

June 2010

Inside this Issue:

A Message from Ted.....	1
Building Systems Maintenance.....	2-3
Custodial Services .....	4-9
Facilities Planning & Construction.....	10-11
Landscape Services.....	12-13
Utility Services.....	14-15
One Percent For Art.....	16

## A Message from Ted Weidner



The summer has started and while the students and faculty may be taking a break, FMP is working harder than ever. Here's a snapshot of what has or will be happening this summer:

### New Buildings:

The new **Physical Sciences Building** opened just as the students were taking their final exams. Moving from three buildings into one is not accomplished overnight; the move will take us well into June before it is complete. Once the move is done we will raze Ferguson Hall with the plan to complete the demolition and site restoration prior to football season.

**Jackie Gaughan Multicultural Center** was dedicated several weeks ago. It's an impressive new meeting space for students and others.

**Whittier Building**, while not "new" it sure looks new inside. Most of the building has been renovated and restored. Unrenovated areas are available for additional researchers with grant funds to support them. In addition, FMP has demonstrated its expertise by providing the first instantaneous building energy monitor near the main entrance. We believe that energy awareness by building occupants will result in reduced energy consumption.

**Keim Hall** has been renovated and enlarged. This "new" home for Agronomy and Horticulture features a laboratory in the courtyard; and landscapes maintained by the department which will provide learning opportunities for students and others. Large glass areas at several levels looking into the courtyard provide different views while in a controlled environment.

All these buildings have been designed with energy and environmental awareness in mind. The University has always been concerned about sustainability but with tools like the USGBC LEED Guidelines and subsequent university commitment to meeting the equivalent of LEED Silver, we're proud that these buildings meet or exceed this commitment.

In a short two months we'll work with the City of Lincoln to host the National Special Olympics. There are several events occurring on campus in addition to housing over 5,000 athletes and family members. Those who are involved will be receiving special credentials to be able to work in the areas with the athletes. I'm looking forward to presenting our beautiful facilities to the athletes and their families.

Everything we do involves careful coordination among ourselves and others. Keeping the campus beautiful while dealing with limited budgets is everyone's responsibility in FMP; let's take advantage of the summer to find ways to work better with each other and to find ways to make UNL better.

Enjoy the summer while here on campus and find safe and healthy time to spend with your family.

# BSM

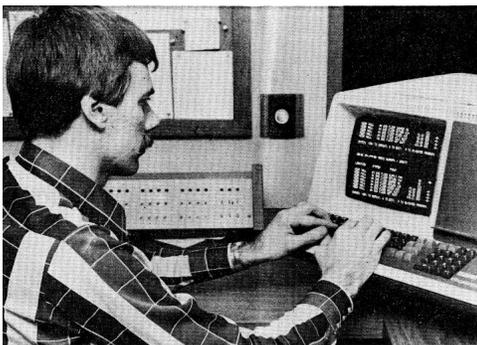
## Retirement of BSM Director, Jim Hines

Thirty three years ago UNL Physical Plant Assistant Director, Tom Nycum, made a phone call to Jim Hines and asked if they could meet over lunch. At the time, Jim was working for Johnson Control Systems out of Omaha and had been commuting nearly every day for two years to work at UNL on the Johnson system. Jim said that he thought Tom wanted to purchase control equipment or repair parts and was surprised when Tom told him he had been observing him, was impressed with his work ethic, and offered him a job. Jim considered \$4.00 an hour (a raise) a pretty good deal and accepted that offer. Now, after more than three decades, he has announced he is going to retire effective June 1st.

Soon after Nycum hired Jim to manage the control system, he also mentioned it might be a good idea to investigate the possibility of expanding the system and modifying it so UNL could add points to the system without having to go through the manufacturer. Thus began the home grown, UNL Energy Management Control System. What began in the dark basement rooms of 1700 Y Street has evolved into an energy management system that covers both campuses and contains more than 33,000 monitoring and control points. "It wasn't very long," Jim said, "before we progressed from simply monitoring what was happening in the buildings, to being able to control the equipment. Turn it on and off and make remote adjustments." "As the new system grew," he said, "we continued to think outside the box." A meeting with an electrical engineering faculty member led to another innovative idea. It became apparent that UNL could manufacture the electronic circuit boards necessary to expand the system at a fraction of the cost of purchasing them. He said, "Today our costs to install UNL controls is about \$500 per point compared to a vendor installed cost of nearly \$900 per point."

In 2002, the Controls System Group and Building Operations and Maintenance were merged to become Building Systems Maintenance, and Jim was tapped to lead the combined organization. "This was a big change for me", he said, "It quickly became clear to me that I could no longer be as intimately involved in everyday details." He decided that he needed to put together a strong leadership and management team. He considers himself fortunate to have been able to identify talented people to assume key leadership roles. Empowering them to act and providing them the authority to manage their individual areas has enabled BSM to improve the department's ability to provide cost effective solutions for the campus maintenance needs. He said that decision has yielded very positive results. "The success of BSM is the result of the fine leaders and dedicated staff who serve UNL so well, each day. My number one goal when hiring is to attempt to determine a person's character. One can be the best technician or tradesperson in the world, but without integrity, honesty, and initiative, these skills are not of much value."

Jim said that while he is leaving "an organization which is dear to my heart", he is eagerly looking forward to the future. He said he and his wife, Deanna, plan to travel and spend time with their grandchildren, and he will be working more at his church. One of his first goals is to take his mother on a vacation to the ocean. "She's 83 and has never seen the ocean," he said, "I want her to be able to walk down the beach with the warm sand between her toes. And honestly, I'm looking forward to that too."



