

UNIVERSITY of NOTRE DAME  
School of Architecture

**DESIGN VI/ ARCH 41121 (& AME 47431)**

BUCCELLATO STUDIO SPRING 2015  
Environmental Stewardship through Interdisciplinary Research and Design

**PROJECT 2: COMMUNITY: TRADITIONS, CULTURE, AND PLACE:**

A new neighborhood plan and model sustainable multi-family residences for  
Graduate student housing at the University of Notre Dame

ISSUED: FEBRUARY 18, 2015

Project Phases:

1. Understanding Context: Site Analysis and Precedent Research (Project 2a)
2. **New Neighborhood Master Plan & Comprehensive Building Design** (Project 2b)
3. Comprehensive Final Report (Project 2c)

In this penultimate phase of the project, you will undertake the comprehensive design of a **model sustainable residential housing type** within the context of a new neighborhood Master Plan (yours) for the western flank of South Bend's Morningside Neighborhood. Your Master Plan is expected to consider recent development along the Twyckehnam corridor and propose a broader vision for future development along Notre Dame's east edge, including the "Morningside Village Graduate Residence Complex" and the incorporation of additional, necessary infrastructure to support and enhance community life – both for ND graduate students and South Bend residents alike – living in the Morningside Neighborhood (for reference: see the South Bend Area Planning Commission's 2014 Report on Land Use and Pedestrian Plan).

Per the course abstract, the primary objective of this project (which is meaningfully related to the projects you have recently undertaken this semester) is to **consider the critical relationship between culture and place**; and meanwhile continue to advance our understanding and appreciation for the many different ways that our buildings must perform.

Using your knowledge of the specific ways that climate and context – the simultaneous consideration of locality, function, resources, program, and culture – influence building design *and* performance, you are expected to integrate and promote durable and sustainable principles of architecture and urbanism at every opportunity. From the guiding Master Plan and the treatment of the site, to the design of the buildings and the materials and methods employed in their construction and operation, the buildings that you propose must promote and bring forward the traditions and culture of the target community (married graduate students currently living at The University Village complex), and meanwhile become enduring and didactic examples of next-generation, high performance multi-family residential buildings.

Of course, you are aware that building performance is not only tied to resource and energy consumption: the design of high performance, site responsive architecture involves the thoughtful – and simultaneous – consideration of *both* the physical and cultural context of a given site, the specific functional requirements, as well as regulatory and other related (i.e., budget) constraints.

Approaching the design of 'high performance buildings':

1. Identify dominant issues and influential circumstances, both cultural and physical (understanding the connection between culture and place)
2. Assess ways that (those) existing conditions, traditions, and customs can be meaningfully maintained and incorporated into a new neighborhood and housing.  
This requires the understanding of:
  - a) Current neighborhood and building configuration and amenities
  - b) Resident experience, values, traditions
3. Establish criteria for measuring success – what are our 'performance' criteria:
  - a) Physical building performance (energy consumption)
  - b) Materials and methods (durability and long-term cultural and physical sustainability)
  - c) Site impact, land use strategies
  - d) Novel infrastructure and sustainable technologies/ solutions
4. Site evaluation/ high-level building optimization analysis (location, orientation, influences)

One of the ways that we will seek to understand and advance our knowledge of high performance building design is through collaboration with your engineering studio-mates. Together, you will work in pairs to incorporate feedback from prevailing building energy analysis tools into your building design process. Through on-going collaboration, the project teams will arrive at an optimal building design, one that performs exceptionally well in its context, for its purpose (client/ cultural) and that exceeds industry-standard energy performance goals (total annual energy consumption) for the building type. This tight, iterative process is meant to encourage the design teams to consider, from the outset of the design process, the impact of building orientation, massing, materiality, etc., on operating energy use, and enable informed decision-making about design compromises and trade-offs.

**\*Refer to the Appendix for the energy performance criteria and targets for your comprehensive building design and the list of deliverables that you are responsible for producing for your mechanical engineering counterparts.**

**Please refer back to page 2 of the Course Syllabus for overarching project objectives and pedagogical goals.**

Your successful completion and presentation of Project 2b requires the following (at minimum):

New Neighborhood Master Plan (1:100) & Area Plan (incl. relationship to ND campus)  
Primary Building Site Plan  
Primary Building Plans and Elevations  
Building Section(s)  
Typical Wall Section and "Bay" Detail  
Predicted Energy Performance for Comprehensive Building Design (your typical residential building)  
Process and Technical Documentation of Collaborative Iterative Design (see below)

You are expected to describe how your building design is an appropriate solution for the neighborhood that you have designed and, per our broader goals, a model for similar communities and contexts. Therefore, your final presentation should include drawings (i.e., site elevations and sections, perspectives, vignettes, etc.) that can support – or substantiate – your building design solution within the broader proposed neighborhood design. You will need to be able to describe how well your proposal accommodates the current resident population of The University Village and furthermore, how the extension of graduate residence life amenities to a greater portion of the University's graduate population might be achieved through your proposal.

Additional drawings that can be used to enhance our understanding of your particular approach to the design and character of the neighborhood, architectural character, construction methods, sustainable land use and infrastructure strategies, additional amenities, and so forth are *strongly* encouraged. **You are expected to include explicit evidence of your design development with your engineering collaborator in your final presentation.**

**\*\* ALL presentation drawings must be delineated by hand and *skillfully rendered*** as part of a single, thoughtful and carefully conceived composition. Other presentation modes and media may be proposed and pursued with the approval of the instructor.

**MID PROJECT REVIEW (ARCH Lead):** **FRIDAY, MARCH 6 at 2:00 pm**

**TECHNICAL DESIGN MEMO (ENG Lead):** **WEDNESDAY, March 18 at 2:00 pm**

**TECHNICAL DESIGN MEMO (ENG Lead):** **MONDAY, March 30 at 2:00 pm**

**FINAL PROJECT REVIEW (ARCH Lead):** **WEDNESDAY, APRIL 15 at 2:00 pm**

## **APPENDIX**

### **Energy Performance Criteria and Targets**

Through careful evaluation of prevailing building energy codes and regulations, the engineering team will establish a target **normalized** total annual energy consumption<sup>1</sup> and EUI (energy use intensity)<sup>2</sup> for each building. This target EUI is expected to be more stringent than existing targets, reflecting the University's desire to be a 'beacon of light' to the world in sustainability. This target is a minimum requirement, and through iteration, the expectation is that your final building design will exceed even that target.

This can be achieved with improved design, more energy efficient construction and material choices, or the incorporation of renewable energy features into the design. An important component of this project will be understanding and documenting the design choices that influence and ultimately dictate the building performance of the final design.

**Note on units:** All energy values should be reported in kWh and all other variables should be reported in English units.

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<sup>1</sup> For the purposes of this project, **normalized** total annual energy consumption is the total normalized energy consumption normalized to the **conditioned** volume in the building with units of [kWh/ft<sup>3</sup>]

<sup>2</sup> The energy use intensity (EUI) is the energy consumption divided by the functional area with units of [kWh/ft<sup>2</sup>]