

Tips for a Successful Healthcare Project

HEALTH CARE CONSTRUCTION SUMMIT

Tuesday, May 27, 2008

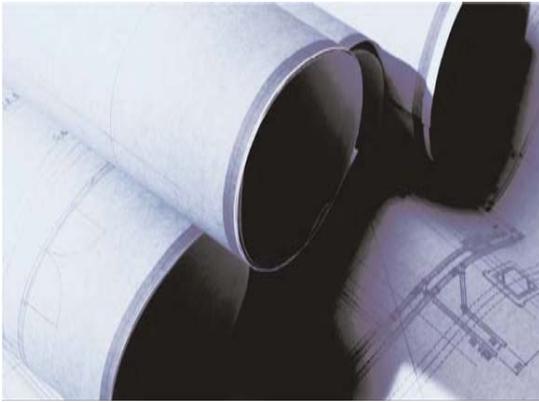
Electrical





Topics for Discussion

- Why is health care construction different?
 - *Health care construction in California vs. other states*
- What is unique to your trade on a hospital project?
- Health care construction: The Ideal State vs. Reality
 - *What is supposed to happen*
 - *What does happen*
 - *Common slip-ups to avoid*
- Resources available to help contractors succeed?
- How to get involved in health care construction jobs



Health Care Construction is Different

“It’s a matter of life or death”

- Patient and staff safety depend on the proper operation of the systems in hospitals
- Life Support
 - *Emergency Power Systems*
 - *Medical Gas Systems*
- Infection Control
 - *Ventilation Systems*
 - *Plumbing Systems*
 - *Architectural Finishes*
- Earthquakes



Health Care Construction is Unique

Higher Standards for Performance

- Commercial buildings may not be repairable or functional following a “Design Event” (fire, earthquake, etc.)
- Hospitals must function following an incident
- Fire philosophy is to “defend in place”
 - *Patients may be too ill to evacuate*
 - *Patients are moved to adjacent “compartments”*
- Earthquake philosophy: Hospitals must be reasonably capable of providing services to the public
 - *Limited damage*
 - *Critical equipment and systems remain operational*



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What is Supposed to Happen

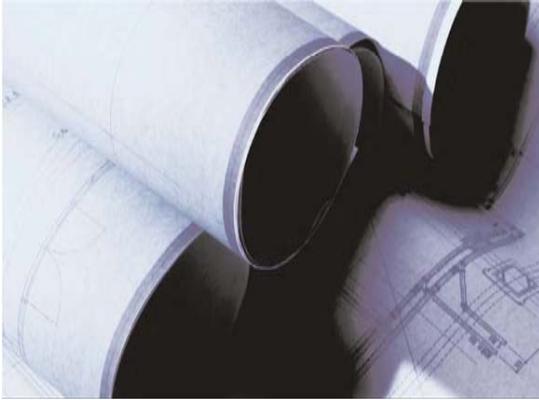
- The Hospital Design Team (Architects, Engineers, etc.)
 - *Identify existing conditions*
 - *Design a code compliant project*
- OSHPD Reviewers
 - *Identify every code deficiency and see they are corrected*
- Contractors
 - *Build according to the approved drawings*
- IORs and OSHPD Field Staff
 - *Inspect for conformance with the approved drawings*



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What Does Happen

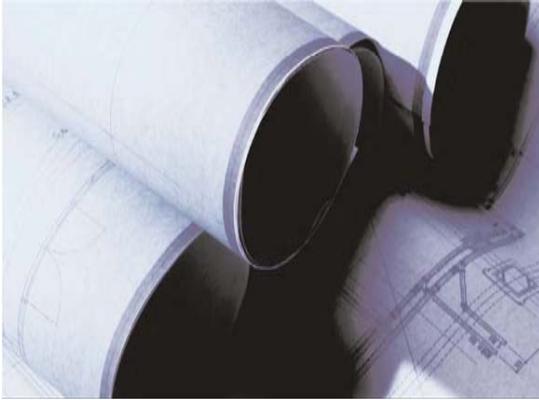
- The Hospital Design Team
 - *Designs a code compliant project based on the information they have and constraints of time and budget*
- OSHPD Reviewers
 - *Identify major code deficiencies, major coordination issues*
- Contractors
 - *Builds according to the approved drawings, accounting for variations in the existing conditions and uncertainty in the code and drawings, corrects “unbuildable” conditions*
- IORs and OSHPD Field Staff
 - *Inspect for conformance with the approved drawings and the code – identifying major and minor code deficiencies*
 - *Attempts to be flexible when code is “unclear” or where the design is “unbuildable”*



