



Standard Practice for

Good Workmanship in Electrical Contracting



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An American National Standard

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Standard Practices for
Good Workmanship
in Electrical Construction



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Contractors Association



National Electrical Installation Standards™

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(This foreword is not a part of the standard)

Foreword

National Electrical Installation Standards™ are designed to improve communication among specifiers, purchasers, and suppliers of electrical construction services. They define a minimum baseline of quality and workmanship for installing electrical products and systems. *NEIS™* are intended to be referenced in contract documents for electrical construction projects. The following language is recommended:

General work practices for electrical construction shall be in accordance with NECA 1, *Standard Practices for Good Workmanship in Electrical Construction*.

Use of *NEIS™* is voluntary, and the National Electrical Contractors Association assumes no obligation or liability to users of this publication. Existence of a standard shall not preclude any member or nonmember of either organization from specifying or using alternate construction methods permitted by applicable regulations.

This publication is intended to comply with the edition of the National Electrical Code® (NEC) in effect at the time of publication. Because they are quality standards, *NEIS* may in some instances go beyond the minimum safety requirements of the NEC. It is the responsibility of users of this publication to comply with state and local electrical codes when installing electrical products and systems.

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1. Scope

This recommended practice is intended to define what is meant by installing equipment in a “neat and workmanlike manner” as required by the National Electrical Code, Section 110-12. All information in this publication is intended to conform to the National Electrical Code (ANSI/NFPA 70). Installers should always follow the NEC, applicable state and local codes, and manufacturers’ instructions.

Other *National Electrical Installation Standards*™ provide additional guidance for installing particular types of electrical products and systems. A complete list of *NEIS*™ is shown in Annex A.

2. Receiving, Storing and Protecting

2.1 Receiving Material on Site

a) Material and equipment shall be carefully unloaded, observing all packing label warnings.

b) Packages with packing slips and/or purchase orders shall be inventoried. Back orders shall be documented and new shipping schedules verified. If approved project data (shop drawings) are used, check all products for completeness and timely delivery. Expedite or otherwise resolve the product delivery schedule problems.

c) Leaving protective coverings in place as much as possible, shipment shall be opened and inspected completely, and as quickly as possible recovery of loss due to shipping damage shall be initiated. Undamaged material shall be carefully repacked unless intended for immediate installation. *(NOTE: Depending on specifications, company policy or project circumstances, it may be necessary to receive, unpack and check all material at the company shop or other staging area, in which case careful repackaging is essential.)*

c) Storage shall be organized with essential information such as luminaire type, project destination, voltage, job tags, or labels for easy reference and access.

d) Boxes that are partially crushed shall not be stacked even if the products are intact.

e) Should any event, such as a water leak occur, that could damage stored material, the affected material shall be re-inspected for damage and necessary replacements shall be obtained.

f) Apparatus with moisture-sensitive insulation such as dry-type transformers shall be stored under conditions that ensure the insulation material does not absorb moisture. For example, relative humidity must be maintained below 75 percent at all times.

2.2 Storage and Protection

a) Material shall be stored in a clean, dry and secure location. Especially avoid spaces where water might accumulate or where significant airborne dust or dirt is present. If such a location is not available, material shall be stored on pallets or other means to rise above floor and possible water levels, and wrapped in protective plastic sheeting.

b) Observing warnings and stacking instructions on packaging or shipping materials, equipment shall be stacked or otherwise stored to prevent damage.

3. General Requirements

Good workmanship shall be apparent in the installation of all electrical materials and equipment (*see Figure 1*).

- a) Equipment shall be level, plumb and true with the structure and other equipment; also in a horizontal or vertical position as intended.
- b) All materials shall be firmly secured in place, adequately supported, and permanent. Materials

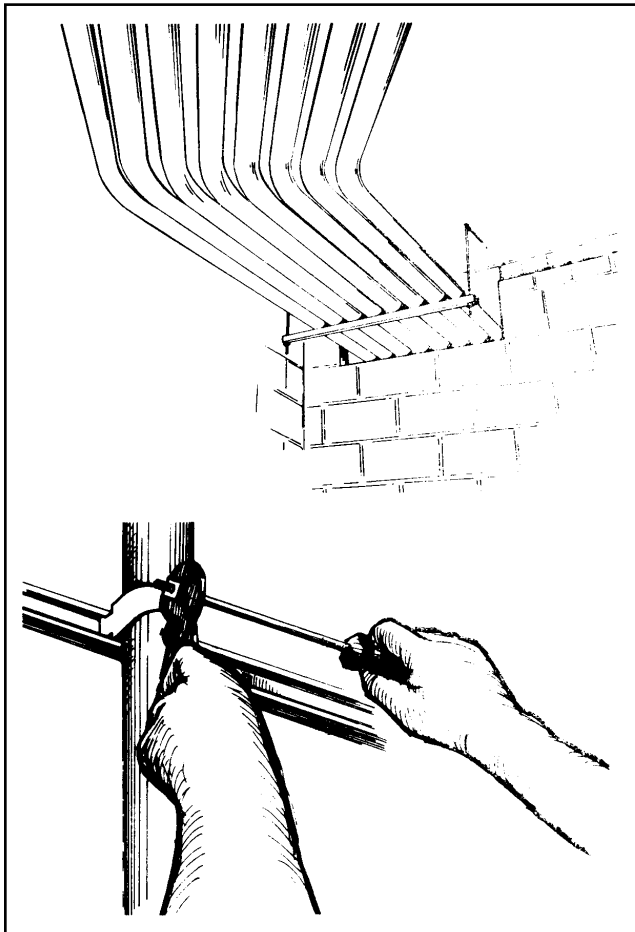


Figure 1

embedded in concrete or masonry or otherwise part of the structure are considered sufficiently supported.

