

U.S. DEPARTMENT OF ENERGY  
**SOLAR DECATHLON 2023**  
BUILD CHALLENGE  
March 28, 2023



View Of Two-Family Alley House From The Southwest Intersection Of Temple Avenue And East West Alley

# PROJECT REPORT

## THE ALLEY HOUSE 201 N. Temple Avenue, Indianapolis, IN

Solar Decathlon Competition Entry | **West Unit**  
Cardinal Studio | Student Design Team  
Ball State University | Muncie, IN, United States



# TABLE OF CONTENTS

03

## About Us

Interdisciplinary Students, Faculty, and Advisor Team

04

## Our Client

Englewood Community Development Corporation (ECDC)

05

## Project Context

201 N Temple Ave.  
Neighborhood Alleys  
Residential Inhabitants & Programs

09

## Project Summary

The Alley House

10

## Design Philosophy

Design Synthesis and Community Integration

11

## Construction Site Details

Regulatory Context Summary

12

## Construction Partners

Partnerships & Contributions

13

## Summary of Exhibit

Strategies Planned

14

## Future Plans

After the Competition

15

## Exhibition Success

Online & Public Success Summary



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# ABOUT US

## BALL STATE UNIVERSITY | BSU

Located in Muncie, Indiana, Ball State University prides itself on being a student-centered, community-engaged, and sustainability-focused public research university. It is one of twelve higher education institutions to receive the Department of Energy's Zero Energy Design Designation. Ball State's innovative commitment to sustainability has fueled the creation of the nation's largest ground source, closed-loop district heating/cooling system, benefiting the University financially and the environmental impact. In addition, all new construction is required to be LEED certified. Each year, Ball State initiates a diverse range of immersive learning projects that engage students with organizational partners and community members to create a positive impact in the local community.

## College of Architecture and Planning | CAP

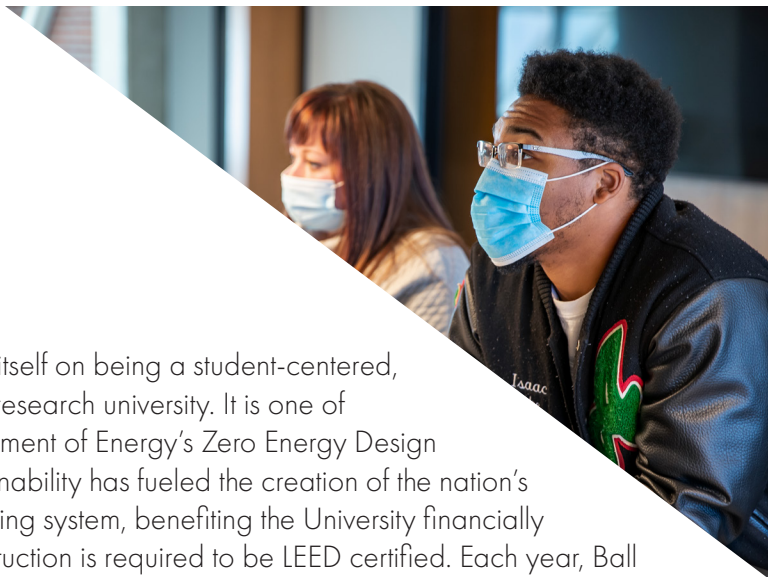
The R. Wayne Estopinal College of Architecture and Planning (ECAP) at Ball State University comprises four departments: Architecture, Landscape Architecture, Urban Planning, and Construction Management and Interior Design. Over the five semesters of the Solar Decathlon competition, CAP's interdisciplinary team of approximately 120 undergraduate and graduate students collaborated with residents in the Near Eastside neighborhoods of Indianapolis, Englewood Community Development Corporation (ECDC), design advisors, consultants, industry sponsors, and professional partners/contractors to:

- Restore residential neighborhoods with prototypes for vacant urban lot infill housing
- Provide affordable, two-family housing units integrated into a walkable community
- Create a two-family housing typology with one high-performance, net positive energy unit
- Provide a demonstration of net-positive-energy use in high-performance building



**BALL STATE  
UNIVERSITY**

**R. Wayne Estopinal  
College of Architecture  
and Planning**



## College of Architecture and Planning | CAP: Indy

An outreach and education center of the College of Architecture and Planning, CAP: Indy offers educational opportunities for students and professionals, assists neighborhood and community groups through outreach, and supports initiatives that improve the quality of life in Central Indiana. Its mission is to be a catalyst for recovering and redefining the experience of urban places and building livable cities as models for sustainable urban life. CAP: Indy is dedicated to social and ecological responsibility and building meaningful partnerships through the interdisciplinary collaboration of students, faculty mentors, professionals, and the community.





# OUR CLIENT

## ENGLEWOOD COMMUNITY DEVELOPMENT CORPORATION

Englewood Community Development Corporation (ECDC) focuses on comprehensive community development and creating space in the Englewood neighborhood for people of all ages, economic status, race, ethnicity and cultural background. The Alley House project not only augments the existing developments of schools, housing, and commerce, but also adds innovative design goals to the current L.O.V.E (Livability, Opportunity, Vitality, Education) initiatives of ECDC.

The development in the neighborhood has been spurred by local plans such as the Near Eastside Quality of Life Plan, the ReEnergize East Washington Street Plan, and the Great Places 2020 Plan. Englewood CDC has focused on affordable housing as its strategy and is developing the Englewood Homes project, forty duplex units of infill housing for low-income families.

The redevelopment of the P.R. Mallory campus also has helped to bring highly ranked K-12 schools back into the Near Eastside. The adaptive reuse of the P.R. Mallory Administration building is the home of Purdue Polytechnic High School and the Paramount School of Excellence. With livability and opportunity being key aspects of site selection, the Alley House strives to meet the needs of Englewood and the families that will inhabit it.

In addition to following L.O.V.E principles, Englewood CDC is developing a Community Land Trust as part of an initiative organized by the Kheprw Institute. This strategy will maintain housing affordability in perpetuity, in concert with its rent-to-own model in Englewood Homes and its partnership with Ball State in this Solar Decathlon project.



