

# **Durland Hall Renovation of the Chemical Engineering Laboratories**



**Prepared by Facilities Planning  
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## **Program to Renovate Chemical Engineering Laboratories in Durland Hall**

### **Introduction**

Durland Hall was constructed in 1976. The first phase of the Engineering complex was 59,456 square feet and was built to address the research and teaching needs of the College of Engineering. At the time, the College of Engineering's Departments of Civil Engineering, Chemical Engineering and Mechanical Engineering shared space in Seaton Hall with the College of Architecture. The new engineering facility provided much needed lab space for those departments and the the university.

In the past 30 years, Durland Hall has acquired two new wings, a total of 185,585 square feet. As each wing was added, new infrastructure was added to address the new and developing research needs. Phase I has received only minor renovations to the interior spaces.

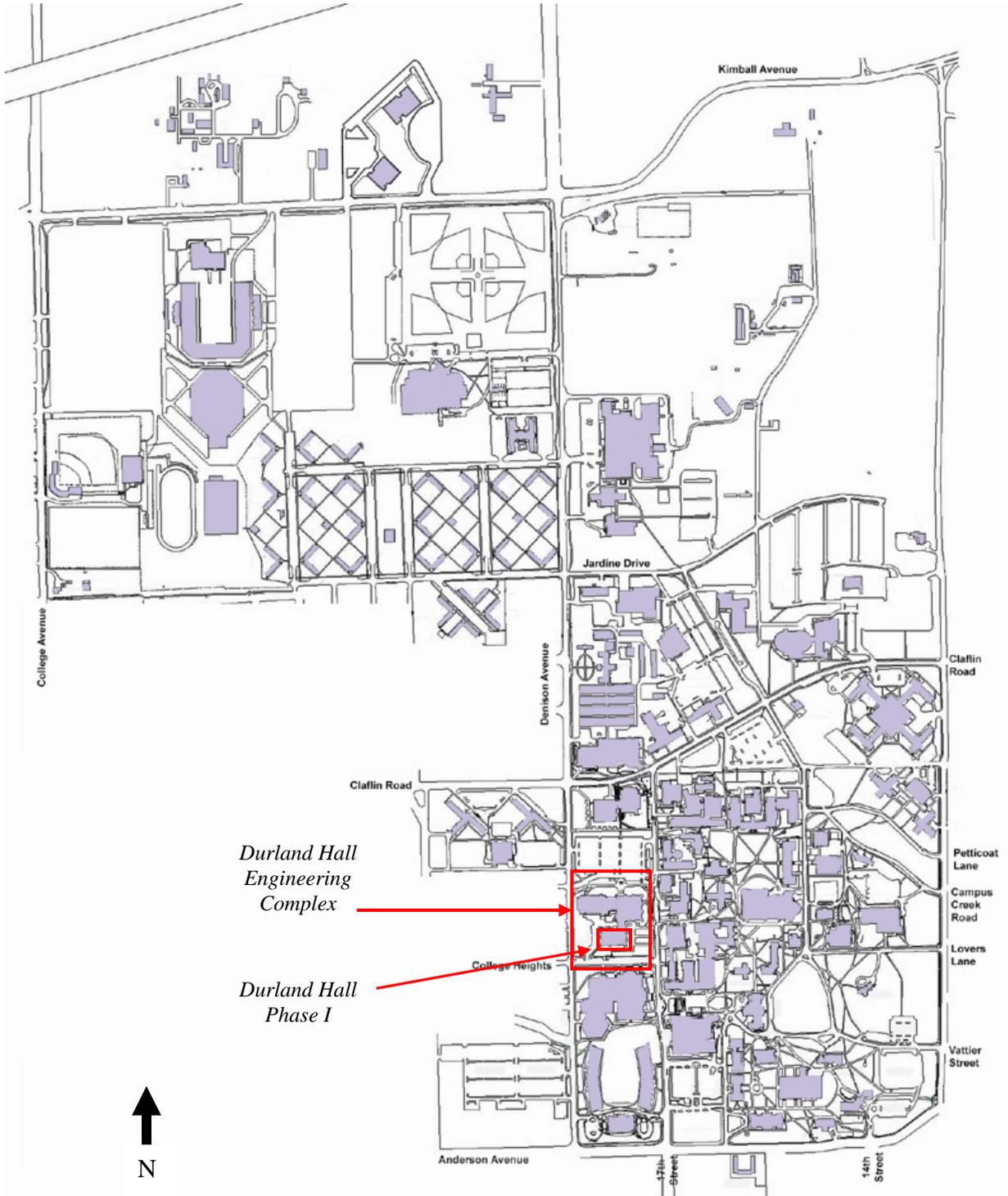
In that same time frame, engineering research has continues to evolve. The original laboratory facilities located in Phase I of Durland Hall Engineering Complex has become dated and no longer meets the current research needs.

