CHAPTER 12 BUILDINGS AND BUILDING REGULATIONS*

ARTICLE II – BUILDING CODE

*Cross reference(s)--Airport zoning, § 5-36 et seq.; erosion and sedimentation control, Ch. 15; fire prevention codes and standards, § 17-101 et seq.; floodplain management, Ch. 18; open housing, § 22-41 et seq.; planning and development, Ch. 34; preservation, Ch. 37; awnings, § 42-176 et seq.; subdivisions, Ch. 43; zoning, App. A. --State law reference(s)--Powers of home rule units, Ill. Const. art. VII, § 6.

ARTICLE II. - BUILDING CODES
DIVISION 7. – RESIDENTIAL CODE

Sec. 12-17.6 Same--Additions, insertions, deletions and changes.

The following sections of the **International Residential Code** adopted in section 12-16 is hereby revised as follows:

Section R105.2 Work Exempt from permit. Refer to IBC Section 105.2 for exemptions (NOTE: Decks, Fences, Driveways and Sidewalks or pavement adjacent to Driveways require permits).

Subsection R106.1.4 shall be changed to read as follows:

R106.1.4 Information for construction in areas prone to flooding. For buildings and structures in flood hazard areas as established on local floodway rate maps, locally adopted floodplain ordinances shall apply.

Subsection R109.1.3 Floodplain inspections. Shall be deleted in its entirety.

Subsection R109.5 shall be added:

R109.5 Dry and Stable access- Except for foundation inspections, a minimum 24" wide dry and stable access shall be provided to all inspection access points. Inspections scheduled for which this dry and stable access has not been provided will be disapproved and may be disapproved with penalty.

Subsection R112.1.1 shall be added as follows:

R112.1.1 Appeals. Appeals shall be made and conducted in accordance with the provisions of the adopted International Building Code - Appendix B Board of Appeals as amended.

Table R301.2(1) Insert – CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA:

Ground Snow Load	Wind Design				Seismic Design Category[f]	Subject to Damage From			Winter Design Temp[e]	Ice Barrier Underlayment Required[h]	Flood Hazards[g]	Air Freezing Index[i]	Mean Annual Temp[j]
	Speed[d] (mph)	Topographic Effects[k]	Special Wind Region[l]	Wind-borne debris zone[m]		Weathering[a]	Frost Line Depth[b]	Termite[c]					
25 lbs/sf	115	NO	NO	NO	B	Severe	42 inches below grade	Mod-Heavy	-5degF	YES	YES see Aurora Engineering Division	1635	48.7degF

Subsection R301.2.4 Floodplain Construction shall be changed to read as follows:

R301.2.4 Information for construction in areas prone to flooding. For buildings and structures in flood hazard areas as established on local floodway rate maps, locally adopted floodplain ordinances shall apply.

The following subsection shall be added to Section R303.1.1:

R303.1.1 Basements: Window area in basements, except as may be otherwise specified for habitable rooms, the glass window area in basements shall not be less than two (2) percent of the floor area served.

The last sentence of the exception to subsection R303.3 shall be amended as follows;

R303.3 Exception

… Ventilation air from the space shall be **independently** exhausted to the outside.

Exception to Subsection R304.2 shall be deleted and Subsection to R304.2 shall be added as follows:

R304.2 .1 Living Spaces: Living Room, Dining Room, Kitchen and Bedrooms shall provide the minimum floor areas as prescribed in the City of Aurora's Amended Property Maintenance Code – Occupancy Standards Section 404 -

The following shall be added to Chapter R308:

R308.7: Sliding Glass Doors. Ground level or easily accessible, sliding glass doors shall have installed an approved permanent anti-slide device.

Subsection R309.3 Flood Hazard areas. Shall be deleted in its entirety.

The following subsection shall be added to Section R310.2:

R310.2.3.3 Basement Window Wells; window well locations shall be placed as remotely as practical from at grade door locations and shall place a min. #4 bar with min. 4" hooks at the top and bottom of each opening

The following subsection shall be added to Section R310.4:

R310.4.1 Window wells shall be provided with flat covers capable of supporting at least 150 lbs.

The following subsection shall be added to Section R311.2:

R311.2..1 All swinging exterior doors, garage man doors and garage service doors shall be equipped with a dead bolt lock with a minimum one-inch throw and dead locking latch. Dead bolts shall contain hardened inserts, or equivalent, so as to repel cutting tool attack. Mortise-type locks may be used; if the above-described requirements are met.

Subsection R313.1 shall be modified as follows:

R313.1 Townhouse automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in each individual townhouse with a first floor Living Space footprint exceeding 5,000 ft^2

Subsection R313.2 shall be modified as follows:

R313.2 One- and two family dwellings automatic fire sprinkler systems. AN automatic residential sprinkler system shall be installed in One and Two family dwellings with a first floor Living Space footprint exceeding 5,000 ft^2.

Subsection R322 Flood-Resistant Construction shall be changed to read as follows:

R322.1.11 Additional Information for construction in areas prone to flooding. For buildings and structures in flood hazard areas as established on local floodway rate maps, locally adopted floodplain ordinances shall additionally apply and the most restrictive requirements shall apply.

Subsection R401.1 Application. Shall be changed to read as follows:

R401.1 The provisions of this chapter shall control the design and construction of the foundation and foundation spaces of all buildings. In addition to the provisions of this chapter, the design and construction of foundations in areas prone to flooding as established by Table R301.2 (1) shall meet the provisions of section R322. Wood foundations shall not be allowed.

Subsection R401.4.1 Geotechnical evaluation. Shall be changed to read as follows:

R401.4.1 A Geotechnical report from a soils engineer shall accompany all new home permit applications and shall be amended with observed in place results after excavation and prior to scheduling the Footing inspection. Copy of the revised report shall be given to inspector at the footing inspection.

Subsection R402.1 Wood Foundations and its subsections R402.1.1, & R402.1.2 shall be deleted in their entirety.