Daystar Daycare in the Garden



P.R. Mallory Adaptive Reuse Educational Building



Oxford Place Senior Apartments



Thomas Gregg Neighborhood School



# PROJECT CONTEXT

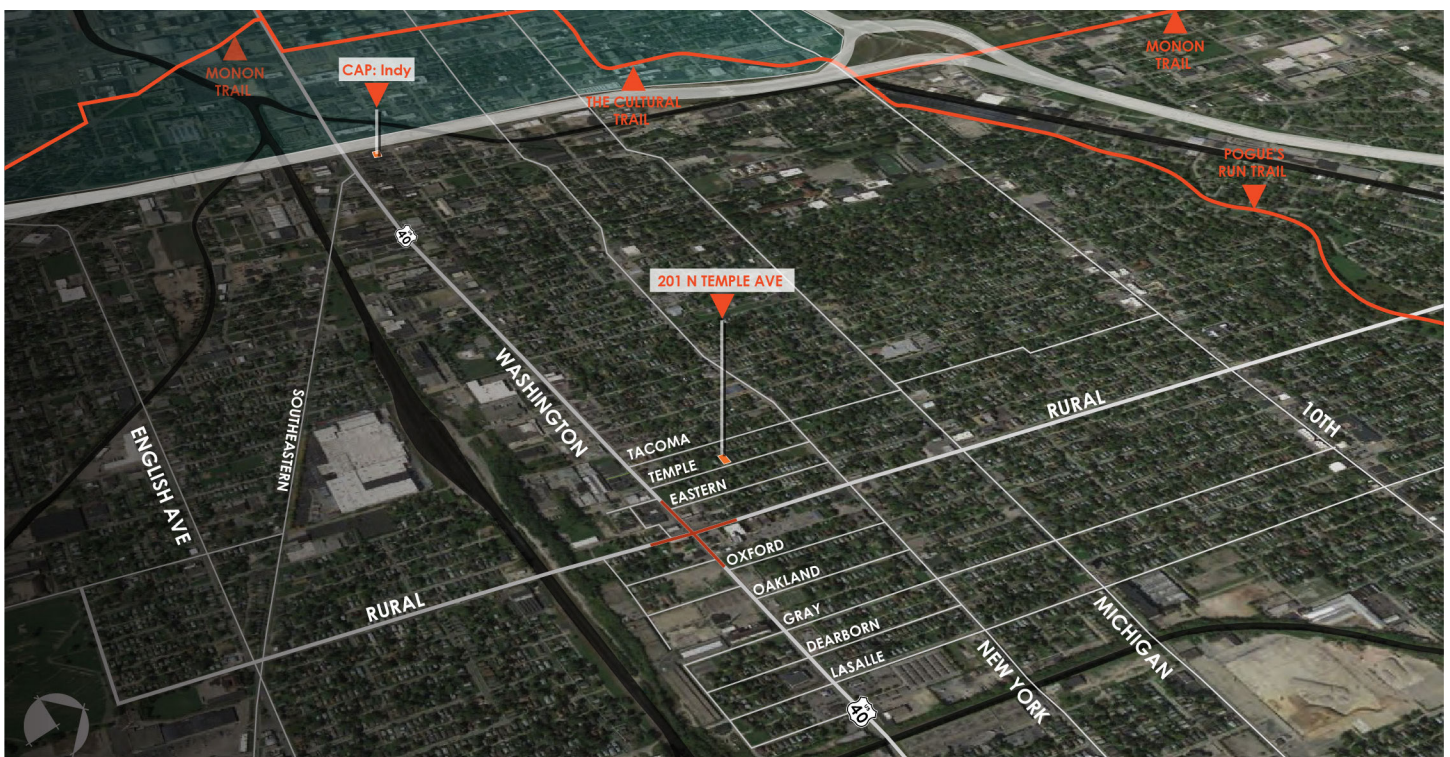
## 201 N. TEMPLE AVENUE INDIANAPOLIS, IN 46202

Just east of downtown Indianapolis is the lively neighborhood of Englewood, a multi-cultural, multi-generational place to live, work, worship, learn, and play. Like many post-industrial communities in the Midwest, Englewood has experienced population decline, reduced educational attainment rates, decreasing median household incomes, and high vacancy rates. The recent affordable housing crisis and deteriorating existing building stock have made this neighborhood a target for outside developers who are building rapidly using low-quality construction materials, and contributing to rising property values.

While higher property values bring positive impacts such as an influx of capital into the area and increased beautification efforts in the neighborhood, they also negatively impact residents through the displacement of

original households and by changing the neighborhood's social character. Although affordable senior housing has been developed in the Near Eastside neighborhoods of Indianapolis, this has not effectively addressed the shortage of affordable housing for families.

Research indicates that vacant and abandoned properties in the Near Eastside neighborhood continue to disturb the community's economy, health, welfare, and safety. Indianapolis is not sheltered from these harsh realities. Nevertheless, communities often respond to difficulties by finding opportunities. One such opportunity is the Cardinal Studio and Englewood Community Development Corporation (ECDC) plan to re-engage this neglected community by constructing multi-family housing units on vacant lots owned by ECDC.



Location of the Solar Decathlon Alley House and the Ball State CAP: Indy Center in the Near Eastside Neighborhood





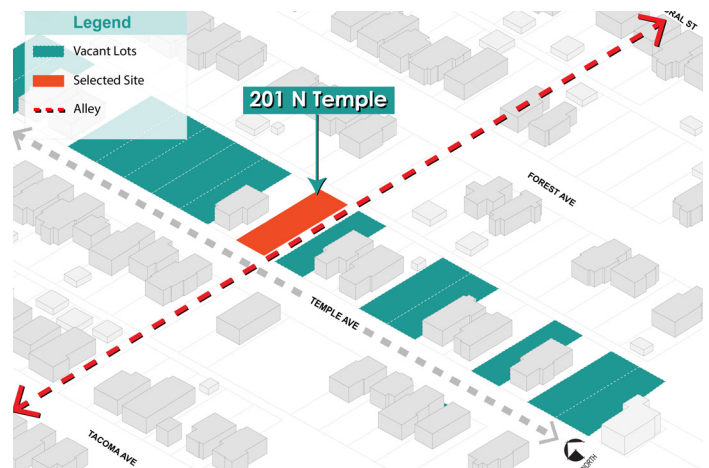
Site Context Map with Walking Radii

## NEIGHBORHOOD ALLEYS

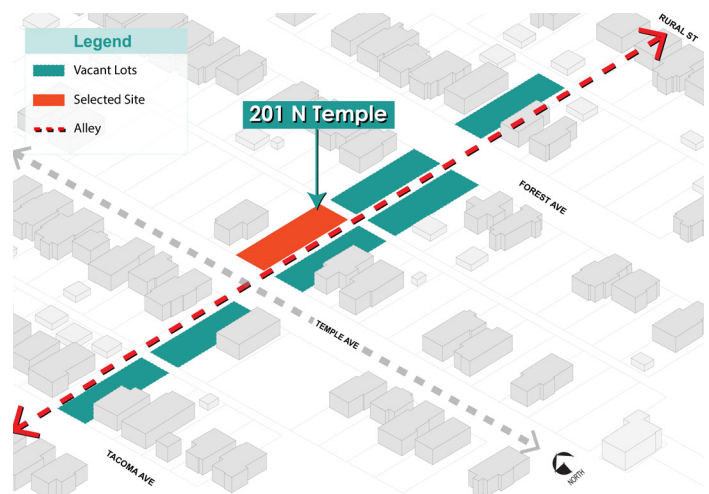
Before the automobile revolution, alleyways served as dense pedestrian highways within urban cities. They offered a means of connecting parts of the city in a manner that promoted a lively community. These narrow paths continue to offer pedestrian flow, utility service access, and shortcuts away from heavily trafficked transportation arteries. Unfortunately, as cities evolved into modern downtowns, the perception of alleyways changed: they became unsafe due to their lack of lighting, few-to-no exit routes, and confined nature. Cities have neglected alleys because they no longer serve their original utilitarian functions.

