

## Mission *critical*

Hospitals are a unique workplace for electrical construction workers. Hospitals function 24 hours a day. There is no down time. Their electrical systems are mission critical not only for power, but for nurse call, security systems, code blue systems, fire alarms, and to keep computer systems online. In addition, workers must pay special attention to infection control procedures, often wearing hospital scrubs, and work areas must be sealed off to prevent the spread of dust and bacteria.

Several National Electrical Contractor's Association members (NECA) in the Dayton area perform renovations, maintenance,

equipment upgrades and install systems in new hospital facilities, including Kastle Electric, Chapel Electric, ESI Electrical Contractors, and Wagner Smith Electrical Contractors.



*Typical of local NECA work is this State-of-the-art nurse's station at Miami Valley Hospital, ESI Electrical Contractors.*

Grandview Hospital is undergoing several renovation projects. Facilities Project Coordinator Nick Comstock with Wagner Smith acts as a liaison between Grandview and any new construction that

takes place at the hospital. "We have Kastle Electric remodeling the emergency room, Chapel Electric is installing a new heart and cath lab, along with changing out the fire alarm system and HVAC systems, while Wagner Smith is installing the controls for these systems," says Nick. "And we just rerouted the power that feeds the hospital utility infrastructure including cable, electrical systems, gas and water, all in preparation to build a new hospital area early next year. Hospitals must continually upgrade to keep up with the changing technology," says Nick. SONET, a new computer room project, was recently completed by Wagner Smith and ESI installed systems for the new trauma center.

### Kastle Electric

As challenging as working in a hospital already is, Kastle Electric has been renovating the Emergency Room at Grandview, while the Emergency Room continues to function. "We are replacing every system with state-of-the-art equipment," says Andy Stuhlmiller. These include a new nurse call system, code blue system, access control, HVAC control, security systems, and medical gas systems, as well as electrical prepping for installation of new CT Scans, MRI's and other new equipment. "The real challenge," according to Kastle Project Foreman Matt Fore, "is keeping all existing systems up and running, while installing the new systems. And we have to stay flexible. We could start work in a trauma room when an ambulance arrives. Then we have to vacate the area immediately." They are also relocating the security room and nurse call station, all while

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## Simply... the best workforce!

There is one thing that can be said about NECA contractors and the IBEW workforce...they are the best. The best trained, most highly qualified in the latest technology, perform the best quality work and are the most professional members of the electrical industry. No ifs, ands or buts.

Not only is their apprenticeship training outstanding, but there are

many opportunities for ongoing training, to acquire additional leadership and technical skills, through the Management Education Institute (MEI) and the National Institute of Training (NTI).

MEI offers courses year-round in Project Management, Technical Management and Business Management. Here's a sampling of the available classes:

- Developing an Electrical Safety Program
- Construction Law for Electrical Project Managers
- Quality Management
- Conflict Prevention and Resolution
- Project Finance
- Structured Cabling Systems
- Harnessing Technology to Increase Productivity
- Strategic Planning for Electrical Contractors

- Delivering High-Quality Customer Service
- Human Resources – Using the Potential of Your Greatest Asset.

Instructors travel to your own facility to teach these courses. Currently 20 Journeymen from Local 82 are attending Electrical Project Supervision courses, held at the IBEW/NECA Training Center in Dayton.

NTI is held for one week each year in Knoxville,

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## Mission *cont'd*

the existing facilities are up and running.

A unique project that Kastle has installed at Grandview is an extensive snow melting system that is embedded in the concrete slabs of the sidewalks. This design allows for easier access into the emergency room, particularly for the handicap ramps. The General Contractor for this Grandview project is Danis, and Helmig, Lienesch & Associates are the Electrical Engineers.

## Chapel Electric

Chapel Electric has serviced and maintained the majority of Dayton's hospitals over the years, while completing some of the nation's largest replacement hospitals. Chapel shares the same concerns as the owner regarding patient welfare and minimizing hospital interruptions. Chapel is a member of the American Society for Healthcare Engineering and has key personnel that have completed its certified healthcare construction environment program.

Their philosophy is to determine the end-user wants and needs, and provide service that exceeds expectations. For example, last winter during the region's big snowstorm, Chapel workers assisted in shoveling the parking lot at Grandview. "The real customers are the patients," says David Roark, Manager of the Special Projects Division.

"We try to support Grandview in any way possible because patient welfare is the top priority." Chapel also helped to move the lighted Cross that was on St. Elizabeth's building and installed it at Grandview, where it can be viewed from I-75.

Chapel Electric has four, full time staff working at Grandview hospital. Their constant presence permits them to undertake renovation projects and moves and adds per client's requests. Their emergency call center provides 24/7/365 demand service capability for emergency service on security cameras, fire alarms, nurse call systems and high voltage distribution. Failed equipment results in unplanned outages that can be very costly and critical in a hospital. That's why Chapel provides predictive/preventive maintenance at Grandview, on high voltage systems and with the use of infra-red cameras, which are used to detect abnormal heat on electrical



*Vanderbilt Children's Hospital, Nashville, TN, Chapel Electric*

switchgear and transformers.

