



MECKLENBURG COUNTY

Land Use & Environmental Services Agency

Code Enforcement

Date: March 19, 2010
To: Code Enforcement Customers
From: James N. Bartl, AIA; Director of Code Enforcement
Re: Changes to the Contractor Pass Rate Incentives Program

I'm writing to make you aware of a program change to the Contractor Pass Rate Incentives Program. The change was required to address a problem that was created partly because of the existing program's success in achieving its intended purpose of increasing inspection pass-rates and secondly because of the economic impact on building construction permitting activity.

Background

The Pass Rate Incentive Program was implemented in 2000 with an intended purpose to improve the inspection pass rate for projects by creating a permit fee credit or additional charge depending on the inspection pass rate percentage for a project. The program was developed by the joint- Department/industry Code Compliance Task Force (CCTF). The Contractor Pass Rate Incentives Program has been incredibly successful. Prior to the program start in 2000, Mecklenburg County's inspection pass rates were documented in the 60 percentile range (FY97 averaged 68.7%, with August, 2006 building inspections passing at a 56.2% rate) from July – December 2009, the Department reported an 87% inspection pass rate. We believe Contractor Pass Rate Incentives, along with a strong joint training effort with the industry, is one of the key tools that have helped in pushing the inspection pass rates to historic highs, and close to the 90% level, which at one time many considered an unattainable number. It also merits noting the program has won national awards and recognition as an innovative approach to conserving community resources while improving performance by both the industry and Department.

The Problem

The very success of the Contractor Pass Rate Incentives Program posed a problem to the Building Development Commission (BDC) and the Department. At a time when our permit fee revenue stream is below projections, the quality incentive payouts under the Contractor Pass Rate Incentives were reaching new highs and the program was running a net loss which appeared to be growing. The BDC recommended that the Department reconvene the Code Compliance Task Force and develop a solution to address the problem. Several options were identified as follows:

- A. Shut off the Program
- B. Increase Permit Fees
- C. Keep the Program but Tweak it

During its December 15, 2009 and February 1, 2010 meetings, the Code Compliance Task Force (CCTF) discussed the problem and agreed to keep the program and make adjustments. The original program measures still seemed to work well for residential type projects but did not work as well for commercial type projects. The commercial general contractor representatives recommended that the program be changed to break out their category of work and then adjusted as needed to include enlarging the "neutral zone" below 15% and capping the payout at 10%.

On February 16, 2010 the detailed CCTF recommendations were presented to the BDC for review and consideration; the BDC voted to approve the recommended changes to the Pass Rate Incentives Program. On March 16, 2010 the Board of County Commission approved the changes to the fee ordinance as follows:

(LAND USE AND ENVIRONMENTAL SERVICES)

Disapproved Inspections, where indicated by *red bold italics* in the following:

The re-inspection fee structure is based on an evaluation of each project with regard to the project code defect rate (failed inspections/total inspections for all disciplines), at project completion or issuance of the Certificate of Occupancy (CO)* or *Temporary Certificate of Occupancy (TCO), whichever occurs first*. The projects code defect rate is compared to the Percent Fee Adjustment Schedule and, prior to issuance of the CO, or following the final inspection, either a charge or credit would be calculated based on the original permit fee, and applied to the general contractor’s account.

1. Small projects (less than or equal to a \$100 permit fee or \$10,000 construction value)

- -Charges: by % on fee adjustment schedule
- -Minimum charge: not less than \$25 per permit
- -Maximum charge: no maximum
- -Credits: No credits given

2. Large project (greater than a \$100 permit fee and \$10,000 construction value)

- -Charges: By % on fee adjustment schedule
- -Minimum charge: no minimum
- -Maximum charge: not more than \$90 per failed inspection
- -Credits: By % on fee adjustment schedule
- -Minimum credit: no minimum
- -Maximum credit: to be calculated as follows:
 - Credit=(a-b)x\$90, where
 - “a” is 20% of total inspections
 - “b” is the number of inspections failed
 - Difference times \$90 per saved inspection

Fee Schedule

The Percentage Fee Adjustment Schedule is as follows:

Code defect % of Failure

(< or = to) % of Failure/Permit Fee Adjustments

These changes on page 3 shall be effective on permits issued on or after April 1, 2010.

Note: Above 40%, the percent fee adjustment shall be the same as the Code Defect Percentage Failure.

Commercial = Projects constructed under the NC Building Code

Residential = Projects constructed under the NC Residential Code (One-Two Family)

Changes to the Contractor Pass Rate Incentives Program

March 19, 2010

CURRENT: 20% Cap

Percentage of Failure	Permit Fee Adjustment
0	-20
1	-19
2	-18
3	-17
4	-16
5	-15
6	-14
7	-13
8	-12
9	-11
10	-10
11	-8
12	-6
13	-4
14	-2
15	0
16	1
17	2
18	3
19	4
20	5
21	6
22	7
23	8
24	9
25	10
26	12
27	14
28	16
29	18
30	20
31	22
32	24
33	26
34	28
35	30
36	32
37	34
38	36
39	38
40	40

COMMERCIAL: 10% Cap

Percentage of Failure	Permit Fee Adjustment
0	-10
1	-9
2	-8
3	-7
4	-6
5	-5
6	-4
7	-3
8	-2
9	-1
10	0
11	0
12	0
13	0
14	0
15	0
16	1
17	2
18	3
19	4
20	5
21	6
22	7
23	8
24	9
25	10
26	12
27	14
28	16
29	18
30	20
31	22
32	24
33	26
34	28
35	30
36	32
37	34
38	36
39	38
40	40

RESIDENTIAL: 15% Cap

Percentage of Failure	Permit Fee Adjustment
0	-15
1	-14
2	-13
3	-12
4	-11
5	-10
6	-9
7	-8
8	-7
9	-6
10	-5
11	-4
12	-3
13	-2
14	-1
15	0
16	1
17	2
18	3
19	4
20	5
21	6
22	7
23	8
24	9
25	10
26	12
27	14
28	16
29	18
30	20
31	22
32	24
33	26
34	28
35	30
36	32
37	34
38	36
39	38
40	40

Dear Code Enforcement customers,

In response to a decline in revenue brought about by the struggling economy, Mecklenburg County Code Enforcement has instituted a general permit fee increase of 4.75 percent. This increase went into effect April 21, 2010.

This change marks the first broad increase in permit fees since 2003.

Mecklenburg County has traditionally had some of the lowest permit fees in the United States. But as Mecklenburg development slowed and thus the demand for plan review and permitting decreased, Code Enforcement has been forced to make reductions in staff and selectively increase fees to ensure that quality customer service and technology initiatives can continue to thrive and move forward.

Code Enforcement's new permit fee schedule

Value of construction	Permit fee*
\$1 to \$3,000	\$62.85 (minimum fee per trade for projects that don't require plan review)
\$1 to \$7,001	\$83.80 (minimum fee per trade for commercial projects that require plan review)
\$3,001 to \$50,000	\$62.85 plus \$12.83 per \$1,000 or part over \$3,000
\$50,001 to \$100,000	\$665.86 plus \$5.78 per \$1,000 or part over \$50,000
\$100,001 to \$150,000	\$954.86 plus \$6.24 per \$1,000 or part over \$100,000
\$150,001 to \$250,000	\$1,266.86 plus \$4.83 per \$1,000 or part over \$150,000
\$250,001 to \$1 million	\$1,749.86 plus \$5.31 per \$1,000 over \$250,000
\$1,000,001 to \$10 million	\$5,732.36 plus \$2.78 per \$1,000 over \$1 million
More than \$10 million	\$30,752.36 plus \$1.42 per \$1,000 over \$10 million

*All renovation/alteration projects, commercial and residential, will be charged \$62.85 per trade plus 7 cents per square foot for the building trade and 4 cents per square foot for each of the following trades involved: electrical, mechanical and plumbing. Square foot area means the area of the room or space in which the renovation/alteration occurs.

Commercial projects that don't require plan review will be charged on a per-trade basis: One trade will cost \$62.85, two trades will cost \$125.70, etc. Commercial projects that do require plan review will be charged the following on a per-trade basis: One trade will cost \$83.80, two trades will cost \$167.60, etc.

Single-family detached affordable housing projects are exempt from this fee increase.

Code Enforcement also has revised fees in areas where the cost of service has traditionally exceeded the fees associated with that service. These changes include:

- Increases in fees associated with Commercial Plan Review
- A charge associated with ABC building inspections, which formerly had no cost
- An increase in hazardous material permit fees

For more information on the changes in the permit fee schedule and navigation of the plan review and permitting processes, contact the Residential Technical Assistance Center at 704-432-7822 or the Commercial Technical Assistance Center at 704-336-3829, ext. 4. For more information on the services and technological advances helping to revolutionize customer service, visit [Code Enforcement's Web site](#).

Thank you for your understanding as we move forward amid difficult economic times.
Mecklenburg County Code Enforcement



MECKLENBURG COUNTY
Land Use and Environmental Service Agency
Code Enforcement

Notice of commercial project technology surcharge, effective July 1, 2010

Date: May 10, 2010
TO: All Customers
From: Jim Bartl
RE: Technology Surcharge Fee Increase

On May 5, the Mecklenburg County Board of Commissioners (BOCC) approved changes to the LUESA Fee Ordinance, creating a 5% technology surcharge, on commercial projects only. The surcharge will run from July 1, 2010 to June 30, 2014, funding continued technology development, primarily on commercial projects.

As further background, since completing the installation of the POSSE Permitting and Inspection (P&I) system in 2003, the Department has funded all new technology development through either permit fees or the Special Reserve Fund, including, among others:

- Meck-SI paperless special inspection process and website
- Residential electronic plan submittal and review
- Homeowner Internet Permits (HIP) and Trades Internet Permits (TIP)

We are mid-stream in developing commercial Electronic Plan Submittal (EPS) and Electronic Plan Review (EPR), which will advance our movement toward a totally paperless process. Key remaining components include;

- Two dimensional plan submittal and review (EPS-EPR)
- Single portal submittal for any project, and any authority/agency in the County
- Modification of EPS-EPR to link with Building Information Modeling – Integrated Project Delivery processes, the use of which appears to be growing rapidly in the commercial construction industry.

The 2008-2010 dip in permit fee revenue makes it impossible to fund continued technology development from either general permit fees or the Department's Special Reserve Fund. Consequently, the department and Building Development Commission proposed to the BOCC a 5% technology surcharge on commercial permits, to support these related technology projects only. This returns to a tool used effectively by the Department in implementing the 1997-2002 replacement of the entire Permitting & Inspection system. The surcharge is only on commercial projects since this technology is to be used only on commercial projects, in the foreseeable future. Again, we will apply the new 5% technology surcharge to all permits issued on or after July 1, 2010 and will sunset the technology surcharge on June 30, 2014.

Questions on the technology surcharge fee increase should be directed to:

- Geraldine Walton, 704-0432-1093, geraldine.walton@mecklenburgcountync.gov
- Jim Bartl, 704-336-3827, james.bartl@mecklenburgcountync.gov

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MECKLENBURG COUNTY
Land Use and Environmental Services Agency
Code Enforcement

Memo

Date: July 20, 2010
TO: all contractors
From: Jim Bartl
RE: Code Compliance Report

For over twelve years, the Department has collected data on inspection failures, based on a system of defect codes, which are recorded at the time of inspection. Those reports are summarized for presentation to the Building Development Commission on a quarterly basis.

Attached is a copy of the most recent Code Compliance Report Data Summary for the period April 1, 2010 to June 30, 2010. This report highlights the most frequent code defects sighted in each of the trades.

Since July 1, 2001, detailed contractor code defect data has been available on the Department web site (go to the contractor's tool box at www.meckpermit.com). Questions on the data may be directed to Kathleen Batey (704-336-3545) or your project specific Code Enforcement Manager.

Prior to July 1, 2002, we also held hard copies of individual contractor defect reports at the Building Development Center front desk for contractor pickup. Given the huge amount of paper involved, and the fact that the vast majority of these reports were not picked up, this service was discontinued. However, Hal Marshal administrative support staff will provide assistance to contractors on downloading their reports over the counter or by phone (call 704-336-3830).