While urban alleyways have been associated with blight and crime, the alleyways within the dense urban fabric of Englewood hold enormous potential for weaving the community together. Urban greening efforts can re-conceptualize alleys by promoting pedestrian networks, stormwater treatment, productive gardening, habitat restoration, and neighborhood social life.

The east-west alley running alley to the south of the 201 N. Temple Avenue lot provides two things: **southern solar access for the net-positive energy design of the duplex and a desirable connection to the heart of the Englewood neighborhood.** Amenities like the Englewood Church, Day Star Childcare, and the East Washington Street Branch Public Library are accessible through the alley. The Alley House takes advantage of the south side alley by creating a space for the community to gather and a safe pedestrian path to the community's amenities. The Alley House provides positive placemaking for the neighborhood and has the potential to be a model of how homes in this area can take advantage of this alley asset.

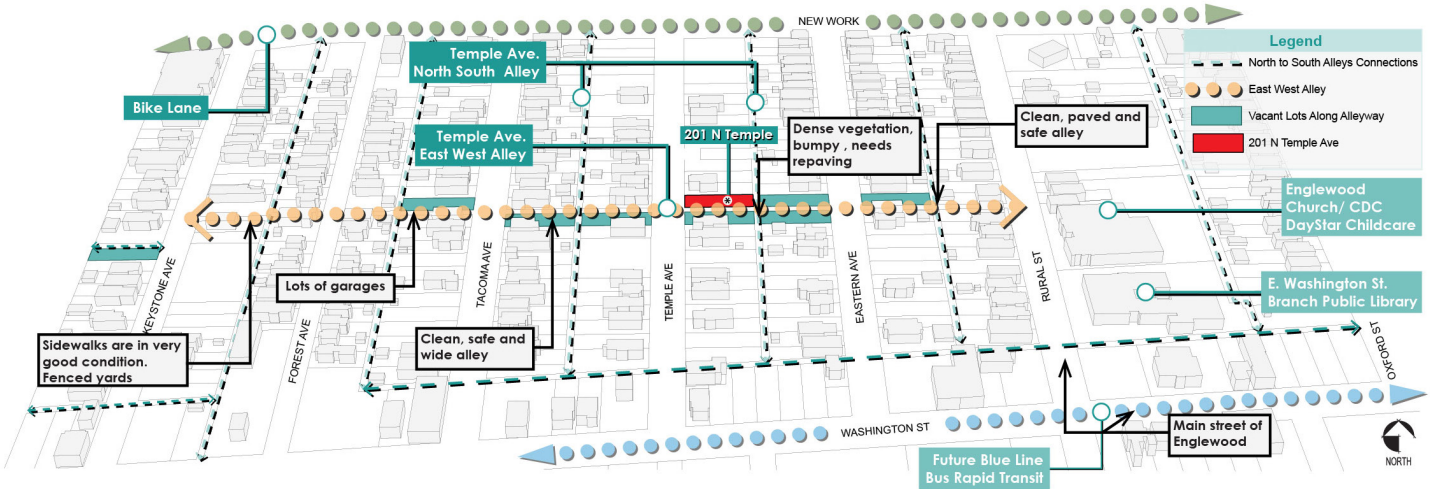


Vacancy Along Temple Avenue



Vacancy Along East-West Alley





### Alley Connection Analysis Diagram

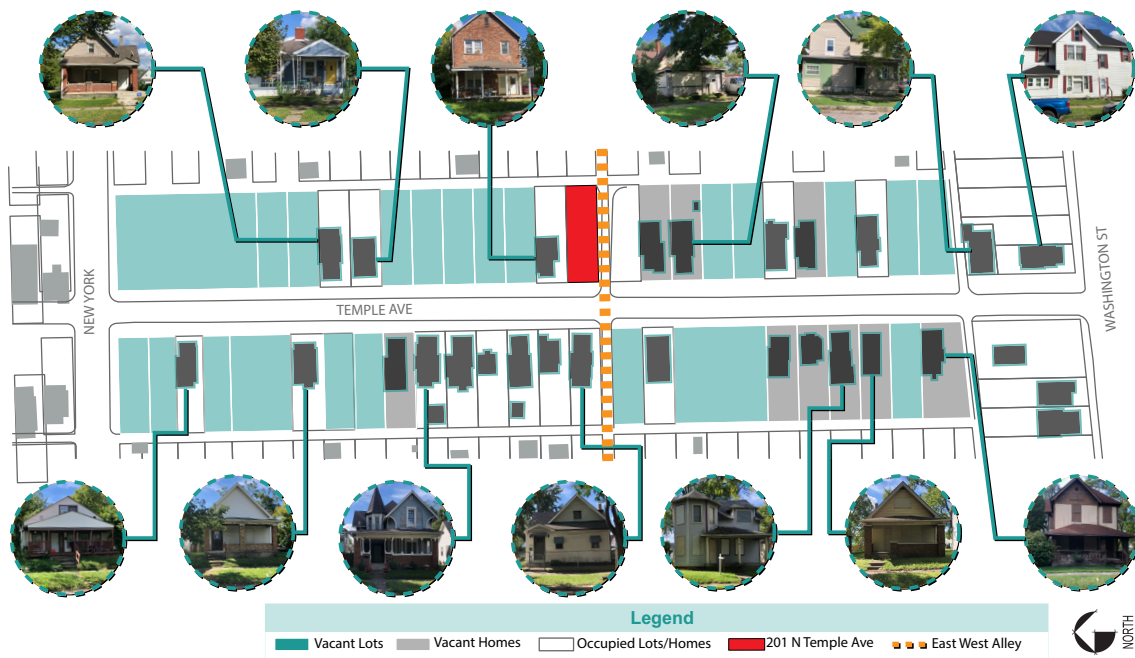
Englewood CDC noted infill developers consider alley sites to be least desirable. Cardinal Studio developed a prototype duplex design that could be used as a model housing typology for infill on other vacant sites along the east-west alley.

The Alley House project not only adapts to the needs of a growing family, creates a strong sense of place, and encourages sustainable lifestyles, it also activates the adjacent alleyway to transform a liability into a neighborhood asset.

