.
- High sloping ceilings lend an unexpected expansiveness to the communal areas of the homes. The architect chose a light, neutral-colored plaster for the sides of buildings that face the property lines; bright, warmer hues enliven the courtyard facades. Saw-toothed metal roofs and deep awnings recall the vernacular architecture of Santa Clara Valley’s agricultural past.

**MATERIALS AND ASSEMBLIES:**
- The project meets the strict Title 24 California energy code that has some of the strictest energy use codes in the nation. Bright exterior colors contribute to the project’s cheerful atmosphere, while the courtyard is a key part of the project. You can look across it and are able to look at your neighbor.

**SUSTAINABILITY:**
- Studio E utilizes several design features to make Eucalyptus View feel more like a house, rather than an apartment unit. Each unit has a ten-foot high living space with tall windows to allow for more natural light and views to the shared courtyard. Semi-private porches marked by trellises create a personal entry to each unit and allow for an exterior space.

**Eucalyptus View**

**PROJECT DATA:**

**DESCRIPTION:** Located in the heart of Escondido, this project provides an integrated model for affordable housing. Designed to meet the needs of local agricultural workers and their families, the site includes a daycare and community rooms with computer access along with a laundry center.

**TYPE:** Apartment Community

**CONTEXT:** A development of 36 apartments. Another building includes a day care and community rooms. The project is located in the heart of Escondido, which is a key part of the project.

**ARCHITECT:** Studio E, San Diego, CA

**UNIT/ACRE:** 1.5 acres = 16 units/acre

**UNIT BREAKDOWN:**
- 3 Bedroom: 8
- 2 Bedroom: 12
- 1 Bedroom: 4

**HOME QUALITIES:**
- Studio E is able to create a competitive bid process for the developer.
- Using standards construction details and assemblies, Studio E is able to build in a more competitive bidding process as more workers are familiar with the process. Steel railings are added to the units as well to create a sense of security and provide the needed shade.

**SUSTAINABILITY:**
- Using standards construction details and assemblies, Studio E is able to create a competitive bid process for the developers.
- The development is located in the heart of Escondido, which is a key part of the project.
- Steel railings are added to the units as well to create a sense of security and provide the needed shade.
Oroysom Village

**PROJECT DATA:**

**DESCRIPTION:** Covering six acres next to Mission San Jose, one of California’s original Spanish missions, founded in 1797, Oroysom Village is a mix of family townhouses and senior apartments.

**TYPE:** Multifamily housing: Townhomes and Senior Housing

**LOCATION:** Freemont, CA, near Mission San Jose

**ARCHITECT:** David Baker + Partners

**TOTAL SF:** 90,000

**UNIT/ACRE:** 16

**UNIT BREAKDOWN:**

1 Bedroom                40
2 Bedroom                29
3 Bedroom                32
Total                          101

**Parking spaces**        162

**COMMUNITY QUALITIES:**

To create a sense of community, the site is organized as a neighborhood grid, with parking for residents and guests arranged along the streets. A network of broad pathways pass between the homes, creating a setting for socializing as well as connecting community recreation facilities and play areas.

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Oroysom Village (cont.)

**PROJECT DATA:**

**DESCRIPTION:** The family townhouses, which range in size from one to four bedrooms, are grouped into diverse buildings to create a relaxed organization and maximize landscaped open space. Individual homes are personalized with private entries, trellises and patios, and feature distinct elevations and roof lines.

One-bedroom apartments designed for seniors are on a large, landscaped building that features a central courtyard garden, providing a sheltered area for meals and socializing. Senior apartments include individual balconies with either shared enclosed rooms or open porches.

**UNIT BREAKDOWN:**

1 Bedroom                no unit information
2 Bedroom                925-975sf
3 Bedroom                1300sf
4 Bedroom                no unit information

**HOME QUALITIES:** Every unit has a private exterior patio or balcony, generous glazing and a private entrance. Traditional details such as a gabled roof and shaded porches appeal to the residents. 9-foot ceiling heights make the units seem larger and stunning views of Mission Hills provide a backdrop not normally reserved for affordable housing. Existing pepper trees were retained on the site and supplemented by additional greenery and shade, including shade structures over the parking areas.

**MATERIALS AND ASSEMBLIES:** Precise data unavailable. Units are most likely stick built on site using readily available materials. Units appear to use vinyl windows and siding as well as traditional shingles.

**SUSTAINABILITY:** Precise data unavailable. The abundance of greenspace and the retention of existing trees seem to suggest that sustainability was considered by the architect. Possibly, the early completion date of 2001 places this project before these issues were perceived as necessary in affordable housing.