**Mecklenburg County
Code Enforcement Department**

Building Trades Code Compliance Report

**Building Inspections
Electrical Inspections
Mechanical Inspections
Plumbing Inspections**

April 1, 2010 through June 30, 2010

April 1, 2010 through June 30, 2010

Mecklenburg County Code Enforcement Department

Code Compliance Report

Data Summary

1. Building Inspections Top Fifteen Code Defects

task	item #	item	# defects	% of total
mono slab	108	need soil compaction test	356	5.92%
framing	111	fire stopping/draftstopping	290	4.83%
footing	108	need soil compaction test	211	3.51%
framing	197	other defects listed on job	198	3.30%
final	197	other defects listed on job	146	2.43%
frame	109	foundation anchors	123	2.04%
frame	195	previous list incomplete	106	1.76%
frame	105	call clerk or check meckpermit	106	1.76%
final	105	call clerk or check meckpermit	96	1.60%
frame	131	engineered roof design	91	1.51%
final	123	exterior grading	88	1.46%
final	120	missing/incomplete insulation	87	1.45%
final	114	flashing/caulking	84	1.40%
final	118	handrail construction	83	1.38%
frame	104	not ready for inspection	79	1.32%
TOTAL			2144/6006	35.70%

Note 1: all 04 (incomplete not ready for inspection) total 261 or 4.34% of total bldg code defects noted

Note 2: Rough O2's = 35.25% of total; Final O2's = 25.34% of total

2. Electrical Inspections Top Fifteen Code Defects

task	item #	item	# defects	% of total
final	30	improper wiring method	154	4.70%
final	W8	defects created by others	153	4.67%
final	9	grounding	126	3.85%
final	25	improper overcurrent protection	116	3.54%
final	19	label panel	102	3.12%
final	65	AFCI defect	97	2.96%
final	10	bonding	79	2.41%
final	55	GFCI defect general	65	1.98%
rough	W8	defects created by others	61	1.86%
final	4	job not ready	59	1.80%
final	31	cables subject to damage	59	1.80%
final	5	too many defects to list	56	1.71%
rough	31	cables subject to damage	53	1.62%
final	6	defect not corrected	48	1.47%
final	79	equipment not wired	42	1.28%
TOTAL			1267/3274	38.70%

Note 1: all 04 (incomplete not ready) total 129 or 3.94% of total electrical code defects noted

Note 2: Rough O2's = 17.44% of total; Final O2's = 66.07% of total

3. Mechanical Inspections Top Fifteen Code Defects

task	item #	item	# defects	% of total
final	H01	damage caused by others	130	6.75%
final	G03	test not to code or bad gauge	92	4.78%
final	A13	need ladder	87	4.52%
gas test	G03	test not to code or bad gauge	85	4.41%
final	Z99	other or no defect code applies	73	3.80%
final	Z96	approval withheld for other trades	53	2.75%
final	A4	not ready for inspection	52	2.70%
rough	H01	damage caused by others	49	2.54%
final	P1	primary/secondary drain missing	47	2.44%
rough	D6	duct damaged	43	2.23%
rough	Z99	other or no defect code applies	40	2.08%
rough	G03	test not to code or bad gauge	37	1.92%
final	D11	dryer vent missing or incorrect	36	1.87%
final	D5	duct or boots not sealed	34	1.77%
gas pipe serv	G7	gas pipe protection not per code	33	1.72%
TOTAL			891/1924	46.30%

Note 1: all 04 (not ready for inspection) total 94 or 4.89% of total mechanical code defects noted

Note 2: Rough O2's = 26.46% of total; Final O2's = 63.36% of total

4. Plumbing Inspections Top Fifteen Code Defects

task	item #	item	# defects	% of total
rough	B31	pipng test missing/incorrect	110	11.04%
final	H01	damage by others	60	6.02%
final	D31	T&P drain missing or incorrect	55	5.52%
final	E31	handicapped regulation missing	37	3.71%
wtr distr	B31	pipng test missing/incorrect	35	3.51%
final	E71	fixture installed incorrect	35	3.51%
final	E81	backflow requirement	34	3.41%
final	41	not ready	31	3.11%
slab	B31	pipng test missing/incorrect	27	2.71%
rough	B51	pipng support missing/incorrect	24	2.41%
rough	41	not ready	22	2.21%
final	C21	pipng insulat'n missing/incorrect	18	1.80%
final	D21	wtr heater pan missing/incorrect	15	1.50%
final	J21	equipment inaccessible	15	1.50%
final	A81	need additional permits	15	1.50%
TOTAL			533/996	53.51%

Note 1: all 04 (not ready for inspection) total 72 or 7.12% of total plumbing code defects noted

Note 2: Rough O2's = 25% of total; Final O2's = 47.6% of total



Building Consistency Meeting

Residential

Date: 4/7/10 Recorder and minutes prepared by: Danny Wooten/Jeff Griffin

Staff present: Willis Horton, Danny Wooten, Steve Kellen, Steve Pearson, Rob Bock, Ron Dishman, Tim Taylor, Walt Nash, Barry Human, Patrick Bidy, Andrew DeMaury, TW Anthony, David Williams, Harold Sinclair, Billy Yandle, Kirk Aten, Greg Walsh, Mike Jackson.

Public present: Kenneth Rampersad (**Soto Construction**); David R. Schwieman (**D.R. Schwieman, Inc.**); Darren Price/Charles Sofinowski (**M/I Homes**); Wayne Carter (**Lifestyle Homes**); Bob Mckee (**Ryan Homes**); Bill Green (**Barefoot & Company**); Tony Smith (**Hobart Smith Construction**); Kenneth Rampersad (**Soto Construction**).

Topics/Subject	Decisions/Conclusions/Actions
Old Business	
Smoke detector status	<p>Update on changes related to smoke detectors. Code change has been approved and will be allowed at this time to remove the requirement to upgrade a home with a hard wired and interconnected smoke detector when there is attic and crawl space access. Language now will only require that if ceiling and/or wall covering is removed see below:</p> <p style="text-align: center;">Item D – 8 Request by David Smith, Building Code Council, to amend the 2009 NC Residential Code. The proposed amendment is as follows:</p> <p>R313.2.1 Alterations, repairs and additions. When alterations, repairs and additions requiring a building permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings; the smoke alarms shall be interconnected and hard wired.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Interconnection and hard-wiring of smoke alarms in existing areas shall not be required where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for hard wiring and interconnection without the removal of interior finishes. <u>Smoke alarm locations are required per Section R313.2, but may be battery powered and shall be designed to emit a recurring signal when batteries are low and need to be replaced.</u> 2. (no change to exception 2)

New Business	
Inspection cancellations	Discussed the issue of canceling an inspection request to make sure that record reflects a reason for cancellation. Staff has been advised that all cancelled inspections require notes to be placed into the system as to the reason for the cancellation (at minimum) with other information like person cancelling inspection as needed.
Plans options identified	Issue brought up by staff that we are getting large sets of plans on site that are filled with every plan option available, these plans should have proper identification as to options being used on a particular site. Plans should be marked or tabbed for proper identification to prevent staff from missing a detail in the site review.
Re-org update & reduction in force	Discussed the re-org status and the separate issue of reduction of staff. Customers were advised that the hard start of the re-org and the RIF will take place on the same date which is May 5 th . After this date your permits will indicate the management team assigned to your project. A special note was made to be aware that staffing levels will be low due to the RIF and it will become more important that special needs are communicated and jobs are ready when inspectors arrive, there will not be time for multiple trips in a given day.
Stamped plans in the field	All stamp (county approved) plans are required on every site when an inspection is requested, failure to provide plans on site will terminate an inspection. The county no longer requires that plans be red stamp they can be re-produced just have to have the stamp on the plans. New issue was on an electronic set of plans that had a stamp on all pages but the foundation page; inspector was on site to inspect the foundation. The sheet needed was not stamped so inspection was failed for not having the approved foundation plan on site which was supplied at second inspection. On electronic plan review the system will place a stamp in the upper right hand corner on each page; this stamp must be present to conduct the inspection.
Sunroom wall ratings	Issue came up on a job about a sunroom addition on a townhouse, any addition to the building footprint such as a sunroom still has to meet the R302 lot line requirements which will require a 1hour rated wall even though it's not a party wall required to be 2 hour. On townhouse units lot lines should be properly identified in order to maintain set back or require this rating, when in doubt inspector should request a survey copy.
Vinyl guardrail systems	There are several projects both commercial and residential that use a vinyl guardrail system, manufacturer's installation instructions must be provided on site to determine required brackets, connectors and rail stiffeners needed for that system to meet code required live loads.
Termite treatment identification	Builders can use any system approved by the NC Department of Agriculture but need to identify on plans, in plan box or by sticker on permit what type of treatment will be used, if this is a slab home this should be present on slab inspection (crawl space should be present at foundation inspection).
Plans submitted with deck shown	Question asked about plans that have decks shown on them, currently we don't require decks to be shown on plans they are handled in the field however if a plan shows a deck and it doesn't meet code the reviewer could fail or mark up the defect that needs attention.



Building Consistency Meeting

Residential

Date: 5/5/10 Recorder and minutes prepared by: Danny Wooten/Jeff Griffin

Staff present: Danny Wooten, Willis Horton, Steve Kellen, Rob Bock, Ron Dishman, Tim Taylor, Walt Nash, Barry Human, Patrick Bidy, Andrew DeMaury, David Williams, Harold Sinclair, Billy Yandle, Greg Walsh, Mike Jackson, Steve Lineberger, Randy Newman, Tony Kiser, Ken Kiser, Ken Turull, Don Sprinkle, Dave Ries, Robert Richardson, Eric Brown, George Rogers, Steve Kellen, Stan Hargett, Ron Featherstone, Debra Parris.

Public present: David R. Schwieman (**D.R. Schwieman, Inc.**); Wayne Carter (**Lifestyle Homes**); Lou Salvador (**Dr Horton**); John Meeks (**Apple blossom Energy**); Daniel McBride (**Cunnane Group**); Rob Merrell/Kevin Ratliff (**Griffin Masonry**); Terry Cleary (**Meeting Street Homes**); Rod Spence (**Banister Homes**); Jason Whitener (**Southern Tradition Homes**).