Taking full advantage of the alley to the south of the site, the Alley House harmoniously integrates dwelling and landscape by using the south wall of the building to create physical and visual access to the surrounding native, cultivated, and productive landscape. Through the thoughtful placement of front porches, walkways directly leading directly into the alleyway, and intentional landscape design to beautify

the alley, the Alley House embraces Cardinal Studio’s design principles and showcases them for future developments.

Complementing the existing architecture of Temple Avenue while creating its own identity, the Alley House provides a welcoming experience for family and friends. The alleyway provides opportunities for education about sustainable and energy-efficient dwellings through visible solar panels, native plantings, rain gardens, and prominent stack ventilation towers. The site-specific building form, Temple Street and south alley orientation, and a contextual material palette allow this two-family duplex to integrate successfully into its context. The alley to the south of the site runs east to west from Rural Street to Keystone Avenue. As seen in the diagram, at least eight lots sit vacant along the alley. The diagram also shows the important connection the alley makes between Englewood Church, Daystar Daycare, and other important resources in the community.



### Temple Ave. Adjacent Home Style & Morphology Analysis

## THE ALLEY HOUSE | RESIDENTIAL INHABITANTS PROGRAM

The Near Eastside is a vibrant and colorful community, matching the grit and strength of the people who call this neighborhood home. As in many former industrial districts around the country, once factories shut down so too did the livelihoods of residents in this once-booming area. Left in the wake of the devastation were families without the resources to leave.

However, these hardships ultimately became the catalyst for renewed community strength. The families who endured, and still endure, the area's post-industrial downturn have created a rare and tight-knit sense of community, one holding the potential to create a vibrant neighborhood that taps into the urban development revival.

The urban revival Indianapolis is experiencing now brings both important resources that Englewood needs as well as threats of displacement for its most vulnerable residents: affordable housing is needed. Infill also offers opportunities to densify by adding more dwelling units per acre than a typical single-family home can provide, which putting more residents closer to amenities and transportation options.

### Alley House Facts (West Unit)

Bedrooms: **3 bed** | **2 bath** | **1,386 sqft**

Lot Size: **5,000 sqft**

Median Cost: **\$375,000**

Kitchen Size: **70 sqft**

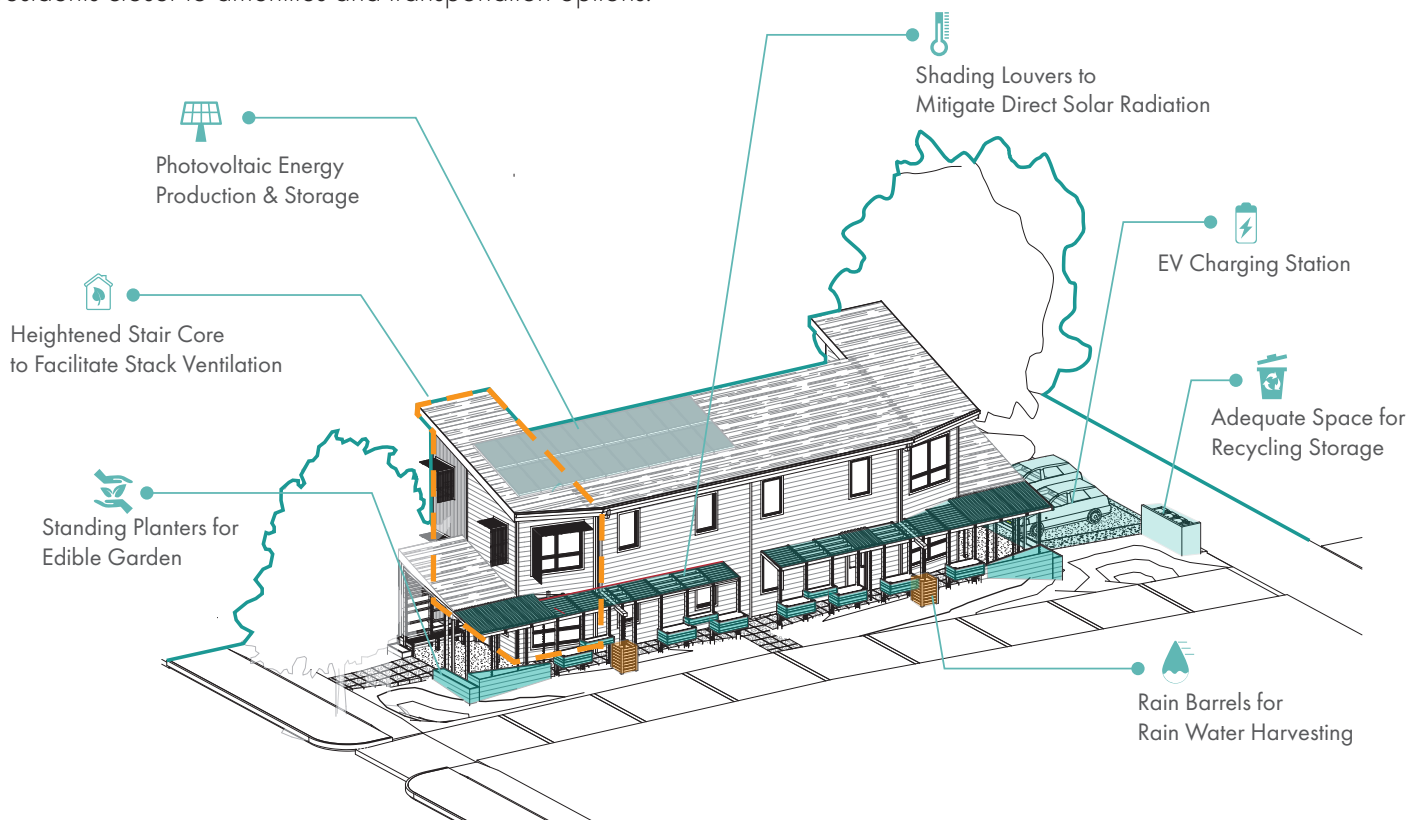
Living/Dining Room Size: **245 sqft**

Heating & Cooling: **Multi-zone, short ducted heat pump**

Parking: **On-street & Rear Parking Pad**

Laundry: **On-site Laundry**

Outdoor Amenities: **Porch, Pergola & Green Spaces**



### Alley House Unique Features

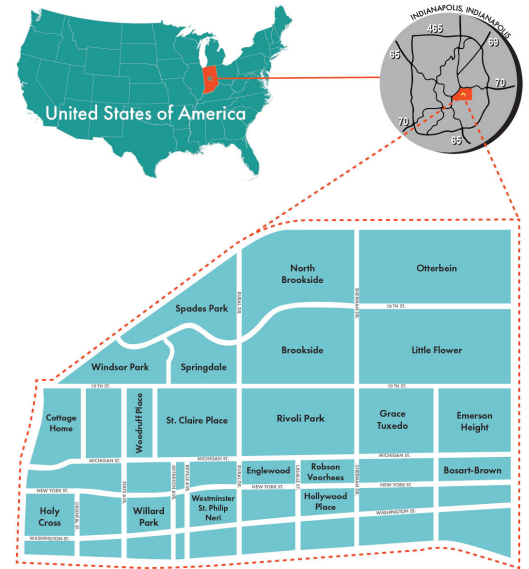


# PROJECT SUMMARY

## THE ALLEY HOUSE

The Alley House is Cardinal Studio’s design-build proposal for the Solar Decathlon. It addresses gentrification pressure, promotes neighborhood revitalization, and facilitates lifestyle growth for local families. The finished building will infill a vacant lot at 201 N. Temple Avenue with an **affordable two-family, net-positive energy home that activates public alleys and integrates sustainable landscape design criteria and Passive House principles**. This prototype building design showcases energy efficiency, offers community engagement opportunities, and creates a desirable, safe, functional, and healthy home to sustain two families.