- c) All hardware, fittings, and accessories shall be of a type designed, intended and appropriate for use and complement the items with which they are used.
- d) All materials and equipment including hangers, supports, fasteners or fittings, and accessories shall have corrosion protection suitable for the atmosphere in which they are installed (whether located indoors or outdoors). Care shall be taken during the installation to assure the integrity of the corrosion protection. Damaged corrosion protection shall be repaired after installation.
- e) All screws, bolts, nuts, clamps, fittings or other fastening devices shall be made up tight in accordance with manufacturers' and/or listing instructions.
- f) Plans and specifications shall be carefully followed when installing equipment. (*NOTE: Local building codes may have seismic requirements that affect equipment installation. Installers shall consult these codes or coordinate with the general contractor prior to installing equipment.*)

4. Anchors and Fasteners

Permanence and neat appearance, a part of good workmanship, require that consideration be given to the type of atmosphere surrounding anchors and fasteners. Anchors and fasteners shall be non-corrosive or have adequate corrosion resistant coatings or treatment. Weather conditions must be considered for outdoor locations, but there are also indoor locations that may be wet or damp. Fumes from industrial processing also may cause corrosive atmospheres. The possibility of corrosion due to electrolytic action between dissimilar metals must also be considered.

a) All anchors and fasteners shall be of a type designed for the purpose and rated capable of adequately and safely securing the item on the base material in which the anchor or fastener is used. Selection shall be based on the amount and type of load, base material, safe working load and atmosphere.

b) In addition to the weight of the material, consideration should also be given to vibration, such as with motors or fans; variable loading resulting from internal or external forces, such as operation of safety switches or circuit breakers; and shock load, when possible (*see Figure 2*).

c) Anchors or fasteners used shall be a type designed and intended for use in the base material to which the material or support is to be attached. Generally, screws are used on wood, masonry anchors on concrete or brick, toggle bolts or similar on hollow walls, machine screws, bolts or welded studs on steel. Nails are normally used only for temporary support or for light loads, such as nonmetallic outlet and device boxes, in wood frame construction.

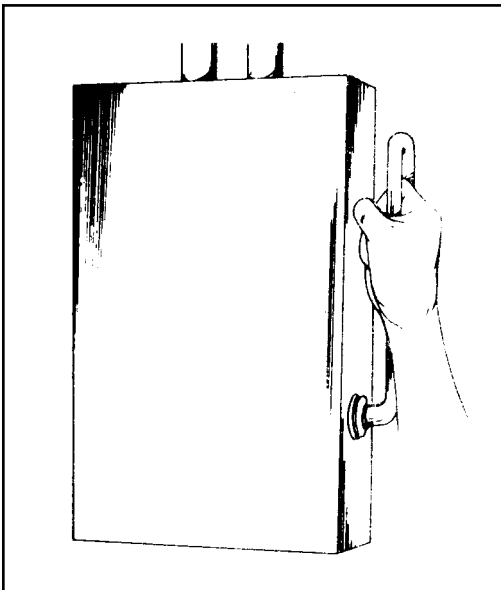


Figure 2

5. Hangers and Supports

The weight of the hanger or support must be considered as part of the total load. The total load also includes the materials within an enclosure. For example, the weight of the conductors in a raceway or junction or pull box shall be added to the load of

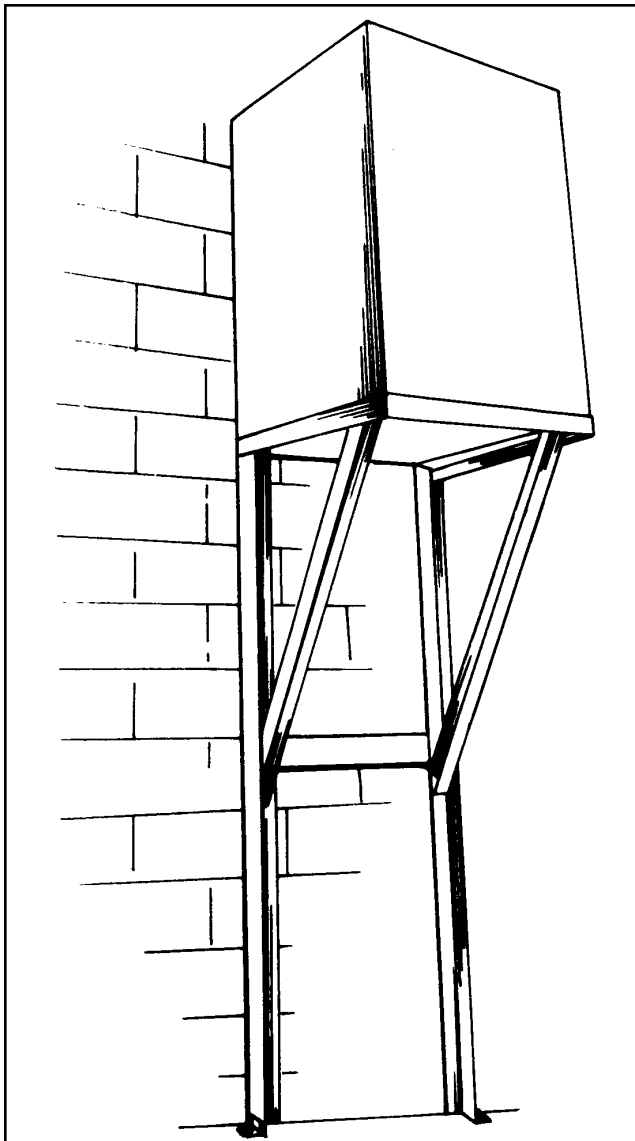


Figure 3

the raceway or box. External forces such as vibration, operation of equipment such as switch handles or possible shock load shall also be considered.