Topics/Subject	Decisions/Conclusions/Actions
Old Business	
None	
New Business	
Accessory Buildings Permits and support requirements	<p>Several questions have come up in regards to permitting and foundations systems allowed for accessory buildings as listed under chapter 1 section R101.2 Scope.</p> <p>One question reviewed with the State was where the 12' in any direction is measured. The requirement for a permit is based upon any <u>plan dimension</u> (no overhangs) greater than 12' in any direction; also with any vertical wall height that is greater than 12' (not roof line including barn roof style). A second question is many buildings are elevated due to topography or ground clearances for non-treated joists/subfloor. Using 4x4 or 6x6 runners which is a typical practice how far apart can supports be and of what type of material. The department has allowed based upon previous engineering the following:</p> <ul style="list-style-type: none"> • Precast blocks/footers or solid only cap blocks can be used and dry stacked on grade • Runners must be minimum 4x4 • Maximum clear span between blocks is 4' • Must be less than 400 square feet, 1 story and tied down at the corners per section R101.2 <p>A formal interpretation will be worked up to address this application and posted on the web at www.meckpermit.com.</p>
Basement egress windows	Maximum height to a window sill for emergency egress is 44" per Section R310.1 . If a window in a basement area is above that corrections are needed as listed below:

	<ul style="list-style-type: none"> • Window opening needs to be lower to maximum dimension and window well installed on outside if needed. • A fixed landing or if needed a compliant stair with a landing to the window must be installed. This option requires it to be a permanent stairway and actually part of the finished floor.
Girder bearing in crawl spaces	<p>Question asked about how much bearing is required on a pier in a crawl space. All Girders are required to have full bearing over piers regardless of the orientation of the piers per Table R403.1a footnote #3 as listed below:</p> <p><i>3. Centers of piers shall bear in the middle one-third of the footings, Girders must have full bearing on piers, footings shall be full thickness over the entire area of the footing.</i></p>
Splices in girders	<p>Question was asked about splices in girders which has been addressed before and was related to a 3 ply girder that the middle ply had splices that hit not over a support. In order for girder to be considered a full 3 ply member it must span from support to support without splices in span.</p>
Closed vs. Open cell foam insulation	<p>Question was asked about the use of closed cell foam in attic applications (if allowed). There is no current restriction for closed cell foam, the code doesn't acknowledgment a difference between closed or open cell just that foams must meet ASTM E 283 per section listed below:</p> <p><i>R806.4 Conditioned attic assemblies. Unvented conditioned attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) are permitted under the following conditions:</i></p> <ol style="list-style-type: none"> <i>1. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.</i> <i>2. An air-impermeable insulation is applied in direct contact to the underside/interior of the structural roof deck.</i> <p><i>"Air-impermeable" shall be defined by ASTM E 283.</i></p>
Townhouse soffit protection	<p>Townhouse soffit protection continues to be an issue with inspections and the specific requirements. All townhouse buildings with 3 or more units must have all of their soffit lines protected with minimum allowance for ventilation allowed (section R302.1 item #2). In addition to the protection and ventilation there is no allowance for any ventilation within the first 4' off of the property line similar to no ridge allowed with the first 4' off property lines.</p> <p>Inspection issue that came had to do with a builder that would like to place the protection for the soffits in place at time of siding after the frame. As long as the soffit material used is visible at final inspection like the use of fiber cement board there would be no problem with allowing it to go up with the siding. If protection is underneath vinyl or other soffit material and not going to be visible at final it must be in place at frame inspection.</p>
Trusses with metal web members	<p>Question was asked about trusses that use metal web members and if they were allowed. They would be allowed based upon engineering design that would need to be provided at frame inspection as reference in section R502.11.1 for floor systems.</p>



Building Consistency Meeting

Residential

Date: 6/2/10 Recorder and minutes prepared by: Danny Wooten/Lon McSwain

Staff present: Danny Wooten, Eric Brown, Druied Roberson, Steve Lineberger, Ron Dishman, Tim Taylor, Walt Nash, Barry Human, Patrick Bidy, Dave Ries, Gene Morton, Lon McSwain, Greg Walsh, Patrick Granson, David Williams, Harold Sinclair, Billy Yandle, Robert Richardson, Jeff Griffin, An Nguyen, Ken Turull.

Public present: Daniel McBride (**Cunnane Group**); Kenneth Rampersad (**Soto Construction**); David R. Schwieman (**D.R. Schwieman, Inc.**); Rob Merrell (**Griffin Masonry**); Wayne Carter (**Lifestyle Homes**); Terry Cleary (**Meeting Street Homes**); Bob McKee (**Ryan Homes**).

Topics/Subject	Decisions/Conclusions/Actions
Old Business	
Accessory Structures	A hand out was passed out with the formal interpretation of the foundations required for accessory structures, see attached.
New Business	
Re- org update	Lon McSwain was introduced as the new Building Code Administrator. The breakdown of the field administrators and field teams was presented. The proposed changes to the consistency meetings were introduced. Since the field staff would be required to attend for ISO hours the residential and commercial meeting would be held back to back on the same day.
Landings at the bottom of stairs	Section R-311.4.3 item #4. In the 2006 code a door was allowed at the bottom of a stair before the landing. In the 2009 code item #4 has been deleted from that section and a landing is now required before the door.
Townhouse soffits	Section R-302 requires the entire soffit be protected with no openings within 4'-0" of the party wall. (non-com, frt, gyp bd, ect). There is a field inspection issue in that if the finished product is the approved non-combustible material like fiber cement board then it can be viewed at final inspection. If the builder is using protection that will be underneath the vinyl soffit material and not visible at the final then it must be installed at frame check.
Insulation mixed products	If a mix of foam and fiber glass is used then a Res-Check is required, as when any foam product is used.
Glazing, hazardous locations	Any glazing with in 24" of a door <u>in the same plane</u> as the door with the bottom edge located less than 60" AFF shall be tempered. Concern raised from the field had to do with maybe requiring because a door handle may hit the glass which is not the concern or intent of this section of the code and if a window is in a different plane (not the same wall) then there is no concern under NC code on door handle impact or how close it might be to the door.
E-plan	A feature has been added to allow the plans to be viewed only (can not make any changes).

CODE



INTERPRETATION

MECKLENBURG COUNTY

Building Code Enforcement

CODE: 2009 NC RESIDENTIAL CODE

SUBJECT: ACCESSORY BUILDING FOOTERS AND DIMENSION

REVIEWED: RESIDENTIAL CONSISTENCY TEAM

Question:

On an accessory storage building where is the 12' in any direction measured to and can an accessory storage building be built on stacked blocks, how far apart can they be spaced?

Code reference:

Chapter 1 section R101.2 scope

Answer:

The requirement for a permit is based upon any **plan dimension** (no overhangs) greater than 12' in any direction; also with any vertical wall height that is greater than 12' (no roof line). A second question is many buildings are elevated due to topography or ground clearances for non-treated joists/subfloor. The department has allowed based upon previous engineering the following practice:

- Precast solid blocks/footers or cap blocks can be used and dry stacked on grade
- Runners must be minimum 4x4
- Maximum clear span between blocks is 4'
- Must be 400 square feet or less, 1 story and tied down at the corners per section R101.2

Approved By Lon Mcswain Date 6/2/10



MECKLENBURG COUNTY
Land Use and Environmental Service Agency
Code Enforcement

4/14/10 ELECTRICAL CONSISTENCY MEETING

Code Consistency Questions

1. Is it permissible to use insulation to separate a type IC luminaire from coming into contact with HVAC ductwork that's marked not suitable for contact with a heat source?

While clearly not the intent of the code, there is nothing in the NEC that prohibits this installation provided the ductwork is completely separated from the IC luminaire and the paper side of the insulation is not in contact with the luminaire.

2. Is it allowed to fish ENT in a 35-foot high vertical foyer wall section in a lobby down to a wall mounted receptacle outlet without providing any means of support or securing means for the conduit inside the wall?

Section 362.30(A) has a new Exception No. 3 that states as follows: "For concealed work in finished buildings or pre-finished wall panels where such securing is impracticable, unbroken lengths (without coupling) of ENT shall be permitted to be fished." However, be careful if this lobby area is part of an assembly occupancy and remember that penetrating a fire rated wall will require the proper through penetration fire stop systems based on UL 1479 must be used. Reference page number 70 of the UL White Book or the UL Fire Resistance Directories.

3. Where a large 20-ampere GFCI device is installed in a single-gang box, is there any minimum depth the box has to be to receive the wires, wire connectors, and the device?

Yes, see 314.24(C)(4) that states, "Boxes that enclose utilization equipment supplied by 12 and 10 AWG conductors shall have an internal depth that is not less than 30.2 mm (1-3/16 in.). Where the equipment projects rearward from the mounting plane of the box by more than 25 mm (1 in.), the box shall have a depth not less than that of the equipment plus 6 mm (1/4 in.)."

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4. Some jurisdictions require the 8 AWG copper bonding conductor used to bond the pump and other metallic piping of a hydromassage bathtub to be run back to anywhere on the service grounding system or panelboard where the pump branch circuit originates. 250.130(C) is often given as the reference for this requirement. Please comment.

The bonding conductor does not need to be "run back" to anywhere. A new last sentence clarifies the bonding requirements for hydromassage bathtubs. Bonding applies to all metal piping systems and all grounded metal parts in contact with the circulating water. See 680.74 that states, "The 8 AWG or larger solid copper bonding jumper shall be required for equipotential bonding in area of the hydromassage bathtub area and shall not required to be extended or attached to any remote panelboard, service equipment, or any electrode."

5. Where two 12/2-w ground NM cables for kitchen small appliances are stapled together on wood framing and a 3½-inch thick fiberglass insulation blanket is installed over the conductors, is there a derating requirement?

Reference 334.80 new third paragraph that states, "Where more than two NM cables containing two or more current-carrying conductors are installed in contact with thermal insulation without maintaining spacing between cables, the allowable ampacity of each conductor shall be adjusted in accordance with Table 310.15(B)(2)(a). Answer is no, but if you look at a Code change in the 2008 if you have more than two cables derating will be required. This is based on studies done by the copper development association.

6. Where an individual motor-compressor has a FLA of 32 and 175% of this rating is used to establish the overcurrent protection for the motor ($32 \times 175\% = 56$). **1)** Is it required to back the overcurrent device chosen back to 50 or is it allowed to go to the next standard size overcurrent device, 60-amperes? Also, what if the device required is the 50-ampere device and the compressor will not consistently start and run on the 50-ampere device. **2)** It is apparent from the rules in 440.22 that the protective device can be increased but would it be required to only go to a 60-ampere device and could a 70-ampere device be installed ($32 \times 225\% = 72$)?

1) 50 ampere overcurrent device. 2) 70 ampere overcurrent device.

FLA = 32 amperes

$32 \text{ A} \times 175\% = 56 \text{ A} = 60$, however --(...not exceeding 175 percent...)

50 A overcurrent device (...not sufficient for the starting current of the motor...)

$32 \text{ A} \times 225\% = 72 \text{ A}$ (shall not exceed 225 percent...)

70 A overcurrent device maximum

7. According to 240.24(B) a tenant in a motel room does not need access to the overcurrent protective devices that serve the room as long as electrical maintenance is provided by building management and where the electrical system is under continuous building management supervision. Would this remain to be true if the motel room has permanent provisions for cooking? Would a built-in microwave constitute permanent cooking provisions?

1) No. This question points to a revision in 240.24(B)(2) that states, "Where electric service and electrical maintenance are provided by the building management and where these are under continuous building management supervision, the branch-circuit overcurrent devices supplying any guest rooms or guest suites without permanent provisions for cooking shall be permitted to be accessible only to authorized management personnel." Generally, where provisions for cooking are provided, the motel room or motel suite has become a dwelling unit by definition.

2) Per NC DOI, yes.

8. Many builders are now using LED lighting in clothes closets in dwellings. Has there been any minimum clearance established between this type of luminaire and the nearest point of storage space in a clothes closet? I am specifically interested in the closet clothes hanger rods that now come with LED type lighting on the bottom of the rod which places the light right above or touching in some cases the hanging clothes.

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Yes, newly renumbered 410.16(C)(5) (previously was 410.8) permits surface-mounted fluorescent or LED luminaires to be installed within the storage space where identified for this use. UL has been testing clothes rod within built-in lighting within the rod. 410.16(C) states, "Location. Luminaires (fixtures) in clothes closets shall be permitted to be installed as follows: and 410.16(B)(5) states, "Surface-mounted fluorescent or LED luminaires shall be permitted to be installed within the storage space where identified for this use. The original proposal was to accept listed surface-mounted or wall-mounted clothes rod luminaires installed in accordance with the manufacturer installation instructions. The comment added two subsections with more generic text accepting surface mounted fluorescent or LED luminaires within the storage area of the closet. Since the actual rod in the closet would be part of the storage area and would be surface mounted from one side to the other of the closet, a rod-type fluorescent or LED luminaire could be installed.

9. Where a hole is tapped into an enclosure or other metallic cabinet for the insertion of a grounding screw how many threads are required to make a good ground connection where no washer and nut are utilized?

Not less than two threads. See 2008 NEC 250.8 that states, "250.8 Connection of Grounding and Bonding Equipment. See 250.8(A) that states, "Permitted Methods. Grounding conductors and bonding jumpers shall be connected by one of the following means:

- (1) listed pressure connectors
- (2) terminal bars
- (3) pressure connectors listed as grounding and bonding equipment
- (4) the exothermic welding process
- (5) machine screw-type fasteners that engage not less than two threads or are secured with a nut
- (6) thread-forming machine screws that engage not less than two threads in the enclosure
- (7) Connections that are part of a listed assembly
- (8) Other listed means

10. Is MC cable suitable to use as the wiring jumper between an outdoor AC disconnect and the AC unit where the disconnect, wiring, and unit are located in a wet location?