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Keys to a Successful Project

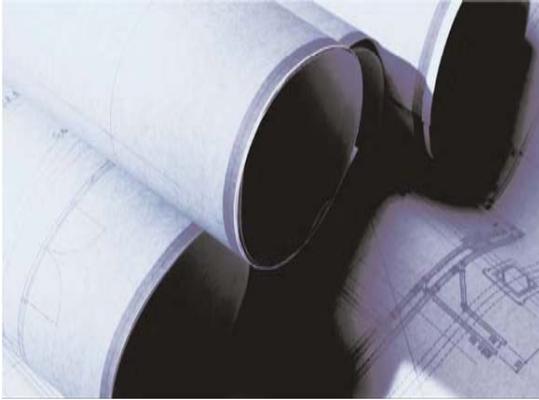
- Familiarity with the building code
- Coordination with other trades
- Craftsmanship!
- Foresight-
 - *Identify potential problems*
 - *Clarify before you build*
- Team effort – not a battle of wills



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When Problems Arise...

- Types of problems you may encounter
 - *Unforeseen Conditions*
 - *Work that does not match the approved drawings*
 - *Code deficiencies that were not caught in plan review*
 - *Code interpretation issues*
- When problems occur resources are available
- On-site resources
 - *IOR's*
 - *OSHPD Field Staff*



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Additional Resources

- How to get involved in health care construction jobs
 - *Contact you Trade Association*
 - www.necanet.org
 - www.thequalityconnection.org
- Industry resources
 - *Training & Certification Classes*
 - www.njatc.org
 - www.electrifyingcareers.com
- OSHPD
 - www.oshpd.ca.gov/fdd/



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The National Electrical Contractors Association
www.necanet.org

NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION

CONTACT | GUESTBOOK

▶ MYACCOUNT

CONVENTION & SHOW
ELECTRICAL CONTRACTOR MAGAZINE
NECA-MEI
NECA-NEIS
ELECTRI INTERNATIONAL
NECA CONNECTION

ABOUT NECA
MEMBERS ONLY
PRESS

NECA STORE
VALUE ADDED SERVICES
FIND A CONTRACTOR

CODES & STANDARDS
EDUCATION & TRAINING
GOVERNMENT AFFAIRS
SAFETY
INTERNATIONAL

OTHER RESOURCES

NECA is the voice of the electrical contracting industry, working to promote higher standards, quality workmanship and training for a skilled workforce.

WHAT'S NEW

- ★ **05/13/2008**
May 15: OSHA To Begin Enforcing Rule Requiring Employers To Pay For Most PPE
- ★ **05/13/2008**
ECmag.com Plans Upgrade; Seeks Your Input On How To Improve Site
- ★ **05/08/2008**
First Ever EDL Webinar on BIM
- ★ [more...](#)

DID YOU KNOW

1991 - Soviet Union collapses and 15 independent states emerge.

1914, July - At its annual convention, NECA adopts a "Code of Ethics" which provides ethical standards for fair competition.

NTI 2008 EC-Group Registration

Teaching the Skills to Succeed

2008

NTI - NATIONAL TRAINING INSTITUTE

Register for NTI 2008. [Click here for more information.](#)

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The Quality Connection
www.thequalityconnection.org

A screenshot of the website www.thequalityconnection.org. The page features a large central graphic of a stylized 'E' logo, with the left half in gold and the right half in blue. The text 'THE QUALITY CONNECTION' is prominently displayed in a large, white, sans-serif font. Below it, the tagline 'cooperation. education. new ideas.' is written in a smaller, lowercase font. On the left side, there is a vertical navigation menu with buttons for 'ABOUT US', 'WHAT'S NEW', 'PRESS CENTER', 'SUBSCRIBE', 'CONTACT US', and 'SITE MAP'. At the top left, there is a logo for 'THE QUALITY CONNECTION' with the tagline 'COMMITMENT TO EXCELLENCE'. A 'Quick Jump' search bar is located at the top center. At the bottom, there is a dark blue banner with the text 'See a preview of the latest edition in our Video of the Month section.' and the 'ELECTRIC TV' logo. The footer contains the text 'National Labor-Management Cooperation Committee of the Electrical Construction Industry' and contact information: '3 Bethesda Metro Center • Suite 1100 • Bethesda, MD 20814-5372 • Fax: 301-215-4545'.

