



DLI gathers input about residential fire sprinklers

Findings from town hall meetings will be given to IRC advisory group

Commissioner Steve Sviggum and representatives from the Department of Labor and Industry's Construction Codes and Licensing Division hosted three town hall meetings in December throughout Minnesota to gather input on potential changes to the building code that could affect homeowner safety and housing affordability.

The Minnesota Building Code currently uses the 2006 International Residential Code (IRC) as the base for its residential code and the Minnesota Department of Labor and Industry (DLI) will soon begin the rule adoption process for the updated residential code, which will be based on the 2009 IRC.

In September 2008, the International Code Council (ICC) voted to add the fire sprinkler provision to its 2009 IRC. This provision will require fire sprinkling in all one- and two-family homes and townhouses that build to the code as of Jan. 1, 2011. Since Minnesota amends and adopts the ICC codes to form the Minnesota Building Code, the state needs to review this fire sprinkler provision for possible inclusion when it adopts the 2009 IRC.

"The new fire sprinkler requirements will have an impact on Minnesotans," said Steve Sviggum, DLI commissioner. "I appreciate the additional safety features that residential sprinklers can provide for Minnesota families and firefighters, but I also recognize the potential of a steep price tag attached. We need to discuss the potential changes to the building code that could affect homeowner safety and housing affordability."

Meeting attendants agreed on the importance of homeowner safety, and praised existing safety measures, but differed on whether or not the sprinkler portion of the code should be required in new construction in Minnesota.



Assistant Commissioner Thomas Joachim, right, and DLI Commissioner Steve Sviggum, left, address attendants at a December town hall meeting in Rochester. The meeting - one of three - was organized to obtain input on possible changes to the state building code. Also pictured is Rep. Kim Norton (DFL-Rochester).

Home builders shared concerns about added costs to new construction a required sprinkler system would bring and that it could eliminate some first-time buyers. Those in the fire safety fields countered that homeowners would see reduced insurance premiums with a sprinkler system and the added safety would save lives.

The design and construction materials used in newer homes can cause a fire to burn hotter and spread quicker, fire officials said. Sprinkler heads installed in homes — which they said would require little to no maintenance — could douse a fire before it gets out-of-hand.

Builders and inspectors said that while a sprinkler could reduce fire damage, the systems have long been an available option in new construction, yet very few homeowners choose to have sprinklers installed.

DLI plans to forward any information and comments from the meetings to the IRC advisory committee that will make recommendations regarding potential changes to the residential code in Minnesota.

Phone tree updated to better direct callers

The Construction Code and Licensing Division's main telephone lines are no longer answered by a receptionist. Rather, each department within the division now has "topic lines."

These topic lines are designed to route the caller directly to a person in the appropriate area of expertise rather than to a department

receptionist.

When the appointed person(s) for the topic lines are unavailable, the call will go to voice mail. Be assured, however, care is taken to respond to messages left on voice mail as soon as possible.

» *A comprehensive phone number and e-mail list is available at:*
www.doli.state.mn.us/cclidcontactus

CCLD's main line phone tree is also in the process of being updated. The options will be changed to better help the caller find help in the specific area for which they are calling. The target date for these changes is the end of December, 2008.

The following is a directory of the CCLD topic phone lines.
All phone/fax numbers are within the (651) area code:

CCLD Main Number: 284-5012; fax: 284-5749

Boiler and HPP Inspections: 284-5544; fax: 284-5737

Building Permit Surcharge: 284-5411

Building Plan Review: 284-5857

Continuing Education, Rules & Code Development contacts:

Mike Godfrey – Manager, education, rules and code development: 284-5862

Don Sivigny – rules, code development; residential energy code: 284-5874

Richard Lockrem – seminar coordinator, certification renewal: 284-5868

Daniel Kelsey – structural: 284-5868

Scott Nelson – mechanical code; commercial energy code: 284-5850

Herman Hauglid – contractor continuing education program approval: 284-5863

Curt Wiehle – certification application; certification training, accessibility: 284-5877

Chris Meier – international residential code; mechanical code: 284-5865

Colleen Chirhart – rules: 284-5867

Kelly Denno – recertification of building officials, limiteds, accessibility specialists: 284-5845