Maybe, see 330.10(A)(11)(c) that states, "The insulated conductors under the metallic covering are listed for use in wet locations and a corrosion-resistant jacket is provided over the metallic sheath." Code reference 330.10 (A)(11)(c). The answer is yes as long as the wires inside are listed for a wet location and new for 2008 it must also have a jacket. This has been the recommendation of the manufacturers for years and now it is required by the Code.

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11. Is it permissible for a 100 amp breaker and set of # 1 AWG conductors from one panel to feed a sub-panel with a 200 amp main breaker and 85 amps of load? This sub-panel is rated for 200 amps.

Yes, Per 408.36 as long as the subpanel does not exceed 100 amps of load and is rated no less than 100 amp

12. Per 110.26 (E) exception, what is the minimum allowable headroom allowed for mounting service equipment or panel boards in existing dwelling units?

The minimum headroom of working spaces about service equipment, switchboards, panelboards, or motor control centers shall be 2.0 m (6½ ft). Where the electrical equipment exceeds 2.0 m (6½ ft) in height, the minimum headroom shall not be less than the height of the equipment. The exception is there to address adding new circuits in existing equipment, switchboards, and panelboards in existing dwelling units.



MECKLENBURG COUNTY
Land Use and Environmental Service Agency
Code Enforcement

6/9/10 ELECTRICAL CONSISTENCY MEETING

Code Consistency Questions

1. I have a 50 amp 240 volt breaker ahead of a feeder to a subpanel for swimming pool circuits. There are no GFCI breakers protecting the branch circuits from the pool subpanel. Is this installation code compliant?

Partially compliant. 680.22(B) for pool motors and 680.23(A) 3 for underwater luminaires require GFCI protection in the branch circuit. No other sections of 680 specify branch circuit protection.

2. What are the mounting height requirements for luminaires in a residential stairwell?

Per IBC 1009.2 and NCRC R311.5.2 stairways are required to have a minimum headroom height of 6' 8" (80") measured vertically from the sloped plane adjoining the tread nosing or from the floor surface or platform. This measurement is required across the entire width of the stairway or landing and will not allow any lighting fixtures to be in this space that protrude from the walls.

Per NCRC 303.6 there shall be a wall switch at each floor level to control the lighting outlet where the stairway has six or more risers. The illumination of exterior stairways shall be controlled from inside the unit

3. I have receptacles installed with grade level access on the front and rear of my single family dwelling. Are these receptacles allowed to be switched?

Yes. There is nothing in section 210.52(E) or all of article 210 that would prohibit switching those receptacles.

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4. Are j-boxes for chandeliers required to be installed and made up for a rough inspection?

Yes, however some building conditions may not physically allow this to take place.

5. I'm not allowed to double up the neutrals on a neutral bar in a panel. Can I take 2 neutral wires and put them under a wirenut with a single wire (pigtail) then put the single wire (pigtail) onto the neutral bar? If this is an approved method [which it seems to be] then what is the difference? If you only cut 1 breaker off and you break the neutrals under the wirenut you will get the same affect. The lugs on the neutral bar are approved to accept 2 wires of the same size, so the reason can't be that the lugs are not approved.

No.

408.41 Grounded Conductor Terminations.

Each grounded conductor shall terminate within the panelboard in an individual terminal that is not also used for another conductor.

Exception: *Grounded conductors of circuits with parallel conductors shall be permitted to terminate in a single terminal if the terminal is identified for connection of more than one conductor.*

6. I received a red tag for an attic mounted electric central heater installation. The unit was 25 kW rated and I installed a general duty safety switch adjacent to the heating unit as the unit utilizes cartridge fuses for the required supplementary overcurrent protection. The red tag stated the heating unit was in contact with combustible wood (framing braces) and that the unit was not marked for direct contact with combustible materials. The inspector referenced 424.13 of which he is correct. However, why is this installation the electrician's responsibility instead of the trade (mechanical contractor) that set the unit?

Electrical contractor should notify general contractor that the heating unit is not properly installed by mechanical contractor. It is not the electrical contractor's responsibility to relocate the unit. The electrical inspector should also notify the mechanical inspector of the problem.

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7. 514.11(B) states, "Emergency controls as specified in 514.11(A) shall be installed at a location acceptable to the authority having jurisdiction, but controls shall not be more than 30 m (100 ft) from dispensers, [NFPA 30A, 6.7.1]." Where a diesel dispenser is on the same island with gasoline dispensers, would the provisions of 514.11(B) apply to the diesel dispenser?

See 514.1, 514.3(A), 514.4 and 514.11(A) through (C). The scope of Article 514 covers all facilities where "motor fuels" are dispensed from fixed equipment into the fuel tanks of motor vehicles or marine craft. Diesel fuel (a Class II combustible liquid) is encompassed by the term motor fuel. Note that the change in scope to cover all motor fuel dispensing facilities occurred in the 2005 NEC. In prior editions of the NEC, Article 514 applied to those facilities that dispensed "volatile flammable liquids" as defined in Article 100. Therefore the all applicable requirements of Article 514, including 514.11(B) do apply to the diesel dispenser. In accordance with 514.3, some installations at which only combustible liquids are dispensed may not require electrical area classification. A diesel dispenser in a Class I location will have to be identified for use in that specific Class, Division and Group.

8. Two Questions: **(1)** Is it required that a redundant ground to receptacles and switches be maintained in an MRI (magnetic resonance imaging) room per 517.13? **(2)** If so, are there any special concerns that have to be taken into consideration?

1) See 517.2 & 517.13(A) & (B). A room in which an MRI is located is a *patient care area* and more specifically is a *general care area* in accordance with the definitions of these terms in 517.2. Patient care areas are required to meet the grounding requirements in 517.13(A) and (B). **2)** Special concerns over the use of metal raceways and metal cable armor/jackets in the vicinity of this type of equipment would be addressed in the installation instructions for the particular MRI unit.

9. What constitutes a wall in a dwelling that will require receptacle outlets?

Wall space in a "habitable" room. The requirements for dwelling unit receptacle outlet locations and spacing are located in Section 210.52(A). The "six-foot" rule for dwelling unit receptacle outlet spacing is located at Section 210.52(A)(1). This rule applies to every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area of dwelling units. This laundry list of rooms required to comply with the "six foot" rule has changed and expanded nearly every Code cycle. In the 1975 edition of the NEC "similar room or areas" was added to encompass all habitable rooms without having to add a particular habitable room to the laundry list found at 210.52(A). For use with Section 210.52 and the rooms described in 210.52(A), wall space is defined as any

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wall 600 mm (2 ft) or wider, spaces occupied by fixed panels in exterior walls, and spaces afforded by fixed room dividers such as freestanding bar-type counters or railings.

The walls that are required to meet the receptacle outlet spacing requirements are typically referred to as habitable rooms. "Habitable" rooms are not defined in the NEC even though habitable rooms are mentioned on eight different locations in the 2005 NEC. NFPA 5000 (Building Code) defines a "Habitable Room" as a room in a residential occupancy used for living, sleeping, cooking, and eating, but excluding bath, storage and service areas, and corridors. The International Residential Code defines a "Habitable Space" as a space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces. Receptacle outlet requirements for kitchen countertops [210.52(C)], bathrooms [210.52(D)], outdoors [210.52(E)], laundry areas [210.52(F)], basements and garages [210.52(G)], and hallways [210.52(H)] are covered separately for "habitable rooms in Section 210.52.

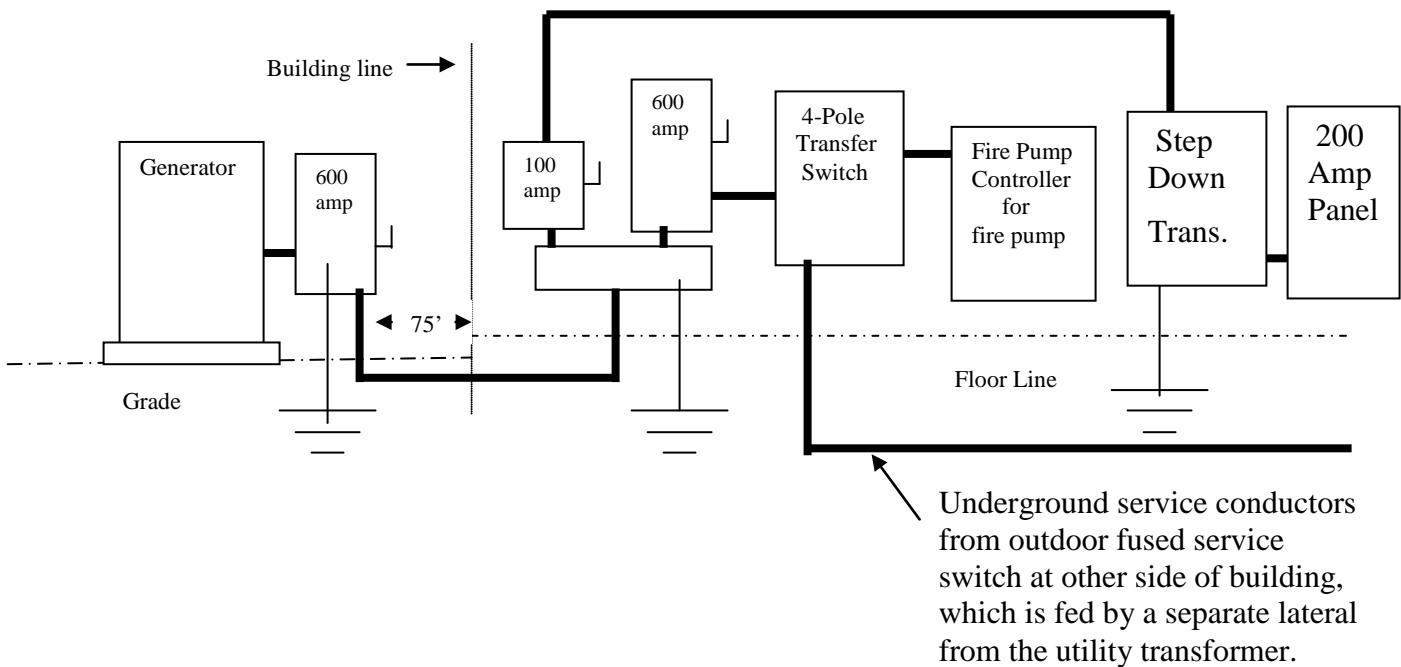
10. What is the difference in a smoke detector and a smoke alarm?

Typically, what is encountered in a dwelling is a multiple-station smoke alarm. These units are self-contained units that incorporate a smoke chamber and related electrical components to initiate an audible alarm signal from the unit when abnormal smoke actuates the unit. These devices are typically powered by the normal 120-volt branch circuits (with battery backups). Where a battery is employed as the main power supply, such as in older existing dwellings, its depletion below the level at which an alarm signal would be obtained is indicated by a distinctive audible trouble signal which persists for at least seven days. Multiple station smoke alarms permit the interconnection of single-station units so that actuation of any of the units results in the actuation of the audible alarms of all the units. The multiple-station 120-volt (battery back-up) devices typically seen in dwelling units are covered by Article 210 and therefore, required to be AFCI protected when installed in dwelling unit bedrooms. The dwelling might have a fire alarm system installed throughout the dwelling with low-voltage smoke detectors or smoke alarms installed in the bedrooms. These devices would be subject to Article 760 (Fire Alarm Systems) and not subject to AFCI protection (not a 120-volt outlet).