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Brielle Cordingly

Brielle Cordingly

Brielle Cordingly

Brielle Cordingly
TASSAFARONGA VILLAGE

PROJECT DATA

David Baker and Partners Architects

Tassafaronga Village
Oakland California
Completed May 2010

Number of Units

- Oakland Housing Authority Studios
- Oakland Housing Authority Townhomes
- Oakland Housing Authority 1 Bedroom
- Oakland Housing Authority 2 Bedroom
- Oakland Housing Authority 3 Bedroom
- Oakland Housing Authority total
- Oakland Habitat for Humanity total

Density Ratios

- Project sf
- Site Acres
- Total Bedrooms
- Bedrooms/Acre
- Units/Acre

Parking

- Oakland Housing Authority total
- Habitat total
- Spaces/Unit OHA + Habitat

MATERIALS and ASSEMBLIES

- SUSTAINABILITY

- HOME QUALITIES

Tassafaronga Village provides numerous home qualities for inhabitants. Underground parking allows for complete utilization of the lot size, creating more density per square mile than developments that are more spread out. Shifting volumes create spaces for semi-private entrances into each unit and also for private exterior spaces. Variable facades lend a feeling of individuality to each apartment. There is a generous courtyard on the interior of the main complex, which includes spaces for gardens, and is maintained primarily by rainwater reuse. This courtyard provides a community gathering area. Carefully placed fenestration allows for pleasant light quality and good views. Bike racks and rooms encourage the use of public transportation. The development also leases spaces to groups providing community services - medical facilities and grocery stores.

Although actual details of the materials and assemblies were unavailable from the architects, photographs lead to certain educated assumptions. The structure is primarily of light wood assembly with wood sheathing, finished with stucco or EIFS panels. Some units have cementious siding of various widths. The building that is a rehab has rigid frame construction. Roofing appears to be bituminous roofing. There are vinyl windows and off-the-shelf fixtures and materials. The parking deck is poured concrete.

Sustainability plays a major part in the complex. The architects use white ballast on roofing, which reflects the sun’s heat, and bituminous roofing which lasts longer and is more water resistant than roofs which are built up. Solar power (photovoltaic cells) is used for heating hot water and providing some electricity. The courtyard plan allows for a green space on the level above ground, which features garden areas and recycled rubber under the playgrounds. There is another green roof area which is not occupiable, but which reduces the solar heat gain. Water retention and reuse keeps the courtyard green. The complex incorporates adaptive reuse of an existing building. It is situated near existing public transportation routes and provides generous space for bike racks and rooms.

Judith Finkner

Judith Finkner
EcoMOD 1 | OUTin House

Blu Homes_ Evolution House

**PROJECT DATA:**

**DESCRIPTION:** Blu Homes builds its homes in a 80,000 square foot factory in Massachusetts and are based on a proprietary folding delivery system. BLU|EVOLUTION homes are designed for single-family, townhomes, and development communities. The modular nature of the construction process allows for upgrades from varied packages for home customizations.

**TYPE:** Single Family Residence, 3-4 Bedroom/ 1-2 Baths

**CONTEXT:** Materials, Orientation, and layout can be modified for site context.

**ARCHITECT:** Blu Homes

**COST:** $260,000 for standard (not including site work/ permits)

**TOTAL SF:** 984 sf (1st Floor) + 576 sf (2nd Floor) = 1560 sf Total

**HOME QUALITIES:** The standard floor plan for the first level of the Evolution features a living space with private bedrooms to one side. The high ceilings, abundant large windows, open floor plan and modern finishes provide great adaptability for growing families.

**MATERIALS AND ASSEMBLIES:** The BLU|EVOLUTION home is delivered complete with windows, doors, plumbing, appliances, fixtures, and most of the framing already installed. All that needs to be done on site is minimal finish work. As a result, there is limited site work costs and fewer risks of a typical construction project. Other features of the BLU|EVOLUTION home system include:

- Radiant floor hot water heating
- Standing seam metal roof with 50-year lifespan
- 9-16’ ceilings with operable transom windows
- Solar hot water and photovoltaic ready roofs
- Able to offer prefabricated building spans that are 18’ to 20’ 6” wide and ceilings up to 16’ high

**SUSTAINABILITY:** The off-site factory construction also reduces waste and uses less materials overall in comparison to traditional construction. The structural and high level framing is 77% recycled content, and exterior rigid foam insulation provides a tight air seal and radium barrier to maintain constant interior temperature. Blu Homes use computer modeling software to site for passive heating and cooling, and structural analysis, resulting in 50% to 60% less carbon emissions compared to other energy compliant homes.
The Flow House

PROJECT DATA:
The Flow House was designed as disaster relief housing in New Orleans, LA, post-Hurricane Katrina. It was designed based on William McDonough’s Cradle to Cradle approach of sustainability. It is a prefabricated, modular duplex that can be adapted based on the needs of the occupants, and incorporates a series of outdoor rooms which serve as an expansion of the interior living space.

