



PDHonline Course E361 (4 PDH)

2011 National Electric Code

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2020

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NEC 2011 Update Purchased Two-Day Seminar 27Oct10, notes by Thomas Mason		
Significance	Section	Content / Change
not NEC		22Apr11 Ohio Requirement for certification and work practices for renovation and painting (lead)
	Informational Note	Formerly Fine Print Notes - not enforceable
	Informational Annex	Emphasizing not enforceable
	110	Ampacity, emphasizing temperature rating
	110	Bathroom - now defined by unspecified pieces
	110	Intersytes Bonding System - for communications
	110	Supplementary Protective Device - low-rated device for motors, lighting or controls
	110	Separately-Derived Source - only with switched neutral
	110	OH Service Drop Conductor
	110	Underground Service Conductor
	110	Service Lateral (Utility)
Inferred change		Service point is NOT the high-side of service disconnect
	200 6 A	identification of 6AWG and smaller
	200 6 B	Identification of 4AWG and larger
changes practice		Re-identification of switch leg only
	210 4 B	IP Disconnect
	210 4 D	Group multi-wire circuits
	210 5	Hot Conductor Identification
	210 6	120-277 for lighting, including LED
	210 7	Multi-wire branch circuits
difficult and un	210 8	GFCI must be accessible
insight		place required GFCI for garage door opener outside garage use panel-mount GFCE instead of GFCI receptacle
	210 8	long list of required GFCI locations exception - gutter ice melting (except if required by mfg instructions)
	210 8 B 5	GFCI - other than dwelling unit - same list -indoor wet location (locker room) -garages, service bays
	230	Service conductor overhead clearances, 8-ft above roof
	200 12 A	AFCI, required MC or conduit to outlet - or poured concrete over PVC - suggest panel-mount
insight		
retroactive	210 12 B	Renovation of recept now requiring AFCI, requires AFCI now - AFCI outlet or panel-mount
	210 52 C,D	Receptacles in kitchen counters

		210 52 E	Receptacles on balconies, decks, porches, regardless of size
		210 52 G	Receptacles in basement, garage, shed
		210 52 I	Receptacles in foyers
		230 24 E	Clearance from communications
		230 40	Multiple Services, document if over 6
		230 40	Single service to multiple occupancies
		230 40	Service conductor may be used at 100% of rating
		230 44	Cable tray used for service cable needs barrier if contains non-SE; label every 10-ft
		230 54	Service head must be weatherproof
NEW insight		399	Overhead conductors over 600V utilities giving substantial discount for primary service - Code references C2-2007, National Electric Safety Code (for Utilities) - does not apply indoors - requires documentation of engineered design, esp structure, soil, weather loading, guying
		110 36	Manufacturer specifies installing conditions to be enforced by NEC
		110 14	Terminations on finely stranded cable - use approved lugs
major item insight insight		110 24	Label available fault current on modification or new installation utilities upgrading to high-efficiency transformers, makes fault current calc wrong utility supplied available fault current wrong 50%
insight		240 15 B 3	Tie on single-pole breakers requires 120/240 rated breakers NEC trying to force use of 3P breaker or separate neutral
practice		240 21 B 1 4	10-ft tap rule - no round up (never was)
insight		240 24 E	Panel must not be located in bathroom of dwelling unit, guest room, dormitory OK in commercial bathroom
		250	10 parts on grounding and bonding
		250 2	Supply Side Bonding Jumper (SSBJ), Ph Ph Ph N G between transf and pnl
		250 21 B 2	Preferred bonding of neutral at transf, not pnl
		250 21 C	Mark ungrounded system
NEW		250 24 C 3	Full capacity neutral on delta service - ungrounded wye?
		250 30 A	Single point grounding at transformer or at panel
		250 35 B	Non-separately-derived transformer, SSBJ not equipment grounding conductor
new		250 52 A 2	minimum 2 10-ft ground rods - water pipe required
		250 11 8	type MC-AP, mc with ground, esp Aluminum
		300 4	Boxes must be 1-1/2-in from roof deck - raceway must not be concealed
new, enforcea		300 4 H	expansion joint required on conduit when present in structure
new, enforcea insight		300 11	must identify above-ceiling support wires by color or tag - suggest fluorescent orange spray paint before installation