Renovations take place continually. Chapel has been working with Grandview since the 1960's to meet the technological improvements and challenges. They have replaced all types of medical equipment as it is updated. Chapel also services generators for backup power and UPS (uninterrupted power supply) units for computers, both of which are critical in the functioning of a healthcare facility. In addition, they installed all of the voice and data cabling and fiber optics

throughout Grandview. Chapel performs maintenance on systems at Southview, Huber Health Care, Clinton Memorial and doctor's medical office buildings in the area, as well.

On the national level, Chapel recently completed the Vanderbilt Children's Hospital in Nashville, TN and has been awarded two research projects on campus. One is a 600,000 square foot Medical Research Building and the other is the Imaging Institute. The Imaging Institute will house the second largest MRI in the United States. The magnet is classified as 7 Tega strength and is 140,000 times stronger than the earth's magnetic field.

## ESI Electrical Contractors

At Miami Valley Hospital, ESI Electrical Contractors are finishing the renovation of a new burn center, complete with a new fire alarm system, nurse call, CCTV security system, new TV antenna system, and overhead paging. They have also installed card access control for hospital personnel. Currently they are installing more than 50 card readers to all the pharmacies in the hospital (some of these are located at nurses stations).

ESI currently has 5 to 10 electrical workers performing maintenance at Miami Valley Hospital. "We handle everything from changing a receptacle, fixing a motor operated door to replacing lights in surgery rooms, where we have to wear hospital scrubs," says Project Manager Roger Howard. Here's a list of some of the work performed by ESI over the last year:

- Back up emergency system added
- Installation of a new UPS for the computer room
- Renovation to the nursing excellence training facility
- Transfer switch replacements (which switches power to emergency backup power)
- Parking garage lighting

upgrade

- CICU (coronary intensive care unit) electrical upgrades
- Installation of a new Linear Accelerator in Radiation Oncology (which involved cutting up the floor, tearing out the concrete, running new conduit, installing transformer panels and new lighting).

ESI is ready to start on a new power distribution project at the Cleveland Clinic Heart Hospital. The project will be done in conjunction with Wagner-Smith Co. and D. E. Williams, a Cleveland based NECA contractor. They will be installing high voltage systems, generators etc. for normal power, emergency power and critical care and life safety. The new Heart Hospital Building will include surgical and patient care areas. The building is over one million square feet.

## Wagner Smith Electrical Contractors

The Shaw Trauma Center (a Wagner Smith/ESI collaboration) project is Miami Valley's largest recent addition to the MVH campus (over half a million square feet). This project began in 1998 as a five story building including a new emergency trauma center, 23 new state-of-the-art surgery suites, central sterilization facility, an additional heliport landing pad for care-flight and much more. During the construction of this facility 3 additional floors were added to accommodate a new CICU unit, a new 69-bed patient care unit, and a new Psychiatric Ward. The new building, now referred to as the "South Tower" by MVH personnel, was completed in early 2004.

It may be all in a day's work for these highly skilled electrical workers, but for the patient's, their work is life saving.

## CONNECTIONS

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Your comments, suggestions and questions are welcome! Contact the Western Ohio Chapter - NECA.

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# Dangers of arc flash

The flash is instantaneous, almost too fast for the eye to comprehend. But the end result of this incident could be more than \$15 million in direct and indirect costs to a company.

Five to 10 arc flash explosions occur in electrical equipment every day in the U.S. that sends a burn victim to a special burn center. And that number does not include cases sent to regular hospitals or unreported cases and “near misses,” estimated to be many times that number. Last year, 364 electricians lost their lives due to arc flash.

## What is an arc flash?

Arc flash incidents typically occur in applications above 120V and can occur when electrical equipment is

being serviced or inspected. The arc flash is caused by a reduction of the insulation or isolation distance between energized components. This could be caused by a tool being inserted or dropped into a breaker or service area. Often incidents occur when a worker mistakenly fails to insure that the equipment has been properly de-energized. And this is key. Training to avoid arc flash is only for the exception, when a facility cannot be de-energized (as in a hospital that functions 24/7).

The surface of the sun is 9,000 degrees F and the temperature of an arc can reach more than 35,000 F as it creates a brilliant flash of light and a loud noise. An enormous amount of radiant energy explodes outward from the

electrical equipment, spreading hot gases, melting metal, causing death or severe radiation burns, and creating pressure waves that can damage hearing or brain function and a flash that can damage eyesight. The fast-moving pressure wave also can send loose material flying, injuring anyone standing nearby. At higher voltages, this blast is equivalent to eight sticks of dynamite!

