



# 2023 National Electrical Code® (NEC®) Changes Raceways & Wiring Methods

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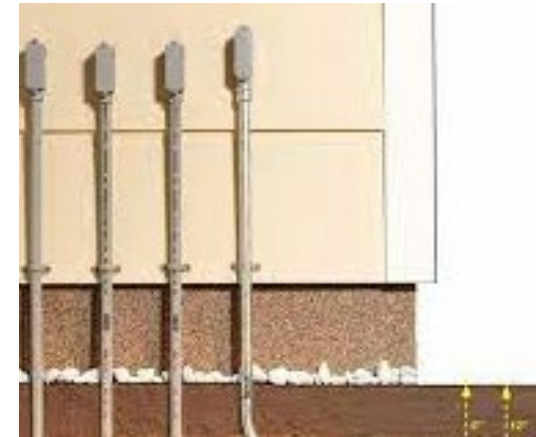
## ▲ About Me:

- ▲ Been in product and electrical safety for 15 years
  - Started career as Field Service Engineer for Canadian Standards Association
  - Been with Atkore 10 years (Director of Industry Affairs)
- ▲ Sit on National Electrical Code CMP 3 and CMP 5 as well as correlating committee
  - Former CMP 8 member
- ▲ I am on part 1 and section 12 of Canadian Electrical Code
- ▲ I sit on the New York City electrical Code

- ▲ Several articles were created for medium voltage systems.
  - ▲ Systems exceeding 1,000V ac or 1,500V dc. Existing requirements for such systems were relocated from several articles
- ▲ New articles covering medium voltage:
  - ▲ 235: Branch circuits, feeders, and services
  - ▲ 245: Overcurrent protection
  - ▲ 305: General requirements
  - ▲ 315: Conductors and cables
  - ▲ 395 (was 399): Outdoor overhead wiring
  - ▲ 495 (was 490): Equipment

# 225.27 – Raceway Seals

- ▲ Change was made to clarify use of seals
- ▲ Section 225.7 states:
  - ▲ If a raceway enters a building from outside, the raceway must be sealed in accordance with 300.5(G) and 300.7(A) even if it is not being used.
  - ▲ The sealing material must be identified for the conductor insulation or cable sheath.



## 230.7 Other Conductors in a Raceway

- ▶ Service conductors are not allowed in the same raceway, underground box, handhole enclosure or cable with branch circuits, feeder circuits, or limited energy circuits.
- ▶ Change made to clarify that Service conductors are never allowed mixed with circuits of lower power no matter the type of raceway or cable
  - ▶ Separate raceway needs to be ran

# 250.118 Types of Equipment Grounding Conductors

- ▶ Stainless-steel Flexible metal conduit and SS liquid-tight flexible conduit are now required to contain a separate wire type equipment Grounding conductor
  - ▶ 250.118(A)(5)(F) Stainless FMC must contain a wire type EGC
  - ▶ 250.118(A)(6)(F) Stainless LFMC must have a wire type EGC



# 300.4 Protection Against Physical Damage

- ▲ Protection requirements for RTRC conduit were relaxed
- ▲ Rules for metal corrugated roof decking were clarified
- ▲ Installation of protective fittings was revised



# 300.4(A)(1) Bored Holes

- ▲ There is a requirement that holes drilled through wood frames for wiring methods to pass through must be 1.25” from the edge or protected by a metal plate.
- ▲ There is an exception to this rule for RMC, IMC, PVC, and EMT.
  - ▲ The exception excluded RTRC-Fiberglass
- ▲ This Exception now includes RTRC





# 300.4(E) Wiring & Boxes Under Metal Corrugated Roof Decking

- ▲ Cables, Raceways, and boxes in concealed or exposed locations under metal corrugated sheet roof decking must be at least 1.5” from the decking
- ▲ Exception revised to clarify that this rule does not apply to RMC or IMC
- ▲ It also changed wording to allow for all steel and metal fittings and boxes to be part of this exception



# 300.5 Underground Installations

- ▲ Cover requirements for EMT were added in column 3 and the requirements for a warning ribbon were expanded.