THE QUALITY CONNECTION
COMMITMENT TO EXCELLENCE

Quick Jump

THE QUALITY CONNECTION

cooperation. education.
new ideas.

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ELECTRIC TV

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**National Joint Apprenticeship and Training
Committee of NECA and IBEW**

www.njatc.org

IBEW - NECA
APPRENTICESHIP & TRAINING
NJATC
NATIONAL JOINT APPRENTICESHIP AND TRAINING COMMITTEE OF NECA AND IBEW

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Friday, May 23, 2008

WHAT'S NEW

Announcing the 2008/2009 Inside Curriculum! Throughout the past year, the NJATC's Directors and Curriculum Specialists, along with Curriculum Workgroup members, labored diligently to revise the NJATC curricula, and create new textbooks and workbooks that meet the critical needs of our JATCs/AJATCs. [Read More...](#)

ONLINE BOOKSTORE

The Outside 3rd Year curriculum is now available.

HELMETS TO HARDHATS

Learn about it here.

WELCOME

The finest electrical workers in the country receive their training through the National Joint Apprenticeship and Training Committee of National Electrical Contractors Association (NECA) and International Brotherhood of Electrical Workers (IBEW).

It's a model education partnership which produces the best-trained, most up-to-date electrical apprentices and journeymen in the country. All of the \$100 million annually spent is privately funded.

LOOKING FOR A CAREER?

Click here to find your training center.

News and Events

Teaching the Skills to Succeed

2008
19th NATIONAL TRAINING INSTITUTE

NTI 2008 is coming soon!
Get the latest information from our [NTI site](#). [NTI Registration](#) is now open.

[2008 Master Calendar](#)
Listing of NJATC training courses.

[2007 Training Partner Awards](#)
See the award winning Training Partners for 2007.

[From the Newsroom.](#)
NJATC MIC Program Receives 3 More Scholarships

[Training Partner of the month: 3M](#)
The inventors of Vinyl Electrical Tape are proud to support NJATC as a Platinum level partner.

[ElectricTV.net](#)
Breaking news in the electrical industry.

[IBEW Hour Power](#)
An Online Magazine Connecting IBEW Members.

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Electrifying Careers

www.electrifyingcareers.com

ElectrifyingCareers.com

Looking for an electrifying career? The fast-growing electrical industry employs more than 650,000 workers in a variety of jobs and produces more than \$65 billion annually. Apprenticeship — a program that allows you to earn while you learn — is the place to start in this electrifying industry. *See if an electrifying career is right for you!*



Students

Looking for a great career after high school? How about 59 of them?



Parents

Learn how your kids can earn college credit while training for a great job!



Career Counselors

Order our Action Kit and help talented students find rewarding careers!



Career Changers

Ready for a change? Earn while you learn an electrifying (and rewarding) new career.

WHAT'S NEW

-  NJATC Apprentices Earn & Learn (pdf)
-  NJATC Outside Apprenticeship Hits Record Height (pdf)
-  NASCAR Dreams Fueled by NECA-IBEW Sponsorship (pdf)
-  Read more about NECA-IBEW's sponsorship of Alli Owens





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Facilities Development Division (FDD) - Plan Review & Construction Observation

Plan Review and Construction Compliance Goal:

Plan Review and Construction Compliance will (a) provide quality service to our clients by being efficient, flexible, responsive and accountable, and (b) will review plans, specifications, and observe health care facilities construction to ensure compliance with applicable codes and regulations.