“Flow House combines four principles: providing and maintaining connections to human nature and natural resources. The design’s key to success lies in mass production, which allowed for the economies of scale. William McDonough + Partners, through the Flow House design office, envisions a world where human harmony and natural ecosystems are not separate entities, but rather, interdependent and mutually supporting, where ‘toxic waste’ becomes ‘matter that fails to thrive’.” from Architecture in Times of Need by Kristin Feireiss

PROJECT TYPE:  duplex
COMPLETION:  Not yet built - in construction document phase
ARCHITECT:  William McDonough + Partners, Charlottesville, VA
TOTAL SQUARE FEET:  1,900
UNITES PER ACRE:  2
COST PER SQUARE FOOT:  not known

UNIT 1 BREAKDOWN:  3 bedroom, 2.5 bath, kitchen, living room, dining area, access to four outdoor decks
UNIT 2 BREAKDOWN:  1 bedroom, 1 bath, living/kitchen, and deck

HOME QUALITIES:
“The Flow House reflects the Make It Right Foundation’s vision for sage, healthy, and high design quality homes—inspired by Cradle to Cradle thinking—that preserve the community spirit of the Lower Ninth Ward. The design celebrates the movement of light, shade, air and water as a means of connecting a family with their community and the natural world.”

“Referencing vernacular typologies, Flow House responds to the gulf coast’s hot, humid climate by providing cool shaded spaces and promoting passive ventilation. The living room fully extends from the dogtrot to the front porch. The design provides views up and down the street to promote a more secure and connected community.”

MATERIALS AND ASSEMBLIES:
The Flow House is composed of three prefabricated modular units. Each unit is 16’0” wide and constructed off site. The house was designed by the architects to be 100 percent Cradle to Cradle, which means that each part has the potential to be disassembled and reused and/or “returned to the Earth within biological cycles or to industry within technical cycles.”

Wall and roof assemblies are conceived as metal structural insulated panels (SIPs) while foundations, exterior cladding, and millwork are specified as wood (biological nutrients). “Wood will either be FSC certified, formaldehyde-free, and responsibly harvested for millwork, or (non-toxic) acetalyzed for exterior cladding, structural columns, and foundation piles. Interior walls will be finished with gypsum-free, mold-resistant, and low-VOC drywall (biological nutrient).”

SUSTAINABLE STRATEGIES:
The sustainable strategies include: deep overhangs, multiple connections with exterior areas allowing for lots of daylight and natural ventilation, roof mounted PV panels, water cisterns to harvest rainwater runoff and rain gardens to absorb any storm runoff. According to the architects: “Flow House is designed to maintain materials in biological and technical metabolisms, a goal that informs everything from the selection of products to disassembly strategies at both the building and product level. The material palette is comprised of Cradle to Cradle Certified products and materials that embody Cradle to Cradle principles—meaning that after its useful life, all materials in the house can be either recycled or returned to nature.”

WESTERN ELEVATION
EASTERN ELEVATION
SOUTHERN ELEVATION
NORTHERN ELEVATION

SECOND FLOOR
FIRST FLOOR
GROUND FLOOR

IMAGES TAKEN FROM WWW.MODULAR.ORG

Jeff Wilkins
Carrie Strayhorn & Megan Tomo
TULANE URBANbuild 01

PROJECT DATA:

DESCRIPTION:
TUULNE URBANbuild 01 is a house focused on several key environmental goals. It was designed to achieve LEED Silver Certification. It was also built in a prototype in New Orleans, LA. The house is highly energy efficient and responds to the needs of the climate. It features an integrated approach to sustainable design, including passive solar design, natural ventilation, and high-performance materials. The house is designed to minimize its impact on the environment while maximizing comfort and energy efficiency.

CONTEXT: prototype, New Orleans, LA – post Katrina, hot and humid climate

PROJECT TYPE: single family home

ARCHITECT: Tulane URBANbuild

COMPLETION: 2006

HOME QUALITIES:

The home is highly energy efficient and has several features that contribute to its comfort. It includes energy-saving air conditioning, sustainably harvested and manufactured materials, and zero-VOC interior paint. There are also several strategies to improve the energy efficiency of the house, such as advanced framing and high-performance insulation.

MATERIALS AND ASSEMBLIES:

The house is built with high-performance materials, such as bamboo flooring, zero-VOC interior paint, and energy-saving air conditioning. The house also features well-designed and energy-efficient components, such as a highly insulated roof, exterior walls, and windows.

SUSTAINABLE STRATEGIES:

LEED Silver Certification was achieved by incorporating state-of-the-art sustainable design principles, such as passive solar design, natural ventilation, and high-performance materials. The house is also designed to minimize its impact on the environment while maximizing comfort and energy efficiency.

UNIT BREAKDOWN: 3 bedrooms, 2 baths, kitchen, living, and dining room

UNIT/ACRE: 1

TOTAL SF: 1370

TULANE URBANbuild 04

PROJECT DATA:

DESCRIPTION:
TULANE URBANbuild 04 is a house in New Orleans, LA, that explores the integration of sustainable design principles and the connection of the house to the interior. Design efforts were focused on sustainability and relationships between the house and the street.

CONTEXT: prototype, New Orleans, LA – post Katrina, hot and humid climate

ARCHITECT: Tulane URBANbuild

COMPLETION: 2009

HOME QUALITIES:

The design process involved investigating typical characteristics of the neighborhood including lot orientation, programmatic elements, and interior spaces. The intention of URBANbuild 04 was to create a house that is not only energy efficient but also highly sustainable and responsive to the needs of the users.