Safe working load shall be determined by applying recognized safety factors to the rated strength of the complete assembly and shall be based on the weakest component member.

- a) Hangers and supports shall be used to properly and firmly support electrical materials or equipment in a safe and permanent manner. They may be standard manufactured items or fabricated in the shop or on the job site (*see Figure 3*).
- b) They shall be of a type designed or appropriate for the purpose, have a neat and finished appearance and complement the installation.
- c) Job fabricated hangers and supports shall be made from standard structural shapes and hardware or systems of shapes, fittings and hardware designed for the purpose. One example would be angle irons.
- d) All bolts, screws, nuts, and other threaded devices shall have standard threads and heads so that they do not require special tools and may be readily replaced when necessary unless required for tamper-proof installation.
- e) All threads shall be fully engaged (or covered) and all parts made up tight.
- f) The selection of hangers and supports shall be based on the following criteria:
 - 1. Amount and type of load
 - 2. Safe working load
 - 3. Atmosphere
 - 4. Manufacturers' recommendations

5. Job specifications
6. Listing for the application (where applicable)
7. Spacing intervals required by the National Electrical Code (where applicable).

g) Hangers and supports, whether standard manufactured items or job fabricated, shall have corrosion protection suitable for the atmosphere in which they are installed (whether located indoors or outdoors). Care shall be taken during the installation to assure the integrity of corrosion protection. Damaged corrosion protection shall be repaired after installation.

h) When hangers and supports that have corrosion protection are field cut, the material shall be protected by field application of zinc-enriched paint or similar sealant.

i) Care must be taken to prevent corrosion that might result from the use of dissimilar metals in damp or wet locations. Damaged corrosion protection coatings shall be repaired after installation.

j) Hangers and supports shall be adequately and safely attached to the building structure or structural member.

k) The equipment or materials to be supported shall be securely fastened to the supporting means with material suitable for the purpose.

6. Outlet Boxes

- a) Outlet and device boxes shall be of a type designed for the use and location (*see Figure 4*).
- b) Outlet and device boxes shall be securely and rigidly attached or supported plumb, level, and true.
- c) Box supports, hangers or brackets, when used, shall be of a type designed or suitable for the type of box used and the building structural member to which they are attached. In determining the type of support or fastener, consider the total load caused by any device or equipment, such as lighting fixtures, which are in turn supported by the outlet box.
- d) Outlet and device boxes and their covers shall have corrosion protection suitable for the atmosphere in which they are installed. Where necessary, gaskets shall be used to prevent the entrance of moisture.
- e) Installation of outlet and device boxes shall be coordinated with other trades such as drywall and painting.
- f) Outlet and device boxes shall be protected to prevent entrance of foreign matter. Plaster and debris shall be thoroughly cleaned from the box before the conductors are installed.
- g) Generally, single-gang outlet and device boxes for switches shall be mounted with the long axis vertical (*see Figure 5*).
- h) Generally, boxes for receptacles shall be mounted either vertically or horizontally, but consistently throughout the structure.
- i) Boxes of three or more gangs shall be mounted with the long axis (dimension) horizontal. The boxes shall be located so that the cover or device

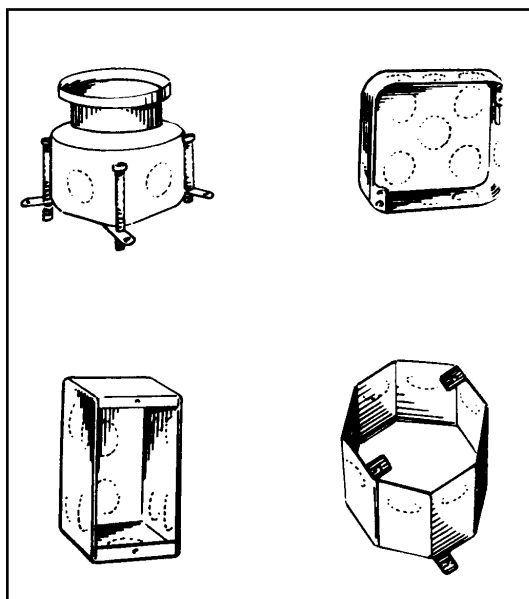


Figure 4

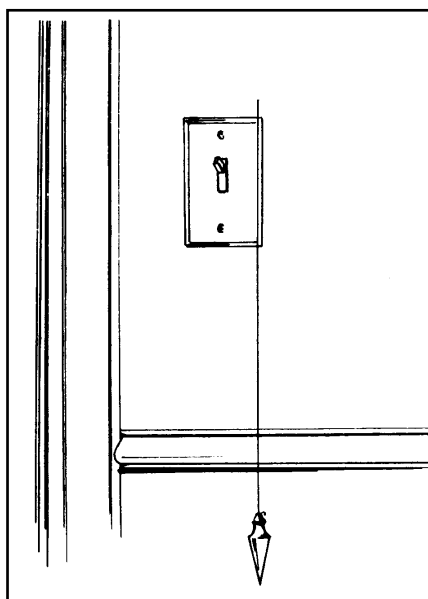


Figure 5

plate will not span different types of building finishes either vertically or horizontally.

j) Boxes for switches near doors shall be located on the side opposite the hinge and close to the door trim.

k) Covers for outlet boxes shall be of a type designed, intended and appropriate for the use and location, and have suitable corrosion protection. Device plates shall not be used as covers for exposed installations.