Electrical Inspections: 284-5026; fax: 284-5749

Elevator Inspections: 284-5071

Enforcement Services: 284-5069; fax: 284-5749

Contractor Recovery Fund: 284-5057; fax: 284-5749

Independent Contractor: 284-5074; fax: 284-5749

Licensing and Certification:

Electrical Licensing: 284-5031; fax: 284-5743

Boiler Licensing: 284-5080; fax: 284-5743

Residential Building Contractor Licensing: 284-5034; fax: 284-5743

Manufactured Structures: 284-5092

Plumbing Inspections: 284-5044

Plumbing Licenses: 284-5044

Plumbing Plan Review: 284-5063



A variety of rules dictate requirements for Minnesota's certified building officials

Education reporting required

Minnesota Rules sections 1301.0700 – 1301.1100 require certified building officials to obtain and report continuing education to maintain certification.

The report must include evidence of attendance or participation in approved continuing education programs. Although there is no requirement to do so, DLI sends a letter to each certified building official to notify them that their certification will expire.

Certified building officials are responsible to report their continuing education even if they did not receive a letter from DLI. In

the past, letters have been returned to the department due to a change in address. It is a building official's responsibility to inform DLI of any changes in address.

Minnesota Rules 1301.0770 – 1301.1100 are included in chapter 1301 of the State Building Code.

A digital version of the 2007 State Building Code is [available on the DLI Web site](#).

For help with questions about rules, contact CCLD's [Rich Lockrem](#) by phone at (651) 284-5868 or [Mike Godfrey](#) by phone at (651) 284-5862.

Many certifications have expired

Approximately 125 building official certifications expired on Dec. 31, 2008.

Persons who were certified before 1988 were the first to be subject to the continuing education requirements of Minnesota Rules Chapter 1301.

DLI sends a notice to building officials about 120 days before their certification expires. Please note that if a notice is not received, building officials are still responsible to comply with the continuing education requirements which includes submitting the form and proof of continuing education. The form and documentation must be submitted before the expiration date.

In past years, DLI has had expiration notices returned due to a change of address. Please contact Kelly Denno by phone at (651) 284-5845 or e-mail Kelly.Denno@state.mn.us with address updates.

The continuing education summary report is available on the DLI Web site.



CCLD Review is a quarterly publication of the Minnesota Department of Labor and Industry.

To receive e-mail notification about future issues of the *CCLD Review*, [subscribe online](#).

Contact information
CCLD main phone number
(651) 284-5012

Visit the [Contact Us](#) page

Licensing information
DLI.Licensing@state.mn.us
Electrical: (651) 284-5031
Boiler: (651) 284-5080
Residential Building Contractors:
(651) 284-5034
Plumbing: (651) 284-5044

Building Code information
Phone: (651) 284-5068
Toll-free: 1-800-657-3944
Fax: (651) 284-5749
TTY: (651) 297-4198
bcsd.response@state.mn.us

Electrical information
Phone: (651) 284-5026
Fax: (651) 284-5749
DLI.Electricity@state.mn.us

Boiler, High-Pressure Piping, Boats-for-Hire inspection
Phone: (651) 284-5544
Fax: (651) 284-5737
DLI.Code@state.mn.us

Plumbing information
Phone: (651) 284-5044
Fax: (651) 284-5748
DLI.Plumbing@state.mn.us

Residential Building Contractor information
Phone: (651) 284-5069
Fax: (651) 284-5749
DLI.Contractor@state.mn.us

Independent Contractor Exemption Cert. information
Phone: (651) 284-5074
DLI.ic@state.mn.us
www.doli.state.mn.us/ic

Take care choosing permits

■ Contractors have three permit options

One of the most common errors made by high-pressure-piping (HPP) contractors when they apply for permits to construct or install HPP is the type of permit for which they apply. There are three types of HPP permits, each unique to specific HPP applications.

All three types are listed on the HPP permit application form and directions for each — with inspection fees formulas — are listed on the worksheet provided with each application.

The first, and most common, is the “Standard” permit. This permit type must be applied for when the costs of constructing the HPP are known up front. The contractor pays the application and base fee, along with the calculated inspection fee at the time of application.