Category	Smoke Alarms:	Smoke Detectors:
UL Category	UL category (UTGT)	UL category (UROX)
Standard	ANSI/UL 217	NFPA 72, "National Fire Alarm Code"
Description	An assembly that incorporates the detector, the control equipment, and the alarm-sounding device in one	A device that detects visible or invisible particles of combustion. A device suitable for connection to a circuit that has a sensor that

	unit operated from a power supply either in the unit or obtained at the point of installation.	responds to a physical stimulus such as heat or smoke.
Types	Single station, Multiple station	Photoelectric, Ionization, Combination Photoelectric/Ionization, Projected beam, Air sampling

11. Conductors from an outdoor 480-volt, 3-phase generator immediately terminates into a 600-ampere rated fused switch with feeder conductors from the generator running to a wireway in the building's electrical equipment room. The feeder conductors from the generator feed a 100-ampere, 480-volt fused switch that feeds through a step-down transformer that feeds a 200-ampere rated 120/208 panelboard that serves as the power to and the control panel feeding smoke exhaust fans for fire control and to a panelboard that supplies power to fire-pump auxiliary equipment. In addition, a 600-ampere fused switch feeds a transfer switch (feeder/service) with the load side of the transfer switch feeding a fire-pump controller. Is this set-up a Code compliant installation for a fire pump? Assume the overcurrent protection, capacity of generator, and other issues are adequately addressed per the loads and equipment served.



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See 695.4(B), 695.4(B)(1), and 695.10. No. In applying the provisions of 695.4(B) to the generator source there are two 600-ampere switches and overcurrent protective devices in series with the supply conductors to the fire pump controller. Section 695.4(B) states that a single disconnecting means shall be permitted between the remote power source and the listed fire pump controller, listed fire pump power transfer switch or listed combination fire pump controller and power transfer switch. In addition the 4-pole transfer switch shown in the diagram is required to be listed for fire pump service in accordance with 695.10 and 695.4(B). In accordance with Section 9.6.1.1 of NFPA 20-2003, the generator is only required to be sized to carry the starting and running of the fire pump along with supplying all other loads that are intended to be in concurrent operation. The protective device between the generator and the fire pump controller is only required to be sized to carry the instantaneous pickup of the fire pump loads. This is specified in Section 9.6.5 of NFPA 20 and also in 695.4(B)(1) of the NEC

12. The exception to 210.52(C)(1) states that, "Receptacle outlets shall not be required on a wall directly behind a range or sink in the installation described in Figure 210.52." Then the figure shows that an outlet is not required if the distance between a range or sink is less than 12-inches for a straight with/outset top or less than 18-inches behind a corner installation. It appears the actual language of the written exception and what is depicted in Figure 210.52 is in conflict, as the exception language does not specify a distance. In fact, if a receptacle were required behind a corner-mounted sink per the Figure, this would appear to be an exception to the written exception to the main rule. Please comment.

If Exception can't be meet (illustrated in Figure 210.52), main rule in 210.52(C)(1) must be applied. The main rule in 210.52(C)(1) requires a receptacle outlet to be installed so that no point along the wall line is more than 600 mm (24 in.) measured horizontally from a receptacle outlet in that space. Section 210.52(C)(4) states that rangetops, refrigerators, or sinks would constitute a break in the countertop and the countertops on each side of these rangetops, etc. would be considered as separate countertop spaces. As stated in the question, the exception to 210.52(C)(1) states that receptacle outlets shall not be required on a wall directly behind a range or sink in the installation described in Figure 210.52. Figure 210.52 states that receptacle outlets are not required if the distance between the wall or corner is less than 12 in. (straight countertop) and 18 in. (corner-mounted). If the stated distance is 12 in. (or 18 in.) or more then the main rules of Section 210.52(C)(1) would have to be applied, meaning the "no point more than 24 in." rule would apply behind the rangetop or sink.

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13. Two Questions: **1)** Where mood lighting is installed over a hydromassage bathtub such as wall mounted fluorescent cove lighting mounted just below the ceiling line of an 8 foot high ceiling, is such lighting subject to the requirements of the last sentence of 410.4(D), that is, listed as a minimum for damp locations?, and **2)** If yes, why?

1) Yes. **2)** NEC 680.72 covers the installation of electrical equipment in the room where the hydromassage bathtub is located and requires that equipment to be installed as covered in Chapters 1-4 as if the room were a bathroom. NEC 410.4(D) establishes the area up to 8ft above the rim of the bathtub to be a damp location, hence driving the fixture to be listed for damp location as required in NEC 410.4(A).

EVENTS & UPDATES

Re-org Update

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MECKLENBURG COUNTY
Land Use and Environmental Service Agency
Code Enforcement

5/12/10 ELECTRICAL CONSISTENCY MEETING

Code Consistency Questions

1. Is it illegal to install a wet-niche luminaire face-up in the bottom of an outdoor spa or hot tub as such an installation cannot comply with the provisions for inspection, relamping, or other maintenance as a person accomplishing such work would be required to enter the water?

See 680.42 that states, "A spa or hot tub installed outdoors shall comply with the provisions of Parts I and II of this article, except as permitted in 680.42(A) and (B), that would otherwise apply to pools installed indoors," See Article 680, Part II, Section 680.23(B)(6) that states, "All wet-niche luminaires shall be removable from the water for inspection, relamping, or other maintenance. The forming shell location and length of cord in the forming shell shall permit personnel to place the removed luminaire on the deck or other dry location for such maintenance. The luminaire maintenance location shall be accessible without entering or going in the pool water." Also, see 680.23(A)(6) for bottom-mounted luminaires in outdoor pools that states, "A luminaire facing upward shall comply with either (1) or (2): (1) Have the lens adequately guarded to prevent contact by any person, and (2) Be listed for use without a guard." Therefore, bottom mounted luminaires in outdoor spas or hot tubs are permitted and there appears to be a conflict with the requirements.

2. 314.30(D) references 250.96(A) for bonding of the metal covers and other exposed conductive surfaces associated with a handhole enclosure. Would this also hold true if the conductors in the handhole enclosure are service conductors?

No, see revised last sentence of 314.30(D) in the 2008 NEC that states, "Metal covers and other exposed conductive surfaces shall be bonded in accordance with 250.92(A) if the conductors in the handhole are service conductors, or in accordance with 250.96(A) if the conductors in the handhole are feeder or branch circuit conductors."

3. Three 3-inch x 6-foot lengths of Schedule 40 PVC runs are installed unsupported between two switchboards. The inspector has stated the three runs of PVC have to be supported

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within 3 feet of each cabinet so that I need to install at least 1 support midway on each piece of conduit. There is nothing there to support the conduit to and I have pointed out that Table 352.30 allows 6-feet between supports for 3-inch PVC conduit. Is the inspector correct or am I correct?

The inspector is always correct and is again this time per 2008 NEC, Section 352.30(C) that states, "Where oversized concentric or eccentric knockouts are not encountered, PVC conduit shall be permitted to be unsupported where the raceway is not more than 450 mm (18 in.) and remains in unbroken lengths (without coupling). Such raceway shall terminate in an outlet box, junction box, device box, cabinet, or other termination at each end of the raceway,"

4. Many Type MC cables have three small equipment grounding conductors that are per the cable's installation instructions required to be connected together at each end to form a single equipment-grounding conductor. Is this allowed per Article 250 and especially 250.118?

Up until the 2008 NEC this was only covered in the UL white book under Metal-Clad Cable (PJAZ). This UL section stated, "The sheath of the smooth or corrugated tube type MC Cable of a combination of the sheath and a supplemental bare or unstriped green insulated conductor is suitable for use as the ground path required for equipment grounding. The supplemental grounding conductor may be sectioned and when sectioned, all sections are identical. 2008 NEC Section 310.13 was revised to state, "Equipment grounding conductors shall be permitted to be sectioned within a listed multiconductor cable, provided the combined circular mil area complies with 250.122."

5. While inspecting a swimming pool installation it was noted that extra luminaires including the housings and lamps were being added to an existing low voltage (24-volt) lighting system. The inspector was told the housings and lamps were components that were part of a listed assembly including the original power supply that could be added to as required per design. I thought all such low voltage lighting was listed as an inclusive complete system and was required to be so by Article 411. Please comment.

NEC Section 411.3 establishes the listing requirements. The 2005 NEC simply indicates the system must be listed. The 2008 NEC clarifies by establishing that a lighting system assembled from the following listed parts shall be permitted: 1) LV Luminaires, 2) LV Power Supply, 3) Class 2 Power Supply, 4) LV luminaire fittings, 5) Cord for which the luminaires and power supply are listed for use, 6) Cable, conductors in conduit, or

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other fixed wiring method for the secondary circuit.

6. Please explain the difference in grounding requirements and why such different requirements for a 1Ø feeder made-up of 2 ungrounded, 1 grounded, and 1 grounding conductors and a 1Ø branch circuit made up of 2 ungrounded, 1 grounded, and 1 grounding conductors where such conductors feed from a building with electrical service to another building. One inspector I have on many of my jobs requires that a grounding electrode be utilized or installed for such feeder conductors but does not require the electrodes for a similar branch circuit.

See 250.32(A). The exception allows a multiwire branch circuit supplying a second building without a electrode being installed. A feeder supplying a second building would require a electrode system to be installed at the second building (look at the definitions in article 100 for a "branch circuit" and "feeder").

7. Two Questions: **1)** Under what circumstances can an assortment of equipment assembled to become a panelboard or switchboard on the jobsite, containing controllers, switchgear, bus bars, transformers, and other accessories be allowed without carrying a listing as an assembly? **2)** If an assembly listing is required, what would it state and would each individual assembly part have a label identifying it as a part recognized for a specific assembly?

1) In general, there is no requirement for panelboards, switchboards, or control panels to be Listed in the NEC. However, manufacturers understand that product listing is utilized in the system installation acceptance (approval) process by the AHJs to reinforce a safe installation. Articles 408 and 409 have a number of construction requirements such as wiring space, phase arrangement, conductor spacing, and nameplate markings. The complexity of the panel can move approval beyond the expertise of an AHJ to evaluate the safety of the panel when you consider thermal and short circuit performance. Therefore it is reasonable for an AHJ to request third part evaluation or a listing of the equipment for final approval. Although NEC 500.8(A)(1) is specific to hazardous locations, it provides a framework for how we determine the suitability of equipment for approval. **2)** There are specific installations that require listed equipment. One example is NEC 645.17 for power distribution units installed in an Information Technology Room. The assembly will have a Listing mark and be identified as to its intended use. The assembly will have markings such as the type of circuit breakers that can be installed in that listed assembly. Components are not listed and marked for installation in an assembly. You can not manufacture a new motor controller and decide to mark it for use in a panelboard that was manufactured in the 1970s. The certification process breaks

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down if such methods are employed and the tail is wagging the dog. Components are listed and utilized in an assembled control panel to comply with NEC 409, however the control panel assembly is not listed unless it specifically carries a UL 508A designation.

8. A 100-hp, 480-volt, three-phase fire pump is being installed with the conductors being sized at locked rotor current. Three Questions: **1)** Is it correct to size the conductors at locked rotor current? **2)** What size is appropriate for the feeder disconnect? **3)** What size is appropriate for the overcurrent device for overload protection?

