TOWN OF NIAGARA

COUNTY OF NIAGARA, STATE OF NEW YORK

NIAGARA FALLS, N.Y.

7105 LOCKPORT ROAD
NIAGARA FALLS, NY 14305

PHONE: (716) 297-2150
FAX: (716) 297-9262
www.townofniagara.com

JANUARY 2026

Pool Check List

1. Application for permit
2. Survey of property
3. Site Plan with all measurements and structures not on survey (can be drawn on a copy of your survey)
4. Locking Ladder documents that meet code
5. Pool Alarm documents that meet code (A.S.T.M F2208)
6. Pool Specs (brochures or docs with measurements, what it's made out of and model)
7. Enclosure specifications
8. Electrical plan
9. If needed window and door alarms that meet code (UL STD 2017)
10. If needed enclosure alarms and safety gates

THANK YOU
BUILDING DEPARTMENT
bealy@townofniagarany.gov

Application for Building Permit

Town of Niagara, 7105 Lockport Road, Niagara Falls, NY 14305, 716-297-2150 ext 126
bealy@townofniagarany.gov

Complete the following information: Incomplete applications will be returned

1. Name of Applicant:_____
2. Address of Applicant:_____
3. Phone Number:_____ Email:_____
4. Project Owner:_____
5. Project Address:_____ Tax Map #_____
6. List all Contractors and addresses (as applicable)

   GC/Subs:_____

   Electrician: _____

   Plumber:_____

Please Provide the Following: ☒ Survey of Property
☒ Plans & Specifications
☒ Estimated Cost of Project $_____
☒ Valid Workers Compensation form

Description of Project_____

ACTION: ❑ Erect ❑ Demolish
❑ Alter ❑ Repair
❑ Add ❑ Other_____

MATERIAL: ❑ Frame ❑ Steel
❑ Masonry ❑ Other_____

USE: ❑ One Family ❑ Apartment ❑ Detached Garage ❑ Fence
❑ Two Family ❑ Commercial ❑ Shed ❑ Pool
❑ Multiple Family ❑ Industrial ❑ Other_____

Size of Structure: Width_____ Length _____Height _____No. of Stories ____ Square Footage_____

Note: **All work within the Town of Niagara right-of-way requires a separate permit (includes driveways)**
Pursuant to Town of Niagara Code Chapter 155, §155-14 A. Inspections, states; Work for which a building permit has been issued under this chapter shall be inspected for approval prior to enclosing or covering any portion thereof, and upon completion of each state of construction, including but not limited to building location, site preparation, excavation, foundation, framing, superstructure, electrical insulation, plumbing, heating and air conditioning. Failure to comply will result in a Stop Work Order.

All contractors shall be current with the annual Town of Niagara Business Registration. (TNC 125)

_____
Print Name:

_____ _____
Applicant/Owner Signature: **Date:**

❑ Approved ❑Denied _____
Building Inspector/Zoning Officer Signature

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At this time these electrical companies are currently registered with the Town of Niagara, and are in good standings with the department of inspections. They are a certified third party electrical inspection organizations.

ATLANTIC-INLAND, INC.

John J. O'Connor
Industrial Code Counsel
Certified Electrical Inspector

Email: inspector4856@yahoo.com
Phone: (716) 329-5075
Emergency Phone: (716) 225-7400
Email (Preferred) or Text

Office: 585.436.4460
Cell: 585.230.4186
Fax: 585.349.3834

NEW YORK ELECTRICAL INSPECTION AGENCY
Main Office: 585.436.4460

FRITZ GUNTHER
Chief Electrical Inspector
fgunther@nyeia.com

2767 Dewey Avenue
Rochester, NY 14616
www.NYEIA.com

Office: 585.436.4460
Cell: 585.737.7893
Fax: 585.349.3834

NEW YORK ELECTRICAL INSPECTION AGENCY
Main Office: 844.436.4460

JOHN SCOTT NEU
Certified Electrical Inspector
jneu@nyeia.com

2767 Dewey Ave.
Rochester, NY 14616
www.NYEIA.com

NIAGARA FRONTIER INSPECTION AGENCY

716-276-1200
PO BOX 812
Niagara Falls,NY 14302

WWW.NFIA.US.COM

JEFF LEIDOLPH
Electrical Inspector

Jeff@ExcelsiorInspection.com
(716) 444-1237
www.ExcelsiorInspection.com

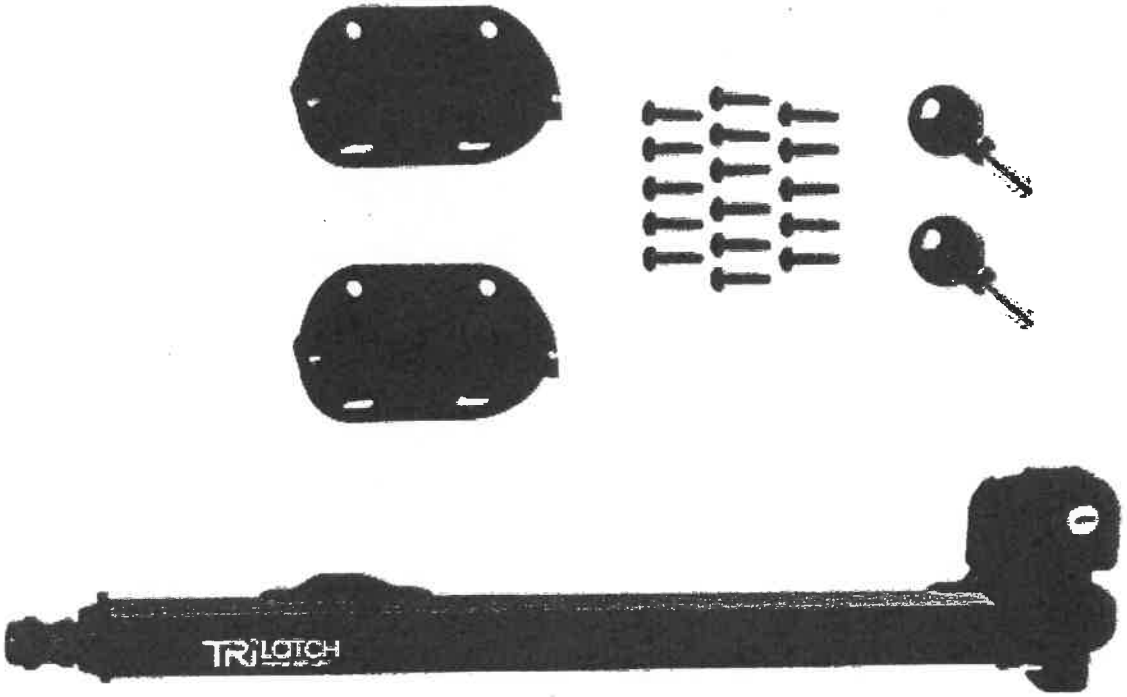
Providing Electrical Inspections For All of Western New York

COMMONWEALTH ELECTRICAL INSPECTION SERVICE INC.

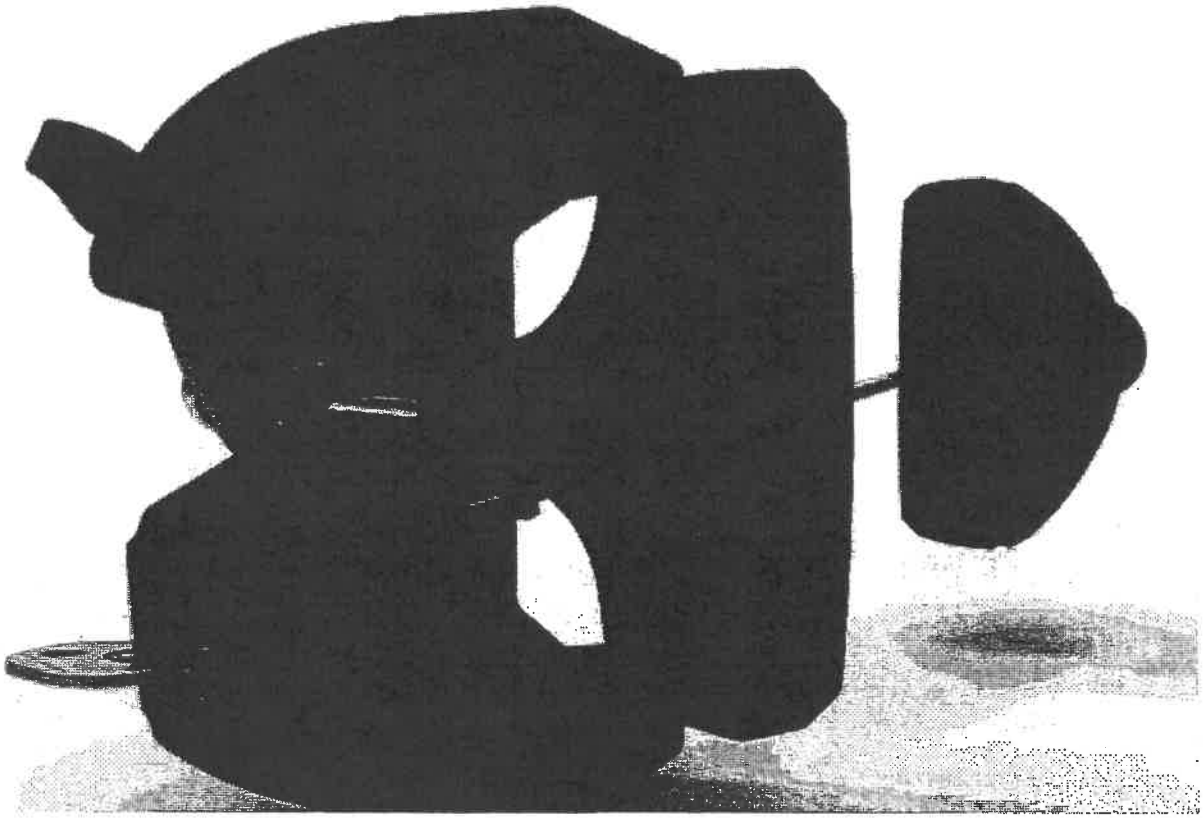
MIKE GARGUIOLO	JOE PRYBYLSKI
EAST AURORA	LANCASTER
716-553-6695	716-983-7998
mgarg1059@gmail.com	ceisjkp@proton.me

John Christopher Dean III
Electrical Inspections of Western New York, LLC
10237 Lakeside Boulevard Ext.
Dunkirk, New York 14048
IAEI CEI-R-196 - ICC Certification ID# 8473814
NEW YORK STATE CODE OFFICIAL 0513-0068
Residential, Commercial & Industrial Electrical Inspections
email: johncdean3@electricinsp.com
www.electricalinspectionsofwny.com
716-224-0700 - 24/7