MATERIALS AND ASSEMBLIES:

The house features well-designed and energy-efficient components, such as high-performance insulation and low-e coated windows. The house also features green roof and walls that take advantage of natural daylight.

SUSTAINABLE STRATEGIES:

The use of sustainable materials allows for better energy efficiency, reduced water consumption, and improved indoor air quality. The house also features high-performance insulation and low-e coated windows. The house also takes advantage of natural daylight, which can be controlled via the interior screening system. The house is also designed to be smoke-friendly and to provide a healthy living environment.
**Rice University ZeRow House**

**PROJECT DATA:**
- **DESCRIPTION:** The ZEROW HOUSE design by Rice University adheres to the small scale and limited budget of typical row houses. The Rice team approached their challenge with an understanding of the project’s limitations and an appreciation for the value of creative, innovative design solutions.
- **TYPE:** One Bedroom Unit with Full Bathroom, Living and Dining
- **CONTEXT:** Located in Lot 105 on the North Side of Deathbane Way, Washington, D.C. during the Solar Decathlon Competition.
- **ARCHITECT:** Rice University Solar Decathlon Team
- **TOTAL SF:** 620 square feet

**HOME QUALITIES:**
- **DESCRIPTION:** The ZEROW HOUSE’s architectural concept is to utilize a “zero” cost to divide public and private space while a “light core” penetrates the interior space with natural ventilation. This connects the exterior and opens up the light core area. A green wall increases the quality of living through natural passive cooling, seasonal harvesting of planters and a leadership for the projected outdoor living area.

**MATERIALS AND ASSEMBLIES:**
- **DESCRIPTION:** The exterior walls are clad with galvalume metal cladding that is rust resistant and easily maintained. The floor decking used on the exterior is a hybrid material consisting of 50% recycled plastic and 50% recycled wood. The shade structure above the “light core” and pavers are powder coated steel for corrosion and rust protection.
- **DESCRIPTION:** The interior finishes were constrained by the limited budget of the project- making the use of affordable, sustainable, and replicable materials were interior flooring consists of durable bamboo while IKEA, ELFA hardware, and do-it-yourself shelving made up much of the interior storage options.

**SUSTAINABILITY:**
- **DESCRIPTION:** To lower energy consumption, the ZERO HOUSE utilizes the advantages of low-energy housing through the use of "green" or passive strategies. The "light core" is segmented through solar modeling technology to break up to 70% of direct light from entering the light core.

**For energy generation purposes, the photovoltaic array is sized appropriately for the house, producing (1) 1.1kW that is directed to the power grid for future use (as expected to battery storage). All excess solar taken out is in the facade thermal insulation and the hot water system by itself, heats the domestic water.

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**Elemental: New Orleans**

**PROJECT DATA:**
- **DESCRIPTION:** The small elevation of the design was to build a house that can be adaptable and expandable based on the family’s physical and cultural needs. The structure for an addition is built during initial construction allowing for simple future expansions. The house was designed with a “do-it-yourself concept,” prepared to change over time with a pre-assembled layout. “We just designed the most difficult part of a house and let the clients adapt to their needs.” The design is also adaptable and expandable and can be built using a normal, quick and safe way. The scheme accommodates the required rooms of a family whose income is limited. The offer itself is an extension of the original house to a larger house or the additional area. The clients could adapt to their needs. “This means that we have to create an open system for the family, both physically and culturally.”

**HOME QUALITIES:**
- **DESCRIPTION:** There are many windows to allow for maximum daylighting. These windows are clad on the porch side of the original plan. The windows are also operable to take advantage of available natural ventilation. The design for the frame/room is not solid as in typical houses. Preparing the barrier for future additions during construction also keeps the family from having to tear out too many sections of the house so that when the family needs more space, additions can easily be added. The client is that easily adaptable to the needs and wants of the family, both physically and culturally.

**SUSTAINABILITY:**
- **DESCRIPTION:** Non-invasive low irrigation plants grow on the green wall and porch is powder-coated steel for corrosion and rust protection. The exterior walls are clad with galvalume metal cladding that is rust resistant and easily maintained. The floor decking used on the exterior is a hybrid material consisting of 50% recycled plastic and 50% recycled wood. The shade structure above the “light core” and pavers are powder coated steel for corrosion and rust protection.
- **DESCRIPTION:** The interior finishes were constrained by the limited budget of the project- making the use of affordable, sustainable, and replicable materials were interior flooring consists of durable bamboo while IKEA, ELFA hardware, and do-it-yourself shelving made up much of the interior storage options.
**Virginia Tech _lumenHAUS_**

**PROJECT DATA:**

- **DESCRIPTION:** The competition is a self-directed, real-world exercise. A simplified system of programmable systems, views, walls, and furniture manipulates the focus on whole building behavior.
- **TYPE:** One bedroom unit with full bathroom, living and dining
- **CONTEXT:** Located in Lot 112 on the South Side of Detlofete Way, Washington D.C. during the Solar Decathlon Competition.
- **ARCHITECT:** Virginia Tech Solar Decathlon Team
- **TOTAL SF:** 800 square feet

**HOME QUALITIES:** The house will achieve passive solar gain by efficient heat circulation throughout the floor and walls, allowing for the heating and radiative input into a large volume. The flexibility of this space, walls, and furniture based on a modular design results in an adaptable environment.