The second is the “Time and Materials” permit. This permit is for projects with “no hard bid,” or use a “not-to-exceed bid.” In this instance, the contractor applies for the Time and Materials permit and pays the application and base fees at the time of application. The calculated inspection fee is due at the completion of the project. The contractor must submit the project figures to the HPP inspector and an invoice for the inspection fees will be sent to the contractor.



One of the most common errors made by high-pressure-piping contractors is choosing the incorrect permit when they apply for a permit to construct or install HPP.

» **For HPP permit application and instruction forms visit www.doli.state.mn.us/hppforms**

The third is the “Blanket” permit. This permit is applied for as a “maintenance or small projects” permit for a specific location. The application and base fees, along with a nonrefundable advance inspection fee of \$300, are due at the time of application. This permit is good for the calendar year and the contractor must notify the inspector of projects as they begin. The construction figures are submitted to the inspector and the contractor is invoiced for the final inspection fees due.

It is important to make sure each application is completed correctly, with the correct fees, project information, location, start date, and is signed by the contracting pipefitter for the HPP business.

2009 Annual Institute for Building Officials

When: Jan. 7 - 16

Where: Continuing Education and Conference Center, St. Paul

Who: Building, electrical, fire, housing, mechanical, plumbing, permit technicians

Details: www.cce.umn.edu/conferences/buildingofficials

Registration information
Phone: (612) 624-4000

Program questions
Phone: (612) 624-3708
E-mail: cceconf5@umn.edu.

The Minnesota certified building official exam will be offered at 6:30 a.m., Jan. 16.

ICC 2009 Upper Great Plains Region III Educational Institute

When: Feb. 9 - 13

Where: Brooklyn Park

Who: Building, design, construction and inspection code professionals

Details: www.iccsafe.org/training/region3institute/ or call 1-888-ICC-SAFE ext. 33818

A trade show is planned for 10 a.m. to 4:30 p.m., Feb. 11-12.

View more building code training opportunities online at: www.doli.state.mn.us/bc_education

Constraints, myths of master electrician and power limited technician allowances

The Minnesota Electrical Act was amended in the 2007 legislative session to recognize common business practices as they relate to the responsible licensed individual for a contractor.

Prior to these changes taking effect, the responsible licensed individual for the contractor license — either master electrician or power limited technician — was not allowed to be employed by any other contractor or employer. There was a single exception, or allowance, whereby a master electrician or power limited technician operating as a sole proprietor could also be employed by a contractor or employer. The change in the law expanded that allowance to any responsible licensed individual for the contractor license if they are a principle of the business, regardless of business organization type, such as sole proprietor, partnership, limited liability company or corporation.

Although not a specific change in the 2007 Session Laws, the reorganization of Section 326B.33, subd. 17, “employment of master electrician or power limited technician,” clarifies that a responsible

licensed individual is only allowed to be the responsible licensed individual for one entity, either contractor or registered employer. This follows the basic “responsible licensed individual” principle of only allowing an individual to be responsible for one contractor or employer. This requirement applies regardless of whether the responsible licensed individual is a principle of the contracting business or is the “managing employee.”

One of the myths associated with the individual licensed as a master electrician and as a contractor and also working for another contractor or employer that has continued since the early 1990’s, was that they were not allowed to have employees. Although it was part of the original bill as introduced in 1991, this provision was never part of the law.

Whether a contractor has or does not have employees has no bearing on whether the master electrician can be licensed as a contractor and be employed by another contractor or employer.

Show stopper

CCLD display booths available

The CCLD loans three, two-part display units to building officials presenting code-related information at community events.

A variety of free literature and photos is provided. The display case size is 55" x 26" x 11". To reserve a display, contact Chris Thompson at (651) 284-5856 or via e-mail at chris.thompson@state.mn.us.

Reservations are granted on a first-come, first-served basis and the displays must be returned to DLI’s St. Paul offices as soon as possible after use.

A specific pickup time will be arranged to allow quick pick-up and drop-off in DLI’s front lobby. For directions to DLI and parking information, visit www.doli.state.mn.us/direct.