EXAMPLE

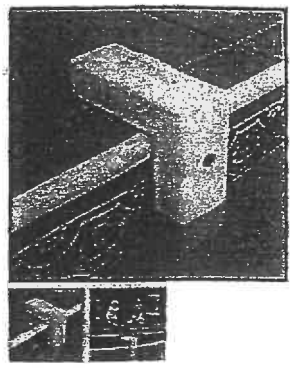


EXAMPLE FOR A 6FT FENCE



The new Model PGRM-2 introduces "Negative Displacement Technology", a new sensing method that requires no adjustments. Entry into the pool by children, pets, or intruders is detected by the unit's electronic sensor and sets off a loud, pulsating alarm both in the home and at the pool. Safe, simple and easy to operate, the 9-volt battery powered alarm does not require tie-downs, ropes, or wires. It comes with a remote in-home receiver which sounds an alarm inside the home (up to 200ft away) when the unit is activated at the pool. Poolguard alarms are designed to detect intrusions similiar to a one year old child weighing 18 pounds and up. The alarm system can be used with a solor blanket on the pool. The unit comes with a limited three year warranty. The PGRM-2 has been 3rd party verified by NSF International to the new ASTM Safety Standard for pool alarms, ASTM F2208-08. Once installed in the pool, It cannot be de-activated and is always in the alarm ready mode. **Tamper Proof:** The alarm will sound when removed from the pool. **Sleep mode:** when you would like to use your pool, simply remove the alarm from the pool and put it into sleep mode. **Automatic Wake-up:** The alarm will automatically wake up and run a system test when installed into the pool. It comes with an in-house remote receiver that has a range up to 200 ft., and comes with a 12 volt power supply. The alarm works on a 9-volt battery (not included); with a battery life of approximately one year. Audible low battery indicator at the poolside alarm is also indicated by the in house remote receiver. New sensing technology provides less chance of false alarms due to wind, rain or small objects such as sticks or toys entering the water. Works with a pool up to 20' x 40' (800 sq. ft.) Larger pools will require additional alarms. Most reliable, advanced, and affordable alarm available. Poolguard Pool Alarms are designed to detect intrusions similar to a one year old child weighing 18 pounds and up. **The PGRM-2 alarm comes with a magnetic shut off key.**

Poolguard InGround Alarm

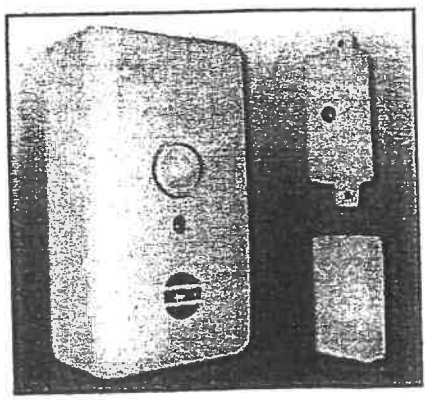


EXAMPLE

POOLGUARD/PBM INDUSTRIES, INC. has been manufacturing pool alarms, door alarms, and gate alarms **since 1982. All Poolguard products are proudly Made in the USA.** Poolguard Door Alarms comply with all building codes and are UL Listed under **UL 2017.** The majority of children that drown in pools go out the back door first and Poolguard's Door Alarm can help protect those doors.

- UL Listed / UL 2017
- Sounds immediately when the door opens
- Outdoor wireless transmitter pass-thru feature
- Simple To Operate
- Easy to Install
- Important safety alarm for doors
- Complies with barrier codes
- Low battery indicator
- Battery powered
- Automatic reset

Poolguard Door Alarm DAPT-WT



- The Door Alarm will sound immediately when a child opens the door, and will continue to sound if the door is left open. If a child goes through the door and closes it, the alarm will sound for 5 minutes and then automatically reset.
- Poolguard Door Alarm Model DAPT-WT is equipped with an Outdoor Wireless Transmitter that allows adults to enter the home from the outside without the alarm sounding and is easy to install.
- The Door Alarm is always on and will automatically reset under all conditions.
- Poolguard Door Alarm is equipped with an adult pass through feature that will allow adults to go through the door without the alarm sounding.
- Optional screen door kits can be purchased for the alarm, this kit allows you to get air through your screen door without the alarm sounding.
- Poolguard Door Alarm uses one 9-volt battery, (not included) with a battery life of approximately 6 months.
- The Door Alarm is equipped with a low battery indicator that will audibly alert you when your battery is getting low.
- Poolguard is the only door alarm that is UL listed under UL 2017 for water hazard entrance alarm equipment.

DOOR ALARM - Model DAPT-WT -

Town of Niagara, NY
Wednesday, March 4, 2026

Chapter 155. Fire Prevention and Building Code

§ 155-4. Building permits.

A. Building permits required. Except as otherwise provided in Subsection **B** of this section, a building permit shall be required for any work which must conform to the Uniform Code and/or the Energy Code, including, but not limited to, the construction, enlargement, alteration, improvement, removal, relocation, or demolition of any building or structure or any portion thereof, and the installation of a solid-fuel-burning heating appliance, chimney, or flue in any dwelling unit. No person shall commence any work for which a building permit is required without first having obtained a building permit from the Town of Niagara.

B. Exemptions. No building permit shall be required for work in any of the following categories:

(1) Construction or installation of one-story detached structures associated with one- or two-family dwellings or multiple single-family dwellings (townhouses), which are used for playhouses, or similar uses, provided the gross floor area does not exceed 144 square feet;

(2) Construction of temporary sets and scenery associated with motion picture, television, and theater uses;

(3) Installation of window awnings supported by an exterior wall of a one- or two-family dwelling or multiple single-family dwellings (townhouses);

(4) Installation of partitions or movable cases less than five feet six inches in height;

(5) Painting, wallpapering, tiling, carpeting, or other similar finish work;

(6) Installation of listed portable electrical, plumbing, heating, ventilation or cooling equipment or appliances;

(7) Replacement of any equipment, provided the replacement does not alter the equipment's listing or render it inconsistent with the equipment's original specifications of a single-family dwelling; or

(8) Repairs, provided that the work does not have an impact on fire and life safety, such as:

(a) Any part of the structural system;

(b) The required means of egress; or

(c) The fire protection system or the removal from service of any part of the fire protection system for any period of time.

C. Exemption not deemed authorization to perform noncompliant work. The exemption from the requirement to obtain a building permit for work in any category set forth in Subsection **B** of this section shall not be deemed an authorization for work to be performed in violation of the Uniform Code or the Energy Code and/or any Town zoning ordinance, Town local law or any other section of the Town Code.

D. Applications for building permits. Applications for a building permit shall be made in writing on a form provided by or otherwise acceptable to the Code Enforcement Officer. The application shall be signed by the owner of the property where the work is to be performed or an authorized agent of the owner. The application shall include such information as the Code Enforcement Officer deems sufficient to permit a determination by the Code Enforcement Officer that the intended work complies with all applicable requirements of the Uniform Code and the Energy Code. The application shall include or be accompanied by the following information and documentation:

(1) A description of the location, nature, extent, and scope of the proposed work;

(2) The Tax Map number and the street address of any affected building or structure;

(3) The occupancy classification of any affected building or structure;

(4) Where applicable, a statement of special inspections prepared in accordance with the provisions of the Uniform Code; and

(5) At least three sets of construction documents (drawings and/or specifications), one of which has been generated in an acceptable electronic format for such documents, which:

(a) Describe the location, nature, extent, and scope of the proposed work;

(b) Show that the proposed work will conform to the applicable provisions of the codes;

(c) Show the location, construction, size, and character of all portions of the means of egress;

(d) Show a representation of the building thermal envelope;

(e) Show structural information, including but not limited to braced wall designs, the size, section, and relative locations of structural members, design loads, and other pertinent structural information;

(f) Show the proposed structural, electrical, plumbing, mechanical, fire-protection, and other service systems of the building;

(g) Include a written statement indicating compliance with the Energy Code;

(h) Include a site plan, drawn to scale and drawn in accordance with an accurate boundary survey, showing the size and location of new construction and existing structures and appurtenances on the site, distances from lot lines, the established street grades and the proposed finished grades, and, as applicable, flood hazard areas, floodways, and design flood elevations; and

(i) Evidence that the documents were prepared by a licensed and registered architect in accordance with Article 147 of the New York

State Education Law or a licensed and registered professional engineer in accordance with Article 145 of the New York State Education Law and practice guidelines, including but not limited to the design professional's seal which clearly and legibly shows both the design professional's name and license number and is signed by the design professional whose name appears on the seal in such a manner that neither the name nor the number is obscured in any way, the design professional's registration expiration date, the design professional's firm name (if not a sole practitioner), and, if the documents are submitted by a professional engineering firm and not a sole practitioner professional engineer, the firm's certificate of authorization number.

E. Construction documents. Construction documents will not be accepted as part of an application for a building permit unless they satisfy the requirements set forth in Subsection **D(5)** of this section. Construction documents which are accepted as part of the application for a building permit shall be marked as accepted by the Code Enforcement Officer in writing or by stamp, or in the case of electronic media, an electronic marking. One set of the accepted construction documents shall be retained by the Code Enforcement Officer, and one set of the accepted construction documents shall be returned to the applicant to be kept at the work site so as to be available for use by the code enforcement personnel. However, the return of a set of accepted construction documents to the applicant shall not be construed as authorization to commence work, nor as an indication that a building permit will be issued. Work shall not be commenced until and unless a building permit is issued.

F. Issuance of building permits. An application for a building permit shall be examined to ascertain whether the proposed work is in compliance with the applicable requirements of the Uniform Code and Energy Code. The Code Enforcement Officer shall issue a building permit if the proposed work is in compliance with the applicable requirements of the Uniform Code and Energy Code.

G. Building permits to be displayed. Building permits shall be visibly displayed at the work site and shall remain visible until the authorized work has been completed.

H. Work to be in accordance with construction documents. All work shall be performed in accordance with the construction documents which were submitted with and accepted as part of the application for the building permit. The building permit shall contain such a directive. The permit holder shall immediately notify the Code Enforcement Officer of any change occurring during the course of the work. The building permit shall contain such a directive. If the Code Enforcement Officer determines that such change warrants a new or amended building permit, such change shall not be made until and unless a new or amended building permit reflecting such change is issued.