Cardinal Studio developed these goals to strengthen residents’ ability to create a home where their children can grow, develop a strong community connection, and provide a reliable, adaptable dwelling that supports sustainable and affordable living.



Near Eastside Indianapolis Neighborhood Map

## Cardinal Studio developed seven design goals that define success for this design-build project:

Cardinal Studio developed these goals to strengthen residents’ ability to develop a growing home for their children, a strong community connection, and a reliable and adaptable dwelling that reflects sustainable and affordable living.


- 

**Providing for Intergenerational Adaptability + Life Cycle Changes** 01
- 

**Creating a Sustainable Sites & High-Performance Building Design** 02
- 

**Enhancing Sense of Place** 03
- 

**Fostering Equity & Inclusion** 04
- 

**Facilitating Educational Opportunities** 05
- 

**Building Resilience in the Home** 06

### Cardinal Studio Goals

# DESIGN PHILOSOPHY

## DESIGN SYNTHESIS AND COMMUNITY INTEGRATION

The Alley House was created in partnership with Englewood CDC and Gratus Development as well as with architects, landscape architects, interior designers, engineers, and industry sponsors in a truly collaborative community effort.

The home was created as an equitable, affordable, and energy-efficient two-family home that is sociable, that is welcoming and creatively engaging, encouraging both community connections and educational opportunities. Thoughtfully designed features include a stair tower that provides passive cooling through stack ventilation, shared and private spaces in the window seats on the southern alley for both units, and framed views looking out from the home into the landscape.

The front-to-back units in this duplex facing the east-west alley create a unique but repeatable presence on North Temple Avenue through the use of porches, buddy benches, recycled limestone pavers, native vegetation, and productive gardens that activate the green alley. Simultaneously achieving an appealing, contextual aesthetic while providing optimal functionality and adaptability, the Alley House enables families to easily grow, change, and age in place.

Englewood CDC's rent-to-own program and the community land trust initiative under development give residents the opportunity to own their own homes after 15 years, addressing growing concerns about affordability and gentrification in Englewood. Through careful site selection, appropriate alley activation, environmentally responsible building design and sustainable strategies, and interior and exterior household amenities, the Alley House promotes community connections, creates personal and social interactions and experiences in the neighborhood, and gives a strong sense of place in the community.

### 01 | Providing for Intergenerational Adaptability + Life Cycle Changes

Residents in the Alley House desire a place to call home, to raise their children from diapers to diplomas, and create a long-term place for future generations to visit and grow. The Alley House supports young children, energetic teens, focused young adults, and aging parents and grandparents through all stages of life.

### 02 | Creating a High-Performance Building Design

Apply Sustainable Sites and Passive House (PHIUS) Core Prescriptive Certification is a rigorous approach to improve energy efficiency, indoor air quality, durability, and thermal comfort. Sustainable Sites criteria provide maximum ecological benefits without harming the ecosystem.

### 03 | Enhancing Sense of Place

The Alley House promotes community connections through design strategies that create personal experiences, social interactions in neighborhood, and identities for the residents that bring pride in their home and give a sense of place in the community.

### 04 | Fostering Equity & Inclusion

Typical low-income affordable housing is stigmatized. Cardinal Studio aimed to create multi-family rental units that are affordable, attainable, and provide housing with dignity.

### 05 | Facilitating Educational Opportunities

Cardinal Studio created opportunities for residents and community members to learn about the home's energy-efficient features and design strategies. The student team designed the house's exterior to communicate to the community and the interior to communicate to residents and guests. The Alley House is a model, an exemplar, and a learning tool.

### 06 | Building Resilience in the Home

The Alley House is a two-family, net-zero energy home that embodies passive principles, on-site renewable energy, local and low-carbon intensive materials, and a high-performance envelope.



# CONSTRUCTION SITE DETAILS

## REGULATORY CONTEXT SUMMARY

Cardinal Studio had two PowerPoint workshops on Building Codes: Health, Safety, and Welfare in the fall semester of 2021 and 2022. We learned the purpose of the building code as a legal document to define construction standards typically based on a “model” code with amendments added by the State. We used the 2020 Indiana Residential Code, which is based on the model 2018 International Residential Code. This code controls the physical construction of the building but has limited control over the property. This is where we referred to the Indianapolis Zoning / Subdivision Ordinance. The Zoning Ordinance is a legal document adopted by the city of Indianapolis to control development in terms of size, boundaries, and type of use. This document was particularly important in the initial site selection and schematic design of the Alley House as it defined the setbacks as typical boundaries for construction and easements for utilities, drainage, and access.

Additionally, we used the Infill Housing Guidelines 2021 Update which is applicable to the Compact Context Area of which the Near Eastside Neighborhoods are a part of. These guidelines illustrate context design decisions that address adjacent houses, blocks, and neighborhoods. Our team carefully considered site configuration including setbacks, building orientation, spacing, open space, and landscaping. Understanding that the style and design of houses help create character, the team looked at the placement of the house and the landscaping that plays an equally important role in creating character. Finally, the Infill Housing Guidelines covered important concepts to consider when designing duplexes including building massing, height, and architectural features that reflect the history of the neighborhood.

In designing and building the net-positive energy Alley House, it was important to meet code requirements, but also to push beyond to ensure a better, more efficient, and sustainable home. The Alley House follows the Solar Decathlon requirements, the DOE Zero Energy Ready Home requirements, but is also designed to meet the requirements for both PHIUS Core Prescriptive certification and Sustainable SITES certification. With these certifications the Alley House will go beyond the status quo residential construction to become a model for green building.