7. Junction and Pull Boxes

a) Junction and pull boxes shall be used where necessary to facilitate the pulling of wire or cable. NEC Section 370-28(a) provides minimum sizing requirements for junction or pull boxes used in wiring systems containing conductors No. 4 and larger.

b) Consideration shall be given to the size and number of conductors, number of bends in the raceway, and the need for support of conductors in vertical raceways.

c) Junction and pull boxes shall be of a type intended or suitable for the use and location. They may be standard manufactured items or custom designed and fabricated to meet the particular requirements.

d) Junction and pull boxes including hinges or screws used to fasten the cover shall have corrosion

protection suitable for the atmosphere in which they are installed.

e) Junction and pull boxes shall be firmly and securely fastened to or supported from the building structure or structural member. In determining the type of fastener, hanger, or support, consideration must be given to the load caused by any conductors supported by the box and any load that might be caused by external forces.

f) Raceways shall be arranged to provide the longest sweep or radius for the conductors (*see Figure 6*).

g) Covers for large junction or pull boxes 6 square feet (864 square inches) or larger should be hinged or sectionalized to facilitate removal and replacement. When the cover is sectionalized, cross bracing shall be provided to fasten the sections of the cover at the seams.

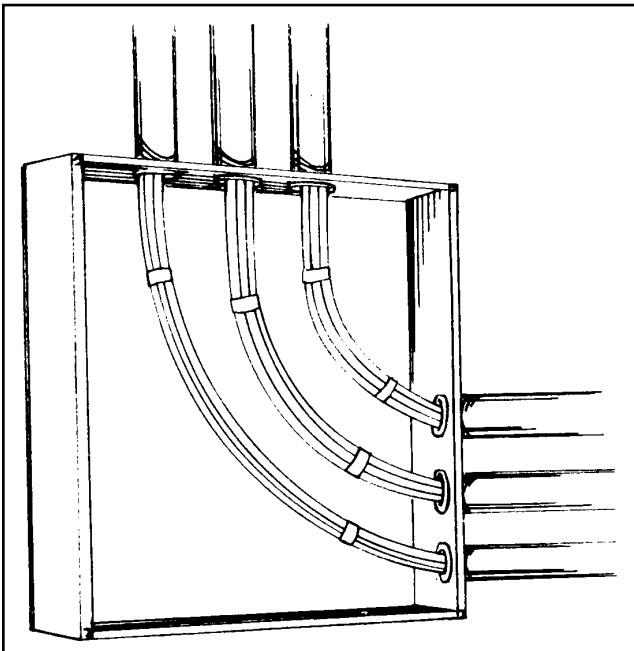


Figure 6

8. Raceways

a) Raceways shall be firmly and securely fastened to or supported from the building or structural member or embedded in concrete or masonry. Table 1 lists recommended spacing of supports for vertical and horizontal raceways.

b) Hangers and supports shall be of a type compatible with and suitable for the intended use. They may

be standard manufactured items or job fabricated. Consideration must be given to the weight of the enclosed conductors when selecting supports and fastening means.

c) Care shall be taken to prevent the entrance of foreign matter into raceways and they shall be cleaned if necessary before pulling the conductors.

Table 1: Spacing of Conduit Supports*

Conduit Trade Size (inches)	No. of Conductors in Run	Location	Maximum Support Spacing (feet)
HORIZONTAL RUNS			
½, ¾	1 or 2	Flat ceiling or wall	5
½, ¾	1 or 2	Where it is difficult to provide supports except at intervals fixed by the building construction	7
½, ¾	3 or more	Any location	7
1 and larger	1 or 2	Flat ceiling or wall	6
1 and larger	1 or 2	Where it is difficult to provide supports except at intervals fixed by the building construction	10
1 and larger	3 or more	Any location	10
Any	...	Concealed	10
VERTICAL RUNS			
½, ¾	...	Exposed	7
1, 1¼	...	Exposed	8
1½ and larger	...	Exposed	10
Up to 2	...	Shaftway	14
2½ and larger	...	Shaftway	28
Any	...	Concealed	10

1. A support shall be provided for exposed or concealed raceway as close as practical to and not exceeding one foot from an unsupported box or access fitting. In horizontal runs, a support at a box or access fitting may be omitted when the box or access fitting is independently supported and the raceway terminal is not made with a Chase nipple or threadless box connector.
2. In vertical runs, the load produced by the weight of the raceway and the enclosed conductors shall not be carried by the raceway terminals but shall be carried entirely by the conduit supports.

* (The National Electrical Code did not provide specific requirements for the support of rigid metal conduit until the 1965 Edition. The table of spacings in the Code applied to sizes ½" through 3" only and was expanded to cover up to 6" in the 1968 Edition. The spacing requirements of this standard were originally published by the National Electrical Contractors Association in 1928 as part of the "Electragist Standards for Wiring Installations." They have been frequently quoted and included in handbooks on electrical installations. In some specifics they are more restrictive than the requirements of the National Electrical Code.)

d) Stub-ups shall be protected from damage and carefully re-bent when necessary. Bends and offsets shall be carefully made so that the inside diameter is not effectively reduced. Unless otherwise required, the legs of a bend shall be in the same plane, and the straight legs of offsets shall be parallel.

e) All raceway fittings shall be of a type compatible with the raceway and suitable for the use and location.

f) Unless otherwise specified, concealed raceways shall be run with the minimum of bends in the shortest practical distance considering the type of building construction and obstructions (*see Figure 7*).

g) Raceways placed in concrete slab construction shall occupy the middle third when practical and leave at least $\frac{3}{4}$ inch concrete cover. They shall be tied to the reinforcing rods or otherwise supported when necessary to prevent sagging when concrete is poured and shall be laterally spaced to allow concrete to pass between them.

h) Exposed raceways shall be run parallel and perpendicular to the building surface or exposed structural members and follow the surface contours as much as practical to present a neat appearance.