I. Time limits. Building permits shall become invalid unless the authorized work is commenced within three months following the date of issuance. Building permits shall expire 12 months after the date of issuance. A building permit which has become invalid or which has expired pursuant to this subsection may be renewed upon application by the permit holder, payment of the applicable fee, and approval of the application by the Code Enforcement Officer.

J. Revocation or suspension of building permits. If the Code Enforcement Officer determines that a building permit was issued in error because of incorrect,

inaccurate, or incomplete information, or that the work for which a building permit was issued violates the Uniform Code or the Energy Code, the Code Enforcement Officer shall revoke the building permit or suspend the building permit until such time as the permit holder demonstrates that:

(1) All work then completed is in compliance with all applicable provisions of the Uniform Code and the Energy Code; and

(2) All work then proposed to be performed shall be in compliance with all applicable provisions of the Uniform Code and the Energy Code.

K. Fee. The fee specified in or determined in accordance with the provisions set forth in § **155-18**, Fees, of this chapter shall be paid at the time of issuance of a building permit, an amended building permit, or for renewal of a building permit. Fees charged by the Town may be changed from time to time by resolution of the Town Board.

Town of Niagara, NY
Wednesday, March 4, 2026

Chapter 221. Swimming Pools

[HISTORY: Adopted by the Town Board of the Town of Niagara 4-26-1977 by L.L. No. 2-1977. Amendments noted where applicable.]

GENERAL REFERENCES
Fire prevention and building construction — See Ch. **155**.
Zoning — See Ch. **245**.

§ 221-1. Definitions.

As used in this chapter, the following terms shall have the meanings indicated:

BUILDING LINE OF THE POOL
The inside face of the pool.

PRIVATE OR SEMIPRIVATE POOL
A swimming pool used and intended to be used solely by the owner, operator or lessee thereof and his or her family and by guests invited to use it without payment of any fee.

PUBLIC POOL
Any swimming pool which is not private or semiprivate.

SWIMMING POOL
All pools or tanks of a permanent or semipermanent nature which have a depth of more than two feet or a water service of more than 150 square feet, and which are moved, erected, constructed or excavated either above, below or partly above and below ground level, and are used for swimming, bathing or wading.

TOWN
The Town of Niagara, New York.

§ 221-2. Swimming pool as a structure.

A. A swimming pool shall be deemed to be a structure under the Chapter **245**, Zoning, of the Code of the Town of Niagara.[1]
[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. I).*

B. A swimming pool may be permitted only as an accessory structure to a principal building used for residential purposes. Said pool shall be for the exclusive use of the occupants of the principal building and their guests.

C. A swimming pool may be permitted when said use is not as an accessory structure to a principal building, only upon application to the Zoning Board of Appeals in accordance with this chapter. All pools that are not private or semiprivate must comply with the regulations of the New York State Department of Health.

§ 221-3. Permits required.

Permits shall be required as indicated in Ch. **155**, Fire Prevention and Building Construction.

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 221-4. Location.

The location of the swimming pool on the property must:

A. Conform to the setback regulations of Chapter **245**, Zoning.

B. Not be placed in a front yard.

C. Be at least 15 feet from any house basement and aboveground pools at least 15 feet from any structure, unless conditions warrant a lessening or increasing of this distance.

D. Be at least 15 feet from any active well, septic tank, leach bed, etc., unless conditions warrant a lessening or increasing of this distance.

E. Be kept a minimum distance of 10 feet from overhanging power lines.

§ 221-5. Construction and equipment.

A. The swimming pool shall be designed and constructed in such a manner so as not to endanger the health and/or safety of its users and to not unduly interfere with the use and enjoyment of adjacent property.

B. The swimming pool shall be required to have adequate equipment to properly recirculate, filter, algacide and germicide the water of the pool with provisions and instructions for maintenance of same.

C. The swimming pool must be equipped with proper safeguards for the users of the pool. Such safeguards shall include: at least one ladder or stairway to facilitate quick exits from the pool; signs or other markings posted every six feet along the side of the pool and wherever the depth of the pool changes significantly, indicating the depth of the pool at that point; signs or other markings noting areas permitted for diving and wading.[1]

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

D. No part of the pool structure, including fencing or docks, shall project more than eight feet above the surrounding existing grade, except by special permit.[2]

[2] *Editor's Note: Former Subsection E, regarding conformity with the New York State Building Construction Code, which immediately followed this subsection, was deleted at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 221-6. Water supply and drainage.

A. Water supply.

(1) There shall be no fixed or direct connection between any swimming pool and any potable water supply.

(2) All water used in any swimming pool shall be of drinking water quality as such standards are set by the Town of Niagara and the State of New York.

(3) The Town Board of the Town of Niagara may, if the health and safety of the town residents during an extreme emergency requires, prohibit the use of the town's water supply for swimming pool purposes.

B. Drainage. Drainage requirements shall be as set forth in the Uniform Code.[1]

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 221-7. Fencing requirements.

Fencing requirements shall be as set forth in the Uniform Code.

[1] *Editor's Note: Amended at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 221-8. Electrical and heating.

A. All lighting and electrical work shall conform to the provisions of the current edition of the National Electrical Code. Also, all underground lighting shall be of low voltage.

B. No lighting shall be installed in such a manner that it may be an annoyance to the owners of adjacent property. Under normal circumstances, floodlighting, the illumination of adjacent property, among other things will be sufficient to constitute an annoyance.

C. All swimming pool heating devices shall meet approved and accepted standards of the National Swimming Pool Institute and the local public service corporation.

§ 221-9. Maintenance.

Every swimming pool, presently constructed or installed or hereafter constructed or installed, including fencing, gates, lighting and all appurtenances thereto, shall be kept in proper repair at all times and shall be maintained in such a manner as never to constitute a hazard or menace to health or safety. Any such hazard which may exist, or develop in, or in consequence of, or in connection with any such swimming pool shall be forthwith abated and/or removed by the person in possession, owning or having jurisdiction over such pool, upon receipt of notice from the Code Enforcement Officer.

§ 221-10. Reasonable use.

Use of a swimming pool shall be in a reasonable manner and at reasonable times so as not to cause undue discomfort and/or annoyance to adjacent residents.[1]

[1] *Editor's Note: Former § 11, Existing pools, which immediately followed this section, was deleted at time of adoption of Code (see Ch. **1**, General Provisions, Art. **I**).*

§ 221-11. Appeals for variance.

Any person, upon written application to the Zoning Board of Appeals, may apply for a variance to exclude him or her from the requirements of this chapter. The Zoning Board of Appeals shall hold a public hearing in accordance with the same provisions and requirements as if said application were for a zoning variance.

§ 221-12. Penalties for offenses.

Any person committing an offense against any provision of this chapter shall be guilty of a violation punishable as follows: by imprisonment for a term not exceeding 15 days or by a fine not exceeding $250, or by both such fine and imprisonment. The continuation of an offense against the provisions of this chapter shall constitute, for each day the offense is continued, a separate and distinct offense hereunder.

§245-17 Dimensional Regulations

A. A schedule of area, lot and bulk requirements, which are also enclosed in Appendix A, are hereby established in minimum regulations of this code.

B. Height regulations as required by this code are in effect in all areas of the Town, except where they may be in conflict with vertical zoning requirements of the Niagara Falls International Airport, in which case the airport and FAA regulations govern.

RESIDENTIAL DISTRICTS	MINIMUM LOT SIZE	MINIMUM LOT WIDTH	MAXIMUM LOT COVERAGE	FRONT SETBACK	SIDE SETBACK	REAR SETBACK	MAXIMUM HEIGHT
Neighborhood Residential (NR)	7,500 sf	80'	25%	35'	7'	10'	35'
Mixed Residential (MR)	-	-	-	-	-	-	-
Single-Unit	7,500 sf	60'	30%	25'	5'	10'	35'
Two-Unit	9,000 sf	60'	30%	25'	5'	10'	35'
Three-Unit	10,000 sf	60'	30%	25'	5'	10'	35'
Four-Unit	11,000 sf	60'	30%	25'	5'	10'	35'
Five-Unit+	12,000 sf	60'	30%	25'	5'	10'	35'

COMMERCIAL DISTRICTS	MINIMUM LOT SIZE	MINIMUM LOT WIDTH	MAXIMUM LOT COVERAGE	FRONT SETBACK	SIDE SETBACK	REAR SETBACK	MAXIMUM HEIGHT
Neighborhood Mixed-use (N-MU)	10,000 sf	60'	50%	15'	10'	15'	35'
Corridor Mixed-use (C-MU)	10,000 sf	70'	40%	20'	10'	15'	35'
Commercial (C)	10,000 sf	70'	40%	25'	10'	15'	35'

INDUSTRIAL DISTRICTS	MINIMUM LOT SIZE	MINIMUM LOT WIDTH	MAXIMUM LOT COVERAGE	FRONT SETBACK	SIDE SETBACK	REAR SETBACK	MAXIMUM HEIGHT
Industrial (I)	1.5 acres	150'	30%	60'	15'	25'	35'
Mixed Industrial (MI)	1 acre	100'	30%	60'	15'	25'	35'

§245-19 Accessory Building or Structure

A. Accessory or storage buildings, including but not limited to a garage for the parking of passenger motor vehicles of residents on the premises, garden house, tool house, playhouse, and housing for domestic animals incidental to the residential use of the premises, are subject to the following:

1. Accessory buildings attached to a principal building shall comply with the yard requirements of this chapter for the principal building unless otherwise specified.
2. No detached accessory building or structure in the NR or MR Districts shall exceed 14 feet in height.
3. No detached accessory building or structure in the N-MU or C-MU Districts shall exceed 25 feet in height.
4. With the exception of detached private garages, all detached accessory buildings shall be located in the rear yard and subject to the setback requirements of the schedule.
5. An accessory garage may be located in a front yard which is in excess of a required front yard where the side and rear yards have insufficient area.
6. The distance between the main building and the accessory building shall be in accordance with the Building Code.
7. No residential front yard shall be used for the open storage of boats, motor vehicles, travel trailers or other equipment, except for vehicle parking on driveways.

§245-20 Animal Care Establishment

A. The following regulations shall apply to all animal care establishments and will include any establishment that provides veterinary offices, immunizations, diagnosis and treatment of animals, boarding of animals during convalescence, grooming facilities, and general boarding facilities such as kennels, as defined by this Chapter.

B. Enclosed structures shall be provided for each animal which is boarded, regardless of the specific animal care establishment.

C. No animal care establishment shall be closer than 100 feet to any side or rear property line.

D. An enclosed structure shall be provided for each animal.

E. No animal care establishment shall be located closer than 150 feet to a residential structure on an adjacent lot.

F. No outdoor runs or open exercise areas shall be visible from any adjacent residential use. All openings from the enclosed structure to the exercise area shall be screened and buffered from any adjacent residential use.