Subsection R403.1.1 Minimum size. Shall be deleted and changed to read as follows:

R403.1.1 Minimum sizes for concrete and masonry footings shall be as set forth in Table R403.1 and Figure R403.1(1). The footing width, W, shall be based on the load bearing value of the soil in accordance with Table R402.2. *Spread footings **Width** shall be twice the width of the foundation wall and not less than 16 inches. Spread footing **Thickness** (depth) shall be equal to the width of the foundation wall and not less than 8 inches. Footing **Projections**, P, shall be ½ the width of the foundation wall, not less than 4 inches and shall not exceed the thickness of the footing.*

Table R403.1(1) Minimum width of concrete or masonry footing (inches). Shall be deleted and changed to read as follows:

		Load Bearing Value of Soil (psf)			
	Height	1,500	2,000	3,000	>= 4,000
Trench Footings w/ light-frame construction ----- with Horiz. Reinforcing (one #4 bar within 12" of top and bottom)	1-Story & < 10' joist span	16	12	12	12
Trench Footings w/ light-frame construction ----- with Horiz. Reinforcing (one #4 bar within 12" of top and one #4 bar at mid point)	1-Story	Engineered w/ Soil test	16	16	16
Trench Footings w/ masonry veneer ----- with Horiz. Reinforcing (one #4 bar within 12" of top and one #4 bar at mid point)	1-Story	Engineered w/ Soil test	20	20	20
Trench Footings ----- with Horiz. Reinforcing (one #4 bar within 12" of top and one #4 bar at mid point)	2-Story	Engineered w/ Soil test	24	24	24
Conventional light-frame construction	1-Story	16	16	16	
	2-Story	20			
	3-Story	24	20		
4-inch masonry veneer over frame or 8 inch hollow concrete masonry	1-Story	20	20	20	
	2-Story	24			
	3-Story	32	24		
8-inch solid or fully grouted masonry	1-Story	24	20	20	16
	2-Story	32	24		20
	3-Story	42	32	24	

Table R403.1(2) shall be deleted in its entirety.

Table R403.1(3) shall be deleted in its entirety.

Figures R403.1 (2) and R403.1 (3) Permanent Wood Foundations shall be deleted in their entirety.

The following section Chapter R403.1.4 shall be deleted and replaces with the following:

R403.1.4.1: Frost Protection:

Exceptions:

1. Detached and freestanding single story accessory structures less than **768** gross square feet, with an eave height of less than 10'; shall be allowed to be supported on an approved continuous turned down slab detail per the building code.
2. Deleted
3. Decks not supported by a dwelling and not adjacent to communicating doorways of a dwelling need not be provided with footings that extend below the frost line. Temporary handicapped ramps may be provided on non frost protected footings provided they are removed upon the lack of medical need of the ramp for the occupants.

Subsection R403.2 Footings for Wood Foundations shall be deleted in its entirety.

Table R404.1.1 (1) Plain Masonry Foundation Walls shall be amended as follows:

Maximum Wall Height (feet)	Maximum Unbalanced Backfill Height[c] (feet)	Plain Masonry[a] Minimum Nominal Wall Thickness (inches)		
		Soil Classes[b]		
		GW, GP, SW and SP	GM,GC,SM,SM-SC and ML	SC, MH, ML-CL and inorganic CL
5	4	8	8	8
	5			10
6	4	8	8	8
	5			10
	6		10	12
7	4	8	8	8
	5		10	10
	6	10	12	10 solid[d]
	7	12	10 solid[d]	12 solid[d]
8	4	8	8	8
	5		10	12
	6	10	12	12 solid[d]
	7	12	12 solid[d]	Footnote[e]
	8	10 solid[d]	12 solid[d]	Footnote[e]
9	4	8	8	8
	5		10	12
	6	10	12	12 solid[d]
	7	12	12 solid[d]	Footnote[e]
	8	12 solid[d]	Footnote[e]	Footnote[e]
	9	Footnote[e]	Footnote[e]	Footnote[e]

Table R404.1.2(5) Minimum Vertical wall reinforcement for 6-inch waffle-grid basement walls, shall be deleted, 8 inch minimum wall width required see R404.1.2(6).

Table R404.1.2(7) Minimum Vertical wall reinforcement for 6-inch screen-grid basement walls, shall be deleted**,**

Subsection R404.2 Wood Foundations walls and its subsections R404.2.1, R404.2.2, R404.2.3 and Table R404.2.3, R404.2.4, R404.2.5, and R404.2.6 shall be deleted in their entirety.

Section R405.2 Wood Foundations and its subsections R405.2.1, R405.2.2, and R405.2.3 shall be deleted in their entirety.

Section R406.3 Dampproofing for Wood Foundations and its subsections R406.3.1, R406.3.2, and R406.3.3 shall be deleted in their entirety.

Subsection R502.7.1 Bridging. Shall be deleted and changed to read as follows:

R502.7.1 Bridging. All Joists shall be supported laterally by solid blocking, diagonal bridging (wood or metal) or continuous 1 inch x 3-inch strips nailed across the bottom of the joist perpendicularly to the joist at intervals not exceeding 8 feet.

Section R504 Pressure Preservative-Treated Wood Floors (on Ground) shall be deleted in its entirety**.**

Subsection R506.2.1.1 Shall be added:

R506.2.1.1 Back-fill under concrete floors in attached garages.

a. The slab shall be doweled into the foundation wall as follows. Dowels (#4) shall be 3'-4" long, shall be doweled into foundation wall a minimum of 4", and shall be spaced at 24" on center; on all walls that do not provide 4" of bearing for slab.

Section R602.3.2 Single Top plate Exception only. Shall be deleted in its entirety.

Subsection R703.9 Shall be modified

R703.9 Exterior Insulation Finish Systems, general. All Exterior Insulation Finish Systems (EIFS) shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section. Where permitted EIFS installations shall be required to provide a manufacturer's inspection of certification to the owner and shall be kept for inspection upon request. Repairs to existing EIFS systems shall be permitted to be repaired with EIFS systems w/ drainage using the installation recommendations of the Manufacturer.

R703.9.1 EIFS systems without drainage shall not be permitted.. .

Subsection R1003.9.1 shall be amended to read:

R1003.9.2. Spark Arrestors. A spark arrestor is required to be installed on all masonry chimneys.

Chapter 11 Energy Conservation shall be deleted in its entirety; Compliance shall be determined by the current State of Illinois Energy Code amended International Energy Code Council.