## Building Codes

The 2020 Indiana Residential Code adopted the following minimum model codes and standards:

- Indiana adopts the IBC 2018 with its amendments
- Indianapolis Department of Public Works is the agency which is responsible for stormwater management
- National Fire Protection Association 70, 2009
- International Plumbing Code 2006
- International Mechanical Code 2012
- Occupational Safety and Health Administration 1926 Construction

## Indianapolis Zoning Requirements

- Zoning: D-5  
(This type of zone promotes high-density development of commercial and mixed uses in areas)
- Property: 5,000 sq. ft.
- Buildable Area: 2,000 sq. ft.  
\*40% of total Site SF allowed to be built on
- Setbacks:
  - Sides: 3' Min.
  - Front: 18' (or average of the 2 adjacent home setbacks)
  - Rear: 10' Min.
- Coverage: Min. 60% Open Space
- Parking: Min. (1) Off Street Parking Space per
- Dwelling Unit (2 Required)

# CONSTRUCTION PARTNERS

## PARTNERSHIP DETAILS AND CONTRIBUTIONS

The Cardinal Studio team collaborated with over twenty industry partners in the Midwest region, gaining valuable experience in sustainable construction. The team secured industry sponsorships that took the form of material donations, discounts, labor, and consulting expertise while also working with the community partner Englewood CDC and general contractor Cedar Street Builders to bring the project in on time and on budget. Supplementing the team's hands-on participation at the Alley House, the industry sponsors provided knowledge and expertise in the materials' installation in all phases of the project's construction. The Cardinal Studio team acknowledges and thanks these industry partners for their time, support, collaboration, consultation, and donations of time and materials. They have contributed \$120,000 to date in donations.

### **AeroBarrier AeroSeal, LLC | Nik Budd, Sales Representative**

AeroBarrier discounted their process to air seal the building envelope at the framing stage of construction by 40%. Nik spent time with Cardinal Studio to help us to understand the process of air sealing to improve durability, cut energy costs, and create a comfortable healthy indoor environment.

### **Cedar Street Builders | Dan Porzel, Owner**

Cedar Street Builders provided Cardinal Studio with expertise on high-performance building design and products, sustainable construction practices, and PHIUS Certification. Dan is the team's general contractor on the Alley House. He discounted his overall price by 10%.

### **EcoVantage | Jason Holman, Production Manager**

Provided a material donation of exterior thermally modified wood as siding for the vertical stair towers of the Alley House as well as material for the exterior sun-shading, south-facing pergola, and interior stair screen details. This material donation was estimated at \$22,500.

### **Floor Coverings International of Carmel | Terry Turman, Owner**

Terry provided a discount on bio-based marmoleum flooring used in Alley House.

### **Green Fiber Applegate | Rob Walker, Regional Manager**

Provided more than 300 bags of cellulose used for dense packing in wall cavities and loose fill in attic space for both west and east units.

### **Greenheck | Tony Rossi, Consultant Engineer and Tara Kelly, Product Marketing Manager**

Furnished the energy recovery ventilation (ERV) system, a precision ERV controller, and the Haven indoor air quality (IAQ) sensors for the east unit of the Alley House. Tony provided engineering consultation on IAQ, ERV, drawings review, installation, and start-up assistance.

### **Hempwood | Bryon Lilly, Sales Manager**

HempWood stair treads were used as an eco-friendly, fast-growing alternative to hardwood. Bryon provided a 10% discount on the price.

### **Jefferson Electric | Joel Walsman, Owner**

Jefferson Electric donated consultation time to assist the team in solar array calculations and photovoltaic (PV) product selection. They installed all electric and solar technologies in the Alley House and provided a discount on the electric vehicle (EV) charger, the electrical panel box and smart sensors, and the back-up battery system.

### **JMT Landscape Group | Tyler Schnell, Principal**

JMT's landscape team worked on the grading bio-swale and rain gardens and discounted labor on reclaimed limestone pavers around Alley House.

### **Leggett | Ken Williams, VP of Sales and Mike Reynolds, Operations Director**

Ken provided expertise on the on innovative, frost-protected shallow foundation system, which reduced the amount of high-carbon concrete used and limited site excavation. He provided Cardinal Studio with a discount on the engineering services necessary to get the foundation through permitting required by the City of Indianapolis.

### **Mitsubishi | Mark Giganti, Sales**

Mark helped the team secure a discount on the required components of the HVAC split system heat pump for both the east and west units.

### **Olympia Stone | Matt Schuckman, Owner and Kate Chrisman, Sales Representative**

Matt provided Cardinal Studio with a 25% discount on the recycled quartz countertop remnants that the team selected for the kitchen countertops and lavatory counters in the two bathrooms.

### **Pella Windows + McComb Window | Angelo Zarvas, VP Architecture Sales and Paul Spacco, Sales Representative**

Pella Corporation gave Cardinal Studio a significant discount of \$26,222.77 on the triple-glazed windows for the west unit of the Alley House. Angelo and Paul helped the build team choose windows to meet the rigorous prescriptive path specifications for PHIUS certification.

### **People for Urban Progress (PUP) | Donna Sink, Board President**

PUP donated limestone from an Indianapolis Public School building that was torn down; it was reclaimed for use as pavers set in gravel along the north and south sides of the Alley House.

### **Rockwool | Chris Jessen, Business Development Manager and Nolan Szalmasagi, Territory Manager**

Rockwool provided all the Comfortboard rigid stone wool exterior continuous insulation board used on the west unit of the Alley House, a material donation of \$15,151.02.

### **The Tile Shop | Lace Clute, Owner**

The Tile Shop provided a 25% discount on tile used in the ADA-accessible shower on the main level of the Alley House.



# SUMMARY OF PUBLIC EXHIBIT

## COMMUNITY EXHIBITION STRATEGIES PLANNED

Cardinal Studio's public exhibit will impact its target audience by demonstrating clearly the work of its incredible team of students, faculty, advisors, consultants, contractors, sub-contractors, community partners, and industry sponsors who have contributed their time and energy to making the Alley House a success as an affordable net-zero energy, two-family home. During the Grand Opening Celebration on April 4, 2023, Cardinal Studio will thank this dedicated team. Over 200 individuals are expected to attend.

Working with Ball State University's Office of Marketing and Communications, Cardinal Studio invited alumni from the seven departments in the College of Architecture and Planning (CAP): Architecture, Landscape Architecture, Urban Planning, Urban Design, Historic Preservation, Construction Management, and Interior Design. From the first, the design and build of the Alley House has been an interdisciplinary project involving collaboration between students, faculty, professionals, and alumni from all these disciplines. Cardinal Studio targeted this audience to provide valuable opportunities for the student team both to share its work and to network with successful and prominent CAP alumni during the CAP Alumni Tour Day on April 5.

Public tours highlighting the sustainability and renewable energy aspects of the Alley House will be given on April 4-18, with a few days set aside for private tours. On weekend public tour dates, Cardinal Studio will host numerous community-based events and fun, family-friendly activities. The schedule lists specific tour dates, times, and activities with events of interest for media coverage.