G. No outdoor storage of feed shall be permitted.

H. No outdoor storage of animal waste shall be permitted.

I. No deceased animals shall be buried on the premises.

J. An exercise area shall be provided for any animal boarding facility. The size of such exercise area shall be based on standards accepted by a nationally recognized animal husbandry organization.

K. Any outdoor run or exercise area shall be enclosed by a fence of at least 4 feet in height to contain animals being boarded or kenneled.

SECTION R328—SWIMMING POOLS, SPAS AND HOT TUBS

[NY] R328.1 General. The provisions of this section shall control the design and construction as well as substantial modification of *swimming pools*, *spas* and *hot tubs* installed in or on the lot of *dwellings* regulated under this code, and detached one- and two-family *dwellings* classified as Group R-3 and constructed under the *Building Code of New York State*.

Exception: Communal *swimming pools* for the shared use of multiple *townhouse units* shall be regulated by the *Building Code of New York State*.

[NY] R328.1.1 Compliance with other sections. *Swimming pools*, *spas* and *hot tubs* shall comply with this section and other applicable sections of this code. The requirements of this section and of the other applicable sections of this code shall be in addition to, and not in replacement of or substitution for, the requirements of other applicable federal, state and local laws and regulations, including, but not necessarily limited to the requirements of CPSC 15 USC 8003, where applicable.

[NY] R328.2 Definitions. For the purpose of these requirements, the terms used shall be defined as follows and as set forth in Chapter 2.

BARRIER, PERMANENT. A fence, the walls of a permanent structure, any other structure or combination thereof which completely surrounds the *swimming pool* and sufficiently obstructs access to the *swimming pool*.

BARRIER, TEMPORARY. An approved temporary fence, permanent fence, the walls of a permanent *structure*, any other *structure*, or any combination thereof that sufficiently prevents access to the *swimming pool* by any person not engaged in the installation or construction of the *swimming pool* during its installation or construction.

HOT TUB. See "Spa."

RESIDENTIAL. That which is situated on the premises of *dwellings* regulated under this code, and also detached *dwellings* classified as R-3 and constructed under the *Building Code of New York State*.

SPA. A portable or nonportable *structure* intended for recreational or therapeutic bathing, in which all controls, water-heating and water-circulating equipment are an integral part of the product. *Spas* are shallow in depth and are not designed for swimming or diving.

SUBSTANTIAL DAMAGE. For the purpose of determining compliance with the pool alarm provisions of this section, damage of any origin sustained by a *swimming pool*, whereby the cost of restoring the *swimming pool* to its before-damaged condition would equal or exceed 50 percent of the market value of the *swimming pool* before the damage occurred.

SUBSTANTIAL MODIFICATION. For the purpose of determining compliance with the pool alarm provisions of this section, any *repair*, *alteration*, *addition* or improvement of a *swimming pool*, the cost of which equals or exceeds 50 percent of the market value of the *swimming pool* before the improvement or *repair* is started. If a *swimming pool* has sustained substantial damage, any repairs are considered substantial modification regardless of the actual repair work performed.

SUCTION FITTINGS. All components, including the sump and/or body cover/grate and hardware.

SUCTION OUTLET. A submerged fitting, fitting assembly, cover/grate and related components that provide localized low-pressure area for the transfer of water from a *swimming pool*, *spa* or *hot tub*. Submerged suction outlets have been referred to as main drains.

SWIMMING POOL. Any *structure*, basin, chamber or tank which is intended for swimming, diving, recreational bathing or wading and which contains, is designed to contain, or is capable of containing water more than 24 inches (610 mm) deep at any point. This includes in-ground, above-ground and on-ground pools, indoor pools, *hot tubs*, *spas*, and wading pools.

SWIMMING POOL, INDOOR. A *swimming pool* which is totally contained within a structure and surrounded on all four sides by the walls of the enclosing structure.

SWIMMING POOL, OUTDOOR. Any *swimming pool* which is not an indoor pool.

[NY] R328.3 Compliance with other standards. *Swimming pools*, *hot tubs*, and *spas* shall comply with other standards as specified in Sections R328.3.1 through R328.3.4.

[NY] R328.3.1 In-ground pools. In-ground *swimming pools* shall be designed and constructed in conformance with ANSI/APSP/ICC 5.

[NY] R328.3.2 Above-ground and on-ground pools. Above-ground and on-ground *swimming pools* shall be designed and constructed in conformance with ANSI/APSP/ICC 4.

[NY] R328.3.3 Permanently installed spas and hot tubs. Permanently installed *spas* and *hot tubs* shall be designed and constructed in conformance with ANSI/APSP/ICC 3.

[NY] R328.3.4 Portable spas and hot tubs. Portable *spas* and *hot tubs* shall be designed and constructed in conformance with ANSI/APSP/ICC 6.

[NY] R328.4 Barriers, application. The provisions of this section shall control the design of barriers for *swimming pools*, *spas* and *hot tubs*. These design controls are intended to provide protection against potential drowning and near-drowning by sufficiently preventing access to *swimming pools*, *spas* and *hot tubs* by persons outside the property, persons within *buildings* on the property, and persons in other parts of the property not contained within the *swimming pool* enclosure.

[NY] R328.4.1 Temporary barriers. An outdoor *swimming pool* shall be surrounded by a *temporary barrier* during installation or construction that shall remain in place until a *permanent barrier* in compliance with Section R328.4.2 is provided.

Exceptions:

1. Above-ground or on-ground *swimming pools* where the pool structure constitutes a barrier in compliance with Section R328.4.2.9.
2. *Spas* or *hot tubs* with a safety cover which complies with ASTM F1346, provided that such safety cover is in place during the period of installation or construction of such *hot tub* or *spa*. The temporary removal of a safety cover as required to facilitate the installation or construction of a *hot tub* or *spa* during periods when at least one person engaged in the installation or construction is present is permitted.

[NY] R328.4.1.1 Height. The top of the *temporary barrier* shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the *swimming pool*.

[NY] R328.4.1.2 Replacement by a permanent barrier. A *temporary barrier* shall be replaced by a complying *permanent barrier* within either of the following periods:

1. Within 90 days of the date of issuance of the *permit* for the installation or construction of the *swimming pool*.
2. Within 90 days of the date of commencement of the installation or construction of the *swimming pool*.

[NY] R328.4.1.2.1 Replacement extension. Subject to the approval of the *building official*, the time period for completion of the *permanent barrier* may be extended for good cause, including, but not limited to, adverse weather conditions delaying construction.

[NY] R328.4.2 Permanent barriers. *Swimming pools*, *spas*, and *hot tubs* shall be completely enclosed by a *permanent barrier* complying with Sections R328.4.2.1 through R328.4.2.9.

Exception: A *hot tub* or *spa* with a safety cover which complies with ASTM F1346 shall not be required to comply with Section R328.4.2.

[NY] R328.4.2.1 Barrier height and clearances. The top of the barrier shall be no less than 48 inches (1219 mm) above *grade* measured on the side of the barrier that faces away from the *swimming pool*. The vertical clearance between *grade* and the bottom of the barrier shall be not greater than 2 inches (51 mm) measured on the side of the barrier that faces away from the *swimming pool*. Where the top of the pool structure is above *grade*, the barrier may be at ground level, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the barrier shall comply with Sections R328.4.2.2 and R328.4.2.3.

[NY] R328.4.2.2 Solid barrier surfaces. Solid barriers which do not have openings shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

[NY] R328.4.2.3 Closely spaced horizontal members. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the *swimming pool* side of the fence. Spacing between vertical members shall not exceed $1^3/_4$ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall be not greater than $1^3/_4$inches (44 mm) in width.

[NY] R328.4.2.4 Widely spaced horizontal members. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall be not greater than 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall be not greater than $1^3/_4$ inches (44 mm) in width.

[NY] R328.4.2.5 Chain link dimensions. Maximum mesh size for chain link fences shall be a $1^3/_4$ inch (57 mm) square, unless the fence has vertical slats fastened at the top or the bottom which reduce the openings to not more than $1^3/_4$ inches (44 mm).

[NY] R328.4.2.6 Diagonal members. Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be not greater than $1^3/_4$ inches (44 mm).

[NY] R328.4.2.7 Gates. Gates shall comply with the requirements of Sections R328.4.2.1 through R328.4.2.6 and Sections R328.4.2.7.1 through R328.4.2.7.3.

[NY] R328.4.2.7.1 Self-closing and opening configuration. All gates shall be self-closing. In addition, if the gate is a pedestrian access gate, the gate shall open outward, away from the *swimming pool*.

[NY] R328.4.2.7.2 Latching. All gates shall be self-latching. For doors and gates in barriers, the door and gate latch release mechanisms shall be in accordance with the following:

1. Where door and gate latch release mechanisms are accessed from the outside of the barrier and are not of the self-locking type, such mechanism shall be located not less than 54 inches (1372 mm) above the finished floor or ground surface.
2. Where door and gate latch release mechanisms are of the self-locking type such as where the lock is operated by means of a key, an electronic opener or the entry of a combination into an integral combination lock, the lock operation control and the latch release mechanism shall be located not greater than 54 inches (1372 mm) above the finished floor or ground surface.
3. At private pools, where the only latch release mechanism of a self-latching device for a gate is located on the pool and spa side of the barrier, the release mechanism shall be located at a point that is at least 3 inches (76 mm) below the top of the gate.

[NY] R328.4.2.7.3 Locking. All gates shall be securely locked with a key, combination or other child-proof lock sufficient to prevent access to the *swimming pool* through such gate when the *swimming pool* is not in use or supervised.

[NY] R328.4.2.8 Dwelling wall as barrier. A wall or walls of a *dwelling* and its *accessory structures* may serve as part of the barrier, provided that the wall or walls meet the applicable barrier requirements of Sections R328.4.2.1 through R328.4.2.6, and one of the following conditions shall be met:

1. All of the following:
   1.1. Doors with direct access to the *swimming pool* through that wall shall be equipped with an alarm that produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be *listed* and *labeled* in accordance with UL 2017. The audible alarm shall activate within 7 seconds; sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened; and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. Deactivation shall last for not more than 15 seconds.
   1.2. Operable windows providing direct access to the *swimming pool*, having a sill height of less than 48 inches above the indoor finished floor in the wall and a sill height of less than 72 inches (1829 mm) above the adjacent exterior surface, in the wall or walls used as a barrier, shall have a latching device located no less than 48 inches (1219 mm) above the floor. Openings in operable windows which provide direct access to the *swimming pool* shall not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
   1.3. Where the *dwelling* or *accessory structure* is wholly contained within the pool barrier or enclosure, alarms shall be provided at every door with direct access to the *swimming pool*.
2. Other approved means of protection, such as self-closing with self-latching devices, so long as the degree of protection afforded is not less than the protection afforded by Item 1 described above.