*Jim Hines in 1980*

*Jim Hines 2010*



## Energy Use Kiosk

When the newly remodeled Whittier Building opens in June, it will be the first to contain an energy use kiosk. This touchscreen enabled dashboard, located on the second floor near the main stairway, will allow building occupants to view the current operational state and energy usage of the main heating, ventilating, and air conditioning systems in the building. This dashboard is the brainchild of BSM Assistant Director, Stefan Newbold, (pictured right) and was developed by BSM's research and development group.

One of the first building occupants will be the Nebraska Center for Energy Sciences Research. Center Director, Dr. Kenneth G Cassman, said, "The kiosk is a great way to spark the interest of visitors to learn about the energy efficiency features in the renovated Whittier Building. The hope is that better understanding of such innovations will promote wider adoption in other new construction and building renovations."



## Categories of Maintenance

A hierarchy which categorizes Building Systems Maintenance activities has been developed. This hierarchy represents the relative importance of various maintenance activities. For example, activities that affect the life safety (e.g. fire alarm testing, fume hood certification) of the campus community are considered more important than routine maintenance that only affects aesthetics (e.g. painting). The categories are:

### Fire, Life Safety, Indoor Air Quality, Regulatory

Maintenance of building systems that involve life safety and mandated regulatory compliance

### Building Preservation

Maintenance required to avoid deterioration of building systems such as roof leaks, plumbing leaks, heating

### Occupied Necessities

Lighting, electrical service, lock repair, lavatory plumbing, sewers, classroom seating

### Unique Program Support

Specialty systems supporting laboratories, classrooms, lecture halls and auditoriums such as compressed air, compressed gasses, fume hoods, writing boards, seating

### Ad Hoc Departmental Requests

Requests from departments that do not fall into one of the above categories such as maintenance of departmentally owned equipment, moveable furniture and specialized systems not part of the building infrastructure

### Aesthetic

Interior surface finishes such as ceiling tile, drywall, painting and floor coverings

## Custodial Services

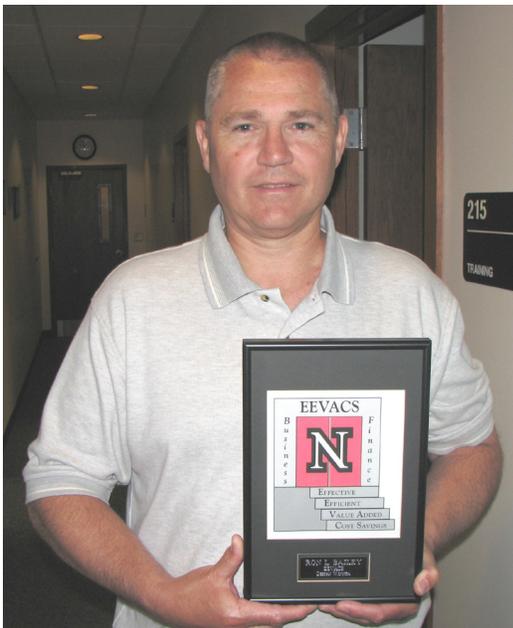
### EEVACS Awards

#### Why EEVACS?

(Excerpt taken from EEVACS Performance Measurements by former Vice Chancellor Melvin Jones)

“**EEVACS** was developed because we reject the notion that staff reductions alone will make the university a better place. Human resources are more important and more valuable to a university’s growth and reputation than dollar resources. If we are to become a more efficient and effective university that adds value to the teaching and research mission, it will be done with human capital. Whether getting bills out on time, keeping the buildings and grounds clean, or having books available at the start of class, the expectation is that the university will be effective in basic service delivery. The university is also expected to expend the least possible amount of resources in getting a job done and to perform expanded services with the same resources. Efficiency becomes not only an expectation but a requirement in stretching every tuition and state dollar to meet the university’s core mission. We must add value to student life and to the teaching, research and service missions of the university through the programs and services we provide to improve the environment and quality of life on campus. Finally, reducing actual cash expenditures through the reduction in operating expenses or in the cost of personnel, and avoiding increases in expenditures when adding or enhancing services is also a common theme in the discussion of how we can do a better job of producing education. This cost savings theme is key to developing a comprehensive approach to having a well run university.”

**W**hen Melvin Jones initiated the EEVACS award system, he asked UNL employees to submit their ideas for an official EEVACS logo. Ron Bailey, Associate Director of Custodial Services, was one who submitted his idea. Ron’s design was chosen by a committee for its creativity and representation of the essential elements of the EEVACS mission. Ron explains the winning idea came from the words Effective, Efficient, Value-Added and Cost Savings. He designed these words to create stair steps to doors that open when employees remain dedicated in their desire to meet or exceed expectations. Ron was given a cash prize of \$100 for his design and he donated the money to the Custodial Employees Association. Business and Finance employees can be nominated for the EEVACS award by anyone affiliated with the University.



Associate Director Ron Bailey displays his winning logo for the EEVACS Mission

#### EEVACS

- \* Effective
- \* Efficient
- \* Value-Added
- \* Cost-Savings

## (EEVACS Continued)



On May 26, 2009, UNL Honors student Kaitlyn Delashmutt was involved in a car accident just off campus at 21st and Dudley Street. Aside from being visibly shaken, she received some cuts from broken glass. Laurel Jinright witnessed the accident and not only stayed to give information to the police, but gave aid and comfort to Kaitlyn. Laurel allowed Kaitlyn to wait in her vehicle, as it was raining, and use her cell phone. When Kaitlyn's uncle Dave Delashmutt arrived at the scene of the accident the first thing Kaitlyn told him was how nice, helpful, and comforting Laurel had been to her. Dave is the Assistant Facilities Operations Manager of Abel/Sandoz Residence Halls, and he nominated Laurel for the EEVACS award.