Exception: Exterior raceways that are arranged to

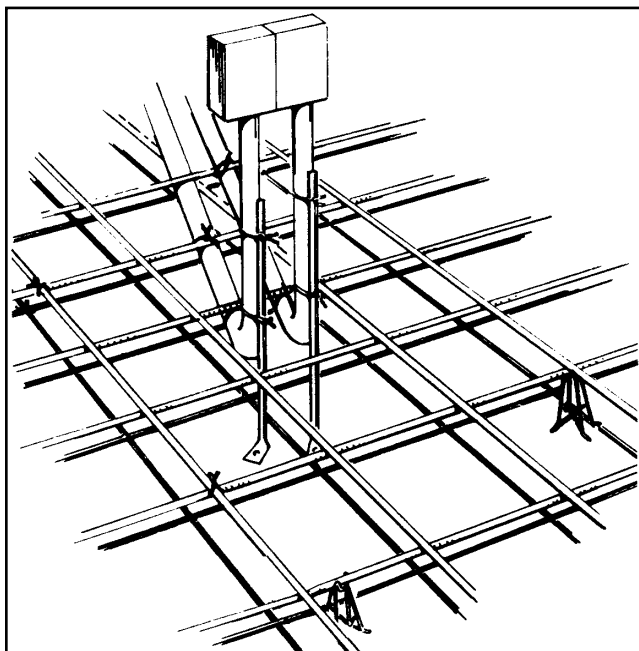


Figure 7

drain. Table 2 lists minimum spacing between parallel raceways in order to provide sufficient room for terminations at boxes and cabinets.

i) Exposed parallel or banked raceways shall be run together to provide a neat appearance. Bends in parallel or banked runs shall be made from the same center line so that the bends are parallel (*see Figure 8*). Standard manufacturers' bends are allowed for groups of 90° bends if the conduits are close to the same sizes. This shall require that there be a change in the plane of the run such as from wall to ceiling and the raceways of the same size. In other cases, parallel raceways shall be field-bent.

j) Raceways shall be joined with fittings designed for the purpose and shall be made tight. Where the installation situation is such that joints cannot be made tight, bonding jumpers shall be used to provide electrical continuity of the raceway system.

k) Raceway terminations shall be made up tight. When terminations are subject to vibration, bonding

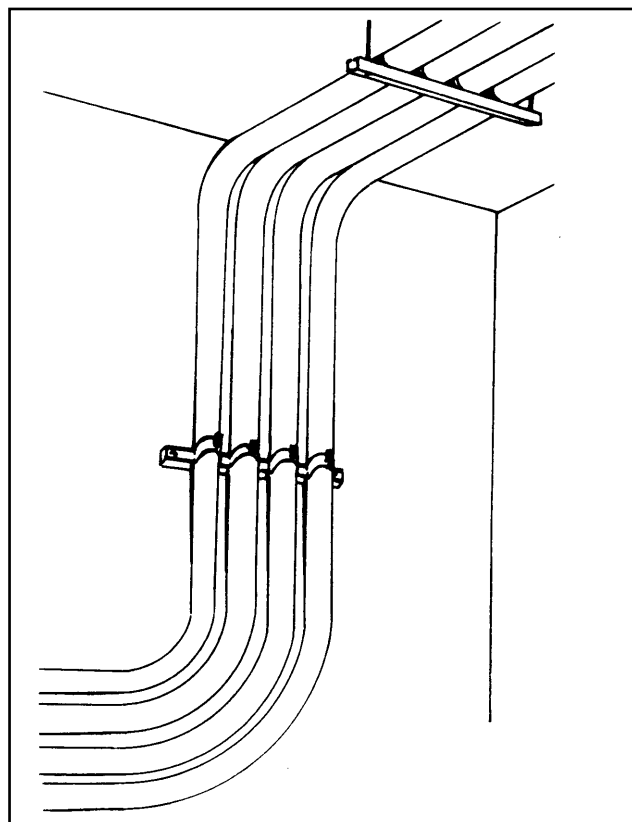


Figure 8

bushings or wedges shall be used to assure electrical continuity. When subject to vibration or dampness, insulating bushings shall be used to protect the conductors (see Figure 9).

l) The set-screws of threadless fittings shall be made up tight with a suitable tool.

m) When raceways are terminated with locknuts and bushings, the raceway shall enter squarely and the locknuts shall be installed so that the convex (hollow) side is against the box. Two locknuts, one inside and the other outside the box, can also be used to facilitate the termination or to make it more secure.

n) When terminating in threaded hubs, the raceway shall be screwed tightly into the hub. The shoulder of a fitting shall rest securely against the hub.

o) When Chase nipples are used, the raceway and coupling shall be square to the box and the Chase nipple tightened with no exposed threads.

p) Use conduit expansion fittings, flexible raceways, or cable wiring methods across all building expansion joints.

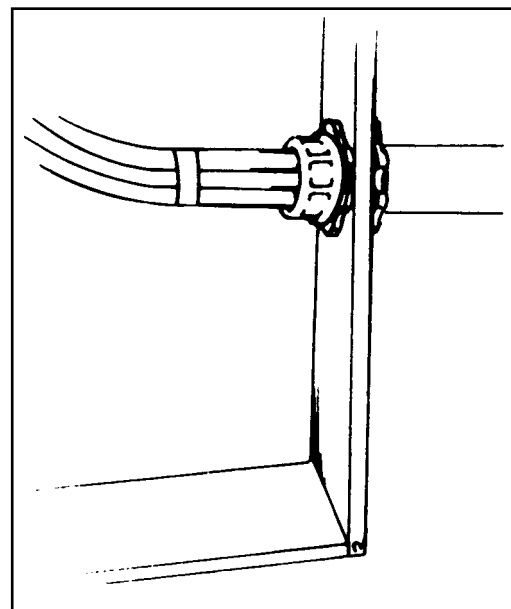


Figure 9

Table 2: Minimum Raceway Spacing

Distance Between Centers in Inches at Junction and Pull Boxes
(Allows Approximately ¼-inch Spacing Between Locknuts)