April 4, Tuesday | 4 pm – 8 pm

Alley House Grand Opening Celebration

April 5, Wednesday | 4 pm – 8 pm

Ball State CAP Alumni Day Tour

April 6, Thursday | 4 pm – 6 pm

American Institute of Architects (AIA) Presentation and Tour

Presentation at the CAP: Indy Center, 25 N. Pine Street, followed by Alley House Tour, 201 N. Temple Avenue. Continued Education Units (CEUs) for Professionals will be provided.

April 8, Saturday | 10 am – 4 pm

Alley House Neighborhood Party and Tour

This family-friendly event will feature food, music, an Easter egg hunt with small prizes for children, and a tour of the duplex. Information about The Alley House will be available.

April 10-12, Monday and Wednesday | 11 am – 3 pm

Neighborhood School Tours

Paramount Middle School, Arsenal Tech, and Purdue Polytechnic High School Alley House Tour and Educational Event (Invited Guests)

April 11, Tuesday | 4 pm – 6 pm

Neighborhood Association & Local Non-Profit Organizations

April 14, Friday | 1 pm- 3 pm

RQAW Architectural and Engineering Firm

Sustainability Team (Invited Guests)

April 14, Friday | 3:30 pm – 5:30 pm

CAP Students & Admitted M.Arch Student Day Tour

April 15, Saturday | 10 am – 4 pm

Ball State Day at the Alley House

This day will feature games, music, food, and educational tours. This event is open to the public, also will be a special opportunity for Ball State faculty, staff, students, and alumni to gather in celebration of the Alley House. Guest speakers expected to be in attendance include President Mearns, Dean Ferguson, faculty leads, and student team leads.

April 16, Sunday | Noon – 4 pm

Open to the Public

April 17, Monday | 4 pm – 6 pm

Guidon Design Tour

Sustainability Team (Invited Guests)

April 18, Tuesday | 3 pm – 5 pm

Department of Architecture Faculty

Faculty Retreat followed by Capstone Closing Event of Public Tour of the Alley House and send-off of Solar Decathletes to travel to Golden, Colorado.

# FUTURE PLANS

## AFTER THE COMPETITION

The Alley House is located and currently being constructed within the Englewood neighborhood on the Near East Side of Indianapolis, Indiana. The Alley House is part of Englewood CDC's larger development, Englewood Homes, which is redeveloping twenty vacant lots in the neighborhood for forty total units of affordable and attainable housing options including the Alley House. These will be available starting with the Alley House in June 2023.

The thinking behind Englewood Homes, including the Alley House, was to provide more housing for low-income families in an area with access to high-quality schools and employment opportunities. Within walking distance of the Alley House are quality education opportunities for birth-12th grade. To leverage this, Englewood CDC is working in partnership with these schools to ensure as many families of students or staff can live in these homes as possible, with easy access to work or school. Along with access to community spaces, employment, transportation, and services, families are best supported to find and keep affordable housing.

While all the homes, including the Alley House have to remain rentals for 15 years due to the funding requirements, Englewood CDC has committed to offering a rent-to-own model which will allow families on limited incomes to create a pathway to home ownership. This is an extremely important step in creating attainable housing within the area and allows families, who otherwise would not have the means or the opportunity to own their own home.

Until renters fulfill the rent-to-own contract, Englewood CDC will maintain ownership of the property and will be responsible for maintaining the house.

“

**The Alley House project has allowed a productive and mutually beneficial partnership between ECDC and the Ball State students to grow and evolve over the length of the project period. ECDC has gained the creativity and fresh perspectives generated by fresh minds and the students gained the deep and practical wisdom of ECDC's many years of working on new building projects on the Near Eastside of Indianapolis. Together they have created something truly unique which will hopefully signal a new day and a reimagined shared life on this block and in our larger community.**

”

- Dr. Susan R. Adams, Ph.D.  
Englewood Community Development  
Corporation Board President



# ONLINE AND PUBLIC EXHIBITION SUCCESS SUMMARY

## COMMUNITY IMPACT

Ball State University's R. Wayne Estopinal College of Architecture and Planning is hosting free public tours of an affordable, net-positive energy, sustainable duplex family home in Indianapolis designed by a team of CAP students and faculty. Located at 201 N. Temple Avenue, on the city's Near Eastside, the duplex, the Alley House, will be home for two families. Public tours highlighting the sustainability and renewable-energy aspects of the Alley House will be given April 4 -18, not including Easter Sunday (April 9). Over 1,000 people are expected to attend over the two-week Public Exhibit period. An online tour of the Alley House design walkthrough is available on the [Solar Decathlon Build Indy](#) website and has had over 140 views on YouTube. A virtual tour of the constructed Alley House will be posted in early April that explains the innovative features of the project and focuses on CAP's impact on the Near Eastside neighborhood through partnerships between Englewood CDC and Cedar Street Builders. This project is a practical, design-build opportunity with hands-on learning for the student team.



**SAVE THE DATE**  
**TOUR THE ALLEY HOUSE!**

The U.S. Department of Energy Solar Decathlon Build Team from Ball State University's R. Wayne Estopinal College of Architecture and Planning invites you to come tour the student-designed Alley House.

The students will guide you through their two-family home built on an infill lot in Indianapolis' Near Eastside with community partners Englewood Community Development Corporation and Cedar Street Builders.

**Tours begin April 4th thru 18th**  
Visit Week Days | 4:00 pm - 6:00 pm  
Saturdays | 10:00 am - 4:00 pm  
Sundays | 12:00 pm - 4:00 pm  
201 N. Temple Avenue  
Indianapolis, Indiana

Alley House  
201 N. Temple Avenue  
Indianapolis, Indiana

U.S. DEPARTMENT OF ENERGY  
**Solar Decathlon**

Public Exhibit Save The Date Postcard



Public Exhibit Yard Signs



Team Presentation Review



This duplex is an example of how Ball State students and faculty make positive impacts—solving problems in ways that help people and strengthen communities. To be successful as planners, architects, engineers, financiers, and community developers, CAP graduates must make it possible for under-resourced populations to access zero-energy, high-performance, quality-built residences such as the student-designed Alley House. The students working on the Alley House are committed, engaged, thoughtful, and talented. Their professionalism, and balanced building-centered and human-centered design knowledge will inspire renewed interest in affordable housing and sustainable building.



**Team Presentation Review**

CAP Alumni Tour Day on April 5 coincides with One Ball State Day, an event that encourages alumni and other supporters to contribute to the Solar Decathlon and other causes, celebrating the spirit of community and giving. This Public Exhibit will be open from 4:00 – 8:00 pm. The Alumni Tour Day will impact hundreds of design professionals from different disciplines, highlighting ways students and alumni at Ball State University can together tackle climate change and share their ideas on how to design and build zero-energy, low-carbon buildings. We didn't create the systems in our world that led to climate change, but we know that we can be the ones to fix them, and our innovative, affordable, two-family "Alley House design will prove it," said one student designer."