Ruth Leverton Hall is currently under renovation. There had been several reports about doors being left open. Custodian Myong Shabloski began checking the doors in Leverton on a daily basis to make sure they were secure. On the evening of February 23, 2010, Myong was checking the doors when she heard water running. She located the source and found that the first and second floors were flooded. She immediately called her manager Ken Ziems. He notified the UNL operator and a UNL plumber was called. The plumber had the water shut off in a short period of time. Custodial staff cleaned up 150 gallons of water in about 2 hours. Thanks to Myong for noticing the flood and her quick actions. A much worse situation was avoided that could have easily leaked over 1000 gallons through the night.



Custodial Supervisor Jeff Worrall called Custodians Jim Chalk, Sharon Kivela and Andy Martin at home on a beautiful Spring Sunday in April to help with a flood in the Food Industry Complex. As Jeff recounts the event he explains that there was no hesitation by any of the three Custodial employees to come in and assist with the clean up. The quick response and hard work saved the facility from any further damage. Jeff, who was called in by Manager Joe Vrtiska, states that he is proud and grateful for the positive attitudes and willingness to stay and finish whatever was needed to complete the task. They were honored for their hard work with an EEVACS award.

Award Recipients Myong Schabloski and Laurel Jinright with Vice Chancellor of B&F Christine Jackson, Custodial Director Deen Popoola and Assistant Vice Chancellor Ted Weidner



Vice Chancellor Christine Jackson presents EEVACS Awards to Custodians Sharon Kivela Jim Chalk and Andy Martin



# Facilities Management and Planning

Pictured top left:  
Andy Martin  
Chet Kincaid



Pictured bottom left:  
Bill Noel  
John Beck



Pictured top right:  
Suzie Kerr  
Roger Carlson  
Andy Zhang Bigham

Pictured bottom right:  
Nyok Deng  
NET Crew



## The Custodial On-Line Experience



In the near future, new employees of Custodial Services will have a web site to supplement their training. Managers and Supervisors will be able to “tune in” to the on-line experience to show new employees videos, photos and interactive exercises to help them understand the Custodial process and UNL Policies and Procedures. With the help of Nebraska Educational Television Interactive Media Learning Services, the training web site will be available on-line to all Custodial employees. Please stay tuned for more information regarding this exciting new development. Here are photos of the NET video crew and Custodial employees who volunteered to be actors in the training videos and photos. We would like to give credit to the employees who helped, some are pictured here. They are: Deen Popoola, Ron Bailey, Larry Schmid, Chris Brennforder, Brian Bridges, Vladimir Cakic, Marie Critel, Nyok Deng, Joyce Dolson, Charles Dorse, Dwight Duchek, Chad Gieseke, Lanny Goering, Galen Harring, Nyariek Jock, Suzie Kerr, Andrew Leeds, Andy Martin, Donna Martin, Zlata Nedic, Hoa Nguyen, Bill Noel, Paul Pierce, Don Puckett, Rita Remmers, Terry Steinkamp, Chung Van, Greg Topp, Jason Weiand, and Sean White. Thank you all so much!

Pictured top left:  
Hoa Nguyen  
Chet Kincaid



Pictured bottom left:  
Vladimir Cakic  
Roger Carlson



Pictured top right:  
Sean White  
John Beck

Pictured bottom left:  
Marie Critel



**Producer/Director/Writer**  
Chet Kincaid

**Videographer**  
John Beck

**Audio Engineer**  
Andy Zhang Bigham

**Production Assistants**  
Rachel J. Carlson  
Roger M. Carlson





## Mike Wilson: Marathon Man

**M**ike Wilson, Custodian, participates in the Lincoln Marathon every year. You may see him running around town training for this one day event. The distance in a marathon is 26.22 miles. On May 2nd, a total of 1,154 runners participated in the Lincoln Marathon. This year, Mike finished 42nd place overall and placed seventh in his age division with a time of 3 hours 2 minutes and 39 seconds.

**Congratulations Mike!**

## Physical Sciences Building

**T**he new Physical Sciences Building is ready for occupation. The four-story, 124,000-square-foot building includes 2 lecture halls, 12 teaching labs, approximately 50 research labs and 7 classrooms, along with office and lab space for physics and astronomy faculty. The structure is UNL's second LEED-certified, environmentally friendly building. It will combine physics and astronomy labs, classrooms, and offices that were located in the 104-year-old Brace Laboratory, 60-year-old Ferguson Hall and 43-year-old Behlen Laboratory. University officials plan to remodel Brace and Behlen. Ferguson is scheduled to be demolished.



The Physical Sciences project crew responsible for scrubbing and refinishing the floors in the new Physical Sciences Building located west of Nebraska Hall /Walter Scott/Othmer complex.



Pictured from left to right:  
Brian Lubker, Chad Gieseke,  
Jason Weiland, Scott McDonald,  
Zdravko Ilic and Terry Steinkamp



## Custodial Services Annual IEHA Spring Seminar

Every spring, The International Executive Housekeeper's Association (IEHA) sponsors a day long training seminar. This year's seminar was held May 14th at Union College. Custodial Directors, Area Managers, Supervisors, Leaders, and even the Staff Secretary attended. The program consisted of two educational, motivational speakers, Chris Blake and Dan Kendig.