The following Subsection shall be added to section M1401.1;

M1401.1.1 Temporary Heat system required; Use of the new furnace during construction activities shall be prohibited. If new furnace is found to have been used, final inspections will not pass without a full system cleaning certification, plus the posting of a contractor installation and equipment warranty to match the manufacturer's equipment warranty period (if the manufacturer's warranty has been compromised by not following the manufacturer's installation instructions).

The following subsection shall be added to Section M1502.3:

M1502.3.1 Clothes Dryer Termination: Clothes Dryer exhaust duct systems shall terminate with a removable guard to prevent bird or rodent entry. For maintenance purposes, termination shall be located no greater than 12 feet above the walking surface or grade below.

The following subsection shall be added to Section M1506.3:

M1506.3.1 Termination. Bathroom exhaust ducts systems shall be equipped with a back draft damper and shall be terminated with a guard to prevent bird or rodent entry.

The following Subsection shall be added to section M1601.1.1:

M1601.1.1 (8); Ductwork; Shall not protrude from the framing cavity when applications of finishes will compress or deform the duct.

The following Subsection M1602.2 shall be added as follows;

2.1 Disbursal of return air openings shall be taken from each finished floor inside of the dwelling unit. Dilution of return air with outdoor air shall be permitted.

The following Subsection to G2414 shall be deleted:

G2414.5 Metallic tubing; All metallic tubing types 5.1-5.3 shall be deleted.

The following Subsection shall be added to section M2426.6;

G2426.6.1 Vent support; B vent support shall be provided every 5 feet minimum with no screw penetrations unless specifically required by the vent manufacturer and then only when it can be demonstrated that the inner wall of the vent has not been penetrated.

Chapters 25-32 Plumbing shall be deleted and the following subsection shall be added:

P2501.1. Scope. Per the State of Illinois pre-emption all Plumbing work shall conform to the current edition of the Illinois State Plumbing Code.

The following non-preempted subsections shall additionally be added:

P2501.2 Hose bib locations: 2 hose bibbs located as remotely as practicable shall be required per residence (e.g. front and rear yards).

P2501.3 Water Distribution Piping: Water distribution piping shall be installed so that all water supplies except for hose bibs are fed from an isolated single branch pipe for the possible future installation of a water filtration system.

P2501.4 Water services shall be sized per the State of Illinois Plumbing Code. Minimum new water service size shall be 1 inch.

P2501.5 Public Systems Available: Variations from provisions contained in this section may be applied for by filing an application with the public works department for referral to and consideration by the city council.

P2501.5.1 A public water main shall be considered available to a building when the building is located within one thousand two hundred (1,200) feet of the public water main. Private wells shall not be allowed within the jurisdiction of the City of Aurora except as provided by section 48-28 of the Aurora Code of Ordinances.

P2501.5.2 A public sewer system shall be considered available when the nearest point of the property is located within one thousand two hundred (1,200) feet of the public sewer.

The following subsection shall be added to Storm Drainage Section P3303 Sumps and Pumping Systems

P3303.1.5 Required storm sump pit discharge shall be handled in conformance with one of the following:

(1) Discharge to the public storm sewer may occur at any time in conformance with City of Aurora Standard Specifications for Improvements.

(2) Discharge to grade, when not prohibited above, may be permitted provided that the point of discharge is at least fifteen (15) feet from all property lines. Sump pumps shall not discharge directly into any street, sidewalk onto adjacent property, or in any manner that will flood or cause a nuisance. Sump discharge contrary to the above provisions shall be considered a violation as a public nuisance of the adopted IPMC 304 Exteriors, Roofs and Drainage subsection.

Chapter 34 General Requirements

SECTION E3401 GENERAL

E3401.1 Applicability. The provisions of 2015 International Residential Code Chapters 34 through 43 with the amendments below shall replace the adopted International Residential Code Chapters 34 through 43 and hereby establish the general scope of the electrical system and equipment requirements of this code. Chapters 34 through 43 cover those wiring methods and materials most commonly encountered in the construction of one- and two-family dwellings and structures regulated by this code. Other wiring methods, materials and subject matter covered in NFPA 70 are also allowed by this code.

E3401.2 Scope. Chapters 34 through 43 shall cover the installation of electrical systems, equipment and components indoors and outdoors that are within the scope of this code, including services, power distribution systems, fixtures, appliances, devices and appurtenances. Services within the scope of this code shall be limited to 120/240-volt, 0- to 400-ampere, single-phase systems.

These chapters specifically cover the equipment, fixtures, appliances, wiring methods and materials that are most commonly used in the construction or alteration of one- and two-family dwellings and accessory structures regulated by this code. The omission from these chapters of any material or method of construction provided for in the referenced standard NFPA 70 shall not be construed as prohibiting the use of such material or method of construction.

E3401.2.1 Electrical systems, equipment or components not specifically covered in these chapters shall comply with the applicable provisions of NFPA 70. (Including but not limited to: alternative power generating equipment, photovoltaic, wind turbines and generators, etc.)

E3401.4 Additions and alterations. Any addition or alteration to an existing electrical system shall be made in conformity to the provisions of Chapters 34 through 43 additionally refer to Appendix J for additional requirements based upon the scope and area of work. Where additions subject portions of existing systems to loads exceeding those permitted herein, such portions shall be made to comply with Chapters 34 through 43.

Chapter 36 Services

SECTION E3601 GENERAL SERVICES

E3601.6.2 Service disconnect location. The service disconnecting means shall be installed at a readily accessible location at the meter. Service disconnecting means shall not be installed in bathrooms. Each occupant shall have access to the disconnect serving the dwelling unit in which they reside.

SECTION E3602 SERVICE SIZE AND RATING

E3602.2.1 Services under 100 amperes.

Services that are not required to be 100 amperes shall be sized in accordance with Chapter 37.

SECTION E3603 SERVICE, FEEDER AND GROUNDING ELECTRODE CONDUCTOR SIZING shall be amended:

E3603.1 Grounded and ungrounded service conductor size.

Service and feeder conductors supplied by a single-phase, 120/240-volt system shall be sized in accordance with Table 3705.1.

Sections E3603.1. through E3603.2 shall be deleted.