Trade Size	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
½	1¾												
¾	1½	1¾											
1	1¾	1¾	2½										
1¼	2	2½	2¾	2½									
1½	2½	2¾	2½	2¾	2¾								
2	2¾	2¾	2¾	3	3½	3½							
2½	2¾	2¾	3	3¼	3¾	3¾	3¾						
3	3	3¾	3¼	3½	3¾	4	4½	4½					
3½	3¼	3¾	3¾	3¾	4	4¼	4½	4¼	5½				
4	3½	3¾	3¾	4½	4¼	4½	4¾	5½	5¾	5¾			
4½	3¾	4	4½	4¾	4¾	4¾	5	5¾	5¾	6	6¼		
5	4½	4¾	4½	4¾	4¾	5¼	5¾	5¼	6	6¼	6¾	7	
6	4¾	5	5½	5¾	5½	5¾	6	6¾	6¾	6¾	7¼	7¾	8¼
Approximate Diameters													
Trade Size	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Conduit	¾	1¼	1¼	1¼	1¼	2¾	2¾	3¼	4	4½	5	5¼	6¾
Bushings	1	1¼	1½	1¾	2½	2¾	3¼	3¾	4¼	5	5¼	6¼	7¾
Locknuts	1½	1¼	1¾	2¾	2¾	3¼	3¾	4¼	4¾	5¾	6	6¼	7¾

9. Wire and Cable

- a) All wire and cable shall be suitable for the temperature, conditions, and location where installed.
- b) Accessory materials such as connectors, splice and tap fittings, and terminations shall be of a type designed or intended and suitable for the use. They shall be compatible with the conductor material.
- c) Wire and cables shall be installed so as not to damage the insulation or cable sheath.
- d) All conductors to be installed in a raceway shall be pulled together. They should be trained and guided into the raceway using an approved pulling compound or lubricant when necessary.

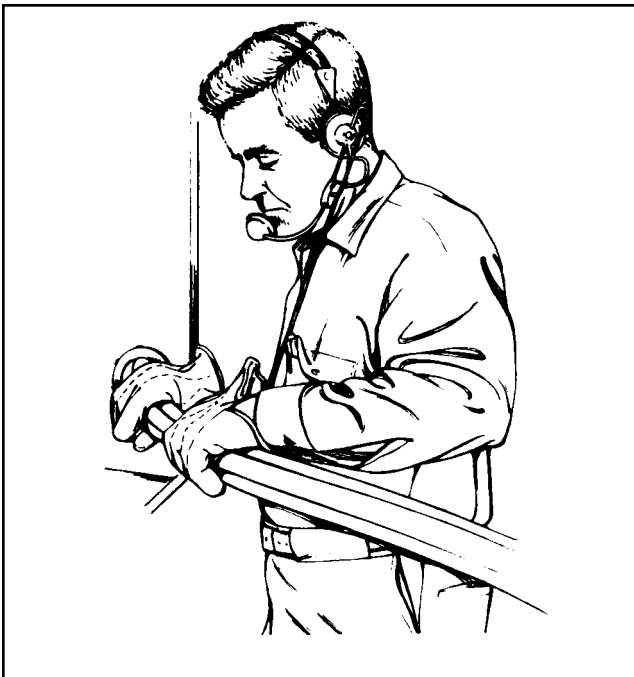


Figure 10

- e) Existing conduits shall be cleaned prior to installing new conductors to ensure the outer jacket is not damaged.
- f) A means of communication, such as radio or intercom, shall be used between the pulling and guiding points to facilitate installation and to help prevent damage (*see Figure 10*).
- g) The pulling means (fish tape, cable or rope) shall be of a type that will not damage the raceway.
- h) Cables that are installed exposed shall be run parallel and perpendicular to the surface or exposed structural members and follow the surface contours as much as practical.
- i) Running boards shall be used where necessary to provide sufficient support and a neat installation. Care shall be taken to provide sufficient mechanical protection for exposed cables.
- j) All wires and cables, whether exposed, concealed or in raceways, shall be sufficiently supported using devices intended for the purpose.
- k) Conductors in raceways or cables shall not be supported by their terminations. (*Note: This is to prevent the weight of the conductors or cables from damaging conductor insulation and to prevent the conductors from being pulled out of equipment terminals.*)
- l) Conductor splices shall be kept to a minimum.
- m) Splices and taps shall have at least the equivalent mechanical strength and insulation as the conductors. Splice and tap devices shall be of the proper size and type for the use and compatible with the conductor material.

- n) The length of conductors within cabinets and cutout boxes shall be sufficient to neatly train the conductor to the termination point with no excess (see Figure 11). Allow sufficient cable length for thermal contraction of conductors to prevent damage of insulation or dislodging connections.
- o) When there are many conductors, they shall be cabled or bundled.
- p) Terminations of insulated conductors shall be made so that the stripped length of bare conductor is not longer than required for the equipment terminal, lug, or connector. The conductor insulation shall bear against the terminal or connector shoulder.
- q) All conductors shall be identified in panelboards or other enclosures with a means that is neat, legible and permanent such as by use of tags, pressure sensitive tape, or cable ties. All circuits shall be identified by a clearly lettered or typed directory in panelboards.
- r) When using cable ties, do not over tighten, to ensure the tie does not cut the conductor's outer jacket. Cable ties shall not be used to support raceways or cables.
- s) Use cable wiring methods, conduit expansion fittings, or flexible raceways across all building expansion joints.