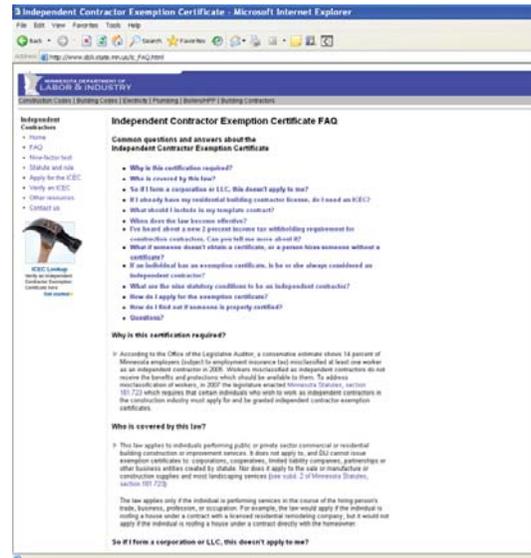
A display booth with CCLD-related photos and brochures is available for use. Contact Chris Thompson at chris.thompson@state.mn.us.

Independent contractor law took effect Jan. 1

A new state law took effect Jan. 1, 2009, requires individuals (not corporations, LLCs or partnerships) who work as independent contractors in the building construction industry to obtain from the Department of Labor and Industry an Independent Contractor Exemption Certificate (ICEC).

As of Jan. 1, 2009, for purposes of the state's workers' compensation, unemployment insurance, wage and hour, and occupational safety and health laws, individuals doing building construction work without an ICEC will be employees of the contractor for whom they are working.

» *For all of the details, including FAQs and applications, visit www.doli.state.mn.us/ic*



DLI's online Independent Contractor Exemption information includes an extensive list of frequently asked questions.

Code change

Hearing leads to update of 'landings' rules

On Jan. 26, 2007, the Department of Labor and Industry conducted a hearing about rules in the 2006 International Residential Code (IRC).

At the hearing, DLI announced it intended to modify the rule pertaining to "landings at exterior doors." The modification included the addition of the words "or floors" in two places within this section.

However, the addition was inadvertently not included in the text of IRC section R311.4.3.2, item (1). The department corrected this using a special rulemaking method.

» *For more information about construction codes, visit www.doli.state.mn.us/buildingcodes*

As of Dec. 10, 2008, Section R311.4.3.2 now reads as follows:

"R311.4.3.2 Landings or floors at exterior doors other than those required by Section R311.4.1.

1. The exterior landing or floors shall be permitted to be no greater than 7-3/4 inches (196 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door, does not swing over the exterior landing.
2. Landings in this subsection are not required for the exterior side of a door when a stairway that is less than 30 inches (762 mm) in height is located on the exterior side of the door. The stairway height shall be measured vertically from the interior floor surface to the finished grade.
3. An exterior landing is not required at a doorway when only a storm or screen door is installed which does not swing over the exterior landing."

Department boards close out busy year

Three boards mandated by the legislature to oversee codes and licensing activities have met throughout the year. The following are updates for activities of the Board of Electricity, Plumbing Board and Board of High-Pressure Piping.

Plumbing Board

The Plumbing Board conducted its annual meeting July 15, 2008, and re-elected John Parizek as chair; re-elected Larry Justin as vice-chair; and Jim Gander was re-elected as secretary.

The newly-organized Plumbing Board first met on Nov. 13, 2007, and was tasked to bring the Minnesota Plumbing Code up-to-date. There have been changes to the plumbing licensing laws in recent years and the licensing rules also required updates. The code was last amended in 2003.

In addition to adopting rules that regulate licensure or registration (with the exception of continuing education) of plumbing contractors, journeymen and others in the plumbing field, the Plumbing Board was given statutory authority to adopt the Plumbing Code and amendments.

The board created five committees to assist it with that task. The committees are the Executive, Code Interpretation, Product and Code Review, Green, and Licensing and Registration committees. Each committee was assigned its duties by the board. The Plumbing Board and its committee met 23 times from January through October.

The Executive Committee meets before each regularly-scheduled board meeting to review any issues that have come up since its previous meeting.

The Code Interpretation Committee meets only as needed. If a code interpretation request is submitted to the board, the board has 30 days in which to respond to the request. The board voted to give the Code Interpretation



Jim Keller offers a presentation to the Green Committee of the Plumbing Board at a meeting in April, 2008. Keller, representing the U.S. Green Building Council, explained the benefits of LEED buildings.

Committee the power to determine the response for each request for interpretation.