E3603.4 Grounding electrode conductor size. The grounding electrode conductors shall be sized based on the size of the service entrance conductors as required in Table 3705.1.

Table E3603.4 shall be deleted.

SECTION E3605 SERVICE-ENTRANCE CONDUCTORS

E3605.5 Protection of all other service cables. Above-ground service-entrance cables, where subject to physical damage, shall be protected by one or more of the following: rigid metal conduit, intermediate metal conduit, ~~Schedule 80 PVC conduit, electrical metallic tubing~~ or other approved means.

E3605.5.1 Conduit Support. Shall be added as follows: All service entrance conduit for overhead service drops shall be supported by galvanized 2 piece back-straps or an approved equal. Corrosion resistant materials shall be required per NEC 300.6

~~**E3605.7 Mounting supports.**~~

~~be supported by straps or other approved means within 12 inches (305 mm) of every service head, gooseneck or connection to a raceway or enclosure and at intervals not exceeding 30 inches (762 mm).~~

E3605.9 Overhead service locations. Connections at service heads shall be in accordance with Sections E3605.9.1 through E3605.9.7.

~~**E3605.9.2 Service cable, service head or gooseneck.**~~

~~head or shall be formed into a gooseneck in an approved manner. The service head shall be listed for use in wet locations.~~

E3605.9.3 Service-head location. Service heads ~~and goosenecks in service-entrance cables,~~ shall be located above the point of attachment of the service-drop or overhead service conductors to the building or other structure. **Exception:** Where it is impracticable to locate the service head ~~or gooseneck~~ above the point of attachment, the service head or gooseneck location shall be not more than 24 inches (610 mm) from the point of attachment.

E3605.9.5 Drip loops. Drip loops shall be formed on individual conductors. To prevent the entrance of moisture, service-entrance conductors shall be connected to the service-drop or overhead conductors ~~either~~ below the level of the service head ~~or below the level of the termination of the service-entrance cable sheath~~.

~~**E3605.9.7 Secured.**~~

~~Service-entrance cables shall be held securely in place.~~

SECTION E3606 SERVICE EQUIPMENT—GENERAL

E3606.4 Marking. Service equipment shall be marked to identify it as being suitable for use as service equipment. Service equipment shall be listed. Individual meter socket enclosures shall ~~not~~ be considered as service equipment.

SECTION E3608 GROUNDING ELECTRODE SYSTEM

E3608.1 Grounding electrode system.

E3608.1.2 Concrete-encased electrode.

Unless otherwise accepted by the building official, a concrete encased electrode shall be installed in new structures with an electrical service.

A concrete-encased electrode consisting of at least 20 feet (6096 mm) of either of the following shall be considered as a grounding electrode:

1. One or more bare or zinc galvanized or other electrically conductive coated steel reinforcing bars or rods not less than $^1/_2$ inch (13 mm) in diameter, installed in one continuous 20-foot (6096 mm) length, or if in multiple pieces connected together by the usual steel tie wires, exothermic welding, welding, or other effective means to create a 20-foot (6096 mm) or greater length.
2. A bare copper conductor not smaller than 4 AWG.

Metallic components shall be encased by at least 2 inches (51 mm) of concrete and shall be located horizontally within that portion of a concrete foundation or footing that is in direct contact with the earth or within vertical foundations or structural components or members that are in direct contact with the earth. Where multiple concrete-encased electrodes are present at a building or structure, only one shall be required to be bonded into the grounding electrode system.

Chapter 37 - Branch Circuit and Feeder Requirements

SECTION E3701 GENERAL

E3701.3 Selection of ampacity. Where more than one calculated or tabulated ampacity could apply for a given circuit length, the lowest value shall be used.

~~**Exception:** Where two different ampacities apply to adjacent portions of a circuit, the higher ampacity shall be permitted to be used beyond the point of transition, a distance equal to 10 feet (3048 mm) or 10 percent of the circuit length figured at the higher ampacity, whichever is less~~

SECTION E3702 BRANCH CIRCUIT RATINGS

E3702.1.1 Existing 12 AWG branch circuits: Existing branch circuits with 12 AWG conductors that cannot be completely traced throughout the circuit shall be served by no more than 15 ampere breakers.

SECTION E3705 CONDUCTOR SIZING AND OVERCURRENT PROTECTION

TABLE E3705.1 ALLOWABLE AMPACITIES

CONDUCTOR SIZE	CONDUCTOR TEMPERATURE RATING						CONDUCTOR SIZE
	60°C	75°C	90°C	60°C	75°C	90°C	
AWG kcmil	Types TW, UF	Types RHW, THHW, THW, THWN, USE, XHHW	Types RHW-2, THHN, THHW, THW-2, THWN-2, XHHW, XHHW-2, USE-2	Types TW, UF	Types RHW, THHW, THW, THWN, USE, XHHW	Types RHW-2, THHN, THHW, THW-2, THWN-2, XHHW, XHHW-2, USE-2	AWG kcmil
	Copper			Aluminum or copper-clad aluminum			
14[a]	15	20	25				
12[a]	20	25	30				
10[a]	30	35	40				
8	40	50	55				
6	55	65	75				
4	70	85	95				
3	85	100	115				
2	95	115	130				
1	110	130	145				
1/0	125	150	170	100	120	135	1/0
2/0	145	175	195	115	135	150	2/0
3/0	165	200	225	130	155	175	3/0
4/0	195	230	260	150	180	205	4/0

~~**E3705.4.4 Conductors of Type NM cable.**~~ **Delete section in its entirety**