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Summer 2022 Groundbreaking Event - Cardinal Studion Receiving a \$25,000 Support Check as One of The 25 Causes (Out Of Over 4000) to Win in The State Farm Neighborhood Assist Grant Program





U.S. DEPARTMENT OF ENERGY  
**Solar Decathlon**

The U.S. Department of Energy Solar Decathlon Build Team from Ball State University's R. Wayne Estopinal College of Architecture and Planning invites you to come tour the student-designed Alley House.

The students will guide you through their two-family home built on an infill lot in Indianapolis' Near Eastside with community partners Englewood Community Development Corporation and Cedar Street Builders.

**Near Eastside Neighborhood Alley House Party and Tour**  
April 8th 10:00 am-4:00 pm

**Easter egg hunt, Student-led tours, Family-friendly games, and local food. Friends and family welcome!**



# ALLEY HOUSE PARTY

FAMILY | FRIENDS | CHILDREN

LEARN ABOUT THE NET ZERO ENERGY ALLEY HOUSE  
TWO-FAMILY HOME IN THE ENGLEWOOD VILLAGE  
NEIGHBORHOOD

201 N. TEMPLE AVENUE

OPEN FOR ALL

APRIL  
8TH  
10:00 AM-4:00 PM



[For more info]

## Invitation for Near Eastside Neighborhood Alley House Party and Tour on April 8th

On April 6 from 4:00 – 6:00 pm, the Cardinal Studio team will give a presentation and tour of the Alley House to representatives from the American Institute of Architects (AIA) Indianapolis. Students also will share the innovative and sustainable house design with the AIA members in a presentation for continuing education units (CEUs) at the University's CAP: Indy Center on the Near Eastside of Indianapolis, then travel less than a mile to 201 N. Temple Avenue to tour the Alley House.

Cardinal Studio will host a free public tour of the Alley House duplex on Saturday, April 8. This Alley House Neighborhood Party is a family-friendly event and will feature food, music, an Easter egg hunt with prizes for children, and a tour of the duplex. Information about the design and construction of the Alley House will be available onsite. The neighborhood association presidents of Englewood and Westminster St. Philip Neri are inviting a multi-generational group of community members who have watched the design and construction of the Alley House. Many of these community members attended the Groundbreaking Celebration in July, 2022, and are excited to have followed the project to its completion. Cardinal Studio expects over 100 people to participate in public tours on April 8.



Summer 2022 - Groundbreaking Event and Creative Use of Ball Jars Filling for Soil Test



The team set up special days for all neighborhood schools to bring classes to tour the Alley House. These include Daystar Daycare, Thomas Gregg Neighborhood Elementary School, Paramount Middle School, and Purdue Polytechnic High School. Schools received a flexible schedule showing two days and four times for taking groups through the Alley House. Teachers and administrators are engaged with this project and are aware of the importance it plays in bringing quality of life to their walkable community, especially the ability to walk to the Alley House using the east-west alley as a community connector. Cardinal Studio also contacted Arsenal Tech High School, a magnet school for the technical arts, to facilitate educational opportunities related to architecture, Alley House tours, and collaboration in advocacy.

Cardinal Studio's primary target audience is the Englewood Community. As a leader in the Near Eastside redevelopment, the Near Eastside features twenty-one neighborhood associations working together to create a multi-cultural, multi-generational place to live, work, worship, learn, and play. Like many post-industrial communities in the Rust Belt, Englewood has experienced population decline, reduced rates of educational attainment, decreasing median household incomes, and high vacancy rates. The recent affordable housing crisis and deteriorating existing building stock have negatively impacted the community. The Alley House is one of twenty duplex homes financed through low-income tax credits and is part of Englewood Community Development Corporation's plan to re-engage this neglected community by constructing multiple family housing units on vacant lots bought through its land bank and now owned by Englewood CDC. Cardinal Studio will discuss this effort of Englewood Homes and other initiatives with the Near Eastside community, and the team will use the Alley House as a kickstart conversation about how to reinvest in their community.

With Ball State University's President Geoffrey S. Mearns, Cardinal Studio designated Saturday, April 15, as Ball State Day at the Alley House. President Mearns and the Dean of the R. Wayne Estopinal College of Architecture and Planning, Dave Ferguson, both will be guest speakers at this event. Cardinal Studio invited the Mayor of Indianapolis, and City Council Chair Vop Osili and the Director of Sustainability Morgan Michelson, each of whom will speak on behalf of the City's initiatives supporting the Alley House. The day also will feature games, music, food, and



**United Way Day of Action Build for the Alley House**



**Cardinal Studio Design Day with Daystar Daycare Children**



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**Student Presentation Review**



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**CAP Dean Dave Ferguson Speaking at Groundbreaking Event**

educational tours. It will be a special opportunity for Ball State faculty, staff, parents, and alumni to gather in celebration of the Alley House. Cardinal Studio employed a multi-dimensional approach to sharing the work of the Alley House. Its press release invited media coverage, and a few correspondents already have contacted the team for special features.

On March 27th, decathletes from Cardinal Studio were interviewed by Newslink Indiana. Students and faculty will take a reporter through the Alley House for a “pre-tour” on March 29th. Local newspapers including the Muncie Star Press and the Anderson Herald Bulletin have run articles about the upcoming Public Exhibit tours.

Finally, on April 18 a faculty discussion of the Solar Decathlon competition and a designated Net Zero Design Curriculum in the Department of Architecture will be a featured topics during a retreat on educational initiatives. The retreat will conclude with a celebration and tour of the Alley House before sending students on their travel to Colorado to present this project to the Solar Decathlon Build Jury.



Second Floor Plan



First Floor Plan



# PAST EVENTS

## SUPPORT & FUNDING

In addition to the over 120 students, 30 faculty and professional consultants, and 20 industry partners, Cardinal Studio has actively been a part of fundraising for the Alley House and to date has secured \$403,556.42 in grants and funding.

## GRANTS / FUNDING:

- Community Development Block Grants Project  
Englewood Homes: The Alley House = **\$246,536.42**
- State Farm Neighborhood Assist Grant  
Net Zero Homes for the Englewood Community = **\$25,000**
- U.S. Department of Energy Proceed to Construction = **\$50,000**
- PHIUS Sponsored Assistantship: Graduate Assistantship Stipend = **\$3,500**
- College of Architecture and Planning = **\$10,000**
- One Ball State Day Funding = **\$2,600**
- Crowd Source Funding = **\$1,200**
- Immersive Learning Provosts Pilot Grant: U.S. DOE Solar Decathlon Design Build Project = **\$19,720**
- Immersive Learning Provosts Grant Sustained: Interdisciplinary Teaching through Immersive Learning = **\$45,000**

**Total = \$403,556.42**



Solar Decathlon Build Challenge Fund