The Product and Code Review Committee meets to review products submitted by individuals and companies for approval into the Plumbing Code and to review each code amendment request received by the board. It then makes a recommendation to the full board based on its findings.

The Green Committee met several times during 2008 to discuss issues including LEED buildings, waterless urinals and rainwater reclamation systems.

The Licensing and Registration Committee was tasked with reviewing the rule language regarding plumbing licensing and registration and then to make its recommendation back to the Plumbing Board.

- 'Plumbing' continues on Page 8

» **View agendas and minutes at:**
www.doli.state.mn.us/pb

Board of High Pressure Piping

The Board of High-Pressure-Piping Systems – formed in the fall of 2007 – conducted its annual meeting on July 5, 2008, where members elected Larry Stevens, Jr., as chair; re-elected Vicki Sandberg as vice-chair and re-elected Bob Bastianelli as secretary.

The Minnesota code for high-pressure piping and code for power piping systems has not been updated since 1993. The board was given statutory authority to adopt high-pressure-piping code and amendments, in addition to adopting rules that regulate licensure or registration (with the exception of continuing education) of high-pressure-piping contractors, journeymen and others in the field.

Five committees were created to review the code: Ammonia, Licensing, Bio-Process, Steam and Welding committees. Each committee met to discuss the various sections of the code and make recommendations to the board. The committees met monthly throughout the year and the Steam Committee

met four times in August to finalize its proposed draft.

The board published a Request for Comments regarding its intent to do rulemaking on May 12, 2008. The Notice of Intent to Adopt Amendments in Chapter 5230 was published in the *State Register* on Dec. 22, 2008. The proposed rules in final form will be published on the board's Web site at www.doli.state.mn.us/bohpps where currently a draft of the proposed rules is available.

If the board receives 25 or more requests for a hearing about the rules it will be conducted in February 2009. The board intends to formally adopt the rules by mid-2009.

Board of Electricity

The Board of Electricity conducted its annual meeting on July 8, 2008, and re-elected as chair Jim Freichels; Willy Hoskins was elected vice-chair and Doug Fingerson was re-elected secretary.

Following a May 2008 hearing, the board adopted the 2008 National Electrical Code, which became

effective Sept. 15, 2008.

Additionally, in 2007 a statute was enacted that required the registration of unlicensed individuals performing electrical work. (See Minnesota Statutes 326B.33). The board was given statutory authority to adopt rules that regulate the licensure or registration and continuing education for electrical contractors, journeyman electricians and others in the electrical field.

Because the Board of Electricity wants to ensure there are rules in place to support that statute, it published a Request For Comments regarding its intent to do rulemaking on Feb. 25, 2008. On Dec. 22, 2008, the Notice of Intent to Adopt Amendments in Chapter 3800 was published in the *State Register*. The proposed rules in final form will be published on the Board of Electricity's Web site at www.doli.state.mn.us/boe where currently a draft of the rules is available.

If the board receives 25 or more requests for hearing, that hearing will be conducted in February 2009. The board intends to formally adopt the rules by mid-2009.

Plumbing board wraps up a busy year (continued from Page 7)

The board published on Jan. 7, 2008, a Request For Comments regarding the board's intent to do rulemaking. On Dec. 15, 2008, the Notice of Intent to Adopt Amendments in Chapter 4715 and 4716 was published in the *State Register*. The proposed rules in final form will be published on the board's Web site

at www.doli.state.mn.us/pb where currently a draft of the proposed rules can be accessed.

If the board receives 25 or more requests for hearing, that hearing will be conducted in February 2009. The board intends to formally adopt the rules by mid-2009.

Reminders for inspection of elevators in Minnesota

Annual elevator operating permits

The Elevator Safety Section continues to send out notices for annual elevator operating permits to all building owners. Building officials should be aware that any elevator-related device in operation is required to have a current elevator operating permit.

Operating permits are not required to be displayed in the elevator. Building officials may request the building owners show proof of a valid operating permit. If questions regarding the permit occur, contact the Elevator Safety Section at (651) 284-5843.

Annual inspections on existing equipment

An annual elevator inspection program began in a limited capacity in 2007. It was based on recognition of increased numbers of complaints and accidents on elevator-related devices reported to DLI.