Chapter 38 - Wiring Methods

SECTION E3801 GENERAL REQUIREMENTS

TABLE E3801.2 ALLOWABLE WIRING METHODS

ALLOWABLE WIRING METHOD		NEW STRUCTURES	EXISTING STRUCTURES for limitations of use refer to IRC Appendix J
Armored cable (BX)	AC	Deleted	Deleted – See FMC and MC for other options
Electrical metallic tubing (Conduit)	EMT	Permitted without indenter type couplings	Permitted without indenter type couplings
Electrical nonmetallic tubing	ENT	Deleted	Deleted
Flexible metal conduit (Greenfield)	FMC	Deleted	Limited in existing unexposed assemblies. (See IRC Appendix J). Then where partially exposed to transition to EMT/RMC shall only be permitted in lengths not to exceed (6) six feet.
Intermediate metal conduit	IMC	Permitted	Permitted
Liquidtight flexible metallic conduit	LFMC	Permitted in lengths not to exceed 6 feet	Permitted in lengths not to exceed 6 feet
Liquidtight flexible non-metallic conduit	LFNC	Permitted in lengths not to exceed 6 feet	Permitted in lengths not to exceed 6 feet
Metal-clad cable	MC	Deleted Except where included as a factory assembled sub component of a manufactured system.	Limited in existing unexposed assemblies. (See IRC Appendix J) Then where partially exposed to transition to EMT/RMC shall only be permitted in lengths not to exceed (6) six feet.
Nonmetallic sheathed cable (Romex)	NM	Deleted	Deleted

Rigid polyvinyl chloride conduit – (PVC)	RNC / PVC	Underground use only.	Underground use only.
Rigid metallic conduit	RMC	Permitted	Permitted
Service entrance cable	SE	Deleted	Deleted
Surface Metal raceways	SMR	Permitted when containing an equipment grounding conductor	Permitted when containing an equipment grounding conductor
Surface Non-Metallic raceways	SNR	Deleted	Deleted
Underground feeder cable	UF	Deleted	Limited see (IRC Appendix J) Only in exterior applications, and in conformance with the cable listing
Underground service cable	USE	Deleted	Deleted
USE-2	USE-2	Above ground when part of a manufacturers systems/requirements	Above ground when part of a manufacturers systems/requirements

TABLE E3801.4 ALLOWABLE APPLICATIONS FOR WIRING METHODS [a, b, c, d, e, f, g, h, i, j, k]
Note that uses of wiring methods are further restricted by Table 3801.2

ALLOWABLE APPLICATIONS (application allowed where marked with an "A")	~~AC~~	EMT	~~ENT~~	FMC	IMC RMC RNC PVC	LFMC, LFNC [a, g]	MC	~~NM~~	SMR	~~SE~~	~~UF~~	~~USE~~
Services					A				—			
Feeders		A		A	A	A			—			
Branch circuits		A		A	A	A	A		A			
Inside a building		A		A	A	A	A		A			
Wet locations exposed to sunlight		A		—	A	A	A		—			
Damp locations		A		A[d]	A	A	A		—			
Embedded in noncinder concrete in dry location		A		—	A	A[j]	—		—			
In noncinder concrete in contact with grade				—	A[f]		—		—			
Embedded in plaster not exposed to dampness		A		A	A	A	A		—			
Embedded in masonry		A		—	A[f]	A	A		—			
In masonry voids and cells exposed to dampness or below grade line					A[f]	A	A		—			
Fished in masonry voids		—		A	—	A	A		—			
In masonry voids and cells not exposed to dampness		A		A	A	A	A		—			
Run exposed		A		A	A	A	A		A			
Run exposed and subject to physical damage		—		—	A[g]	—	—		—			
For direct burial				—	A[f]	A			—			

For SI: 1 foot = 304.8 mm.

a. Liquid-tight flexible nonmetallic conduit without integral reinforcement within the conduit wall shall not exceed 6 feet in length.

b. Type USE cable shall not be used inside buildings.

c. The grounded conductor shall be insulated.

d. Conductors shall be a type approved for wet locations and the installation shall prevent water from entering other raceways.

e. Shall be listed as "Sunlight Resistant."

f. Metal raceways shall be protected from corrosion and approved for the application. Aluminum RMC requires approved supplementary corrosion protection.

g. RNC shall be Schedule 80.

h. Shall be listed as "Sunlight Resistant" where exposed to the direct rays of the sun.

i. Conduit shall not exceed 6 feet in length.

j. Liquid-tight flexible nonmetallic conduit is permitted to be encased in concrete where listed for direct burial and only straight connectors listed for use with LFNC are used.

k. In wet locations under any of the following conditions:

1. The metallic covering is impervious to moisture.

2. A lead sheath or moisture-impervious jacket is provided under the metal covering.

3. 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.

SECTION E3802 ABOVE-GROUND INSTALLATION REQUIREMENTS

TABLE E3802.1 GENERAL INSTALLATION AND SUPPORT REQUIREMENTS FOR WIRING METHODS [a, b, c, d, e, f, g, h, i, j, k]
Note that uses of wiring methods are further restricted by Table 3801.2

INSTALLATION REQUIREMENTS (Requirement applicable only to wiring methods marked "A")	~~AC~~ MC	EMT IMC RMC	~~ENT~~	FMC LFMC, LFNC	~~NM~~ UF	RNC / PVC	~~SE~~	SMR [a]	~~USE~~
Where run parallel with the framing member or furring strip, the wiring shall be not less than $1^1/_4$ inches from the edge of a furring strip or a framing member such as a joist, rafter or stud or shall be physically protected.	A	—		A	A	—		—	
Bored holes in framing members for wiring shall be located not less than $1^1/_4$ inches from the edge of the framing member or shall be protected with a minimum 0.0625-inch steel plate or sleeve, a listed steel plate or other physical protection.	A[k]	—		A[k]	A[k]	—		—	
Where installed in grooves, to be covered by wallboard, siding, paneling, carpeting, or similar finish, wiring methods shall be protected by 0.0625-inch-thick steel plate, sleeve, or equivalent, a listed steel plate or by not less than $1^1/_4$-inch free space for the full length of the groove in which the cable or raceway is installed.	A	—		A	A	—		A	
Securely fastened bushings or grommets shall be provided to protect wiring run through openings in metal framing members.	—	—		—	A[j]	—		—	
The maximum number of 90-degree bends shall not exceed four between junction boxes.	—	A		A	—	A		—	
Bushings shall be provided where entering a box, fitting or enclosure unless the box or fitting is designed to afford equivalent protection.	A	A		A	—	A		A	
Ends of raceways shall be reamed to remove rough edges.	—	A		A	—	A		A	
Maximum allowable on center support spacing for the wiring method in feet.	4.5[b, c]	10[l]		4.5[b]	4.5[i]	3[d, l]		—	
Maximum support distance in inches from box or other terminations.	12[b, f]	36		12[b, g]	12[h, i]	36		—	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad.