[NY] R328.4.2.8.1 Alarm deactivation switch location. Where an alarm is provided, the deactivation switch shall be located 54 inches (1372 mm) or more above the threshold of the door. In dwellings required to be Accessible units, Type A units, or Type B units, the deactivation switch shall be located 48 inches (1219 mm) above the threshold of the door.

[NY] R328.4.2.8.2 Multiple dwelling wall as a barrier. A wall or walls of a multiple dwelling may serve as part of the barrier, provided there is no direct access from the dwelling to the pool.

[NY] R328.4.2.9 Pool structure as barrier. Where an above-ground *swimming pool* structure is used as a barrier, or where the barrier is mounted on top of the pool structure, the structure shall be designed and constructed in compliance with ANSI/APSP/ICC 4 and meet the applicable barrier requirements of Sections R328.4.2.1 through R328.4.2.8. Where the means of access is a ladder or steps, one of the following conditions shall be met:

1. The ladder or steps shall be capable of being secured, locked or removed to prevent access. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.
2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Sections R328.4.2.1 through R328.4.2.8.

[NY] R328.4.3 Indoor swimming pool. Walls surrounding an indoor *swimming pool* shall comply with Section R328.4.2.8.

[NY] R328.4.4 Prohibited locations. Barriers shall be located so as to prohibit permanent *structures*, equipment or similar objects from being used to climb the barriers.

[NY] R328.5 Suction entrapment avoidance. *Suction outlets* shall be designed and installed in accordance with the requirements of CPSC 15 USC 8003 and ANSI/APSP/ICC 7, where applicable.

[NY] R328.5.1 Suction Fittings. *Swimming pool* and *spa suction outlets* shall have a cover that conforms to ANSI/APSP/ICC 16.

Exception: Surface skimmers.

[NY] R328.6 Swimming pool and spa alarms, applicability. A *swimming pool* or *spa* installed, constructed or substantially modified after December 14, 2006, shall be equipped with an approved pool alarm. Pool alarms shall comply with ASTM F2208, and shall be installed, used and maintained in accordance with the manufacturer's instructions and this section.

Exceptions:

1. A *hot tub* or *spa* equipped with a safety cover which complies with ASTM F1346.
2. A *swimming pool* (other than a *hot tub* or *spa*) equipped with an automatic power safety cover which complies with ASTM F1346.

[NY] R328.6.1 Multiple alarms. A pool alarm must be capable of detecting entry into the water at any point on the surface of the *swimming pool*. If necessary to provide detection capability at every point on the surface of the *swimming pool*, more than one pool alarm shall be provided.

[NY] R328.6.2 Alarm activation. Pool alarms shall activate upon detecting entry into the water and shall sound poolside and inside the *dwelling* where it is monitored.

[NY] R328.6.3 Prohibited alarms. The use of personal immersion alarms shall not be construed as compliance with this section.

CHAPTER

42

SWIMMING POOLS

ICC user notes:

About this chapter: *Chapter 42 addresses all aspects of wiring, fixtures, motors and electrical accessories for swimming pools, wading pools, hot tubs, spas and hydromassage bathtubs.*

This chapter focuses on protection of occupants from electrical shock. The dangers of using electricity around water, wet surfaces, grounded surfaces and plumbing are well known, and this chapter is intended to minimize or eliminate those hazards.

SECTION E4201—GENERAL

E4201.1 Scope. The provisions of this chapter shall apply to the construction and installation of electric wiring and equipment associated with all swimming pools, wading pools, decorative pools, hot tubs and spas, and hydromassage bathtubs, whether permanently installed or storable, and shall apply to metallic auxiliary equipment, such as pumps, filters and similar equipment. Sections E4202 through E4206 provide general rules for permanent pools, spas and hot tubs. Section E4207 provides specific rules for storable pools and storable/portable spas and hot tubs. Section E4208 provides specific rules for spas and hot tubs. Section E4209 provides specific rules for hydromassage bathtubs. (680.1)

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

E4202.1 General. Wiring methods used in conjunction with permanently installed swimming pools, spas or hot tubs that are installed in corrosive environments described in Section E4202.2 shall comply with Table E4202.1, Sections E4202.2 and E4205 and Chapter 38 except as otherwise stated in this section. Wiring methods used in conjunction with permanently installed swimming pools, spas or hot tubs that are not installed in corrosive environments shall comply with Chapter 38. Storable swimming pools shall comply with Section E4207.

Hydromassage bathtubs shall comply with Section E4209. [680.7, 680.14, 680.21(A), 680.23(B) and (F), 680.25(A), 680.42, 680.43 and 680.70]

TABLE E4202.1—PERMITTED WIRING METHODS IN CORROSIVE ENVIRONMENTS[a]

WIRING LOCATION OR PURPOSE (Application allowed where marked with an "A")	IMC[b], RMC[b], RNC[e]	LFMC	LFNMC	MC[g]	FLEX CORD
Panelboard(s) that supply pool equipment: from service equipment to panelboard	A[f]	—	A	—	—
Wet-niche and no-niche luminaires: from branch circuit OCPD to deck or junction box	A	—	A	—	—
Wet-niche and no-niche luminaires: from deck or junction box to forming shell	A[j]	—	A	—	A[d]
Dry niche: from branch circuit OCPD to luminaires	A	—	A	—	—
Pool-associated motors: from branch circuit OCPD to motor[h]	A	A[c]	A[c]	A	A[d]
Packaged or self-contained outdoor spas and hot tubs with underwater luminaire: from branch circuit OCPD to spa or hot tub	A	A	A	—	A[d]
Packaged or self-contained outdoor spas and hot tubs without underwater luminaire: from branch circuit OCPD to spa or hot tub	A	A	A	—	A[d]
Indoor spas and hot tubs, and other pool, spa or hot tub associated equipment: from branch circuit OCPD to equipment	A	A	A	—	A[d]
Connection at pool lighting transformers or power supplies	A	A[i]	A	—	—

For SI: 1 foot = 304.8 mm.

a. For all wiring methods, see Section E4205 for equipment grounding conductor requirements.
b. See Section E4202.2 for use of metal conduits in corrosive environments.
c. Limited to where necessary to employ flexible connections at or adjacent to a pool motor.
d. Flexible cord shall be installed in accordance with Section E4202.3.
e. Nonmetallic conduit shall be rigid polyvinyl chloride conduit Type PVC or reinforced thermosetting resin conduit Type RTRC.
f. Aluminum conduits shall not be permitted in the pool area where subject to corrosion.
g. Where installed as direct burial cable or in wet locations, Type MC cable shall be listed and identified for the location.
h. See Section E4202.4 for listed, double-insulated pool pump motors.
i. 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.
j. Metal conduit shall be constructed of brass or other approved corrosion-resistant metal.

E4202.2 Wiring methods and equipment in corrosive environment. Wiring methods in a corrosive environment shall be *listed* and suitable for use in such areas. Rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit, reinforced thermosetting resin conduit and liquidtight flexible nonmetallic conduit shall be considered suitable for the use. Aluminum conduit and tubing shall not be used. [680.14(A)]

Other equipment shall be suitable for use in corrosive environments or be installed in identified corrosion-resistant enclosures. Equipment listed for pool and spa use shall be considered suitable for the use. [680.14(B)]

E4202.3 Flexible cords. Flexible cords used in conjunction with a pool, spa, hot tub or hydromassage bathtub shall be installed in accordance with the following:

1. For other than underwater luminaires, fixed or stationary equipment shall be permitted to be connected with a flexible cord and plug to facilitate removal or disconnection for maintenance or repair. For other than storable pools, the flexible cord shall not exceed 3 feet (914 mm) in length. Cords that supply swimming pool equipment shall have a copper equipment grounding conductor not smaller than 12 AWG and shall terminate in a grounding-type attachment plug. [680.8(A) and (B) and 680.21(A)(2)]
2. Other than *listed* low-voltage lighting systems not requiring grounding, wet-niche luminaires that are supplied by a flexible cord or cable shall have all exposed noncurrent-carrying metal parts connected to an insulated copper equipment grounding conductor that is an integral part of the cord or cable. This equipment grounding conductor shall be connected to a grounding terminal in the supply junction box, transformer enclosure or other enclosure. The equipment grounding conductor shall be not smaller than the supply conductors and not smaller than 16 AWG. [680.23(B)(3)]
3. A *listed* packaged spa or hot tub installed outdoors that is ground-fault circuit interrupter (GFCI) protected shall be permitted to be cord-and-plug-connected provided that such cord does not exceed 15 feet (4572 mm) in length. [680.42(A)(2)]
4. A *listed* packaged spa or hot tub rated at 20 amperes or less and installed indoors shall be permitted to be cord-and-plug-connected to facilitate maintenance and repair. (680.43 Exception No. 1)
5. For other than underwater and storable pool lighting luminaire, the requirements of Item 1 shall apply to any cord-equipped luminaire that is located within 16 feet (4877 mm) radially from any point on the water surface. [680.22(B)(5)]

E4202.4 Double-insulated pool pumps. A *listed* cord-and-plug-connected pool pump incorporating an *approved* system of double insulation that provides a means for grounding only the internal and nonaccessible, noncurrent-carrying metal parts of the pump shall be connected to any wiring method recognized in Chapter 38 that is suitable for the location. Where the equipment grounding conductor of the motor circuit is connected to the equipotential bonding means in accordance with Section E4204.2, Item 6.1, the branch circuit wiring shall comply with Sections E4202.1 and E4205.5. [680.21(B)]

SECTION E4203—EQUIPMENT LOCATION AND CLEARANCES

E4203.1 Receptacle outlets. Receptacles outlets shall be installed and located in accordance with Sections E4203.1.1 through E4203.1.7. In determining the dimensions in this section addressing receptacle spacings, the distance to be measured shall be the shortest path the supply cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, doorway with hinged or sliding door, window opening or other effective permanent barrier. [680.22(A)(5)]

E4203.1.1 Location. Receptacles that provide power for water-pump motors or other loads directly related to the circulation and sanitation system shall be located at least 6 feet (1829 mm) from the inside walls of pools, outdoor spas and hot tubs. These receptacles shall have GFCI protection and be of the grounding type. [680.22(A)(2)].