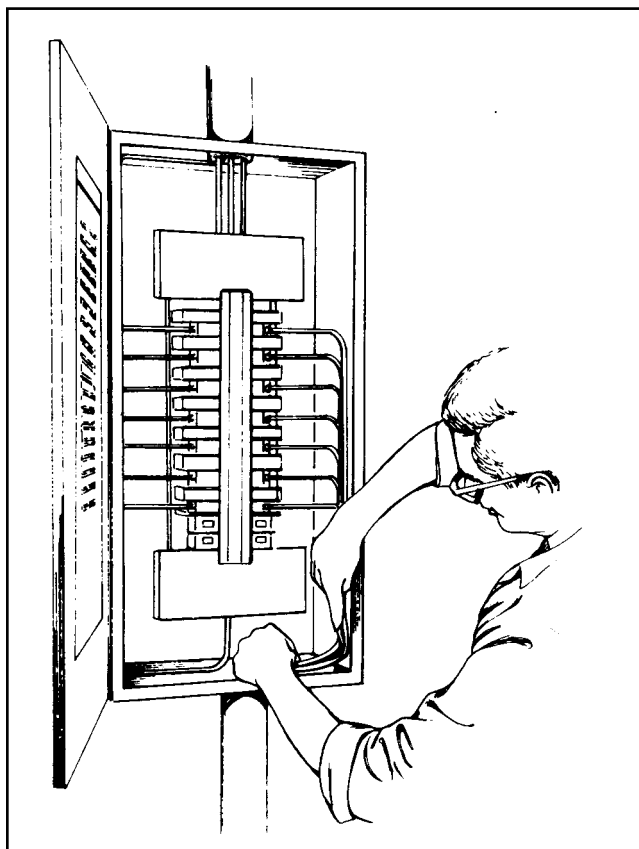


Figure 11

10. Equipment Mounting

Equipment may be ceiling hung, wall mounted or floor mounted as appropriate (*see Figure 12*).

- a) The fasteners or supports shall be sufficient to substantially secure the equipment in place to the building structure or structural element.
- b) In addition to the weight of the equipment, consideration shall be given to the type of load. For example, transformers and motors shall be considered vibration loads. Special consideration shall be given to manufacturer's recommendations.

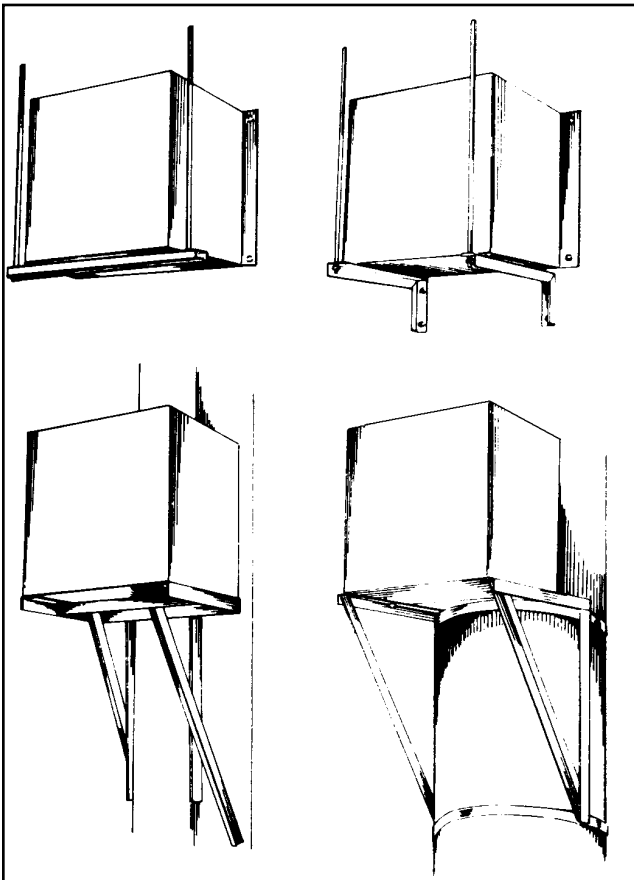


Figure 12

- c) Safety switches shall be considered shock loads. The supports may be standard manufactured items or job fabricated, and shall be appropriate for the location and compatible with the equipment.
- d) Equipment fasteners and supports shall have corrosion protection suitable for the atmosphere.
- e) Selection of the fasteners and supports shall be based upon the strength of the materials and recognized safety factors.
- f) Equipment shall be installed plumb, true as intended and secure. All of these factors shall be immediately apparent.
- g) When several items of equipment are wall mounted in the same area, care shall be taken to line them up vertically and horizontally (*see Figure 13*).
- h) Raceways to and from the equipment shall be vertical and horizontal using appropriate fittings or aux-

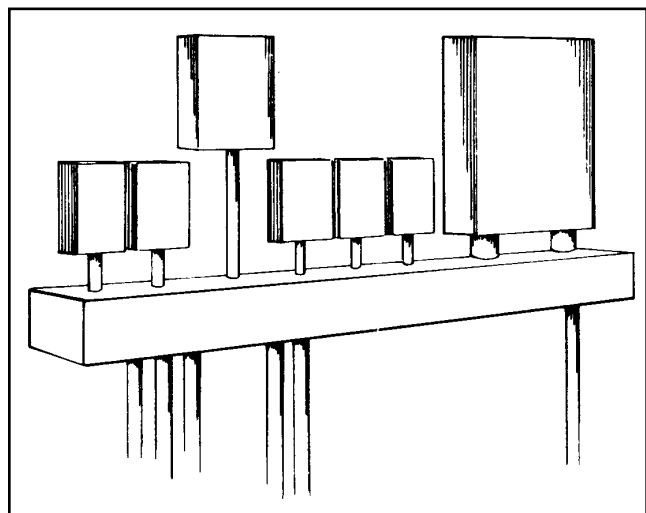


Figure 13

iliary gutters where necessary and practical for appearance.

i) Raceways or cable to floor mounted equipment from ceiling or overhead systems shall be additionally supported. Vibration isolation shall be used when needed.

j) When the equipment is mounted on a non-vibration foundation and the raceway is in the floor, the raceway shall be stubbed up within the foundation. The stub up shall be located as close as practical to the equipment termination point. *(NOTE: NEC Section 384-10 requires that conduits or raceways, including their end fittings, shall not rise more than 3 inches above the bottom of an enclosure.)*

k) Raceway(s) to equipment subject to vibration shall be terminated in a box and final connections made with flexible conduit. The box shall be located as close as practical to the equipment terminals.