a. Installed in accordance with listing requirements.

b. Supports not required in accessible ceiling spaces between light fixtures where lengths do not exceed 6 feet.

c. Six feet for MC cable.

d. Five feet for trade sizes greater than 1 inch.

e. Two and one-half feet where used for service or outdoor feeder and 4.5 feet where used for branch circuit or indoor feeder.

f. Twenty-four inches for AC cable and thirty-six inches for interlocking Type MC cable where flexibility is necessary.

g. Where flexibility after installation is necessary, lengths of flexible metal conduit and liquidtight flexible metal conduit measured from the last point where the raceway is securely fastened shall not exceed: 36 inches for trade sizes $^1/_2$ through $1^1/_4$, 48 inches for trade sizes $1^1/_2$ through 2 and 5 feet for trade sizes $2^1/_2$ and larger.

h. Within 8 inches of boxes without cable clamps.

i. Flat cables shall not be stapled on edge.

j. Bushings and grommets shall remain in place and shall be listed for the purpose of cable protection.

k. See Sections R502.8 and R802.7 for additional limitations on the location of bored holes in horizontal framing members.

E3802.2 Cables in accessible attics. When permitted by table E3801.2.Cables in attics or roof spaces provided with access shall be installed as specified in Sections E3802.2.1 and E3802.2.2.

E3802.4 In unfinished basements and crawl spaces.

When existing and permitted to remain. Where type NM or SE cable is run at angles with joists in unfinished basements and crawl spaces, cable assemblies containing two or more conductors of sizes 6 AWG and larger and assemblies containing three or more conductors of sizes 8 AWG and larger shall not require additional protection where attached directly to the bottom of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Type NM or SE cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit or tubing or shall be protected in accordance with Table E3802.1. Conduit or tubing shall be provided with a suitable insulating bushing or adapter at the point where the cable enters the raceway. The sheath of the Type NM or SE cable shall extend through the conduit or tubing and into the outlet or device box not less than $^1/_4$ inch (6.4 mm). The cable shall be secured within 12 inches (305 mm) of the point where the cable enters the conduit or tubing. Metal conduit, tubing, and metal outlet boxes shall be connected to an equipment grounding conductor complying with Section E3908.13.

SECTION E3803 UNDERGROUND INSTALLATION REQUIREMENTS

E3803.1 Minimum cover requirements.

Direct buried cable or raceways shall be installed in accordance with the minimum cover requirements of Table E3803.1.

TABLE E3803.1 MINIMUM COVER REQUIREMENTS, BURIAL IN INCHES [a, b, c, d, e]

LOCATION OF WIRING METHOD OR CIRCUIT	TYPE OF WIRING METHOD OR CIRCUIT				
	1 Direct burial cables or conductors	2 Rigid metal conduit or intermediate metal conduit	3 Nonmetallic raceways listed for direct burial without concrete encasement or other approved raceways	4 Residential branch circuits rated 120 volts or less with GFCI protection and maximum overcurrent protection of 20 amperes	5 Circuits for control of irrigation and landscape lighting limited to not more than 30 volts and installed with type UF or in other identified cable or raceway
All locations not specified below	24	6	18	12	6
In trench below 2-inch-thick concrete or equivalent	18	6	12	6	6
~~Under a building~~	~~0 (In raceway only or Type MC identified for direct burial)~~	~~0~~	~~0~~	~~0 (In raceway only or Type MC identified for direct burial)~~	~~0 (In raceway only or Type MC identified for direct burial)~~
Under minimum of 4-inch -thick concrete exterior slab with no vehicular traffic and the slab extending not less than 6 inches beyond the underground installation	18	4	4	6 (Direct burial) 4 (In raceway)	6 (Direct burial) 4 (In raceway)
Under streets, highways, roads, alleys, driveways and parking lots	24	24	24	24	24
One- and two-family dwelling driveways and outdoor parking areas, and used only for dwelling-related purposes	18	18	18	12	18
In solid rock where covered by minimum of 2 inches concrete extending down to rock	2 (In raceway only)	2	2	2 (In raceway only)	2 (In raceway only)

For SI: 1 inch = 25.4 mm.

a. Raceways approved for burial only where encased concrete shall require concrete envelope not less than 2 inches thick.

b. Lesser depths shall be permitted where cables and conductors rise for terminations or splices or where access is otherwise required.

c. Where one of the wiring method types listed in columns 1 to 3 is combined with one of the circuit types in columns 4 and 5, the shallower depth of burial shall be permitted.

d. Where solid rock prevents compliance with the cover depths specified in this table, the wiring shall be installed in metal or nonmetallic raceway permitted for direct burial. The raceways shall be covered by a minimum of 2 inches of concrete extending down to the rock.

e. Cover is defined as the shortest distance in inches (millimeters) measured between a point on the top surface of any direct-buried conductor, cable, conduit or other raceway and the top surface of finished grade, concrete, or similar cover.

E3803.11 Under buildings. Underground cable installed under a building shall be in a(n) RMC, IMC, RNC/PVC, raceway.

~~Exception:~~ ~~Type MC Cable shall be permitted under a building without installation in a raceway where the cable is listed and identified for direct burial or concrete encasement and one or more of the following applies:~~

~~1. The metallic covering is impervious to moisture.~~

~~2. A moisture-impervious jacket is provided under the metal covering.~~

~~3. 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.~~

Chapter 39 - Power and Lighting Distribution

SECTION E3903 LIGHTING OUTLETS

E3903.1 General. Lighting outlets shall be provided in accordance with Sections E3903.2 through E3903.4.

E3903.2 Habitable rooms. At least one wall switch-controlled lighting outlet shall be installed in every habitable room, closet with a depth greater than 4 feet, and bathroom.

SECTION E3904 GENERAL INSTALLATION REQUIREMENTS

E3904.6 Conduit and tubing fill. The maximum number of conductors installed in conduit or tubing shall not exceed 9 conductors.

E3904.7 Low Voltage Air handling-stud cavity and joist spaces. Where wiring methods having a nonmetallic covering pass through stud cavities and joist spaces used for air handling, such wiring shall pass through such spaces perpendicular to the long dimension of the spaces.