## Safety programs are key

The NFPA 70E provides regulations that require the calculation of the “flash protection boundary” inside which qualified workers must be protected when working. OSHA requirements cover energized protection safety which has to be addressed in the job planning that will be performed on or near energized electrical equipment, where a

potential for arc flash exists. Dick Brooks, Assistant Training Director with the IBEW/NECA Training Center, recently lectured about arc flash and 70E at Sinclair Community College, to an audience of American Society of Safety Engineers members. Although the NFPA 70E is not enforceable by OSHA, “the customer could have serious liability issues under 70E because a written work permit is required, that the owner must sign if the power cannot be turned off,” says Dick. OSHA has formally stated that NFPA 70E is an effective reference for complying with the OSHA standards regarding working on or near energized electrical equipment.

Third year apprentices receive 12 hours of specific training in arc flash and 5<sup>th</sup> year apprentices receive 16 hours.

## The Best *cont'd*

Tennessee at the University of Tennessee, Knoxville (July 30-August 5, 2005) and is open to Instructors, Contractors, and Journeymen. Students live on campus all week while taking classes.

## Professional Education Courses

These classes are for apprenticeship instructors and focus on the principles of learning, elements of trade teaching, using instructional technology, and supervising and instruction on the job. In order to be an effective instructor, it's important to understand how people learn and the nature of trade education. Emphasis is placed on computer applications in developing training material and its use in presenting related information.

In addition, there are courses on leadership theory and practice, and labor history.

Executive Manager, Western Ohio Chapter NECA Dan Neal will be teaching a class on Labor History and Process of Relationships. The course seeks to provide a knowledge base about the role communication and negotiation play in the IBEW/NECA relationship. It looks at the historical, legal and political contexts in which these two processes work.

## Technical Courses

Here's where the NECA/IBEW members set themselves apart from the rest of the electrical industry workers. Any IBEW member, signatory contractor or their employee may register for any technical training course.

Take a look at some of the offerings:

- AutoCAD Fundamentals
- Test Instruments for Troubleshooting Electrical Systems
- Cable Testing & Fault Locating
- Introduction to Semi-Conductors and Digital Theory
- ARC Welding Principles
- Fire Alarm Systems
- Installing Grid-Connected Photovoltaics Systems
- Power Quality Analysis
- TS LAN 400 Multimode Optical LAN
- DataComm Test and Certification
- Fiber Optic Cabling Installation



You can't stay competitive without the required skills that are demanded in today's world where technology changes

daily. To this point, the IBEW/NECA Training Center has initiated a new apprenticeship program, “Installer Technician.”

In general, the Installer Technicians design, install and maintain systems that are placed permanently, as opposed to being portable. While Installer Technicians make use of a home or building's 120V AC power to activate control panels, audio and video sources, and signal amplifiers, their work focuses on the distribution of low-voltage signals among microprocessor-based devices and controls.

It is critical in today's world to stay abreast of the latest technology. The NECA/IBEW team understands that ongoing training will upgrade their skills to keep them competitive, and simply...the best!





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## Chapel-Romanoff, CRT Technologies

*Newest NECA member*

Chapel Electric (since 1946) of Dayton and Romanoff Electric (since 1927) of Toledo have formed a new company, CRT Technologies, headquartered in Dayton, to design and install structured cabling systems. “It was important for us to create a new company because the work we perform serves a highly specialized market,” says VP Dennis Severance. “All our technicians and installers are BICSI trained and certified.”

They serve several markets including: healthcare, airports, utilities, education, hotels, manufacturing, convention centers, sporting and event arenas, retail, theme parks and entertainment, office buildings, apartments, condominiums, and single family homes. Services include design, installation, maintenance, moves, adds and changes for the following:

- Structured Cable Systems
- Campus Distribution Systems
- LAN/WAN Equipment
- Wireless LAN and Voice Equipment
- Paging Systems

### The Western Ohio Chapter - National Electrical Contractors Association Directory:

#### NECA Members

#### Division *Dayton*

Aztec Electric, Inc.  
Chapel Electric Company  
Complete Electrical Service  
CRT Technologies  
D.R. Electric, Inc.  
ESI Electrical Contractors  
Freedom Electrical Contractor  
High Voltage Maintenance  
Kastle Electric Company  
Lake Erie Electric, Inc.  
Maxwell Lightning Protection  
Mutual Electric Company  
Reliable Electrical & Mechanical  
Studebaker Electric  
Wagner Smith Company  
York Electric, Inc.

#### Contributing Contractors

#### Division *Dayton*

Automated Controls  
Integrated Control Systems  
Justice Electric  
Luehrs Electric, Inc.  
M.B.A. Electric, Inc.  
Nitro Electric Co.  
O.R.E. Electric  
Power Services  
Precision Electrical Contrs.  
Productive Electric, Inc.  
Q.O.B. Electric, Inc.  
Spurling Electric Co., Inc.  
The W.G. Fairfield Co.  
Triad Electrical  
Union Lightning Protection

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