### CHRIS BLAKE

Chris Blake has been Associate Professor of English and Communication at Union College since 1993. He teaches a wide range of topics in composition, communication, journalism, and literature, and takes special interest in helping students get into print. Chris also teaches a Critiquing Film class. Mr. Blake has won numerous national awards in editing and writing. He has written hundreds of published articles with reprints in a variety of books, from Chicken Soup for the Teenage Soul to Swedish anthology for high school readers. In addition to creating Bodywise magazine, he has written many international seminars, including Eight Days to Resolving Stress and Learning to Love. His best-selling book Searching for a God to Love has been translated into five languages. The sequel, Swimming Against the Current, was published in 2007. He has spoken at hundreds of events from Norway to Australia, and is the past president of the Adventist English Association. Mr. Blake remains active in peace and social justice concerns. A former NCAA basketball player, he now enjoys playing disc golf and riding his mountain bike over the precipitous peaks of Lincoln, Nebraska.



### COACH DAN KENDIG

When Nebraska Gymnastics Head Coach Dan Kendig was hired in 1993, his goals were to return the Nebraska gymnastics program to national prominence and to have Nebraska in a position to win a national title, while also maintaining the highest standards of academic excellence for Husker student-athletes. Kendig has not only accomplished those goals, but made them a standard for excellence in his 16-year tenure, as Nebraska is considered among the nation's elite in both the gym and the classroom. Some of Dan Kendig's accomplishments as Head Gymnastics Coach are: Two-time National Coach of the Year (1999, 2003), Two-time Regional Coach of the Year, Six-time Big 12 Coach of the Year (1997, 1998, 2000, 2003, 2007, 2009), 12 NCAA Championships appearances, Nine Super Six Finals appearances, 96 All-Americans, Eight Big 12 Conference team championships, Three Big Eight Conference team championships, and Nine CoSIDA Academic All-Americans.

Ue-Bari, Troy LaPointe, Deen Popoola,  
Jim Lehn, Scott Foltz, Laurel Jinright,  
Suzie Kerr, Bill Jonas and Nathan Walla

Ue-Bari & Brian Lubker



Nick Callaghan, Joe Vrtiska & Ron Bailey



Deen Popoola & Kennan Kennedy



Nathan Walla & Jim Lehn



Dwight Duchek, Brian Lubker,  
Verlin Ritterbush &  
Chad Gieseke



Mike Boyes  
& Will James



Brian Bridges & Jan Fulmer



## Custodial Services Employee Profile

**H**i, I'm Charlie Flowerday, a custodian with the Alpha Team. We clean a number of small buildings and some larger ones. Working for Custodial Services is allowing me to further my education and get my master's in journalism. Before Custodial, I was the editor for the School of Natural Resources. After 21 years, budget cuts took my job in December 2006. Since then, it's been very hard to get back into my profession. Age and "over-qualification" seem to be factors. I'm hoping that a master's will get me to the "next level." It's a degree for teaching at a two- or four-year college. Prior to this, I received a bachelor's in English from Princeton University (1977), a master's in education and theology from Union Theological Seminary in New York (1981) and a second bachelor's in journalism from UNL (1983).



## WELCOME NEW EMPLOYEES!



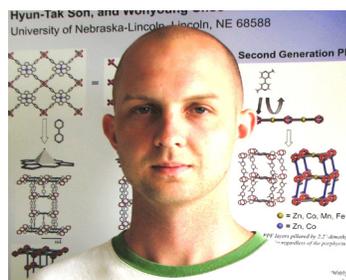
**Brenda Peters**



**Josh Ambroz**



**Donna Kyker**



**Carson Taylor**



**Gabriel Nelson**



**Esther Beltran**



**Paul Pribil**



**Aaron Kurtenbach**

## Facilities Planning & Construction

### FPC Employee Profile: Linda Cowdin



As Manager of Real Estate Properties, Linda Cowdin is responsible for handling all property transactions for the University. Linda has been particularly busy the past few months with the University's acquisition of the former State Fair property, the site of the new Innovation Campus. Linda conducted the preliminary "due diligence" analysis (i.e. investigation of a potential investment) on the fairgrounds property. This involved researching the history of deeds, leases, and easements and assembling and mapping information regarding the existing buildings and site utilities. Linda has worked for the University for 22 years, the past ten in Facilities Planning and Construction.

### Design Guidelines for Facilities Construction

A Design Guidelines Task Force has been formed and consists of Howard Parker (Chair), Brad Muehling, Lee Lephew, Richard Firebaugh and Jim DeCamp (BSM representative).

The Task Force's goals are:

1. Review potential for updating the existing Design Guidelines and review suggestions for updates from users of the guidelines. A short term goal is to update the 2009 Edition in its current format. A long term goal is reformat the Design Guidelines.
2. Improve communication with consultants regarding requirements and their responsibility to comply.
3. Review and make recommendations on Design Guideline waiver requests promptly.
4. Continued process development.

Several suggestions on updates to the Design Guidelines have been received since the 2009 Edition was issued in January, 2009. A call for any further suggestions will be issued in May and a deadline will be set for suggested updates. The Task Force will then review all the suggestions and mark up the 2009 Edition with proposed changes. It will then be posted on the H drive for review and comment in June. Once comments on the proposed changes have been received and reviewed by the Task Force, the final 2010 Edition will be issued in July.

A log of Design Guideline waiver requests and status of requests is on the H Drive at:

<H:\A&E\Construction\Design Guidelines>

Design Guideline update suggestions and waiver requests should be submitted to Howard Parker at:

[hparker1@unl.edu](mailto:hparker1@unl.edu).