The inspection program has four elevator inspectors who perform annual inspections on existing elevators in the metro area and one elevator inspector performing annual inspections in southeastern Minnesota. In addition, the department has several elevator inspectors located in the outstate areas who perform annual and new installation or alteration inspections.

Because coverage for annual inspections is not as extensive as it needs to be, the department has prioritized the annual inspections at facilities with the most exposure to the general public. Future plans provide for inspections annually on all existing elevator-related devices.



» *See Page 10 for information about required changes to existing elevators*



Elevator inspection in Minnesota (cont.)

Required changes to existing elevators

Owners of existing elevator-related equipment should be aware of the following rules and their deadlines:

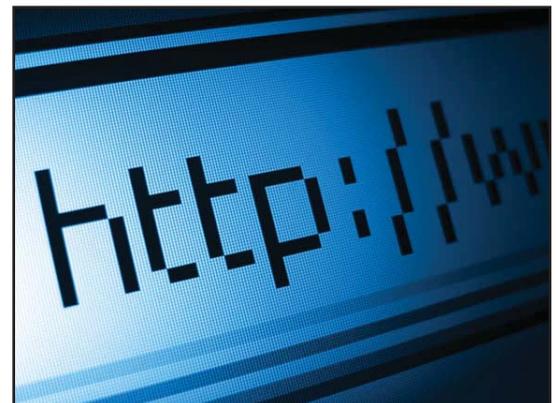
1. ASME A17.3-2002 rule 3.11.3: Existing elevators must have fire service complying with at least the 1987 code minimum or an alteration must occur. Fire service allows emergency personnel to use the elevators in a safe and controlled manner in the event of an emergency. The timeline for completion is 60 months from Jan. 29, 2007.
 - Elevators affected by this rule have a rise of 25 feet or more above the main egress landing and do not have fire service or have a previous version installed. There is an exemption in this rule to allow elevators that only have phase 1 fire service from the key switch in the main elevator lobby and smoke detector recall from the lobbies and machine room, and the rise is less than 35 feet to be exempt from having to add fire service phase 2.
2. ASME A17.3-2002 rule 4.3.3: Cylinders that do not have a safety bulkhead that prevent elevators from uncontrolled decent will have to be replaced with cylinders that include the safety bulkhead. The timeline for completion is 60 months from Jan. 29, 2007.
 - Elevators affected by this rule would be hydraulic elevators manufactured and installed prior to or shortly after 1972.
3. ASME A17.3-2002 rule 2.7.4: All elevators are now required to have a door restrictor which prevents opening of the doors when not within the door opening zone. The timeline for completion is 60 months from Jan. 29, 2007.
4. ASME A17.3-2002 rule 5.1.11: All escalators that can not pass the step indexing test requirements which give a measurable index that has been linked to the cause of entrapments in escalators between the step and side panel (skirt) must be altered to meet the requirements. The timeline for completion is 36 months from Jan. 29, 2007.

Stay up-to-date

Visit www.doli.state.mn.us to stay current on activity at the Department of Labor and Industry

A few of the most recent additions and updates to DLI Web sites include:

- [Filming in Minnesota](#): Important information regarding electrical licensing, inspection and requirements for filmmaking and similar projects in Minnesota.
- [Independent Contractor Exemption Certificate frequently asked questions](#): Visit this page for help with questions about the upcoming certification requirements.
- [Education and Outreach](#): View and download presentation materials and brochures.



Code Questions

Electrical Edition

Fire sprinkler piping and switchgear

Q:

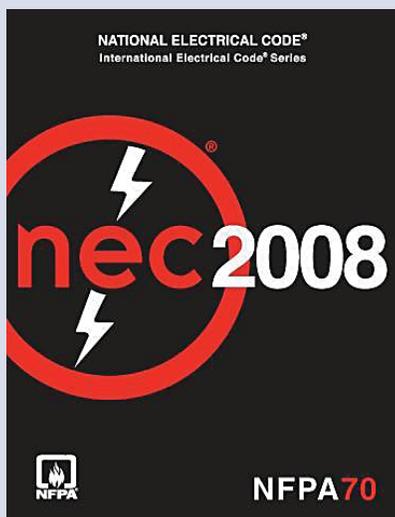
Can indoor fire sprinkler piping be routed above electrical switchgear within the 6-foot dedicated space above the switchgear, provided a drip pan or another means of protection were installed below the pipe to prevent any condensation or leak from reaching the electrical equipment?