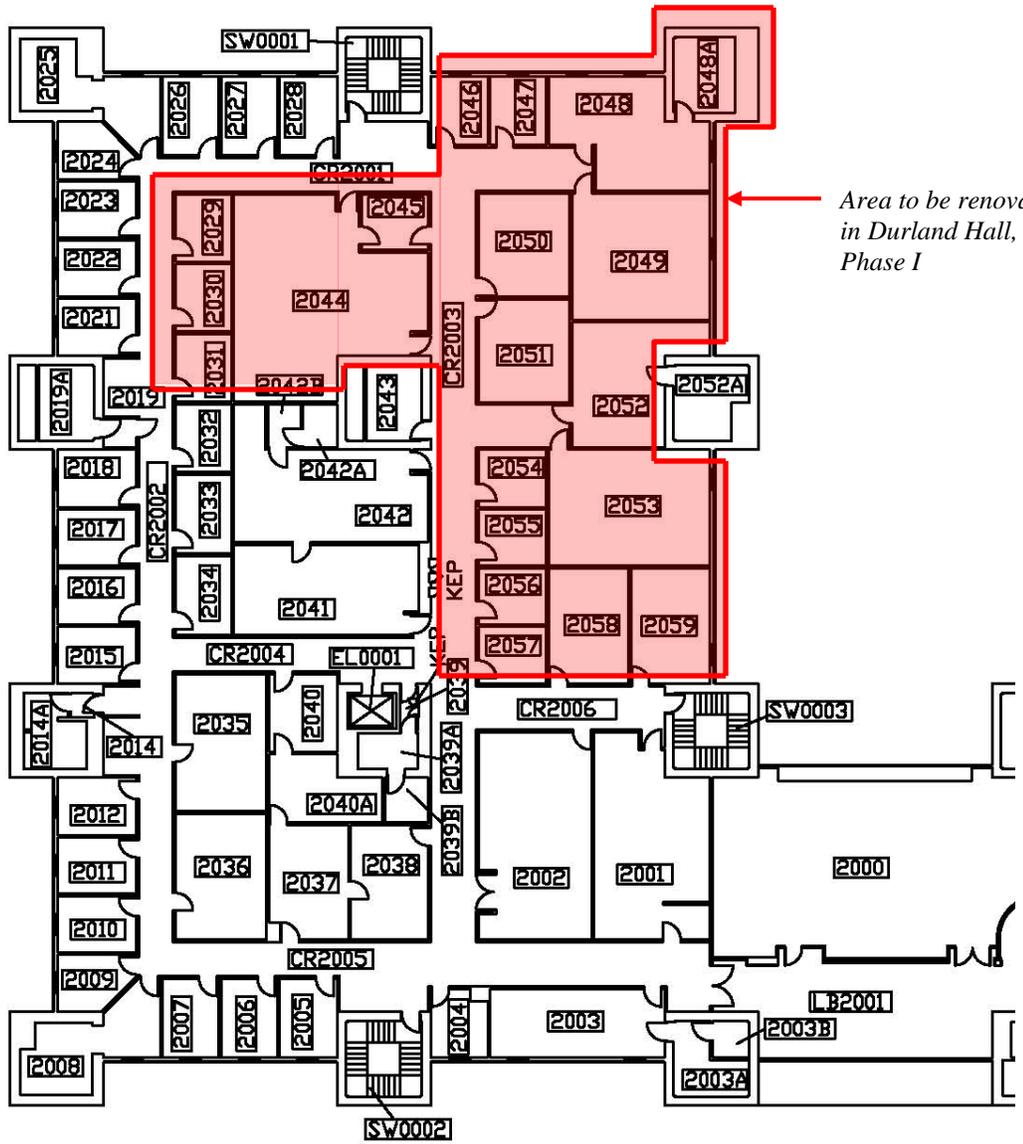
### **Current Conditions**

With the rising costs of energy, a growing area of research is sustainable energy. The laboratories are currently unable to meet this new and growing field of chemical engineering research. As a result, the Department of Chemical Engineering applied for a National Science Foundation grant.

The grant application, "Sustainable Energy Solutions via Systems-Based Research: A Proposal to Modernize the Sustainable Research Infrastructure in Durland Hall" was approved. This \$1,598,997 grant will pay for the needed laboratory renovations in Durland Hall.

# Site Map





Area to be renovated  
in Durland Hall,  
Phase I



## **Project Description**

The space to be renovated includes approximately 5,337 square feet occupying the second floor of Durland Hall. Of this, 5,237 square feet represents space that is used exclusively for research. Funds to cover the cost of renovating this space are requested from NSF. A small gathering area of approximately 100 square feet will be renovated with funds provided by Kansas State University. The breakdown of spaces is as follows.