SECTION E3905 BOXES, CONDUIT BODIES AND FITTINGS

E3905.3 Nonmetallic boxes. Nonmetallic boxes shall not be installed, except in corrosive locations or in non-grounded circuits when they are permitted to remain. Further when permitted they shall be used only with cabled wiring methods with entirely nonmetallic sheaths, flexible cords and nonmetallic raceways.

E3905.6.2 Ceiling outlets. At every outlet not physically capable of hanging a ceiling fan, the box shall be designed or installed so that a luminaire or lampholder can be attached. Such boxes shall be capable of supporting a luminaire weighing up to 50 pounds (22.7 kg). A luminaire that weighs more than 50 pounds (22.7 kg) shall be supported independently of the outlet box, unless the outlet box is listed and marked for the maximum weight to be supported. Ceiling outlets physically capable (due to location and clearances) of hanging a future ceiling fan shall meet the requirements of E3905.8 Boxes at fan outlets.

SECTION E3908 GROUNDING

~~**E3908.8.3 Nonmetallic sheathed cable (Type NM).**~~

~~In addition to the insulated conductors, the cable shall have an insulated, covered, or bare equipment grounding conductor. Equipment grounding conductors shall be sized in accordance with Table E3908.12.~~

E3908.9 Equipment fastened in place or connected by permanent wiring methods. Noncurrent-carrying metal parts of equipment, raceways and other enclosures, where required to be grounded, shall be grounded by one of the following methods:

1. By any of the equipment grounding conductors permitted by Sections E3908.8 through E3908.8.2.
2. By an equipment grounding conductor contained within the same raceway, cable or cord, or otherwise run with the circuit conductors. Equipment grounding conductors shall be identified in accordance with Section E3407.2.

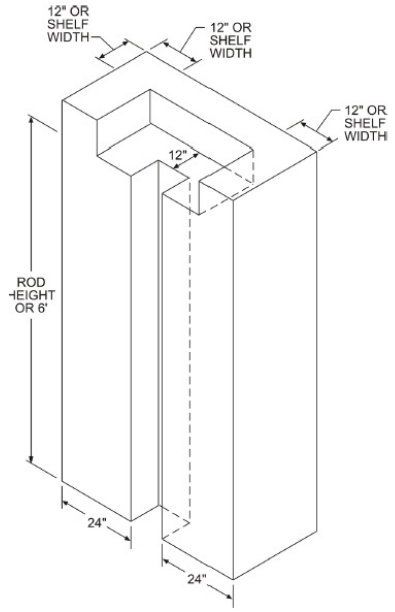
TABLE E3908.12 EQUIPMENT GROUNDING CONDUCTOR SIZING. Heading of aluminum column shall be modified as indicated

RATING OR SETTING OF AUTOMATIC OVERCURRENT DEVICE IN CIRCUIT AHEAD OF EQUIPMENT, CONDUIT, ETC., NOT EXCEEDING THE FOLLOWING RATINGS (amperes)	MINIMUM SIZE	
	Copper wire No. (AWG)	Aluminum or copper-clad aluminum wire No. (AWG) Minimum 1/0

E3908.16 Nonmetallic boxes. When allowed per 3905.3, one or more equipment grounding conductors brought into a nonmetallic outlet box shall be arranged to allow connection to fittings or devices installed in that box.

E3908.21 Underground / Under-slab / Concrete Encased Raceway: shall be added

Equipment Grounding Conductor: A conductor to serve as a 100% redundant Equipment Grounding conductor shall be installed in all underground raceways and raceways in concrete.



SECTION E4003 FIXTURES

E4003.12 Luminaires in clothes closets. The types of luminaires installed in clothes closets shall be limited to surface-mounted ~~or recessed incandescent or~~ LED luminaires with completely enclosed light sources, surface-mounted or recessed fluorescent luminaires, and surface -mounted fluorescent or LED luminaires identified as suitable for installation within the closet storage area. The minimum clearance between luminaires installed in clothes closets and the nearest point of a closet storage area shall be as follows:

1. Surface-mounted LED luminaires with a completely enclosed light source shall be installed on the wall above the door or on the ceiling, provided that there is a minimum clearance of 12 inches (305 mm) between the fixture and the nearest point of a storage space.
2. Surface-mounted fluorescent luminaires shall be installed on the wall above the door or on the ceiling, provided that there is a minimum clearance of 6 inches (152 mm).
3. Recessed LED luminaires with a completely enclosed light source shall be installed in the wall or the ceiling provided that there is a minimum clearance of 6 inches (152 mm).

SECTION E4202 WIRING METHODS FOR POOLS, SPAS, HOT TUBS & HYDROMASSAGE BATHTUBS

TABLE E4202.1 ALLOWABLE APPLICATIONS FOR WIRING METHODS [a, b, c, d, e, f, g, h, l] **Note that uses of wiring methods are further restricted by Table 3801.2**

WIRING LOCATION OR PURPOSE (Application allowed where marked with an "A")	~~AC,~~ FMC,~~NM,~~ SMR,~~SE~~	EMT	ENT	IMC [j], RMC [j], RNC/ PVC [i]	LF MC	LFN MC	~~UF~~	MC [k]	FLEX CORD
Panelboard(s) that supply pool equipment: from service equipment to panelboard	A[b, e] SR not permitted	A[c]	A[b]	A	—	A		A[e]	—
Wet-niche and no-niche luminaires: from branch circuit OCPD to deck or junction box	AC[b] only	A[c]	A[b]	A	—	A		A[b]	—
Wet-niche and no-niche luminaires: from deck or junction box to forming shell	—	—	—	A[d]	—	A		—	A [h]
Dry niche: from branch circuit OCPD to luminaires	AC[b] only	A[c]	A[b]	A	—	A		A[b]	—
Pool-associated motors: from branch circuit OCPD to motor	A[b]	A[c]	A[b]	A	A[f]	A[f]		A	A[h]
Packaged or self-contained outdoor spas and hot tubs with underwater luminaire: from branch circuit OCPD to spa or hot tub	AC[b] only	A[c]	A[b]	A	A[g]	A[g]		A[b]	A[h]
Packaged or self-contained outdoor spas and hot tubs without underwater luminaire: from branch circuit OCPD to spa or hot tub	A[b]	A[c]	A[b]	A	A[g]	A[g]		A	A[h]
Indoor spas and hot tubs, hydromassage bathtubs, and other pool, spa or hot tub associated equipment: from branch circuit OCPD to equipment	A[b]	A[c]	A[b]	A	A	A		A	A[h]
Connection at pool lighting transformers or power supplies	AC[b] only	A[c]	A[b]	A	A[m, g]	A[g]		A[b]	—