E4203.1.2 Other receptacles. Other receptacles on the property shall be located not less than 6 feet (1829 mm) from the inside walls of pools and outdoor spas and hot tubs. [680.22 (A)(3)]

E4203.1.3 Where required. No less than one 125-volt, 15- or 20-ampere receptacle supplied by a general-purpose branch circuit shall be located not less than 6 feet (1829 mm) from and not more than 20 feet (6096 mm) from the inside wall of permanently installed pools and outdoor spas and hot tubs. This receptacle shall be located not more than 6 feet 6 inches (1981 mm) above the floor, platform or grade level serving the pool, spa or hot tub. [680.22(A)(1)]

E4203.1.4 GFCI protection. All receptacles rated 125 volts through 250 volts, 60 amperes or less, located within 20 feet (6096 mm) of the inside walls of pools and outdoor spas and hot tubs shall be protected by a Class A ground-fault circuit interrupter. Outlets supplying all pool motors shall be provided with Class A ground-fault circuit-interrupter protection. [680.21(C) and 680.22(A)(4)]

Exceptions:

1. Receptacles and outlets that are part of listed equipment, with ratings not exceeding the low-voltage contact limit that are supplied by listed transformers or power supplies that comply with Section E4206.1, shall not be required to be provided with ground-fault protection. [680.5(B) Exception]
2. Listed low-voltage motors not requiring grounding, with ratings not exceeding the low-voltage contact limit that are supplied by listed transformers or power supplies that comply with Section E4206.1, shall be permitted to be installed without ground-fault protection. [680.21(C) Exception]

E4203.1.5 Indoor locations. Receptacles shall be located not less than 6 feet (1829 mm) measured horizontally from the inside walls of indoor spas and hot tubs. A minimum of one 125-volt, 15- or 20-ampere receptacle on a general-purpose branch circuit shall be located between 6 feet (1829 mm) and 10 feet (3048 mm) from the inside walls of indoor spas or hot tubs. [680.43(A) and 680.43(A)(1)]

E4203.1.6 Indoor GFCI protection. All receptacles rated 125 volts through 250 volts, 60 amperes or less, and located within 10 feet (3048 mm) of the inside walls of a spa or hot tub installed indoors shall be provided with Class A ground-fault circuit interrupter protection. [680.43(A)(2)].

E4203.1.7 Pool equipment room. At least one GFCI-protected 125-volt, 15- or 20-ampere receptacle on a general-purpose circuit shall be located within a pool equipment room, and all other receptacles supplied by branch circuits rated 150 volts or less to ground within a pool equipment room shall be GFCI protected. [680.12(B)]

E4203.2 Switching devices. Switching devices shall be located at least 5 feet (1524 mm) horizontally from the inside walls of pools, spas and hot tubs unless separated from the pool, spa or hot tub by a solid fence, wall or other permanent barrier that provides at least a 5-foot (1524 mm) reach distance. Alternatively, a switch that is *listed* as being acceptable for use within 5 feet (1524 mm) shall be permitted. Switching devices located in a room or area containing a hydromassage bathtub shall be located in accordance with the general requirements for installing equipment in bathrooms. [680.22(C), 680.43(C) and 680.72]

E4203.3 Disconnecting means. One or more means to simultaneously disconnect all ungrounded conductors for all utilization equipment other than lighting shall be provided. Each of such means shall be readily accessible and within sight from the equipment it serves and shall be located not less than 5 feet (1524 mm) horizontally from the inside walls of a pool, spa, or hot tub unless separated from the open water by a permanently installed barrier that provides a 5-foot (1524 mm) or greater reach path. This horizontal distance shall be measured from the water's edge along the shortest path required to reach the disconnect. (680.13)

E4203.4 Luminaires, equipment and ceiling fans. Lighting outlets, luminaires, equipment and ceiling-suspended paddle fans shall be installed and located in accordance with Sections E4203.4.1 through E4203.4.7. [680.22(B)]

E4203.4.1 Outdoor location. In outdoor pool, outdoor spas and outdoor hot tubs areas, luminaires, lighting outlets and ceiling-suspended paddle fans shall not be installed over the pool or over the area extending 5 feet (1524 mm) horizontally from the inside walls of a pool except where no part of the luminaire or ceiling-suspended paddle fan is less than 12 feet (3658 mm) above the maximum water level. [680.22(B)(1)]

E4203.4.2 Indoor locations. In indoor pool areas, the limitations of Section E4203.4.1 shall apply except where the luminaires, lighting outlets and ceiling-suspended paddle fans comply with all of the following conditions:

1. The luminaires are of a totally enclosed type.
2. Ceiling-suspended paddle fans are identified for use beneath ceiling structures such as porches and patios.
3. A ground-fault circuit interrupter is installed in the branch circuit supplying the luminaires or ceiling-suspended paddle fans.
4. The distance from the bottom of the luminaire or ceiling-suspended paddle fan to the maximum water level is not less than 7 feet 6 inches (2286 mm). [680.22(B)(2)]

E4203.4.3 Low-voltage luminaires. *Listed* low-voltage luminaires not requiring grounding, not exceeding the low-voltage contact limit, and supplied by *listed* transformers or power supplies that comply with Section E4206.1 shall be permitted to be located less than 5 feet (1.5 m) from the inside walls of the pool. [680.22(B)(6)]

E4203.4.4 Existing lighting outlets and luminaires. Existing lighting outlets and luminaires that are located within 5 feet (1524 mm) horizontally from the inside walls of pools and outdoor spas and hot tubs shall be permitted to be located not less than 5 feet (1524 mm) vertically above the maximum water level, provided that such luminaires and outlets are rigidly attached to the existing structure and are protected by a Class A ground-fault circuit interrupter. [680.5(B) and 680.22(B)(3)]

E4203.4.5 Indoor spas and hot tubs.

1. Luminaires, lighting outlets and ceiling-suspended paddle fans located over the spa or hot tub or within 5 feet (1524 mm) from the inside walls of the spa or hot tub shall be not less than 7 feet 6 inches (2286 mm) above the maximum water level and shall be protected by a ground-fault circuit interrupter. [680.43(B)(1)(b)]

   Luminaires, lighting outlets and ceiling-suspended paddle fans that are located 12 feet (3658 mm) or more above the maximum water level shall not require ground-fault circuit-interrupter protection. [680.43(B)(1)(a)]
2. Luminaires protected by a ground-fault circuit interrupter and complying with Item 2.1 or 2.2 shall be permitted to be installed less than 7 feet 6 inches (2286 mm) over a spa or hot tub.
   2.1. Recessed luminaires shall have a glass or plastic lens and nonmetallic or electrically isolated metal *trim* and shall be suitable for use in damp locations.
   2.2. Surface-mounted luminaires shall have a glass or plastic globe and a nonmetallic body or a metallic body isolated from contact. Such luminaires shall be suitable for use in damp locations. [680.43(B)(1)(c)(1) and (2)]

E4203.4.6 GFCI protection in adjacent areas. Luminaires, lighting outlets and ceiling-suspended paddle fans that are installed in the area extending between 5 feet (1524 mm) and 10 feet (3048 mm) from the inside walls of pools and outdoor spas and hot tubs shall be protected by Class A ground-fault circuit interrupters except where such luminaires, lighting outlets and ceiling-suspended paddle fans are installed not less than 5 feet (1524 mm) above the maximum water level and are rigidly attached to the structure. [680.5(B) and 680.22(B)(4)]

E4203.4.7 Low-voltage gas-fired luminaires, decorative fireplaces, fire pits and similar equipment. *Listed* low-voltage gas-fired luminaires, decorative fireplaces, fire pits and similar equipment that use low-voltage ignitors that do not require grounding, and that are supplied by *listed* transformers or power supplies that comply with Section E4206.1 with outputs that do not exceed the low-voltage contact limit, shall be permitted to be located less than 5 feet (1524 mm) from the inside walls of the pool. Metallic equipment shall be bonded in accordance with the requirements in Section E4204.2. Transformers and power supplies supplying

this type of equipment shall be installed in accordance with the requirements of Section E4206.9.1. Metallic gas piping shall be bonded in accordance with the requirements of Sections E3609.7 and E4204.2, Item 7. [680.22 (B)(7)]

E4203.5 Other outlets. Other outlets such as for remote control, signaling, fire alarm and communications shall be not less than 10 feet (3048 mm) from the inside walls of the pool. Measurements shall be determined in accordance with Section E4203.1. [680.22(D)]

E4203.6 Other equipment. Other equipment with ratings exceeding the low-voltage contact limit shall be located at least 5 feet (1524 mm) horizontally from the inside walls of a pool unless separated from the pool by a solid fence, wall or other permanent barrier. [680.22(E)]

E4203.7 Overhead conductor clearances. Except where installed with the clearances specified in Table E4203.7, the following parts of pools and outdoor spas and hot tubs shall not be placed under existing service-drop conductors, overhead service conductors or any other open overhead wiring; nor shall such wiring be installed above the following:

1. Pools and the areas extending not less than 10 feet (3048 mm) horizontally from the inside of the walls of the pool.
2. Diving structures and the areas extending not less than 10 feet (3048 mm) horizontally from the outer edge of such structures.
3. Observation stands, towers, and platforms and the areas extending not less than 10 feet (3048 mm) horizontally from the outer edge of such structures.

Overhead conductors of network-powered broadband communications systems shall comply with the provisions in Table E4203.7 for conductors operating at 0 to 750 volts to ground.

Communications, radio conductors, television conductors, coaxial cables and the supporting messengers within the scope of Chapter 8 of NFPA 70 shall be permitted at a height of not less than 10 feet (3048 mm) above swimming and wading pools, diving structures, and observation stands, towers, and platforms. [680.9(A), (B) and (C)]

TABLE E4203.7 [Table 680.8(A)]—OVERHEAD CONDUCTOR CLEARANCES

	INSULATED SUPPLY OR SERVICE DROP CABLES, 0-750 VOLTS TO GROUND, SUPPORTED ON AND CABLED TOGETHER WITH AN EFFECTIVELY GROUNDED BARE MESSENGER OR EFFECTIVELY GROUNDED NEUTRAL CONDUCTOR (feet)	ALL OTHER SUPPLY OR SERVICE DROP CONDUCTORS (feet)	
		Voltage to ground	
		0 to 15 kV	Greater than 15 to 50 kV
A. Clearance in any direction to the water level, edge of water surface, base of diving platform, or permanently anchored raft	22.5	25	27
B. Clearance in any direction to the diving platform	14.5	17	18

For SI: 1 foot = 304.8 mm.