**MATERIALS AND ASSEMBLIES:**

The Victoria Tycho-Double Bifacial Photovoltaic Module combines with sunlight reflected off the surface below, thus transmits a beautiful translucent light.

**SUSTAINABILITY:** A three-tube passive water treatment system for water purification and calibrated and more flexible, landscape-scale photovoltaic panels. The house employs sliding wall panels to optimize energy use and computer-automated controls to allow the house to control the heat to maintain comfort requirements. The house is composed of 7 solar panels (five 190W HIT Single Black Photovoltaic Modules) on the exterior surface of house and covered with photovoltaic panels that generate electricity while simultaneously shading the house from the sun.

**Darmstadt _Team Deutschland_**

**PROJECT DATA:**

- **DESCRIPTION:** "(in German) a planform that applies well to the solar Decathlon entry from the Technische Universitat Darmstadt. The team wanted to present the German way of building, showcasing German technologies and materials in their solar house, including German oak.
- **TYPE:** One bedroom unit with full bathroom, living and dining
- **CONTEXT:** Located in Lot 112 on the South Side of Detlofete Way, Washington D.C. during the Solar Decathlon Competition.
- **ARCHITECT:** Technische Universitat Darmstadt Solar Decathlon Team
- **TOTAL SF:** 910 square feet

**HOME QUALITIES:**

The Darmstadt House combines both high-tech solar and terrestrial modes of energy production and consumption. By using German technologies and building with German oak, the platform system bears more than a passing resemblance to traditional German wooden shingles, only with legs – spanning every exterior surface of house and covered with photovoltaic panels that generate electricity while simultaneously shading the house from the sun.

**MATERIALS AND ASSEMBLIES:**

The Darmstadt House is based on a platform system which allows for customization and quick assembly, all made in Germany using domestic technologies and materials like local German oak.

The platform system allows for innovative furniture and storage solutions which are embodied in the floor. Like something coming from the future, the box creates a solution to storage and is inspired by the future of Germany.

**SUSTAINABILITY:**

Instead of focusing on the production of house amounts of energy, the team focuses on lowering costs with passive solar design. The team used a variety of designs and materials to achieve this, the building shell became a central design component. The exterior frames consisted of oak framed windows, steel, which were equipped with photovoltaic panels. This panel build generated electricity and also provides protection from the final of the sun.
Habitat for Humanity of Wake County

Contemporary Models

Habitat for Humanity provides high quality homes that achieve affordability through plan efficiencies, standard materials and assemblies, and volunteer labor. The following plans were analyzed according to the same criteria applied to the national best practices.

**Habitat Plan 1101**

**PROJECT DATA:**

- **DESCRIPTION:** Four bedroom, two bathroom single family home designed by Habitat for Humanity.
- **ARCHITECT:** Judith Finkner, James Leonard & James Benson
- **TOTAL SF:** 1101

**HOME QUALITIES:**

- Vertical note cards in the living room, and TV wiring throughout the house give the option to expand. The bedrooms are designed as separate spaces, separated from the public living areas. Each bedroom adds the small living space creates an existing environment. A front porch creates a welcoming entry while the rear deck allows for privacy from the street.

**MATERIALS AND ASSEMBLIES:**

- Using standard construction details and assemblies, all of the Habitat for Humanity homes are designed to be both affordable and easy to build. Standards are used throughout, along with the use of standard size materials and elements on wood frame is a depend on the site. The minimums may vary from house to house, but Habitat for Humanity is easy to build.

**SUSTAINABILITY:**

- The house implements passive solar strategies for the use of natural sun. The house is insulated and sealed to exterior weather conditions. Asphalt shingles are used for the roof. Standard sized windows are used on the exterior. Without a standard size, it's difficult to implement pre-fab or pre-built strategies because no information is available.

**NEGATIVES:**

- For the most part, the plan is well thought out and has a relatively simple. However, some changes were made to the original documents in the bedroom "bathroom." This also adds a bit to the cost. The windows are not a model that would be used in a home of this size. The front porch is too small, but the optional second storage is simply tacked on the exterior.

**HABITAT HOUSE 1290**

**PROJECT DATA:**

- **Total Square Foot:** 1290
- **Four Bathrooms**
- **Two Bathrooms**
- **Living Room, Dining Room, Kitchen**
- **Two Bedroom, Two Bathrooms, Two Bedroom, Two Bathrooms**
- **Slab or Cellar**
- **F 1 Ceiling Type**

**HOME QUALITIES:**

- These Habitat Houses generally feature traditional design with efficient floor plans and low maintenance materials. They are approximately 1,290 square feet. In addition, standard sized materials and standard construction and material are used. Heating in the Habitat houses is usually electric, with carpet and hardwood flooring used in the main areas. Prefabricated lighting is available in the market. The efficient and traditional floor plan lends itself to standard construction practices and materials. Standardized materials and details allows for more accurate pricing by volume.