### Funding for the Nanoscience Metrology Facility

The new NanoScience Metrology Facility addition to the Physical Sciences Building is being constructed on the west side of North 16th Street at the intersection of W Street. The total project cost is \$14.8 million and is made possible by a \$6.9 million grant from the National Institute for Standards and Technology (NIST) which is funded by the American Recovery and Reinvestment Act (ARRA). The project was designed by Perkins + Will of Chicago in partnership with the Lincoln firm of Bahr Vermeer & Haecker. The construction contractor is to be determined after bidding. Brad Muehling is the project manager through design phase and Jim Pinkerton is the construction phase project manager.

This new 32,000 square feet building will provide Central Facilities for UNL's material, nanoscience and nanotechnology research dispersed in Brace Lab, Behlen Lab, Ferguson Hall, Hamilton Hall, Nebraska Hall, Othmer Hall, and the Scott Engineering Center. The project is seeking LEED silver certification. Construction is scheduled to begin July 2010 and is scheduled to be completed December of 2011.

The Nanoscience Metrology Facility will provide state-of-the-art laboratories, shared research facilities, and administrative space in a central location. It will provide modern central facilities for nanofabrication, electron microscopy, and other synthesis and characterization laboratories and will permit new collaborative research that cannot be pursued in our present obsolete departmental buildings and laboratories that are scattered across campus. The building will feature flexible, multi-use research space designed to facilitate interdisciplinary collaboration. It will have a low-vibration, temperature-controlled, low-electromagnetic field environment and clean rooms necessary for world-class research and measurements.

UNL has a growing and nationally recognized research program in nanotechnology and materials science. More than 70 physics, chemistry, engineering and other faculty members from the College of Engineering, College of Arts and Sciences and the Institute of Agriculture and Natural Resources collaborate through the Nebraska Center for Materials and Nanoscience.

### What is Nanoscience?

Nanoscience refers to the ability to manipulate individual atoms and molecules, making it possible to build machines on the scale of human cells or create materials and structures from the bottom up. Nanoscience could change the way almost everything is designed and made from automobile tires to vaccines and to objects not yet imagined.

### How is Nanoscience Used?

While nanotechnology is in the "pre-competitive" stage (meaning its applied use is limited), nanoparticles are being used in a number of industries. Nanoscale materials are used in electronic, magnetic and optoelectronic, biomedical, pharmaceutical, cosmetic, energy, catalytic and materials applications. Areas producing the greatest revenue for nanoparticles reportedly are chemical-mechanical polishing, magnetic recording tapes, sunscreens, automotive catalyst supports, biolabeling, electroconductive coatings and optical fibers. Additional products available today that benefit from the unique properties of nanoscale materials, include: Step assists on vans, bumpers on cars, paints and coatings to protect against corrosion, scratches and radiation, protective and glare-reducing coatings for eyeglasses and cars, metal-cutting tools, sunscreens and cosmetics, longer-lasting tennis balls, light-weight stronger tennis racquets, stain-free clothing and mattresses, dental-bonding agents, burn and wound dressings, ink and automobile catalytic converters.

### What does it mean for today's society?

Responsible development of nanotechnology entails research toward understanding the public health and safety and environmental implications of nanotechnology, as well as research toward promising, highly beneficial uses of the technology. Such an approach recognizes the value of supporting basic research to develop nanotechnology as well as research to address environmental, health, and safety concerns related to the use of nanotechnology.

# Landscape Services

## GIS Mapping at Landscape Services

The University of Nebraska-Lincoln's City and East Campus is designated as a Botanical Garden & Arboretum as well as a Tree Campus USA. Maintaining plant records on maps and in a database is an important part of these designations. Current records have been maintained on paper maps and in a database, but an exciting new mapping is taking place. Landscape Services has hired a graduate assistant to start mapping the campus landscape into GIS, a geographic information system. GIS allows Landscape Services to map site features geographically and analyze the data to reveal relationships, patterns, quantities, and densities and determine areas for growth and development.

Shaojing Tian, the landscape graduate assistant for Landscape Services is from Wuhan, China. Shaojing is pursuing a Masters degree in Community and Regional Planning as well as taking classes in the Department of Horticulture. She has a bachelor's degree in Landscape Architecture from Huazhong Agricultural University in China. The focus of her study at UNL is environmental planning and incorporating GIS as a tool into assessing and reducing adverse impact of development on the environment. Shaojing's work for Landscape Services focuses on mapping trees and shrubs on both campuses. She is utilizing aerial photographs and scanned paper maps to enter plant locations. Once the initial mapping is complete, field verification and updates will start. The data Shaojing is digitizing on the map is linked to the existing plant database so that all plant information can be found in one place. Her work will be an incredible resource for the Landscape Services department and the UNL Botanical Garden and Arboretum.

Landscape Services is also working with the Utilities Department to map more of the campus infrastructure. Another graduate assistant, Shravan Bonagiri was hired to help with GIS mapping. Shravan is from India and is also pursuing a Masters degree in Community and Regional Planning. He has a strong background in GIS mapping and Geodatabase creation from his Graduate Assistant work at Kansas State University. Though Shravan is working with the Utilities Department his work is also focused on site features which is an enormous help to the Department of Landscape Services. Shravan has been mapping sidewalks, drives and parking lots for both City and East Campus. Landscape Services will initially utilize the information Shravan is mapping for snow removal routes and priorities, hardscape inventory and hardscape maintenance priorities.