11. Mounting Heights

The mounting heights and location of wall switches, receptacles, clocks, fire alarm stations, and other devices and equipment are a matter of design. Those that are included in this standard shall be used when this information is not otherwise specified.

Consideration must be given to the practical installation situation, neatness and good workmanship. For example, fire bridging, furring strips or the like may not permit the installation of receptacles or wall switches at the heights listed here. Wainscoting may also cause variation. It is not considered good work-

manship to have a finish plate span different types of building finishes.

a) Safety and convenience of users shall be of prime consideration in the location and mounting height of devices and equipment. Additional requirements in the Americans with Disabilities Act Guidelines (ADAG) shall be observed.

b) Intercom stations or devices that require hand operations, such as switches or fire alarm stations, shall be easily within reach by the average person

Table 3: Typical Mounting Heights

Wall switches	48"
Receptacle outlets (general)	18"
Receptacle outlets (kitchen, utility room, workbenches, etc.)	42", or 6" above countertop
Special purpose outlet	within 72" of intended use
Telephone outlets	18"
Wall intercom stations	48"
Night lights	18"
Wall lighting outlets	84"
Thermostats	48"
Push buttons	48"
Elevator and hoistway control buttons	42"
Bed lights	72"
Patient bedside stations	48"
Clock outlet	96" when possible, or 6" below ceiling. <i>Above doors, center the clock outlet between door trim and ceiling</i>
Bells, buzzers, chimes	96" when possible, or 6" below ceiling
Fire alarm stations	48"
Fire alarms (gongs, bells, horns, lights)	80" above floor finish line, or 6" below ceiling

without having to stretch or stoop or to use ladders or stools.

c) Switches shall be a maximum of 48" above finished floor, and fire alarm annunciation units shall be no lower than 80" above finished floor for ADAG compliance.

d) Convenience as well as appearance and good workmanship calls for consistency in the mounting height and location of similar devices and equipment.

e) Special-use or special-purpose outlets shall be located conveniently for the purpose intended.

11.1 Recommended Outlet Mounting Heights

Table 3 describes typical mounting heights for various outlets and control devices. All heights are measured from finished floor to centerline of device. These heights comply with the requirements of the ADAG (American with Disability Act Guidelines).

11.2 Heights of Disconnect Switches, Protective Devices, Controllers, etc.

The mounting height of disconnect switches, circuit breakers, motor controllers, push button stations, and other similar devices and equipment will vary depending upon location. The National Electrical Code requires that operating levers, handles, or buttons shall not be mounted more than 6'-7" above the finish floor line (to the center of the operator in its highest position).

Individual devices or pieces of equipment, unless otherwise specified, shall be located so that the operating handle, lever or button is located approximately 60" above the finish floor line.

11.3 Panelboards

Commercial. Panelboards in commercial and industrial occupancies shall be located so that the highest overcurrent protective device is a maximum of 6'-7" above the finish floor line.

Residential. For ADAG compliance, panelboards in dwelling occupancies shall be located so that the highest overcurrent protective device is a maximum of 48" above the finish floor line.

(This annex is not part of the standard)

Annex A: Reference Standards

This publication, when used in conjunction with the National Electrical Code and generator manufacturers' literature, provides sufficient information to install and maintain generator sets. The following publications may also provide useful information:

National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
(617) 770-3000
(617) 770-3500 fax
www.nfpa.org

NFPA 70-1999, *National Electrical Code* (ANSI)

U.S. Access Board
(U.S. Architectural and Transportation
Barriers Compliance Board)
1331 F Street, NW, Suite 1000
Washington, DC 20004-1111
(202) 272-5434
(800) 872-2253
(202) 272-5447 Fax
www.access-board.gov

S14, Americans with Disability Act Guidelines
(ADAG) (7/91)

Other *National Electrical Installation Standards*[™] Published by NECA:

National Electrical Contractors Association
3 Bethesda Metro Center, Suite 1100
Bethesda, MD 20814
(301) 215-4504 tel, (301) 215-4500 fax
www.neca-neis.org

NECA 100-1999, *Symbols for Electrical Construction Drawings* (ANSI)

NECA/FOA 301-1997, *Standard for Installing and Testing Fiber Optic Cables*

NECA 400-1998, *Recommended Practice for Installing and Maintaining Switchboards* (ANSI)

NECA 402-2000, *Recommended Practice for Installing and Maintaining Motor Control Centers*

NECA/EGSA 404-2000, *Recommended Practice for Installing and Maintaining Generator Sets*

NECA/IESNA 500-1998, *Recommended Practice for Installing Indoor Commercial Lighting Systems* (ANSI)

NECA/IESNA 501-2000, *Recommended Practice for Installing Exterior Lighting* (ANSI)

NECA/IESNA 502-1999, *Recommended Practice for Installing Industrial Lighting Systems* (ANSI)



National Electrical
Contractors Association
3 Bethesda Metro Center
Suite 1100
Bethesda, MD 20814
301-657-3110
fax: 301-215-4500
www.neca-neis.org

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