**MATERIALS and ASSEMBLIES:**

- Asphalt shingles over a moderately sloped roof are easy to install. Standard sized materials do not include hardwood flooring, which conserves natural materials. All openings in the exterior are automatically insulated to prevent air leakage.

**SUSTAINABLE FEATURES:**

- The efficient and traditional floor plan lends itself to standard construction practices and materials. Standardized materials and details allows for more accurate pricing by volume. Asphalt shingles over a moderately sloped roof are easy to install. Standard sized materials do not include hardwood flooring, which conserves natural materials. All openings in the exterior are automatically insulated to prevent air leakage.
Habitat for Humanity

Wake County Plan 10-1080-DT

Specifications:
- Square feet: 1080
- Bedrooms: 3
- Baths: 2

Home Qualities:
The house features a vaulted ceiling with an open floor plan that allows the small house feel more spacious. Privacy is gained by separating private and public with a wall and by placing the bedrooms with closets and bathrooms into their own areas.

Plan Efficiency:
The plan is logically laid out with public functions open to each other on the left and private bedrooms and baths to the right. The middle corridor is located as much as possible with storage, other uses, and laundry.

Materials and Assemblies:
Standard stick framing materials as well as pre-fabricated boxes were used to make construction easy for contractors and volunteers.

Jennifer Gailey & Brian Casto
Prototypes of Affordable Housing

Some of the national best practices are prototypes that can be adapted to specific sites. The following projects were designed in this spirit, and had a particular focus on home qualities, plan efficiencies, adaptability, materials and assemblies, energy efficiency and performance and sustainable building practices. For some projects, “clients” were created (similar to the Habitat practice of identifying owners before construction) to further define the program and specific qualities of the home prototype.

The Hearth House
2 bedroom–950 square feet

Eric Goldman

The Hearth House focused on the archetypal hearth as the center of family life. Its efficient plan revolves around the kitchen and is designed according to modules that can be constructed off-site and field assembled. It features passive solar systems to minimize heat gain and a water catchment system.
The Shift House
3 bedroom – 1150 square feet

James Benson

The Shift House design was governed by two narrow bars of living space anchored by a central kitchen/bath core. Its efficient plan with minimal circulation space created generous interior spaces that open to the surrounding gardens.

Project Details

- **Number of Bedrooms:** 3
- **Square Footage:** 1150
- **Materials:** Cement Fiber Board Siding, Bamboo Flooring
- **Sustainable Features:** Centralized Core, Modular Construction, Operable Louvers on South Facade, Rainwater Collection

The main concept of the SHIFT house is maximizing living space in a minimal footprint. The SHIFT reduces the amount of circulation throughout the house, while also creating unique outdoor spaces.

The SHIFT creates two bars that form the public and private zones. The zones are anchored by a central mechanical core. The spacious open living spaces are enhanced by the addition of clerestory glazing.
Prototype 0.1 proposes a multi-phase construction, beginning with a modest unit that would grow over time as the family’s financial resources allowed. Its modular planning incorporates in-line framing constructed with readily-available materials. It recognizes that convivial home qualities can be achieved with minimal means.

### Theory

**Density of human pattern**
- Minimal dwelling
- Informal family and home growth

**Home Qualities**
- Compartmentalized patterns
- Kinesthetic experience
- Spatial experience

**Materials**
- Stick-built construction: advanced framing
- Local material (Home Depot)
- Prefab/flatpack applications

**Sustainability**
- Passive systems implementation: variable dependent on site and climatic conditions
- Active systems implementation: budget/subsidy dependent

**Efficiency**
- 16 x 16 module footprint
- Multi-patterned spatial experience

**Materials**
- Stick-built construction: advanced framing
- Local material (Home Depot)
- Prefab/flatpack applications

**Sustainability**
- Passive systems implementation: variable dependent on site and climatic conditions
- Active systems implementation: budget/subsidy dependent

### Single Family

**Wall Types**
- Living
- Eating
- Hygienic
- Storage

**Modules**
- North Elevation
- South Elevation
- West Elevation
- East Elevation

**Section**

**Growth Timeline: 0-5 Years**

**Plan: 1/8” = 1'-0”**

- 512 sq. ft.

**Live/Eat/Sleep/Recreation**
GROWTH TIMELINE: 3-8 YEARS

PLAN: 1/8" = 1'-0"

East Elevation

South Elevation

West Elevation

Growth Timeline: 3-8 years

Plan: 1/8" = 1'-0"

767 sq. ft.

South Elevation

North Elevation

East Elevation

Growth Timeline: 10+ years

Plan: 1/16" = 1'-0"

1,536 sq. ft.
The Flow House
3 bedroom – 1200 square feet

Scott Leonard

The Flow House focuses on a variety of living spaces accommodated by an efficient plan. It is designed according to the modules of a SIPS (Structural Insulated Panel System), modular wall system. SIPS are a cost and energy efficient option for future Habitat homes that could employ volunteer and sweat equity labor in more quality-controlled ways.