Once all the data has been digitized into the GIS data models, the possibilities for information sharing are endless. Having all the data in one place will allow Facilities departments to plan infrastructure improvements, utility locations and future construction based on the significant landscape features of both City and East Campus. Having this data will also give Landscape Services opportunities for outreach in the Lincoln community with web-based maps of the landscape resources on campus.



Shravan Bonagiri

Shaojing Tian



## 2010 Jazz in June Garden Tours

Enjoy Great Garden Tours and Jazz in the great outdoors every Tuesday in June. Join Landscape Services staff as they give Garden Tours before the Jazz in June concert. Enjoy the beauty of campus while learning about interesting trees, perennials, historic buildings and sculptures. The tours begin at 6 p.m. on the east side of the Sheldon Museum of Art at 12th and R Streets. We have 5 tours this year.



### ***June 1st: Historic and Unusual Campus Trees***

Eileen Bergt, Director and Campus Landscape Architect and Kirby Baird, City Campus Landscape Manager will give a tour of the historic and unusual trees in the original four block UNL campus.

### ***June 8th: Tour of Historic Buildings on City Campus***



Kay Logan-Peters, Professor of University Libraries and Architecture Librarian will give an architectural tour of the original four block campus. Some of the buildings she will discuss will be Sheldon Museum of Art, Architecture Hall, Brace Hall, Ferguson Hall, Richards Hall and the Temple Building.

### ***June 15th: Westbrook Courtyard***

Emily Casper, Landscape Architect, will give a tour of the new plantings in the Westbrook Courtyard and surrounding areas near the 11th Street entrance to campus.



### ***June 22nd: Love Gardens***

Amy Alderman, Landscape Services Landscape Supervisor, will give a tour of Love Garden, the large perennial display gardens at the entrance to City Campus. She will discuss plants that are in bloom at this time as well as perennial care and maintenance.

### ***June 29th: Highlights of Sheldon's Sculpture Garden***

Karen Janovy, Education Coordinator-Sheldon Museum of Art, will give a tour of the outdoor sculptures at the Sheldon Museum of Art.



Come early, set out your blanket and join us for the Garden Tour. Along with Jazz in June is the Jazz in June Market which offers a variety of vendors from area food producers, to sidewalk food preparers, to artisans who display and sell their wares. Jazz in June begins at 7 p.m. on the west side of the Sheldon Museum of Art. Jazz in June is a beloved downtown Lincoln summertime tradition that has occurred for 19 years.

### Utility Mapping using Advanced Geographic Information System (GIS) and GPS Technology

#### Introduction:

**Vision:** To achieve digital mapping of the UNL Utility infrastructure using GIS Technology.

The importance of knowing exactly where utilities have been installed, what materials were used, and how the utilities affect the rest of the managed environment, is critical. Utility information is used for damage prevention, repairing utilities, planning facilities, site cleanups, maintenance and inventory of utilities, and analysis of utility usage.

Utility Services division at UNL operates and maintains two central plants and distribution systems for steam, electricity, chilled & domestic water, storm & sanitary sewer, and natural gas, serving 618 Acres of land with 245 buildings. A GIS project is developed for the UNL Utility Services Division as part of Campus Utility Master Plan. The project involved Creating and building baseline GIS data, Updating baseline GIS data using GPS, and Creating Enterprise Web GIS. With the help of GIS Utility mapping the integration between the physical master plan and utility master plans coordinated for better decision making. In the past, lack of an organized system in electronic format prevented the planning and utility departments from running at optimal level. Much of the campus utility information was stored and managed on paper drawings, which haven't been updated since 1985. After the utility information is stored in the GIS database, it is possible to depict precise information that is needed from a map. UNL staff in the Planning and Utility Services department can now do a cursory review for any hypothetical and specific questions before suggesting the location, size, and character of future potential building sites.

As a part of UNL Utility Master Plan study, University hired GIS Workshop Inc, a local consulting firm, to help develop the GIS project. The project involved the following phases to completion.

- **Phase I:** Developed geodatabase design for all utilities (steam, chilled water, electric, domestic, gas, storm sewer, sanitary sewer). This involved extensive field visits and discussions with utility managers, operators, and technicians about existing surface features and attributes to be included in the dataset models. Next step involved Geo-registering mylar scans to imagery (approx. 100 maps for each campus based on grid system) and digitized features from rectified mylars.
- **Phase II:** Acquired GPS hardware and software to verify accuracy of digitized features on the ground. Steps involved developing data collection forms for ArcPad for each utility, differentially correct GPS data and update GIS with GPS data. Most of the university owned utility features (Steam, Chilledwater, Electricity) achieved less than 15 cm accuracy after post processing the GPS data.
- **Phase III:** This phase was collaborated with UNL Police Department in migrating from utility personal geodatabase to Enterprise level database (ArcSDE) and posting it on ArcGIS Server and which is still in the development phase.

ESRI ArcGIS Desktop software is used for mapping utilities. The major source of viewing utility data is through ESRI ArcReader software which helps utility employees locate one call requests and identifying feature attributes for maintenance and relocating purpose.