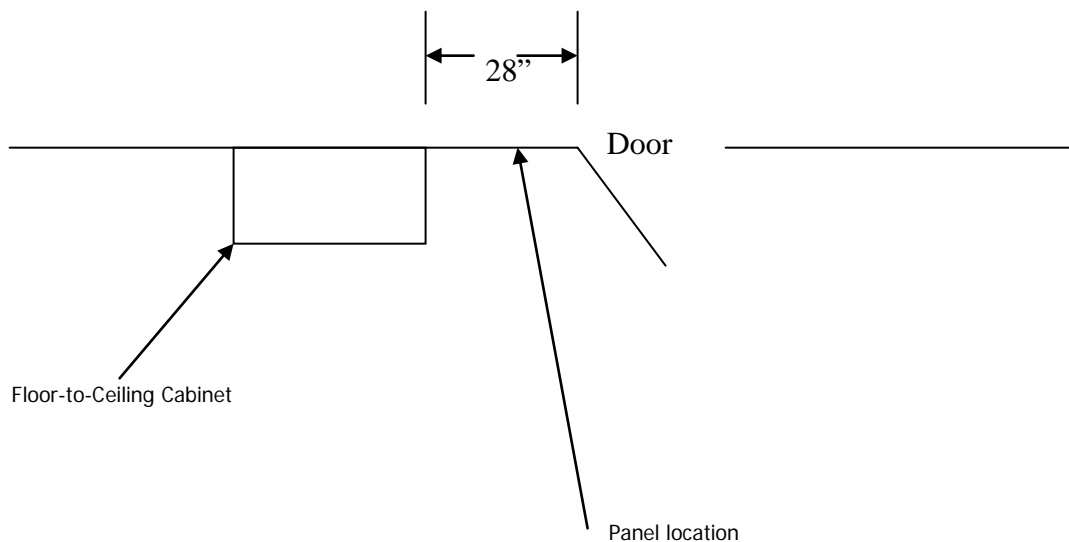
1) See 695.6, 695.7, and 695.4(B)(1). It is permitted but not required to size the conductors for locked rotor current., In accordance with 695.6(C)(2) conductors supplying only a fire pump motor shall have a minimum ampacity in accordance with 430.22 and shall comply with the voltage drop requirements in 695.7. This will result in a minimum size conductor of not smaller than 125% of the full-load current rating of the motor. Unlike other motors covered in the NEC, it is important to note that the performance of fire pump motors and associated control equipment is impacted by low voltage and compensating for voltage drop under starting and running conditions is mandatory in Article 695. Oversizing the conductors may result in undersized terminations in the fire pump controller or fire pump transfer switch. Changes were made in the 2005 Code to clarify that sizing for locked-rotor current applies only to overcurrent protective devices and does not extend to conductors or other devices in the fire pump motor circuit. These revisions were made in 695.4(B)(1), 695.5(B) and 695.5(C)(2).

2) See 695.4(B) and 695.4(B)(1). In accordance with the supervised connection requirements of 695.4 (B), all disconnecting devices that are unique to the fire pump loads shall comply with 695.4(B)(1) through 695.4(B)(5). Based on 695.4(B)(1) the disconnecting means must be able to accommodate an overcurrent device that is sized to carry the locked rotor current of the fire pump indefinitely. The performance requirements of electric fire pump motors are covered in NFPA 20 and the locked rotor currents for electric fire pump motors are found in Table 9.5.1.1 of NFPA 20-2003, Standard for the Installation of Stationary Pumps for Fire Protection. The locked rotor current for a 3-phase, 480 volt, 100-horsepower motor is 725 amperes. Therefore an overcurrent protective device with a continuous current rating or setting of not less than 725 amperes shall be used. Based on 240.6, the next standard size above 725 amperes is 800 amperes.

3) See 695.6(D) and 695.5(B) for installation where a transformer is installed for the fire pump. In accordance with 695.6(D) overload protection is not permitted in the power circuit to an electric motor driven fire pump. The requirement for protecting the supply conductors

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specifies short-circuit protection only. Overload protection of the conductors may impede the ability of the fire pump to start under some conditions. The philosophy for fire pump motors is to provide the starting current for as long as it takes for the motor to start and in some cases where the locked-rotor condition exists for an extended period of time while the motor is trying to start, failure of the motor may occur. This is an acceptable risk for this type of equipment. There is overcurrent protection integrated into the fire pump controller that may respond (20 seconds) in this circumstance.



9. Is the panel location shown above acceptable?

Technically no. 110.26 (A) 2 states "The width of the working space in front of the electrical equipment shall be the width of the equipment or 762 mm (30 in.), whichever is greater. In all cases, the work space shall permit at least a 90 degree opening of equipment doors or hinged panels." However, historically this installation has been accepted because the door swing area has been included to count with the 30 inch space for the panel location. If the door swing was changed to the opposite side or swung in the other direction then it would meet the full intent of the code.

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10. If I take down a luminaire in the hallway and replace it with another luminaire do I have to add AFCI protection for that circuit?

No, however if you extend a circuit or add a new circuit then AFCI protection shall be required per 210.12.

11. Is a spa or hot tub installed on a wooden deck required to have equipotential bonding around it per 680.26?

Yes per article 680.26. This language came into the code in 2008 and has been upheld thus far for the 2011 code per the ROP/ROC copies below.

2008 Code:

17-97 Log #2217 NEC-P17 **Final Action: Reject (680.26(B)(2))**

Submitter: Jeff Fitzloff, State of Idaho Division of Building Safety

Comment on Proposal No: 17-114a

Recommendation: Revise text to read as follows:

(2) Perimeter Surfaces. Extends for 1 m (3 ft) horizontally beyond the inside walls of the pool. Includes unpaved surfaces as well as poured concrete and other types of paving. Bonding for perimeter surfaces shall be provided as specified in 680.26(B)(2)(a) or 680.26(B)(2)(b), and attached to the pool reinforcing steel on copper conductor grid. No perimeter areas will require equipotential bonding if the surface of the area is non conductive or encapsulated in epoxy. at a minimum of four (4) points uniformly spaced around the perimeter of the pool. For nonconductive pool shells, bonding at four points shall not be required. [ROP 17-114a]

Substantiation: The wording in the proposal would require that surfaces that would not be conductive have equipotential bonding. The comment that I have supplied would recognize that surfaces can be coated to insulate them and would be similar to double insulated appliances.

Panel Meeting Action: **Reject**

Panel Statement: The conductivity of a perimeter surface is not dependent entirely on the material. Weather and other conditions can impact the conductivity.

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Number Eligible to Vote: 11
Ballot Results: Affirmative: 10
Ballot Not Returned: 1 Gill, C.

2011 Code:

17-176 Log #4775 NEC-P17 **Final Action: Reject**
(680.26(B)(2))

Submitter: Jeff Fitzloff, State of Idaho Division of Building Safety

Recommendation: Revise text to read as follows:

(2) Perimeter Surfaces. The perimeter surface shall extend for 1 m (3 ft) horizontally beyond the inside walls of the pool and shall include unpaved surfaces with direct contact to the earth as well as poured concrete and other types of paving. Bonding to perimeter surfaces shall be provided as specified in 680.26(B)(2)(a) or (2)(b) and shall be attached to the pool reinforcing steel or copper conductor grid at a minimum of four (4) points uniformly spaced around the perimeter of the pool. For nonconductive pool shells, bonding at four points shall not be required.

Substantiation: I have seen no documentation that wooden decks with hot tubs on the pools that are partially below grade and have a raised plastic catwalk around them are susceptible to voltages from the earth. It is very hard to defend a copper grid around these installations that are not at risk.

Panel Meeting Action: Reject

Panel Statement: The submitter has not provided adequate technical substantiation.

Number Eligible to Vote: 11

Ballot Results: Affirmative: 11



Mechanical 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

General:

- 1) *(Q) Do contractors have to perform load calculations on HVAC exact equipment replacement?*

(A) We as a department would not require a load calculation on exact equipment replacement provided we didn't see anything that looked out of place. However, the Licensing Board has recently ruled that they will be requiring the calculation on ALL jobs including exact equipment replacement.

- 2) *(Q) Do contractors have to install zone systems on new structures?*

(A) The Mechanical Code, section 312 points to ASHRAE (ACCA for residential) for calculating a structures heating and cooling loads. The State Board of Examiners rules state: (newsletter)

21 NCAC 50 .0505 GENERAL SUPERVISION AND STANDARD OF COMPETENCE

(d) Every newly installed residential heating system, air conditioning system or both shall be designed and installed to maintain a maximum temperature differential of 4 degrees Fahrenheit room-to-room and floor to floor. On multilevel structures, contractors are required to either provide a separate HVAC system for each floor or to install automatically controlled zoning equipment for each level with individual thermostats on each level to control the temperature for that level. The seasonal adjustment needed to maintain the **4 degree** Fahrenheit room-to-room and floor-to-floor maximum temperature differential shall not be accomplished through the use of manual dampers.

(e) All licensed HVAC contractors are required to perform a thorough room-by-room load calculation for all new residential structures prior to installing heating systems, air conditioning systems, or both which calculations shall be specific to the location and orientation where the HVAC system or equipment is to be installed. A written record of the system and equipment sizing information shall be provided to the owner or general contractor upon request and a copy shall be maintained in the job file of the licensee for a minimum of six (6) years.

(f) When either a furnace, condenser, or air handler in an existing residential heating or air conditioning system is replaced, the licensed HVAC contractor is required to perform a minimum of a whole house block load calculation. When a furnace, condenser or air handler in a residential heating or air conditioning system is replaced, it is the responsibility of the licensee to ensure that all systems and equipment are properly sized. The licensee may utilize industry standards, reference materials, evaluation of the structure, and load calculations. A written record of the system and equipment sizing information shall be provided to the homeowner, owner or general contractor upon request and a copy shall be maintained in the job file of the licensee for a minimum of six (6) years. If a load calculation was not performed or if a load calculation was performed and it is later determined by the Board that the



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June 2010

General continues:

- unit installed was undersized or oversized, the installation will be considered as evidence of incompetence.
- 2) (Q) *Do the installation of zone systems require an electrical permit?*
(A) The installation of low and line voltage wiring and components typically found in HVAC systems are required to be permitted by an electrical contractor and inspected.
 - 3) (Q) *Do fire logs have to be complete on a final inspection?*
(A) Everything but the ceramic logs must be complete.
 - 4) (Q) *Do condensate lines installed in unconditioned space require insulation?*
(A) The traps would require insulation of R6.5 but not the pipe.
 - 5) (Q) *Where does the zone damper motor have to be placed?*
(A) Wherever the manufacturer requires. It still must be accessible.
 - 6) (Q) *May flue condensate discharge indirectly into a water heater safety pan drain?*
(A) No
 - 7) (Q) *May a single hvac system supply conditioned ari to more than one tenant space?*
(A) Yes provided that the system is zoned such that each space may controlled from within the tenant space or the spaces are controlled by a energy management system by the building owner.
 - 8) (Q) *Is equipment installed outside a structure subject to Zoning set back requirements?*
(A) Yes
 - 9) (Q) *Does the equipment (i.e. coil /condensing unit) have to match when replacing one part of the system?*
(A) The replacement of one of the components with a unit having a higher sear rating has to be supported by the equipment manufacturer. The older component cannot cause the replacement to operate at a reduced efficiency.
 - 10) (Q) *Can a contractor call in and have the department create an RQ (request for service) to investigate work performed without permits?*
(A) We will create RQ's and investigate complaints where perpetrators are still on the site installing equipment. Complaints of work done long past will be routed to the NC Board of Examiners. A homeowner may still file a complaint about work performed in their home.



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June 2010

General continues:

- 11) (Q) *May a contractor discharge HVAC condensate to a lavatory?*
(A) Yes, provided the following criteria is met:
- Lavatory tail pieces ONLY.
 - 1 ½" minimum trap size.
 - Must use ¾" (branch) dishwasher tee.
 - Tubing from tee to the wall connection shall be clear acrylic tubing.
 - Unit size limited to 3 tons or less.
- 12) (Q) *May a contractor use zip ties to secure loose insulation on HVAC line sets?*
(A) Yes, provided that only black zip ties are used outside. These are listed for ultraviolet applications.



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Attention: ✓ Denotes a new question!

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June 2010

Equipment:

- 1) *(Q) A room in a commercial structure has been designated a “class 1, division 1” environment by the Fire Marshal. A designer would like to comfort condition the space. Does the hvac equipment have to meet the “class 1, division 1” requirements?*

(A) Yes. ALL equipment (i.e., exhaust fans, air handlers, etc.) shall meet the requirement and the hvac equipment may not serve any other space.

Electrical Code Reference:

500.5 Classifications of Locations.

(A) Classifications of Locations. Locations shall be classified depending on the properties of the flammable gas, flammable liquid-produced vapor, combustible-liquid produced vapors, combustible dusts, or fibers/flyings that may be present, and the likelihood that a flammable or combustible concentration or quantity is present. Where pyrophoric materials are the only materials used or handled, these locations shall not be classified. Each room, section, or area shall be considered individually in determining its classification.

FPN: Through the exercise of ingenuity in the layout of electrical installations for hazardous (classified) locations, it is frequently possible to locate much of the equipment in a reduced level of classification or in an unclassified location and, thus, to reduce the amount of special equipment required.