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**THE FLOW HOUSE**

**3 BEDROOM, 2 BATH**

**1200 SQ FT**

**FAMILY BIO**

The Smith Family consists of four people; two parents and two small children, a boy and a girl. In the immediate future, the Smith’s are planning for a third child. Mr. Smith is a purveyor of catfish while Mrs. Smith is a social worker who works mainly from home. The two are very active, both inside and out.

**HOME QUALITIES**

A shortened entry porch leads to interior gables throughout the entire house. An open visual connection between the living room and the children's rooms allows parents privacy. A rear porch creates a intimate space for eating. A separated master bedroom/bath from the entire house. Higher ceilings help this modest plan to feel large and open. A shortened entry porch gives an entrance to the kitchen and bedroom areas. A cozier southern aspect the children's rooms allows parents privacy. A rear porch creates a stage for the enjoyment of the outdoors.

**DESIGN THEORY**

The driving design ideas that are implemented in the Flow House include: a public front porch, a family porch, indoor stage for the enjoyment of the outdoors. By using SIPS, the exterior can be clad in an infinite number of ways or styles.

**MATERIAL/SUSTAINABILITY**

Through the use of the SIP System, shop construction, shipped to site, and labor are kept to an absolute minimum. Each panel is extremely efficient with an R rating of up to R-30. The single pitch roof can be upfitted for rain water harvesting as well. The split butterfly roof creates an opportunity for rain to be harvested into a rain barrel on the rear of the house. Each panel is extremely efficient with an R rating of up to R-30. The split butterfly roof creates an opportunity for rain to be harvested into a rain barrel on the rear of the house. Through the use of the SIP System, material waste on site is kept to an absolute minimum. Each panel is extremely efficient with an R rating of up to R-30. The split butterfly roof creates an opportunity for rain to be harvested into a rain barrel on the rear of the house.

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The Longacres Community

By Ryan Wallace

The Longacres neighborhood is a first-tier suburb located one-half mile from downtown Raleigh in East Raleigh. It is bounded by busy roads on all four sides: Poole Road on the north, Martin Luther King Jr. Boulevard on the south, Raleigh Boulevard on the west, and Peyton Street on the east. With a current population of approximately 400 residents, the neighborhood has seen little public or private investment over the past few decades. When Habitat for Humanity of Wake County identified Longacres as a potential neighborhood for revitalization they discovered that the only prior efforts were some neighborhood clean-up efforts facilitated by ACORN (Association of Community Organizations for Reform Now). While the neighborhood is deprived in terms of its built environment, it does have human resources that can assist in revitalization efforts. Engaged neighbors have created community stability and are now working with Habitat to build new homes in their neighborhood.
According to the 2009 American Community Survey the Median Annual Income of the Longacres neighborhood in 2009 was $38,000, but with over 15% living below the poverty line. The 2000 census documents that the neighborhood is 82% African American, with an average family unit comprising three persons. The housing stock is exclusively single-family, most built in the 1950’s and 60’s. In 2009 the average house value was $121,000, with over 60% owner-occupied. However, there have been problems with absentee or negligent landlords contributing to a disproportionate number of dilapidated units. (See the Housing Survey in the Appendix for further information.) Partnering with Habitat for Humanity of Wake County, the city has acquired lots in the neighborhood and today nine are designated for new homes.

At present the neighborhood feels disconnected from the services and amenities that a capital city provides. Hemmed in by several major thoroughfares, the neighborhood has little connection with its surrounding residential neighborhoods. The traffic along its boundary-defining roads is likely the primary cause of this disconnect – Raleigh Boulevard carries 18,000 cars a day; Martin Luther King Jr. 12,000; and Poole Road 7,000. Additionally, many residents do not have cars and must depend on infrequent bus service, biking or walking. Further contributing to its physical isolation are few sidewalks and poorly marked pedestrian crossings, making it difficult or dangerous to access nearby shopping, services and civic institutions. There are no parks within the neighborhood, and while the city owns substantial open land there are no current plans to develop any into community parks.

The following documents the current conditions of the neighborhood and offers modest proposals for its revitalization.
LONGACRES NEIGHBORHOOD:
PROPOSED CONNECTIONS, PARKS & GREEN SPACES

PROPOSED CONNECTIONS
Longacres neighborhood has several important thresholds which, if not properly designed, can provide visual and physical connectivity. These include connections to the local elementary school, community gateway, and the neighborhood shopping district. These could be relatively simple elements that identify the community by means of lighting, pedestrian crossings, plantings, and signage.

1. These principal gateways to the community act as the “front door” to the connectivity. Signage and plantings could be implemented to identify and beautify the neighborhood.

2. The intersection connects Longacres, a busy road (Pike Rd) and a neighborhood shopping district. Signage and road defined pedestrian crossing could make this corner more safe while providing neighborhood identity.

3. This Elementary is an important anchoring institution for the neighborhood. This corner could be enhanced with the planting and clearly defined pedestrian crossings.