**Chemical Engineering Laboratories (yellow):** Two large multi-user spaces will include appropriate fume hoods, lab benches, and chemical handling facilities.

**Chemical Preparation (blue):** This research space will provide for dedicated wet-labs for researchers to conduct bench-scale chemical manipulations. The space will include fume hoods, chemical storage, work benches, and research instrumentation essential for the conduction of the subject research.

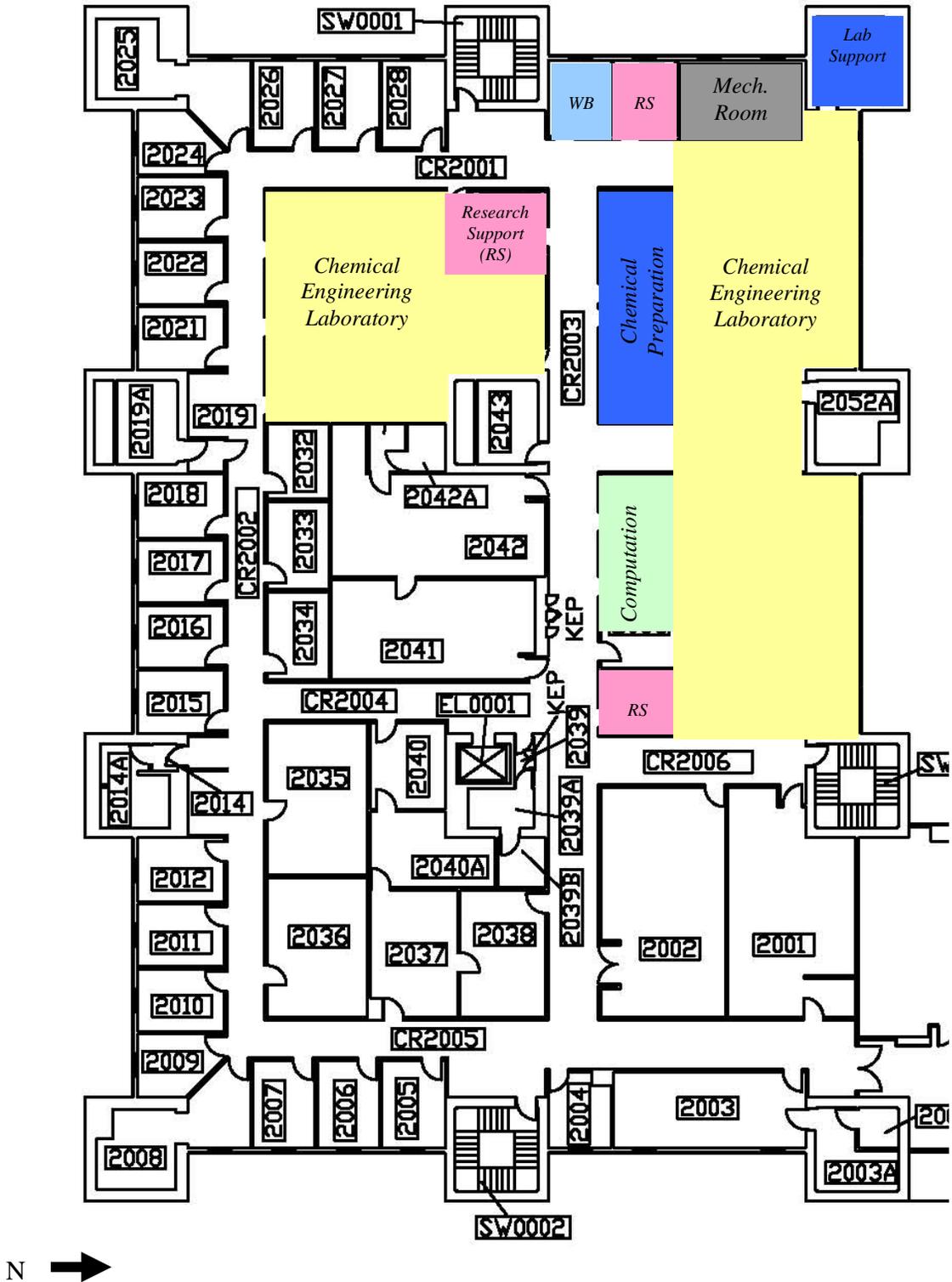
**Lab Support (blue):** This space is designed to provide chemical storage in a well ventilated and controlled environment. A new fume hood and air handling equipment will be provided to allow for a safe and isolated area for the conduction of potentially high-risk activities. The space will also house research equipment necessary for the conduction of the subject research.