A:

No. National Electrical Code (NEC) 110.26(F) [Dedicated Equipment Space] is applicable to switchboards, panelboards, distribution boards, and motor control centers.

NEC 110.26(F)(1)(a) requires “dedicated space” for the electrical equipment previously mentioned. The dedicated electrical space is established by taking the “footprint” of the switchboard or panelboard from the floor to a height of 6 feet above the height of the equipment or to the structural ceiling, whichever is lower. No piping, ducts, leak protection apparatus or non-electrical equipment can be installed in this space. In essence, no equipment that is “foreign” to the electrical installation can be installed in the dedicated space.

NEC 110.26(F)(1)(b) states that the area ABOVE the established “dedicated space” can contain foreign systems provided the electrical equipment is protected from damage from leaks, condensation, and breaks in piping systems. As an example, in a room with a structural ceiling much higher than the electrical equipment, a pipe containing liquids could pass 7 feet above the top of the electrical equipment if it included leak protection apparatus.



NEC 110.26(F)(1)(c) states that fire sprinkler protection is permitted for the “dedicated space” as long as the sprinkler piping complies with (a) and (b) above. In other words, the NEC willingly accepts sprinkler protection for fire suppression of electrical equipment as long as the sprinkler piping itself is not within the “dedicated space.”

The reserved dedicated space for electrical equipment allows electrical workers to install busways, conduits, raceways, cables, and other wiring methods in accordance with applicable safety standards.

Code Questions

Electrical Edition

Are bonding bushings required to be used on flexible metal conduit connectors?



Typical scenario:

- A feeder supplies a separately derived system (delta-wye dry-type transformer).
- The system bonding jumper is installed in the transformer enclosure in accordance with National Electrical Code 250.30(A)(1).
- The grounding electrode conductor originates in the transformer enclosure and is connected to the same terminal as the system bonding jumper in accordance with NEC 250.30(A)(3).
- A length of flexible metal conduit is used for the transformer secondary conductors between the transformer enclosure and the adjacent panelboard enclosure.
- The transformer secondary conductors terminate in a main circuit breaker in the panelboard enclosure in accordance with NEC 240.21(C)(6).



Taking into account the above scenario, are bonding bushings required to be used on FMC connectors?



No. Flexible metal conduit is generally not an acceptable equipment grounding conductor, so installing bonding bushings on the flexible metal conduit connectors does not accomplish anything.

NEC 250.4(a)(3) and (4) are performance requirements that mandate non-current-carrying parts of electrical equipment, materials and other equipment be connected together and to the electrical supply source to ensure an effective ground-fault current path.

NEC 250.118 lists the acceptable types of equipment grounding conductors. Flexible metal conduit is only acceptable if it meets several conditions, one of which is that the circuit conductors contained in the conduit are protected at 20 amperes or less; the transformer secondary conductors for the above scenario are usually going to be protected at more than 20 amperes. Since the flexible metal conduit is not acceptable as an equipment grounding conductor, a wire-type equipment bonding jumper must be installed between the transformer enclosure and the panelboard enclosure in order to maintain continuity of the equipment grounding path.

- 'Bushings' continues on Page 13

Code Questions

Electrical Edition

Does the NEC working space provision apply to the front of a transformer?

Q:

Since there would never be a need to work on one while energized, does the front of a transformer need to honor the National Electrical Code's working clearance rule?

A:

NEC 110.26(A) states that working space is required for equipment that is "... likely to require examination, adjustment, servicing, or maintenance while energized ..."



Dry-type transformers are virtually maintenance-free and generally do not contain any serviceable or replaceable parts. A cover must never be removed while the transformer is energized. Transformer installation instructions explicitly require de-energization prior to any examination, inspection, cleaning, etc. OSHA safety procedures mandate that transformers be de-energized, locked out, tagged and tested prior to removing covers and performing any work.

Even though "minimum clearances" are not required for certain types of equipment that can be readily disconnected, "sufficient" access and working space is required in the opening paragraph of 110.26. Whether or not sufficient access and working space is adequate will need to be determined on a case-by-case basis in the field.