PLAN REVIEW & CONSTRUCTION OBSERVATION

- | | |
|--|--|
| → Plan Review Process | → Construction Observation Process |
| → 60/30/30 Program | → Testing Inspection Observation (TIO) |
| → Over the Counter (OTC) | → Hospital Inspector Certification Program |
| → Standard Comments | → Field Reviews - FREER |
| → Alternate Method of Compliance | → SB 1838 Exemption from Plan Review for Projects of \$50,000.00 or less |
| → Comment and Process Review (CPR) | → AB 2632 Project Review |
| → Required Weight & Size | → SB 224 Project Review |
| → Plan Approval with Comments | → Licensed Clinics |



General Tips

- Ensure you have a building permit before you start
- Have a copy of the OSHPD approved plans and specifications (contract documents) onsite
- Conduct a pre-job conference with the foreman, Inspector of Record (IOR) and OSHPD prior to installation.



General Tips

- Plan to execute the work shown on the approved contract documents
- Don't perform work that is not shown on the approved contract documents which alters the intent, scope or function of the project until approved by OSHPD
- Avoid redesign and material substitutions after construction starts



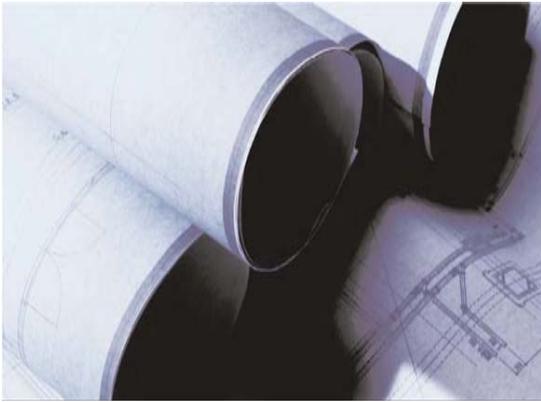
General Tips

- Timely submittals of changes, redesign, alternate means or methods and material substitutions
- Install materials in accordance with the contract documents, manufactures installation instructions and/or approved listings
- Make sure your installation instructions and material submittals are available to the inspectors



Tips for a Successful Project

- Use only certified electricians – AB-931, AB-2481 & AB-1087
- Use only equipment certified by NRTL
- If substituting equipment layout room to verify it fits and all required clearances are maintained
- Fully understand Article 517 – Health Care Facilities
- Fully understand the types of Patient Care Areas and the special requirements associated with each



Installation Methods

- Provide redundant grounding for patient care areas, i.e. no flexible conduit (metal raceway or metallic cable armor must qualify as an equip. grounding return path – must be listed for hospital use)
- Properly install all grounding fittings per listing – proprietary (have installation instructions on hand)
- Ground transformers to building grounding system, not to closest cold water pipe
- No PVC conduit underground in patient care areas – grounding/bonding issues
- Do not run different voltages in same box/raceway



Installation Methods

- 42 circuits max. in any one circuit board
- Do not cut segments out of 90degree bends and offsets – use benders/proper equip. and do it right
- Provide location or area on panel schedule
- Provide rigid support of junction boxes
- Provide independent support of light fixtures
- When determining max. conduit and box fill do not forget to include the redundant ground



Installation Methods

- Ensure that all large boxes, conduits and cable trays are seismically braced
- Use the approved plans – not shop drawings
- Receptacles in patient toilet/shower rooms require GFI protection – may be at the over-current protection device breaker or a weatherproof cover
- Provide elevator seismic switch annunciator connected to the essential electrical system in the elevator machine room
- Derate conductors for home runs in large raceway



Use Reminder Lists

Fire and Life Safety Forms

- [FLSO 2001 Fire Alarm Annunciation Approval](#)
- [FLSO 2001 Fire Sprinkler Approval](#)
- [2001 FLSO Check List](#)
- [FLSO 2007 Fire Alarm Annunciation Approval](#)
- [FLSO 2007 Fire Sprinkler Approval](#)
- [2007 FLSO Check List](#)



Use Reminder Lists

Fire and Life Safety Reminder Lists

- [EPSS Generator](#)
- [Construction](#)
- [Quality Assurance](#)
- [Fire Alarm - Plan Review](#)
- [Helistops](#)
- [Post Approval Documents Field Triage](#)
- [Sprinkler System - Plan Review](#)



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Q & A