**Mechanical Room (gray):** This space will house the equipment necessary to provide a new indoor air-handling unit will be provided to serve the new renovated north laboratory area and sized for the fume hood density. The air-handling unit will be 100% outdoor air and will consist of pre filters, final filters, glycol energy recovery coil, steam heating coil, steam humidifier, chilled water coil and variable speed drive supply fan. The air-handling unit will be installed in the new mechanical room located on the upper floor level.

**Research Support (lilac):** Three rooms will be provided to ensure that the researchers have access to equipment essential for the safe conduction of research. Specifically, these spaces will provide storage for personal protection equipment for the regular users of the space and any visitors. Personal protection equipment (PPE) including safety glasses, goggles, laboratory coats, face shields, respirators, and any other system-specific equipment required will be stored in these spaces. Additionally, these spaces will provide storage for inert research samples, laboratory notebooks, and multi-user research equipment.

**Computation (green):** This space will house research equipment essential for the completion of the subject research. Many of the analytical instruments to be employed in these laboratories are controlled by bench-scale computers. These computers also serve as data collection points for the analytical devices. To the extent possible, this Computation space will house the computers which control the analytical instrumentation. Thus, the analytical instrument might be housed in one of the “Chem. Engineering. Labs” or in the “Lab Support” area and its data acquisition computer might be housed in this computation space.

**White Board (light blue):** This provides an informal meeting space for researchers from the subject laboratories to meet and discuss research ideas.



## **Budget**

Demolition & Equipment Removal	58,000
Construction	1,080,000
Equipment Installation	225,000
Miscellaneous Costs	195,000
<b>Construction Subtotal</b>	<b>1,558,000</b>
Contingencies	242,000
Architectural & Engineering Fees	160,000
Project Inspection Fees	40,000
<b>Project Total</b>	<b>2,000,000</b>

## **Funding**

A National Science Foundation grant and Departmental funds will fund this renovation.

## **Maintenance**

No additional funds will be requested for building maintenance.

## **Timeline**

Programming	September 2010
Regents Approval	October 2010
A&E Selection	October – December 2010
Design Documents	December 2010 – May 2011
Construction	May – November 2011
Occupancy	December 2011