E4203.8 Underground wiring. Underground wiring within 5 feet (1524 mm) horizontally from the inside wall of the pool shall be permitted. Underground wiring shall not be installed under the pool except where this wiring is necessary to supply pool equipment permitted by this chapter. Underground wiring shall be installed in rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit, reinforced thermosetting resin conduit , jacketed Type MC cable listed for burial use, liquidtight flexible nonmetallic conduit listed for direct burial use or liquidtight flexible metal conduit listed for direct burial use, suitable for the conditions subject to that location. The underground wiring method shall be installed completely between outlets, junctions or splicing points. The minimum cover depth shall be in accordance with Table E3803.1. [680.11(A) and (B)]

SECTION E4204—EQUIPOTENTIAL BONDING

E4204.1 Performance. The equipotential bonding required by this section shall be installed to reduce voltage gradients in the prescribed areas of permanently installed swimming pools and spas and hot tubs other than the storable/portable type. The equipotential bonding shall be installed for pools, spas and hot tubs with or without associated electrical equipment related to the pool, spa or hot tub.

[NY] E4204.2 Bonded parts. The parts of pools, spas and hot tubs specified in Items 1 through 7 shall be bonded together using insulated, covered or bare solid copper conductors not smaller than 8 AWG or using rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with Section E3406.14. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool, spa or hot tub area shall not be required to be extended or attached to remote panelboards, service equipment or electrodes. [680.26(B)]

1. Conductive pool shells. Bonding to conductive pool shells shall be provided as specified in Item 1.1 or 1.2. Cast-in-place concrete, pneumatically applied or sprayed concrete and concrete block with painted or plastered coatings shall be considered to be conductive materials because of their water permeability and porosity. Reconstructed pool shells shall also meet the requirements of this section. Vinyl liners and fiberglass composite shells shall be considered to be nonconductive materials and not subject to these requirements.

1.1. Structural reinforcing steel. Unencapsulated structural reinforcing steel shall be bonded together by steel tie wires or the equivalent. Where structural reinforcing steel is encapsulated in a nonconductive compound, a copper conductor grid shall be installed in accordance with Item 1.2.

1.2. Copper conductor grid. A copper conductor grid shall be provided and shall comply with Items 1.2.1 through 1.2.4.

1.2.1. It shall be constructed of minimum 8 AWG bare solid copper conductors bonded to each other at all points of crossing.

1.2.2. It shall conform to the contour of the pool.

1.2.3. It shall be arranged in a 12-inch (305 mm) by 12-inch (305 mm) network of conductors in a uniformly spaced perpendicular grid pattern with a tolerance of 4 inches (102 mm).

1.2.4. It shall be secured within or under the pool not more than 6 inches (152 mm) from the outer contour of the pool shell. [680.26(B)(1)]

2. Perimeter surfaces. The perimeter surface to be bonded shall be considered to extend for 3 feet (914 mm) horizontally beyond the inside walls of the pool while also at a height between 3 feet (914 mm) above and 2 feet (610 mm) below the maximum water level. The perimeter surface shall include unpaved surfaces, concrete and other types of paving. Perimeter surfaces that are separated from the pool by a permanent wall or building 5 feet (1524 mm) or more in height shall require equipotential bonding only on the pool side of the permanent wall or building. Bonding to perimeter surfaces shall be provided as specified in Item 2.1, 2.2, 2.3 and 2.4. For conductive pool shells where bonding to perimeter surfaces is required, it shall be attached to the pool, spa or hot tub reinforcing steel or copper conductor grid at a minimum of four points uniformly spaced around the perimeter of the pool, spa or hot tub, or if the bonded perimeter surface does not surround the entire pool, it shall be attached to the pool, spa or hot tub reinforcing steel or copper grid at a minimum of four uniformly spaced points along the bonded perimeter surface. For nonconductive pool shells where bonding to the perimeter surfaces is required, bonding at four points shall not be required, and the perimeter bonding shall be attached to the 8 AWG copper equipotential bonding conductor and, if present, to any conductive support for the pool, spa or hot tub.

Exceptions:

1. Equipotential bonding of perimeter surfaces shall not be required for spas and hot tubs if all of the following conditions apply:

1.1. The spa or hot tub is listed as a self-contained spa for above-ground use.

1.2. The spa or hot tub is not identified as suitable only for indoor use.

1.3. The installation is in accordance with the manufacturer's instructions and is located on or above grade.

1.4. The top rim of the spa or hot tub is not less than 28 inches (711 mm) above all perimeter surfaces that are within 30 inches (762 mm), measured horizontally from the spa or hot tub. The height of nonconductive external steps for entry to or exit from the self-contained spa is not used to reduce or increase this rim height measurement.

2. The equipotential bonding requirements for perimeter surfaces shall not apply to a listed self-contained spa or hot tub located indoors and installed above a finished floor. [680.26(B)(2), 680.42(B) and 680.43 Exception No.2]

2.1. Conductive paved portions of perimeter surfaces. Conductive paved portions of perimeter surfaces, including masonry pavers, if used, shall be bonded with unencapsulated structural reinforcing steel in accordance with Item 1.1, or with unencapsulated steel structural welded wire reinforcement (welded wire mesh, welded wire fabric), bonded together by steel tie wires or the equivalent. Steel welded wire reinforcement shall be fully embedded within the pavement unless the pavement will not allow for embedding. If the reinforcing steel is absent, or is encapsulated in a nonconductive compound, or embedding is not possible, unencapsulated welded wire steel reinforcement or a copper conductor grid shall be provided and shall be secured directly under the paving and not more than 6 inches (152 mm) below finished grade.

Unencapsulated steel welded wire reinforcement that is not fully embedded in concrete, and copper grid regardless of location, used for equipotential bonding, shall be listed for corrosion resistance and mechanical performance. This listing requirement shall become effective January 1, 2025. The copper grid or unencapsulated steel welded wire reinforcement shall also meet the following:

2.1.1. Copper grid is constructed of 8 AWG solid bare copper and arranged in accordance with Item 1.2.3.

2.1.2. Steel welded wire reinforcement is minimum ASTM 6x6-W2.0 x W2.0 or minimum No. 3 rebar constructed in a 12-inch (305 mm) grid.

2.1.3. Copper grid and steel welded wire reinforcement follow the contour of the perimeter surface extending not less than 3 feet (914 mm) horizontally beyond the inside walls of the pool.

2.1.4. Only listed splicing devices or exothermic welding are used. [680.26(B)(2)(a)]

2.2. Unpaved portions of perimeter surfaces. Unpaved portions of perimeter surfaces shall be bonded with any of the following methods:

2.2.1. Copper conductor(s) shall be used in accordance with Items 2.2.1.1 through 2.2.1. 6:

2.2.1.1. At least one minimum 8 AWG bare solid copper conductor, including the 8 AWG copper equipotential bonding conductor, if available.

2.2.1.2. The conductors follow the contour of the perimeter surface.

2.2.1.3. Only listed splicing devices or exothermic welding are used.

2.2.1.4. The conductor(s) is 18 to 24 inches (457 to 610 mm) from the inside walls of the pool.

2.2.1.5. The conductor(s) is under the perimeter surface 4 to 6 inches (102 mm to 152 mm) below the finished grade.

2.2.1.6. Be installed only in perimeter surfaces not intended to have direct access to swimmers in the pool.

2.2.2. Copper grid or unencapsulated steel welded wire reinforcement used for equipotential bonding of unpaved portions of perimeter surfaces shall meet the following:

2.2.2.1. Be installed in accordance with 2.1.

2.2.2.2. Be located within unpaved surfaces between 4 to 6 inches (102 to 152 mm) below finished grade. [680.26(B)(2)(b)]

2.3. Nonconductive perimeter surfaces. Equipotential bonding shall not be required for nonconductive portions of perimeter surfaces that are separated from earth or raised on nonconducting supports, and it shall not be required for any perimeter surface that is electrically separated from the pool structure and raised on nonconductive supports above an equipotentially bonded surface. [680.26(B)(2)(c)]

2.4. Interconnection of bonded portions of perimeter surfaces. All surfaces where equipotential bonding is required shall be interconnected using listed splicing devices or exothermic welding. Where copper wire is used for this purpose, it shall be solid copper not smaller than 8 AWG. The conductor shall be permitted to encircle the pool to facilitate bonding connections to portions of the perimeter covered in 2.1 and 2.2 that are not contiguous. [680.26(B)(2)(d)]

3. Metallic components. All metallic parts of the pool structure, including reinforcing metal not addressed in Item 1.1, shall be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, the reinforcing steel shall not be required to be bonded. [680.26(B)(3)]

4. Underwater lighting. All metal forming shells and mounting brackets of no-niche luminaires shall be bonded. [680.26(B)(4)]

Exception: *Listed* low-voltage lighting systems with nonmetallic forming shells shall not require bonding. [680.26(B)(4) Exception]

5. Metal fittings. All metal fittings within or attached to the pool structure shall be bonded. [680.26(B)(5)]

Exceptions:

1. Isolated parts that are not over 4 inches (102 mm) in any dimension and do not penetrate into the pool structure more than 1 inch (25.4 mm) shall not require bonding.
2. Metallic pool cover anchors intended for insertion in a concrete or masonry deck surface, 1 inch (25 mm) or less in any dimension and 2 inches (51 mm) or less in length, shall not require bonding.
3. Metallic pool cover anchors intended for insertion in a wood or composite deck surface, 2 inches (51 mm) or less in any flange dimension and 2 inches (51 mm) or less in length, shall not require bonding. [680.26(B)(5) Exception]

6. Electrical equipment. Metal parts of the following electrical equipment shall be bonded: electrically powered pool covers; pool water circulation, treatment, heating, cooling or dehimidification equipment; and equipment not separated from the pool by a permanent barrier that prevents contact by a person, any other electrical equipment within 5 feet (1.5 m) measured horizontally from the inside wall of the pool or 12 feet (3.7 m) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, platforms or diving structures.