PARKS AND GREEN SPACE

1. There is an existing Capital Area Greenway Trail in Ayers Heights. This could be connected by means of city-owned property in Longacres, with proposed links connecting Longacres to the regional rail trails.

2. This open space is owned by the City of Knoxville and presents challenges due to terrain. However, its natural setting could be appropriate for a neighborhood park including trails and other family-oriented programming, serving residents of Longacres as well as surrounding the region.

3. This city-owned space could become a neighborhood park equivalent to a civic green. Programming might include an open area for community sports, parks areas, community gardens and a dog park.
The Longacres Affordable Housing Project

4 Sites–4 Solutions

The following projects are set on four sites in the Longacres Community where Habitat for Humanity of Wake County plans to build single family homes. Each had distinguishing characteristics that often become departure points for the student projects.
The Hot Dog Site
515 Parnell Street

Named The Hot Dog Site because it is the preferred location for Habitat of Humanity of Wake County community picnics, the site is oriented east-west and gently slopes to the street.

The Gather House
3-4 bedroom—1136 square feet
Matteo Rapellini

The Gather House includes flexible spaces that could be converted to a variety of uses by means of centralized mechanical systems, multifunctional spaces and a system of movable walls. Its compact plan, oriented east-west for energy efficiency, maximizes the living spaces through exterior porches and decks. The surrounding gardens were designed to be planted over time and include a grow wall at the carport.
The Park Site
429 Parnell Street

This significantly sloped site faces city-owned open land that in the future could be a park and connection to the city greenway system. The existing house is slated for demolition.

The Windside House
3 bedrooms–1200 square feet
Megan Toma

The Windside House has a particular focus on a sensitive response to the site, home qualities, and the rituals of domestic life. Centered on the family hearth of the kitchen it provides a variety of spaces organized vertically, including a third-story library loft. Porches and windows open to outside gardens and the street. The house is naturally ventilated by a wind tower.
The Gatekeeper Site

414 Lamont

Named The Gatekeeper Site because of its location at the intersection of two residential streets, this nearly-flat site is flanked by modest homes set back from the street. The existing house is slated for demolition.

The Gatekeeper House

3 bedroom—1092 square feet

Jennifer Gailey

The Gatekeeper House responds to its public position by proposing a two-story house that symbolizes its watchfulness over the neighborhood. Unlike many homes in the neighborhood, its prominent porch and street-oriented kitchen engage the street and connect the home with its surroundings. Its efficient plan offers a variety of spaces with strategically positioned windows providing views and cross ventilation.
The School Site
428 Peyton Street

This site has the most public profile, sloping up from a major thoroughfare and offering views of Poe Elementary School.

The Adaptable House
1300 square feet–3 bedroom

Jeff Wilkins

The Adaptable House is designed to grow over time, transforming from a one-bedroom with a carport to a three-bedroom unit as family needs change. The narrow plan of the home opens to outdoor spaces including the carport (in the first phase), and incorporates cross-ventilation and daylighting in its sustainability strategy. Its modular planning would facilitate panelized construction while minimizing construction waste.
The purpose of this document is to provide a framework of understanding of the Longacres neighborhood in east Raleigh. The terms used to describe the physical features of the neighborhood have been adapted from Planning to Stay, by William Morrish and Catherine Brown.

AFFORDABLE HOUSING
SPRING 2011- BARRIE
LONGACRES NEIGHBORHOOD

HOUSING AT A GLANCE
- 150 houses in east Raleigh
- roughly 3 persons/household
- built primarily 1950's & 60's
- 100% single-family detached
- residential - 10 zoning
- 60% owner-occupied
- $121,494 average value
- Habitat for Humanity controls 9 lots in the neighborhood

PARNEIL STREET

HOUSING SURVEY
SOUND MODERATE DILAPIDATED
A unit that appears new or well maintained and structurally intact. There should be straight roof lines. Siding, windows, and doors should be in good repair with good exterior paint condition. Minor repairs stemming from problems such as small areas of peeling paint and/or other maintenance items are allowable under this category.
LONGACRES NEIGHBORHOOD HOUSING SURVEY

**MODERATE**

2301 nelson street

A unit that shows signs of deferred maintenance, or in need of replacement of one or more major components and other repairs, such as roof replacement, painting, and window repairs.

337 angier street
A unit that requires replacement of several major systems and possibly other repairs (e.g. roof structure replacement and re-roofing, as well as painting and window replacement).

A unit suffering from excessive neglect, where the building appears structurally unsound and maintenance is nonexistent, not fit for human habitation in its current condition, may be considered for demolition.
Project Team

Project Director
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Project Partners
Kevin Campbell, Executive Director | Habitat for Humanity of Wake County
Brad McHue, Construction Manager | Habitat for Humanity of Wake County
Syretta Hill, Family Support Manager | Habitat for Humanity of Wake County

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Damon Leverett, AIA | Lead Designer, EYP Architecture and Engineering, Washington, DC
David Maurer, AIA | Principal, Tightlines and Maurer Architecture, Raleigh, NC

Guest Critics
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Ryan Wallace

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