#### Utility Plant Statistics

##### Utility Plant Equipment:

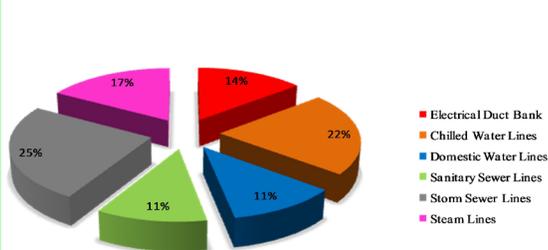
City Campus Utility Plant  
 4 High Pressure Boilers, 360,000 lbs of steam per hour  
 6 Chillers, 20,000 tons of air conditioning  
 636,000 Gallons of Fuel Oil Storage

East Campus Utility Plant  
 3 High Pressure Boilers, 220,000 lbs of steam per hour  
 3 Chillers, 7,000 tons of air conditioning  
 86,000 Gallons of Fuel Oil Storage

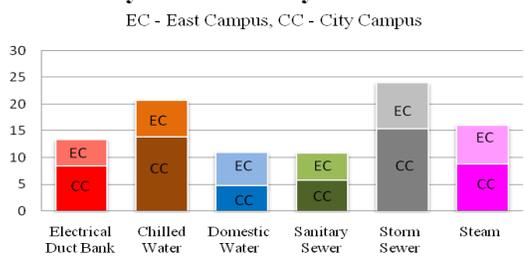
##### Distribution Systems Total:

4.7 Miles of Utility Tunnels (City 2.9 Miles and East 1.8 Miles)  
 20.7 Miles of Chilled Water System (City 13.9 Miles and East 6.8 Miles)  
 16.0 Miles of Steam System (City 8.8 Miles and East 7.2 Miles)  
 2.2 Miles of Natural Gas System (East 2.2 Miles)  
 13.4 Miles of Electric Distribution System (City 8.4 Miles and East 5.0 Miles)  
 10.8 Miles of Sanitary Sewer System (City 5.8 Miles and East 5.0 Miles)  
 24.0\* Miles of Storm Sewer System (City 15.4 Miles and East 8.6 Miles)  
 10.9 Miles of Domestic Water System (City 4.8 Miles and East 6.1 Miles)

#### UNL Utility Distribution Percentages



#### Utility Distribution System in Miles

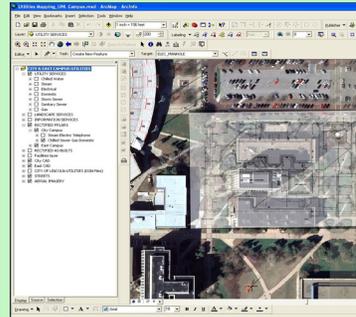


#### Future Projects

- Build custom applications for leveraging utility updates in the field.
- Build Utility Network models.
- Interface between GIS and SCADA for outage management systems.
- Integrating GIS and SAP business solutions for tracking work orders.

#### Methodology

**Georeference Mylar Drawings:** Rectified utility Mylar drawings on to the aerial imagery using ERDAS IMAGINE and ArcGIS Georeference.



**Data Collection:** Collecting and updating utility data using ESRI ArcPad software and Trimble GPS. Conduct regular field visits during utility repair, gathering and documentation. Discuss with utility personnel for undocumented utility information.



#### UNL Utility GIS

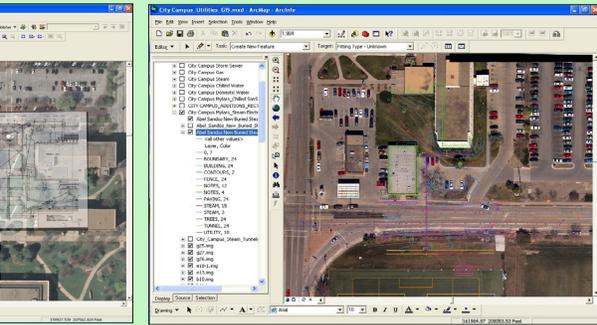


# Facilities Management and Planning

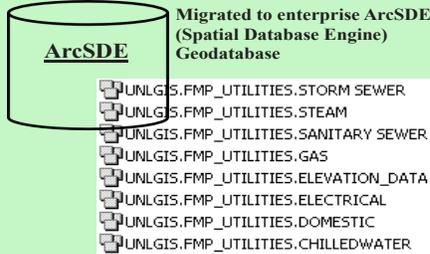
## University of Nebraska-Lincoln of Utility Services, Division of Facilities Man-

ed scanned  
imagery using  
ferencing tool.

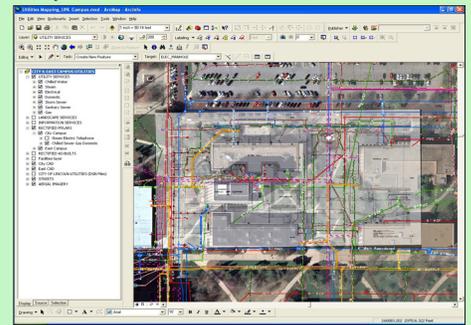
**Transform CAD Drawings:** Imported AutoCAD as-built drawings and then transformed by the coordinate system to exactly overlay on to the aerial imagery



**Geodatabase Design:** Defined data dictionary and created domains and subtypes for all the utilities. Created Personal Geodatabases with feature datasets and feature classes



**Digitize GIS Layers:** Digitized all utilities into separate layers. The layers are grouped based on the common utility.



ting GIS/GPS features in the field  
ble GoeXH handheld unit. » Per-  
repairs and constructions, for data  
ss with maintenance and Power Plant  
ormation.



### Benefits of GIS Mapping

**Better Decisions:** GIS updates are made periodically to have current and accurate information, allowing utility managers and technicians for wide range of decisions to safely handle projects.

**Cost Savings:** GIS mapping of campus utilities is helping in cost savings related to handling information and cost savings associated with better planning and management of physical resources.