Location of Wiring	Direct Burial Cables or Conductors	Rigid Metal Conduit, Intermediate Metal Conduit	EMT or Nonmetallic Raceways W/out Concrete Encasement	Residential GFCI-Protected 120V Circuits up to 20A	Landscape Lighting or Irrigation Control up to 30V
All locations not included below	24"	6"	18"	12"	6" footnote "a"
In trench under 2" concrete	18"	6"	12"	6"	6"
Under a building	0"	0"	0"	0"	0"
Under 4" exterior concrete slab w/o vehicle traffic	18"	4"	4"	6" direct burial 4" in raceway	6" direct burial 4" in raceway
Under streets, roads, driveways, parking lots	24"	24"	24"	24"	24"
One-and two-family dwelling driveways	18"	18"	18"	12"	18"

# 300.5 Minimum Cover

- ▲ NEW Table Note 6 : Directly Buried EMT must comply with 358.10 for corrosion protection.
  - ▲ 358.10 is Uses permitted
    - 358.10(A)(1) allows EMT in direct Burial applications with fittings identified for the purpose.
    - 358.10(B) Provides the requirements for corrosive environments
      - Direct buried Galvanized EMT may require additional corrosion protection
      - Direct buried stainless steel EMT generally does not require additional corrosion protection
      - Aluminum EMT always requires additional corrosion protection



# 300.5(D)(1) & (D)(3)

- **Conductors or Cables emerging from grade must be protected by an enclosure or raceway that extends down at least 18 inches and above the ground at least 8 inches.**
- **Service Conductors buried 18 inches or more must have a warning ribbon in the trench 12 inches above conductors.**





# 300.14 Free Length of Conductors

- At least 6 inches of spliced or un-spliced conductor from the cable sheath or raceway must be provided at splices in boxes and for connection of devices or luminaires.
- Clarifies that you can splice in the extra conductor length if necessary

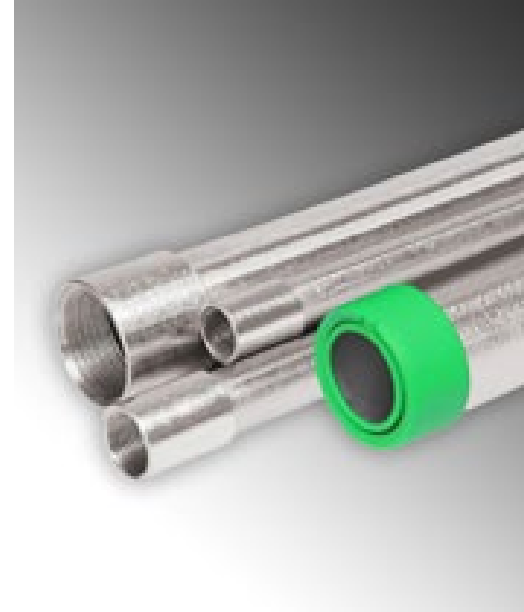


# 305 – General Requirements for 1000V AC or 1500 VDC

- Scope : This article provides general requirements for wiring methods and materials used in systems exceeding 100VAC or 1500VDC.
- Table 305.3 lists wiring methods permitted for use in medium voltage systems



- **Larger IMC is now allowed**
  - Previously IMC was only allowed up to trade size 4
  - Now IMC is allowed to go up to trade size 6 (Same as rigid conduit)
- **Securing and supporting**
  - A change was made to stating that securing raceways inside finished walls of existing buildings is no longer required. (Same change made in article 344 for Rigid)



# 352 PVC Conduit Changes

- ▲ 352.10 Clarified
  - ▲ Concrete encasement and physical damage were clarified
  - ▲ 352.10(B) Now states PVC may be encased in concrete
  - ▲ 352.10(K) Physical Damage now clarifies that if PVC is subject to physical damage schedule 80 PVC conduit is required
    - Informational note added : All PVC fittings are suitable for schedule 40 or schedule 80
- ▲ 352.44(B) Earth Movement
  - ▲ An expansion fitting must be used for underground installations emerging from grade to address settling or movement of ground





# 356 Liquidtight Flexible Nonmetallic Conduit



- ▲ In this article section 356.10 Uses permitted was modified to address corrosive environments
- ▲ 356.10(8) Allows LFNMC to be used in locations subject to severe corrosion and where the raceway is approved for the chemical(s) it is exposed to



# 358 Electrical Metallic Tubing

## ▲ 358.10

- ▲ Allows EMT in direct burial applications but now specifies that fittings need to be identified for the purpose.
- ▲ 358.10(A)(4) Allows EMT to be used in manufactured wiring systems.
  - EMT used to have to be installed complete as a system and then conductors pulled. Now it is allowed to be used in manufactured wiring systems and be prewired if listed.

## ▲ 358.20 Sizes

- ▲ EMT sizes were increased to trade size 6 from a maximum of trade size 4



- ▲ 501.10 Wiring Methods
  - ▲ (1) Threaded rigid metal or threaded IMC, including those coated with supplemental corrosion protection
- ▲ 502.10(A) Wiring Methods
  - ▲ (1) Threaded rigid metal or threaded IMC, including those coated with supplemental corrosion protection
  - ▲ (3) Dust tight wireways or EMT with listed compression fittings





# Questions?

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