Rooms and areas containing ammonia refrigeration systems that are equipped with adequate mechanical ventilation may be classified as “unclassified” locations.

FPN: For further information regarding classification and ventilation of areas involving ammonia, see ANSI/ASHRAE 15-1994, Safety Code for Mechanical Refrigeration, and ANSI/CGA G2.1-1989, Safety Requirements for the Storage and Handling of Anhydrous Ammonia.

(B) Class I Locations. Class I locations are those in which flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. Class I locations shall include those specified in 500.5(B)(1) and (B)(2).

(1) Class I, Division 1. A Class I, Division 1 location is a location

(1) In which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under normal operating conditions, or

(2) In which ignitable concentrations of such flammable gases, flammable liquid-produced vapors, or combustible liquids above their flash points may exist frequently because of repair or maintenance operations or because of leakage, or

(3) In which breakdown or faulty operation of equipment or processes might release ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors and might also cause simultaneous failure of electrical equipment in such a way as to directly cause the electrical equipment to become a source of ignition.

FPN No. 1: This classification usually includes the following locations:

(1) Where volatile flammable liquids or liquefied flammable gases are transferred from one container to another

(2) Interiors of spray booths and areas in the vicinity of spraying and painting operations where volatile flammable solvents are used



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June 2010

- (3) Locations containing open tanks or vats of volatile flammable liquids
- (4) Drying rooms or compartments for the evaporation of flammable solvents
- (5) Locations containing fat- and oil-extraction equipment using volatile flammable solvents

- (6) Portions of cleaning and dyeing plants where flammable liquids are used
- (7) Gas generator rooms and other portions of gas manufacturing plants where flammable gas may escape
- (8) Inadequately ventilated pump rooms for flammable gas or for volatile flammable liquids
- (9) The interiors of refrigerators and freezers in which volatile flammable materials are stored in open, lightly stoppered, or easily ruptured containers
- (10) All other locations where ignitable concentrations of flammable vapors or gases are likely to occur in the course of normal operations

FPN No. 2: In some Division 1 locations, ignitable concentrations of flammable gases or vapors may be present continuously or for long periods of time. Examples include the following:

- (1) The inside of inadequately vented enclosures containing instruments normally venting flammable gases or vapors to the interior of the enclosure
- (2) The inside of vented tanks containing volatile flammable liquids
- (3) The area between the inner and outer roof sections of a floating roof tank containing volatile flammable fluids
- (4) Inadequately ventilated areas within spraying or coating operations using volatile flammable fluids
- (5) The interior of an exhaust duct that is used to vent ignitable concentrations of gases or vapors

Experience has demonstrated the prudence of avoiding the installation of instrumentation or other electrical equipment in these particular areas altogether or where it cannot be avoided because it is essential to the process and other locations are not feasible [see 500.5(A), FPN] using electrical equipment or instrumentation approved for the specific application or consisting of intrinsically safe systems as described in Article 504.

- 2) (Q) *Does a products listing mark have to appear on the product or can the installer provide a letter?*

(A) **The listing mark must be on the product.**

- 3) (Q) *Do "fire rings" have to be listed and labeled?*

(A) **Yes**

- 4) (Q) *May a contractor pull combustion air through a louvered door?*

(A) **Janie Sutton with DOI states: Section 304.1 of the Fuel Gas Code and Section 504.5 of the Mechanical Code allows combustion air for clothes dryers to be supplied through a louvered door, provided that the louvered area has a free area of 100 sq. in.**

For other appliance, the adjoining room shall have (doorway) openings without doors that meets the requirements of Section 304.5.3, or openings 12" from the ceiling and 12" from the floor as described in 304.5.3.1. If a louvered door is used, it must meet the location and free area requirements.



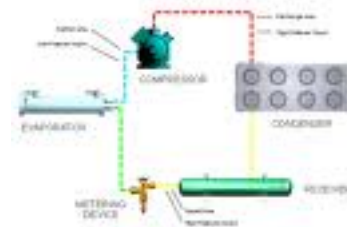
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June 2010

Equipment continued:

- 5)✓ *(Q) Is it permissible for an licensed refrigeration contractor to mix and match evaporator and condenser packages to achieve the refrigeration results called for by the customer?*
(A) Yes as long as the packages and components are listed and labeled.



- 6)✓ *(Q) What is the purpose for requiring safety pans whose dimensions are 3" larger than the coil/housing?*
(A) DOI (Janie Sutton) says the required size for pans is based on two things:
1. Provide volume for condensate.
2. Provide splash protection.
- 7)✓ *(Q) Some 90 + equipment manufacturers state that their 90+ flues must be insulated in areas subject to freezing. Which areas are subject to freezing?*
(A) Areas inside a structure would be unheated garages or storage rooms and attics.



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June 2010

Ventilation/Exhaust:

- 1) *(Q) May you use CO² detectors to reduce the ventilation air requirements found in Chapter 4?*
(A) The rates established in table 403.3 shall be provided unless statistical data supports alternate anticipated occupant density. However, the use of CO² detectors, placed 5 to 6 feet above the finish floor in the return air path may be used to operate a variable speed system. The designer shall submit his/her proposal for consideration. The Code Official will determine the acceptable minimum ventilation rate taking into consideration the building equipment makeup air requirements.
- 2) *(Q) Are there any ventilation requirements on lead acid battery backup systems of less than 50 gallon capacity?*
(A) Yes, section 502.4.1 of the NCMC requires that the concentration of hydrogen be limited to less than 1% of the room volume. If the designer can show that the capacity of the batteries is less than 50 gallons and the hydrogen generated WILL NOT reach the listed threshold, then the normal ventilation required by table 403.3 will be sufficient.
- 3) *May a designer connect exhausts from restrooms and other uses such as a darkroom?*
(A) No. Section 502.18 tells us that Chapter 4 contains the requirements for toilet rooms. Table 403.3, Category “Public Spaces”, Section “Toilet Rooms”; state that you must exhaust 75 cfm per water closet or urinal. You also may use transfer air for make-up air up to 10%. There is no Code supporting the connection of toilet exhaust and other non related exhausts.
- 4)✓ *(Q) Can a developer omit the makeup air requirements in 504.5 of the NCMC by claiming they have found a dryer that exhausts less than 200 CFM of air?*
(A) The appliance industry overwhelmingly produces more appliances that exhaust more than 200 CFM of air to facilitate longer dryer exhaust vents. To take advantage of less CFM’s would require “Permanent” signage (specific dryer) which also means shorted dryer vent installations.
- 5)✓ *(Q) Is it true that you can run a vertical equipment flue through a ceiling that is a common return?*
(A) Yes. Section 503.3.6 of the NCFG allows for three different scenarios

Attention: ✓ Denotes a new question!

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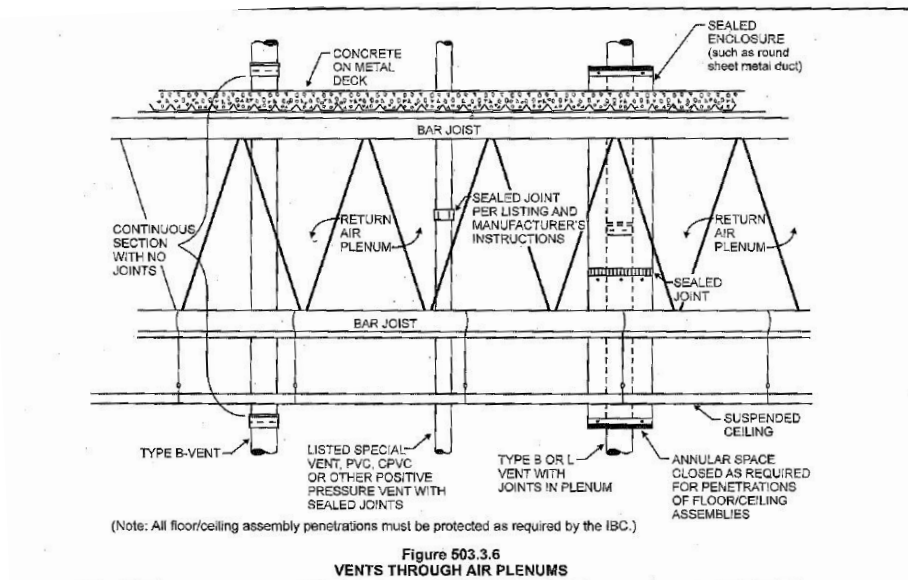
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Ventilation/Exhaust continued:

of flue vent installations;

503.3.6 Above-ceiling air-handling spaces. Where a venting system passes through an above-ceiling air-handling space or other nonducted portion of an air-handling system, the venting system shall conform to one of the following requirements:

1. The venting system shall be a listed special gas vent; other venting system serving a Category III or Category IV appliance; or other positive pressure vent, with joints sealed in accordance with the appliance or vent manufacturer's instructions.
2. The venting system shall be installed such that fittings and joints between sections are not installed in the above-ceiling space.
3. The venting system shall be installed in a conduit or enclosure with sealed joints separating the interior of the conduit or enclosure from the ceiling space.





Mechanical 2010

Attention: ✓ Denotes a new question!

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June 2010

Duct:

- 1) *(Q) How close may an HVAC return be placed to a fireplace?*
(A) The information found in Mechanical Code, Section 918.6 is not clear and seems to contradict itself. We have taken the stance that the return cannot be placed within 10 feet of a fireplace.
- 2) *(Q) Is manufactured grease duct exempt from the slope requirements of section 506.3.7?*
(A) No.
- 3) *(Q) When may radiation dampers be exempted per section 607.6.2.1 of the NCMC?*
(A) When field testing by an approved testing lab show the fire resistance rating of the assembly installed, meet ASTM E119.
- 4) *(Q) With the enforcement of the max 4 degree differential between rooms and the requirement for load calculations on existing equipment replacement by the NC Board of Examiners, do contractors have to bring existing duct insulation up to Code when replacing equipment?*
(A) Janie Sutton, Chief Mechanical Code Consultant for DOI states: "Existing ductwork is not required to be insulated when replacing HVAC equipment. Only the new supply and return ductwork is required to be insulated in accordance with the current energy code. The mechanical code requires only new ductwork to be kept from forming condensation."
- 5) *(Q) May a contractor replace the liner of Code approved flex duct with galvanized duct?*
(A) The contractor would have to supply documentation from the flex duct manufacturer that their insulation blanket would still provide the required R-value when the liner was replaced with hard pipe.



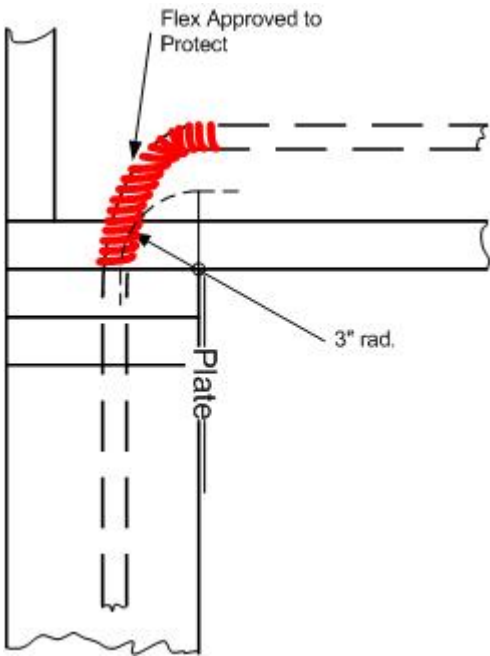
Mechanical 2010

Attention: ✓ Denotes a new question!