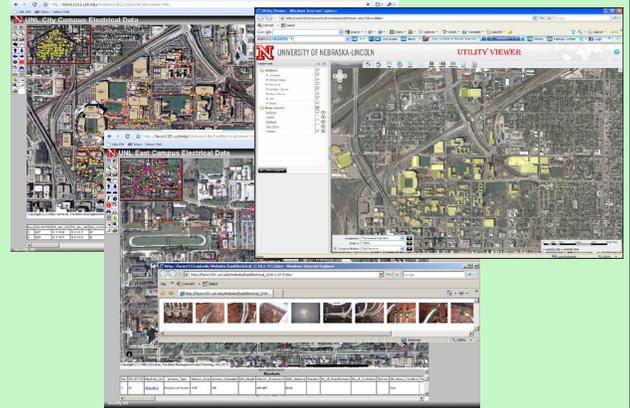
**Improved Communication:** Communication with other departments is enhanced with the improved quality and accessibility of maps. Hyper-linking photos, documents, scanned images and construction drawings helps in finding information at one single point on the map.

**Improved Records Management:** Utility information stored in GIS electronic format is more easier for distribution and accessibility.

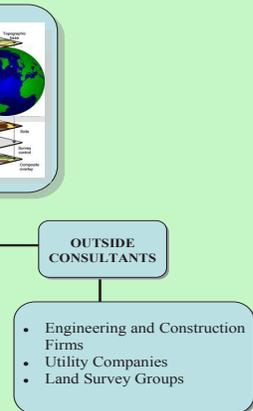
**Better Accuracy:** Achieving 10 to 15cm accuracy on utility feature locations, with the help of GPS, not only helps in preventing damage to other utilities while excavating but also helps in finding features like valve boxes and manholes that are covered in deep snow during the winter season.

**Better Analysis and Time Savings:** Data in GIS format facilitates better analysis of utility networks for capacity planning and capital improvement projects. Campus Planning Committee group is greatly benefited by having the latest GIS utility information for decision making on new campus facilities.

**Leveraging UNL GIS Data on Internet:** Developed ArcIMS Website to share GIS data for inter-departmental use. Later migrated to ArcGIS Server in collaboration with UNL Police department. GIS Systems can be used on Desktop, Enterprise, or Web-Based Environment.

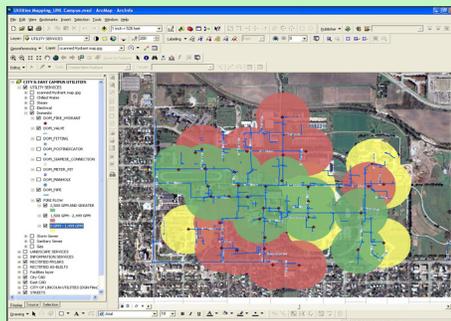


### GIS Data Users

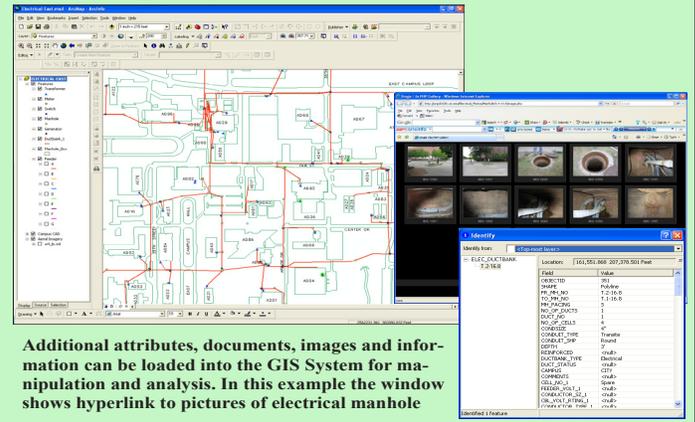


### Applications of GIS

The ArcMap window shows Available Fire Hydrant Flows of each hydrant in east campus. Each hydrant is surrounded by a 420 feet buffer symbolizing "adequate fire flow" and "deficient flow".



GIS Electrical network information helps electricians visualize, analyze, manage, plan and produce inspection reports for outage management.



Additional attributes, documents, images and information can be loaded into the GIS System for manipulation and analysis. In this example the window shows hyperlink to pictures of electrical manhole

# Utility Services

## Annual Steam Outages

For those of you that were still on City campus May 9th thru the 15th and on East campus May 16th thru the 22nd, light jackets and sweaters became normal attire. Why the need for extra layers? It's that time of year for Utility Services' annual steam outages. What this means is no heat and, in most cases, no hot water during these periods. The timing of these scheduled outages are not randomly selected but rather chosen in order to cause the least amount of disruption to campus activities. This two week period coincides with the end of second semester and Commencement along with Campus Rec's scheduled annual shutdowns and also when UNL Housing has little or no occupancy. These outages allow Utilities an opportunity to repair or replace steam production and distribution equipment in order to maximize system operation and safe reliability. Utility plant steam production equipment is continuously monitored thru the course of the year and campus steam distribution systems are inspected monthly for proper operation. Items which require immediate attention are addressed thru emergency isolated outages. All other items which are determined to be non-emergency or safety related and not detrimental to system operation are scheduled for repair during our annual outages. New or remodeled campus facilities requiring new or upgraded steam service are also scheduled during this time if possible. We at Utilities appreciate the cooperation and understanding of campus personnel and hope the one week of minor discomfort is worth the ability to maintain your comfort for the rest of the year.

Rick Haave  
Utility Maintenance Manager

## Steam Outage Replacement Project

Here are pictures of a replacement project that was addressed during the steam outage at the city plant. A 12 inch valve on the steam piping system was replaced. The individuals in the pictures are Duane Mischnick with the green welding sleeves and Ricky Sipes.