a. For all wiring methods, see Section E4205 for equipment grounding conductor requirements.
b. Limited to use within buildings.
c. Limited to use on or within buildings.
d. Metal conduit shall be constructed of brass or other approved corrosion-resistant metal.
e. Permitted only for existing installations in accordance with the exception to Section E4205.6.
f. Limited to where necessary to employ flexible connections at or adjacent to a pool motor.
g. Sections installed external to spa or hot tub enclosure limited to individual lengths not to exceed 6 feet. Length not limited inside spa or hot tub enclosure.
h. Flexible cord shall be installed in accordance with Section E4202.2.
i. Nonmetallic conduit shall be rigid polyvinyl chloride conduit Type PVC or reinforced thermosetting resin conduit Type RTRC.
j. Aluminum conduits shall not be permitted in the pool area where subject to corrosion.
k. Where installed as direct burial cable or in wet locations, Type MC cable shall be listed and identified for the location.
l. See Section E4202.3 for listed, double-insulated pool pump motors.
m. Limited to use in individual lengths not to exceed 6 feet. The total length of all individual runs of LFMC shall not exceed 10 feet.

The following subsection shall be added to Appendix F Section AF103.1:

AF103.1.1 All new construction shall comply with this appendix.

The following exception shall be added to Appendix J - EXISTING BUILDINGS AND STRUCTURES:

AJ201 Definitions. The following Definitions shall be added.

EXISTING, EXISTING INSTALLATION. Any structure, component or installation regulated by this code that was legally installed prior to the effective date of this code adoption, AND for which the required permits and inspections have been issued and approved.

Note: In the absence of proof of legal installation or approval, the code official or his/her designee shall use historical code information and research to determine lack of legal installation or approval.

AJ301.4 Electrical. Repair or replacement of existing electrical wiring and *equipment* undergoing repair with like material shall be permitted.

Exceptions:

1. Replacement of electrical receptacles shall comply with the requirements of Chapters 34 through 43.
2. Plug fuses of the Edison-base type shall be used for replacements only where there is no evidence of over-fusing or tampering per the applicable requirements of Chapters 34 through 43.
3. For replacement of non-grounding-type receptacles with grounding-type receptacles and for branch circuits that do not have an *equipment* grounding conductor in the branch circuitry, the grounding conductor of a grounding type receptacle outlet shall be permitted to be grounded to any accessible point on the grounding electrode system, or to any accessible point on the grounding electrode conductor, as allowed and described in chapters ~~34 through 43~~ below.

(a). A non-grounding-type receptacle(s) shall be permitted to be replaced with a ground-fault circuit interrupter type of receptacle(s). These receptacle(s) shall be marked "No Equipment Ground". An equipment grounding conductor shall be

connected from the ground-fault circuit-interrupter-type receptacle to any outlet supplied from the ground-fault circuit-interrupter receptacle.

(b). A non-grounding-type receptacle(s) shall be permitted to be replaced with a grounding type receptacle(s) where supplied through a ground-fault circuit interrupter. Grounding-type receptacles supplied through the ground fault circuit interrupter shall be marked "GFCI Protected" and "No Equipment Ground". An equipment grounding conductor shall not be connected between the grounding-type receptacles.

AJ401.5 Electrical equipment and wiring. Newly installed electrical *equipment* and wiring relating to new work done in any work area shall comply with the materials and methods requirements of Chapters 34 through 43.

Exception: Electrical *equipment* and wiring in newly installed partitions and ceilings shall comply with all applicable requirements of Chapters 34 through 43; unless otherwise permitted by the building official.

AJ501.1 Newly constructed Elements. Newly constructed elements, components and systems shall comply with the requirements of this code.

Exceptions:

3. Additions to existing structures which would create a first floor total Living Space footprint of greater than the sprinklering thresholds in R313 shall not be required to be sprinklered unless more than 50 percent of the area of the dwelling unit is being remodeled.

AJ501.3 Extensive alterations. When the total area of all the work areas included in an *alteration* exceeds 50 percent of the area of the *dwelling unit*, the work shall be considered as a reconstruction and shall comply with the requirements of these provisions for reconstruction work.

NOTE: Work areas in which the *alteration* work is exclusively plumbing, mechanical or electrical shall not be included in the computation of total area of all work areas.

AJ501.5 Electrical equipment and wiring.

AJ501.5.1 Materials and methods. Newly installed electrical *equipment* and wiring relating to work done in any work area shall comply with the materials and methods requirements of Chapters 34 through 43.

Exception: Electrical *equipment* and wiring in newly installed partitions and ceilings shall comply with all applicable requirements of Chapters 34 through 43; unless otherwise permitted by the building official.

(Code 1969, § 12-2; Ord. No. 087-5615, § 1, 1-20-87; Ord. No. 087-5675, § 1, 6-16-87; Ord. No. 087-5697, § 1, 8-4-87; Ord. No. 087-5715, § 2, 9-15-87; Ord. No. 087-5746, § 1, 12-15-87; Ord. No. 088-71, Exh. A, 6-21-88; Ord. No. 088-66, § 3, 6-7-88; Ord. No. 089-19, § 3, 3-7-89; Ord. No. 089-52, 6-20-89; Ord. No. 092-03, § 1, 1-21-92; Ord. No. 093-54, § 1, 7-6-93; Ord. No. 093-88, § 1, 10-5-93; Ord. No. 094-22, § 1, 3-15-94; Ord. No. 094-38, § 2, 5-3-94; Ord. No. 095-01, § 1, 1-3-95; Ord. No. 095-47, § 3, 7-5-95; Ord. No. 095-58, § 1, 8-1-95)

Cross reference(s)--Fine schedule for violations, § 1-11.