	300 15 B 2 a,b	new Tables, no change of content - emphasis on 104F installation ambient
insight		
	338 10 4	Service entrance cable as a branch circuit, round up if open; round down if in insulation - as outside wall
insight		expect serious delay in Ohio adoption of 2011 National Electric Code 2009 International Building Code requires sprinklers in residences big-deal decision on adding \$10,000 to house price for life-safety
	314 27 A	Oversize fixtures in foyer require independent support or labeled support box
	314 27 C	ceiling fan support
	314 28 E	Power distribution box, as in busway distribution, now labeled for cu. In. space requiremetn - note bend radius per 312.6
	328 14	MV cable must be installed by a qualified person, esp trained in mfg school
	334 10	Exposed nonmetallic sheathed cable acceptable in garage and storage space
	342 30	unsupported raceways between boxes, reworded
	342 46	bushing required unless box mfg states otherwise
	348 30 A Ex2	last flexible raceway support within 6- ft of equipment
	350 30	applies to sealtite - for vibrating equipment a separate ground conductor is required
	348 42	bus duct is permitted behind access panels, but not in concealed locations
NEW	380 23	Plug mold bend radius for over 4 AWG, 8x fdradius
	392	cable tray containing above-600V conductors must be labeled "High Voltage" every 10-ft
	404 2	neutral conductor is required at all switch locations for future active switch - deep box required if active switch (motion detector, etc) installed
retrofit	406 4 D 4	Arc Flash Circuit Interrupter retrofit into locations currently requiring AFCI effective Jan, 2014 - no AFCI receptacle commercially available Oct 2010, requires panel-mount
	406 4 D 5	tamper resistant retrofit where currently required, effective immediately - locations guest room, school, chlid care facility
	406 4 D 6	weather resistant retrofit where currently required
NEW	410 130 G	disconnecting means for fluorescent in retrofit for each ballast
insight		- use 2-pole, hot and neutral
	409 22	must label available fault futtent at industrial control panel - UL 508 8B gives procedure for rathing fault current withstand of industrial control panel
insight		specify AIC for branch cb on panel, not just main; lowest determines panel rating
insight		3-p GFCI created for filming of Titanic; Hollywood funded Cutler-Hamer and Sq-D for cast safety
	110 24	must identify available fault current at apparatus installation point excep qualified industrial facility
	240 91	over 800A conductors must round down, new 95% exception to permit 3-500kCMIL = 1200A
insight		proposal for labeling arc flash PPE class failed because panel considered old data more dangerous than no data
	424 3	branch circuits can be only 15, 20, 25 or 30A
	424 19 A 2	disconnect required at space heaters

	424 28 A	nameplate markings on hvac equipment
	424 36	spacing rules for space heating cables
	424 44 G	GFCI required for space heating cables in floor
	430 6 D	Valve actuator motor requirements
	430 12 A	Motor terminal housings
	430 22	Motor Circuit conductors, clarified at 1.25x I _{fa}
	430 22 A	DC rectifiers clarified at 1.25x I _{fa}
	430 22	Y-start, delta-run clarified at 1.25x y-start I _{fa}
	430 22 G	small motors in cabinet
	430 52	motor circuit protector (fuse)
	430 53	several motors on single circuit
	430 63	required feeder sizing
	430 74	added failure to ground
	430 81 B	cord and plug connected motor
	430 94	mcc protection to match rating of bus
	430 109 F	cord and plug connected motor
	431 22 A	1.25x I _{fa} for adjustable speed drive
	432 5 A	short and overload protection of motor
enforceable	432 5 B	short and overload protection of motor over 600V requires engineer study
	432 45	motor grounding
	445	Generators
	445 12	Protection of generators
insight	445 19	Generator load protection esp if genset has internal protection for residential n.g. generator, first check utility pressure and available SCFM
NEW	450 14	Transformer requires disconnect within sight or lockable
	500 2	Hazardous locations, clarified definition of combustible dust
	517 13 B 1	Health care facility redundant ground
	517 13 B Ex	MC-AP, metal clad, all purpose
insight		move light switch from patient care area to hall
	517 18	no multi-wire receptacle circuits permitted for health care
insight	517 18,19	4 receptacles per general care area; 6 receptacles per critical care area; all hospital grade quadriplex receptacle counts as 4 receptacles
	517 20	wet location patient care area requires 6mA GRCI
	517 30	Critical circuits off transfer switch may share raceway - circuits off different transfer switches require separate raceways

	517 160	Br (H) / OR (N) / GN (gnd) for isolated power circuits used in anesthetic areas
	518 3	temporary wiring for exhibition hall must all be GFCI protected
	680 26 b 2	pool perimeter surface grounding revised
	694	generating wind mill
insight		small generating wind mill just inspected, 10kW, \$65k before incentives, guaranteed 20 yr, 100-ft tow
	690 4	photovoltaic generating systems must be installed by qualified persons
	690 10	back-fed cb for panel connection must be oolt-on
	690 11	photovoltaic generation must be arc-fault protected if over 80V
	694	small generating wind mill storage battery requirements
NEW	695 3	alternate source for fire pumps
	695 6 H,I	fire pump junciton box better defined
NEW insight	700 12 F	exit emergency lights 2 exterior light heads required by NFPA 101, Life Safety Code
	701 6 D	Ground fault sensing (no trip) required on emergency generators over 1000A
	760 3 J	fire alarm conduit fill, seal with expansion sleeve for temp difference or vertical run
enforceable	760 41 B	dedicated fire alarm supply circuit; label on panel, red cb
	800 110	conduit fill on communicaitons wires by BICSI, IEEE, EIS / TIA
	770 110	fiber optic fill
	820 110	cctv fill
insight		power over ethernet (POE) used Chapter 3 fill, 40%
new	800 154	communications cable type table
new	840	Premises powered broadband communications systems; installation methods
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