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June 2010

Gas Pining:

- 1) (Q) Does ALL CSST gas piping require an electrical bond?
(A) Yes
 - 2) (Q) What measurement range should be on a pressure gauge used for gas tests?
(A) A system using 7" water column (low pressure) or 2 lb shall use gauges with a maximum pressure range of 30 psi. A system using pressure exceeding 2 lb shall use a gauge with a maximum pressure of 100 psi.
 - 3) ✓ (Q) How much protection is required when running CSST vertically inside a stud wall and then turning horizontally into a floor/ceiling assembly?
(A) Trackpipe, Wardflex and Gastite require protection anytime piping is restricted and within 3" of the surface. ALL recommend the use of flex pipe in turns such as the one described.
- 
- 4) ✓ (Q) Can CSST be run through the equipment housing?
(A) Yes if supported by the CSST manufacturer. CSST connectors that are designed to be tightened only once shall be connected to a union.
 - 5) ✓ (Q) Are listed connectors allowed to pass through kitchen cabinet partitions?
(A) Yes.



MECKLENBURG COUNTY
Land Use and Environmental Services Agency
Code Enforcement

**CODE
INTERPRETATION**

Mechanical/Plumbing

Code Volume Reference: NC Plumbing Code 2009
Code Chapter Reference: Section 605
Subject: Ridgid Pro Press System (water)
Effective Date: April 4, 2003
Prepared/Revision Date: April 2010

INTERPRETATION:

The Ridgid Pro Press System (Water Distribution) with Viega fittings is a alternative method to typical copper fittings. The system is support by a ICC Evaluation Report. The system must be installed per the manufacturer's installation instructions. The system has no limitations other than those applicable to typical copper/solder installations.

Prepared by: **Consistency Team**

Approved by:

Philip B. Edwards, *M/P Code Administrator*



Plumbing 2010

Attention: ✓ Denotes a new question!
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June 2010

Quarter

General:

- 1) *(Q) Who enforces the cutting and notching requirements found in the plumbing code?*
(A) The plumbing inspector would question the contractor initially. A building inspector would either take over on the repair or consult with the plumbing inspector how best to correct the issue.
- 2) *(Q) What type of access cover is required for a C/O placed in a rated wall?*
(A) The contractor may choose between a rated plate or a access door. The designer shall stipulate which is appropriate for the wall rating.

1st

2nd



Plumbing 2010

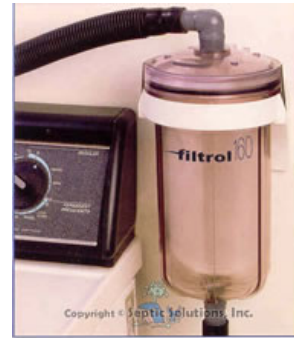
Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Traps & Interceptors:

- 1) *(Q) Do drains in a large walk-in cooler have to discharge their drains through a grease interceptor?*
(A) Only if there is grease producing potential (i.e. hanging meats, oil or grease transfers from larger containers, etc.)
- 2) *(Q) Are Filtrol-160 lint interceptors approved for commercial occupancies?*
(A) The Filtrol-160 was developed to protect septic systems installed in the residential market. A residence is exempt from the lint interceptor requirements in the Code. This product is not applicable to commercial applications.





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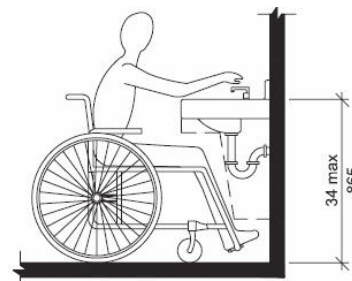
Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Fixtures:

- 1) *(Q) Is the excel fixture calculation spreadsheet provided on the DOI website approved for use by a designer?*
(A) The spreadsheet was developed by the DOI plumbing reviewers for state owned buildings. Designers may use it as a preliminary design tool but they will still be required to provide calculations and explain their design on the submitted drawings.
- 2) *(Q) May an unlicensed tile contractor install a shower pan in structure?*
(A) No. NCDOT states that a permit is required for the installation or replacement of a manufactured shower or the shower pan liner. The State Board of Examiners state that a license is required for anything requiring a permit. The tile contractor would have to be a licensed plumbing contractor.
- 3) *(Q) May a restaurant's toilet facilities be those located in a "core" arrangement, utilized by the tenants of the whole floor?*
(A) No. The NC Health Code requires that a restaurant's toilet facilities be under the control of the restaurant management. Core facilities would be under the management of the building owner or leasing agent.
- 4) *(Q) How do you calculate the facilities on a restaurant when a deck is added to the establishment?*
(A) You shall add the seating load from the deck to the restaurant egress load to get a total demand load (per footnote D).
- 5) *(Q) Would a hole drilled as high as possible, through the cabinet partition separating the kitchen sink and the dishwasher, meet the anchoring requirements of section 802.1.6?*
(A) Yes. The intent of 802.1.6 is to keep the dishwasher discharge line as high as possible to prevent ground food particles from flowing over into the dishwasher during the disposal's cycle. It would be impossible for a line so installed to drop.
- 6) *(Q) What type of protection is require under a public lavatory/ADA?*
(A) ALL piping, valves and appliances shall be protected, either by padding or by a protective cover as depicted in Figure 606.3.





Plumbing 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Fixtures continues:

- 7) (Q) *Do restaurants and bars have to provide drinking fountains?*
(A) They are exempt provided they serve water free to their customers.
- 8) (Q) *Is bottled water still allowed by the NC Plumbing Code?*
(A) Yes. You may use bottled water starting with the 3rd Code required drinking fountain. The ANSI A-117 section 602.1 states: This section is not intended to cover bottle-type water coolers, which generally rely on paper cups and are not permanently piped.



Plumbing 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Water Heaters:

- 1) *(Q) When are safety pans for water heaters required?*
(A) The Code requires safety pans when water heaters are placed in remote locations such as an attic, above drop in ceilings typically found in commercial type buildings, above a space that is occupied or unvented crawl spaces. An example would be; a water heater placed in a closet on the second floor of a two story house with a kitchen directly below. This would require a pan because it was above an occupied space. An example of an unoccupied space would be a garage.
- 2) *(Q) Where does the Code allow a T&P discharge drain to terminate?*
(A) The drain shall discharge through an air gap located in the same room as the water heater which shall then terminate over an approved waste receptor, or outdoors.
- 3) *(Q) does the galvanized nipple that comes installed in most water heaters serve the same purpose as a dielectric union when installing copper water piping systems?*
(A) No! The installer must use a dielectric union or a brass fitting to isolate the copper from the water heater.
- 4) *(Q) May condensate from a water heater flue discharge into a safety pan drain?*
(A) No. Acidic flue condensate must discharge into an approved waste receptor.
- 5) *(Q) What does a contractor use if the water heater manufacturer will void the warranty if dielectric union/s are installed?*
(A) Brass coupling or adapter.
- 6) *(Q) Do expansion tanks require dielectric unions?*
(A) Dielectric unions or brass adapters are required anywhere dissimilar materials are jointed.





Plumbing 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Water Heaters continued:

- 7) (Q) *Who is responsible for enforcing the Code on large water heaters that meet the threshold of the NC Boiler and Pressure Vessel Code?*
(A) **Both the Plumbing and Mechanical (on gas fired) are responsible for checking those items still required by the NC Codes and both are responsible for assuring that the heater receives an inspection and stamp from the NC Department of Labor (Boiler Division).**
- 8)✓ (Q) *May a water heater be installed such that access for service/repair/replacement would require the disconnecting and moving of a laundry appliance (i.e., washer or dryer)?*
(A) **No. The water heater shall be readily accessible (see definitions).**
- 9)✓ (Q) *May a laundry tub (modified) be used as a safety pan for an instantaneous water heater?*
(A) **The Code Official has the latitude to approve pans constructed that meet the minimum requirements of section 504.7.**




Plumbing 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Drainage:

- 1) *(Q) Is it permissible for an owner or contractor to install a self relieving cleanout such as the "Sewer Popper" in a sewer line subject to frequent stoppage?*
(A) NO. This would be in direct violation of section 701.4 which reads:
701.4 Sewage treatment. Sewage or other waste from a plumbing system that is deleterious to surface or subsurface waters shall not be discharged into the ground or into any waterway unless it has first been rendered innocuous through proper treatment approved by the authority having jurisdiction.

- 2) *(Q) May a contractor tie the sewer from two separate residences into a single tap to save tap fees?*
(A) No. Section 701.3 requires a separate connection for each separate lot.
- 3) *(Q) May a contractor/developer connect the drainage systems from multiple townhomes together within the footprint of the building by using a utility easement?*
(A) No. The systems must exit the building/s and then may connect together using an utility easement.
- 4) *(Q) when does the Code require a backwater valve and where is it required to be installed?*
(A) Section 715.1 states:
Where the flood level rims of plumbing fixtures are below the elevation of the manhole cover of the next upstream manhole in the public sewer, such fixtures shall be protected by a backwater valve installed in the building drain, branch of the building drain or horizontal branch serving such fixtures. Plumbing fixtures having flood level rims above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a backwater valve
Section 715.5 Location states:
Backwater valves shall be installed so that access is provided to the working parts for service and repair.
- 5) *(Q) What is the definition of an utility easement?*
(A) Use of another's property for the purpose of laying gas, electric, water, and sewer lines. A property owner grants a utility easement to the electric power company to extend power lines to the owner's home.
- 6) *(Q) May a quarter bend with heel inlet be used at the top of a stack to vent a water closet?*
(A) Yes, provided that it is a dry vent. See table 706.3, footnote F.



Plumbing 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Venting:

- 1) *(Q) Are you still allowed to extra distance in table 906.1 by putting a 1 ½ inch trap on a 2 inch fixture branch?*
(A) No. The table has been reformatted to allow the same distance, 8 feet, even with the 2 inch trap. The table is now based on trap size only.
- 2) *(Q) Section 904.5 states a vent terminal shall not be placed directly beneath any door, window or intake opening. How far away must the vent be placed?*
(A) The vent when placed 10 or more feet from said opening is no longer classified directly beneath.
- 3) *(Q) May a washing machine's vent, located on the lower floor of a two story house, tie back to an adjacent fixtures vent or does it have to extend to the second floor before connecting back to a vent?*
(A) It can connect on the same floor.



Plumbing 2010

Attention: ✓ Denotes a new question!

★ Denotes a revised/revisited question.

June 2010

Water Service/Distribution:

- 1) *(Q) What is the proper way to ground a replacement water service?*
(A) When replacing a water service, the plumbing contractor must take care not to interrupt the electrical system's ground. Some older homes used the metallic water distribution system along with the metallic water service as the electrical system ground. Now with the introduction of so many varieties of approved plastic piping materials, other means of grounding are required. When replacing a water distribution system or water service with plastic piping material, a licensed electrical contractor should be contacted to assure that no electrical hazards are inadvertently introduced.
 - 2) *(Q) May Viega water piping materials be used on new or replacement water piping systems?*
(A) Yes! Viega water pipe systems have been approved by the ICC evaluation service and may be used as an alternative method and material, within product manufacturer's limits and the installation instructions.
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- 3) *(Q) May an installer place a service valve between a water hammer arrestor or expansion tank and the building distribution system they are connected to?*
(A) Yes. The valve would be allowed.
 - 4) *(Q) What type of yard hydrants are approved?*
(A) Hydrants that do not contain stop and waste assemblies as a part of their design.
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- 5) ✓ *(Q) May shark bite fittings be used on backflow devices?*
(A) Yes, provided there is lateral support for the backflow device to keep it from rotating on its axis.
 - 6) ✓ *(Q) May recycled PVC (Char Pipe & Fndry, F1760) be used as an alternate material per section 105.2?*
(A) Yes.



Plumbing 2010

Attention: ✓ Denotes a new question!
★ Denotes a revised/revisited question.

June 2010

Quarter

Water Service/Distribution continued:

- 7)✓ (Q) Does water piping installed in an “unheated: garage or storage room require R 6.2 pipe insulation?
(A) Yes, areas outside the building envelop with no supplied heat source shall be properly insulated.
- 8)✓ (Q) Will water piping laying directly on the ground be considered supported by the Code?
(A) No. The intent of the Code is to secure piping laterally as well as vertically. It is doubtful that piping manufacturer would support installation placed directly on the ground and the Code requires the contractor to install the material per the manufacturer’s installation instructions.

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