Lacking a definition for "sufficient" in the NEC, Webster's defines it as follows: "As much as is needed or desired; enough."

Are bonding bushings required? (Continued from Page 12)

An equipment bonding jumper is defined as the connection between two or more portions of the equipment grounding conductor.

NEC 250.30(A)(2) states that where an equipment bonding jumper of the wire-type is run with the derived phase conductors from the source of a separately derived system to the first disconnecting

means, it shall be sized in accordance with NEC 250.102(C).

If electrical metallic tubing is used between the transformer enclosure and the panelboard enclosure, a wire-type equipment bonding jumper is not required because electrical metal tubing is an acceptable equipment grounding conductor.

Code Questions

Electrical Edition

Does NEC inclusion infer installation requirement?



Q: Does the presence of 230.40 Exception No. 3 in the National Electrical Code (NEC) infer that service equipment shall be installed at a common distribution point on a residential premises if more than two buildings are supplied, and that service equipment shall be installed at a common distribution point on a non-residential premises if more than one building is supplied?



A: No. This is not a correct interpretation. NEC 230.40 Exception No. 3 was introduced into the NEC in 1996. The idea behind the change was to allow one additional set of 100-amp rated service conductors to be extended from a common location on Building A (i.e. house) to detached Building B (i.e. garage). Instead of providing a separately-metered service on Building B with increased meter charges, and in lieu of extending a 100-amp feeder from Building A, which may require the existing 100-amp service in Building A to be upgraded to 200-amps, this new exception was intended to allow Building B to be supplied with 100 amps at minimal cost. Electrical safety was not part of the substantiation for the change.

However, as often happens with code changes, unintended and unforeseen consequences rise to the surface. What if the “common location” is not attached to Building A? What if the common distribution point is on a center yard pole away from any buildings? Does the NEC regulate the number of buildings on a multi-building premises? Considering that the first concurrence of overload protection is typically at the service equipment in or on the building supplied, does the NEC regulate the quantity of unprotected (i.e. un-fused) outdoor electrical infrastructure on a multi-building premises? Is there clear understanding of the definitions of the service-related terms in Article 100?

NEC 230.40 Exception No. 3 is unnecessary language in the NEC - the basic rules in the NEC have always allowed what the proposer was attempting to accomplish. There is nothing inherently wrong with the language – it is simply not needed.

Unfortunately, the effort to resolve a financial problem in a specific jurisdiction of the country, and the presence of the unnecessary language in 230.40 Exception No. 3, has caused much confusion for installers and inspectors. More than one state has amended 230.40 Exception No. 3 out of the NEC during their respective code adoption processes. There is no language in the NEC that correlates with 230.40 Exception No. 3. It should not be assumed that the presence of 230.40 Exception No. 3 in the NEC has some special meaning, or that other historical, fundamental code concepts somehow have a new or different meaning.

For more information on this topic and the answer to the other questions mentioned above, there is a Code Bulletin relative to this topic on the division’s Electrical Code page at www.electricity.state.mn.us/code_standards.

Did you know?

Railroad warning systems are subject to electrical inspection regulations

Automated wayside horn warning systems are often commissioned by local government and subject to state electrical licensing and state or local electrical inspection regulations.

Local governments have tried to create quiet zones in residential areas because of the loud, frequent sound from locomotive horns. These automated wayside horn systems are a compromise between the Federal Railway Authority and local governments.

They provide “directional” audible warning at the railroad crossings to maintain a high level of safety and they eliminate the need for the locomotive engineer to use the “omnidirectional” locomotive horn.

When a train is approaching the crossing, an interconnection from the railroad track signal circuit turns on the automated wayside directional horns to warn traffic and pedestrians. The elevated indicator signs are also illuminated for the locomotive engineer.

An illuminated sign (white “X”) is visible to the locomotive engineer from either direction so the engineer knows the automated wayside (directional) horns are working, thus eliminating the need for the locomotive engineer to sound the train’s horn.



Cathodic protection systems information online

Help with questions about cathodic protection systems, covering licensing of installers to listing of systems, is available at www.electricity.state.mn.us/ICC_SYS.

For help with other code questions, visit the electricity code and standards Web page at www.electricity.state.mn.us/code_standards where more bulletins are available.