Exception: Metal parts of listed equipment incorporating an *approved* system of double insulation shall not be bonded. [680.26(B)(6) Exception]

6.1. Double-insulated water pump motors. Where a double-insulated water pump motor is installed under the provisions of this item, a solid 8 AWG copper conductor of sufficient length to make a bonding connection to a replacement motor shall be extended from the swimming pool equipotential bonding means to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool equipotential bonding means and the equipment grounding system for the premises, this bonding conductor shall be connected to the equipment grounding conductor of the motor circuit. [680.26(B)(6)(a)]

6.2. Pool water heaters. For pool water heaters rated at more than 50 amperes and having specific instructions regarding bonding and grounding, only those parts designated to be bonded shall be bonded and only those parts designated to be grounded shall be grounded. [680.26(B)(6)(b)]

7. All fixed metal parts including, but not limited to, metal-sheathed cables and raceways, metal piping, metal awnings, metal fences and metal door and window frames, shall be bonded where located no greater than either of the following:

7.1. Five feet (1.5 m) horizontally from the inside walls of the pool. Those separated from the pool by a permanent barrier that prevents contact by a person shall not be required to be bonded. [680.26(B)(7) Exception No. 1]

7.2. Twelve feet (3.7 m) vertically above the maximum water level of the pool, observation stands, towers, or platforms or any diving structures. [680.26(B)(7)]

E4204.3 Pool water. Where none of the bonded parts in Section E4204.2 are in direct connection with the pool water, the pool water shall be in direct contact with an *approved* corrosion-resistant conductive surface that exposes not less than 9 square inches (5800 mm^2) of surface area to the pool water at all times. The conductive surface shall be located where it is not exposed to physical damage or dislodgement during usual pool activities, and it shall be bonded in accordance with Section E4204.2. [680.26(C)]

E4204.4 Bonding of outdoor hot tubs and spas. Outdoor hot tubs and spas shall comply with the bonding requirements of Sections E4204.1 through E4204.3. Bonding by metal-to-metal mounting on a common frame or base shall be permitted. The metal bands or hoops used to secure wooden staves shall not be required to be bonded as required in Section E4204.2. [680.42 and 680.42(B)]

E4204.5 Bonding of indoor hot tubs and spas. The following parts of indoor hot tubs and spas shall be bonded together:

1. All metal fittings within or attached to the hot tub or spa structure. [680.43(D)(1)]
2. Metal parts of electrical equipment associated with the hot tub or spa water circulating system, including pump motors unless part of a *listed* self-contained spa or hot tub. [680.43(D)(2)]
3. Metal raceway and metal piping that are within 5 feet (1524 mm) of the inside walls of the hot tub or spa and that are not separated from the spa or hot tub by a permanent barrier. [680.43(D)(3)]
4. All metal surfaces that are within 5 feet (1524 mm) of the inside walls of the hot tub or spa and that are not separated from the hot tub or spa area by a permanent barrier. [680.43(D)(4)]

   Exception: Small conductive surfaces not likely to become energized, such as air and water jets and drain fittings, where not connected to metallic piping, towel bars, mirror frames, and similar nonelectrical equipment, shall not be required to be bonded. [680.43(D)(4) Exception]
5. Noncurrent-carrying metal parts of electrical devices and controls that are not associated with the hot tubs or spas and that are located less than 5 feet (1524 mm) from such units. [680.43(D)(5)]

E4204.5.1 Methods. All metal parts associated with the hot tub or spa shall be bonded by any of the following methods:

1. The interconnection of threaded metal piping and fittings. [680.43(E)(1)]
2. Metal-to-metal mounting on a common frame or base. [680.43(E)(2)]
3. The provision of an insulated, covered or bare solid copper bonding jumper not smaller than 8 AWG. It shall not be required that the 8 AWG or larger solid copper bonding conductor be extended or attached to any remote panelboard, service equipment or any electrode, but only that it shall be employed to eliminate voltage gradients in the hot tub or spa area as prescribed. [680.43(E)(3) and 680.26(B)]

E4204.5.2 Connections. Connections to bonded parts shall be made in accordance with Section E3406.14. [680.26(B)]

SECTION E4205—BONDING AND GROUNDING

E4205.1 Feeders and branch circuits. Feeders and branch circuits installed in a corrosive environment or wet location shall contain an equipment grounding conductor (EGC) that is an insulated copper conductor sized in accordance with Table E3908.13 (Table 250.122), but not smaller than 12 AWG. [680.7(A), (Table250.110)]

E4205.2 Cord-and-plug connected equipment. The flexible cord shall contain an EGC that is an insulated copper conductor sized in accordance with Table E3908.13 (Table 250.122), but not smaller than 12 AWG. The flexible cord shall terminate in a grounding-type attachment plug having a fixed grounding contact member. [680.7(B), (Table 250.110)]

E4205.3 Terminals. Terminals used for bonding and equipment grounding shall be identified for use in wet locations. Field-installed terminals in damp or wet locations or corrosive environments shall be composed of copper, copper alloy or stainless steel and shall be listed for direct burial use. [680.7(C)]

E4205.4 Luminaires and related equipment. Where branch-circuit wiring on the supply side of enclosures and junction boxes connected to conduits run to underwater luminaires are installed in corrosive environments as described in Section E4202.2, the wiring method of that portion of the branch circuit shall be as required in Section E4202.2 . Where not installed in corrosive environments, branch circuits shall comply with Chapter 38. Wiring methods shall contain an insulated copper equipment grounding conductor sized in accordance with Table E3809.13 but not smaller than 12 AWG. The equipment grounding conductor between the wiring chamber of the secondary winding of a transformer and a junction box shall be sized in accordance with the transformer secondary overcurrent protection provided.

The insulated copper equipment grounding conductor shall be connected to all through-wall lighting assemblies, wet-niche, dry-niche or no-niche luminaires other than *listed* low-voltage luminaires not requiring grounding. The junction box, transformer enclosure or other enclosure in the supply circuit to a wet-niche or no-niche luminaire and the field-wiring chamber of a dry-niche luminaire shall be grounded to the equipment grounding terminal of the panelboard. The equipment grounding terminal shall be directly connected to the panelboard enclosure. The equipment grounding conductor shall be installed without joint or splice. [680.23(F)(1) and (F)(2), 680.23(F)(2) Exception and 680.24(F)]

Exceptions:

1. Where more than one underwater luminaire is supplied by the same branch circuit, the equipment grounding conductor, installed between the junction boxes, transformer enclosures or other enclosures in the supply circuit to wet-niche luminaires, or between the field-wiring compartments of dry-niche luminaires, shall be permitted to be terminated on grounding terminals. [680.23(F)(2)(a)]
2. Where an underwater luminaire is supplied from a transformer, ground-fault circuit interrupter, clock-operated switch or a manual snap switch that is located between the panelboard and a junction box connected to the conduit that extends directly to the underwater luminaire, the equipment grounding conductor shall be permitted to terminate on grounding terminals on the transformer, ground-fault circuit interrupter, clock-operated switch enclosure, or an outlet box used to enclose a snap switch. [680.23(F)(2)(b)]

E4205.5 Nonmetallic conduit. Where a nonmetallic conduit is installed between a forming shell and a junction box, transformer enclosure or other enclosure, an 8 AWG insulated copper bonding jumper shall be installed in this conduit except where a *listed* low-voltage lighting system not requiring grounding is used. The bonding jumper shall be terminated in the forming shell, junction box or transformer enclosure, or ground-fault circuit-interrupter enclosure. The termination of the 8 AWG bonding jumper in the forming shell shall be covered with, or encapsulated in, a *listed* potting compound to protect such connection from the possible deteriorating effect of pool water. [680.23(B)(2)(b)]

E4205.6 Flexible cords. Other than *listed* low-voltage lighting systems not requiring grounding, wet-niche luminaires that are supplied by a flexible cord or cable shall have all exposed noncurrent-carrying metal parts connected to an insulated copper equipment grounding conductor that is an integral part of the cord or cable. This equipment grounding conductor shall be connected to a grounding terminal in the supply junction box, transformer enclosure or other enclosure. The equipment grounding conductor shall not be smaller than the supply conductors and not smaller than 16 AWG. [680.23(B)(3)]

E4205.7 Cord-connected equipment. Where fixed or stationary equipment is connected with a flexible cord to facilitate removal or disconnection for maintenance, repair or storage, as provided in Section E4202.3, the equipment grounding conductors shall be connected to a fixed metal part of the assembly. The removable part shall be mounted on or bonded to the fixed metal part. [680.8(C)]

SECTION E4206—EQUIPMENT INSTALLATION

E4206.1 Transformers and power supplies. Transformers and power supplies used for the supply of underwater luminaires, together with the transformer or power supply enclosure, shall be *listed*, labeled and identified for swimming pool and spa use. The transformer or power supply shall incorporate either a transformer of the isolated-winding type with an ungrounded secondary that has a grounded metal barrier between the primary and secondary windings, or a transformer that incorporates an *approved* system of double insulation between the primary and secondary windings. [680.23(A)(2)]

E4206.2 Ground-fault circuit interrupters. Where required in this chapter, ground-fault protection of receptacles and outlets on branch circuits rated 150 volts or less to ground and 60 amperes or less, single- or three-phase, shall be provided with a listed Class A GFCI. The GFCI requirements in this chapter, unless otherwise noted, are in addition to the requirements in Section E3902. [680.5(A) and (B)]

E4206.3 Wiring on load side of ground-fault circuit interrupters and transformers. For other than grounding conductors, conductors installed on the load side of a ground-fault circuit interrupter or transformer used to comply with the provisions of Section E4206.4, shall not occupy raceways, boxes or enclosures containing other conductors except where the other conductors are protected by ground-fault circuit-interrupters or are grounding conductors. Supply conductors to a feed-through type ground-fault circuit interrupter shall be permitted in the same enclosure. Ground-fault circuit interrupters shall be permitted in a panelboard that contains circuits protected by other than ground-fault circuit interrupters. [680.23(F)(3)]

E4206.4 Underwater luminaires. The design of an underwater luminaire supplied from a branch circuit, either directly or by way of a transformer or power supply meeting the requirements of Section E4206.1, shall be such that, where the fixture is properly installed without a ground-fault circuit interrupter, there is no shock hazard with any likely combination of fault conditions during normal use (not relamping). In addition, ground-fault circuit-interrupter protection for personnel shall be installed in the branch circuit supplying luminaires operating at voltages greater than the low-voltage contact limit to protect personnel performing lamping, relamping or servicing. Compliance with this requirement shall be obtained by the use of a *listed* underwater luminaire and by installation of a *listed* ground-fault circuit-interrupter in the branch circuit or a *listed* transformer or power supply for luminaires operating at more than the low-voltage contact limit. Luminaires that depend on submersion for safe operation shall be inherently protected against the hazards of overheating when not submerged. [680.23(A)(1), (A)(3), (A)(7) and (A)(8)]

E4206.4.1 Maximum voltage. Luminaires shall not be installed for operation on supply circuits over 150 volts between conductors. [680.23(A)(4)]

E4206.4.2 Luminaire location. Luminaires mounted in walls shall be installed with the top of the fixture lens not less than 18 inches (457 mm) below the normal water level of the pool, except where the luminaire is *listed* and identified for use at a depth of not less than 4 inches (102 mm) below the normal water level of the pool. A luminaire facing upward shall have the lens adequately guarded to prevent contact by any person or shall be *listed* for use without a guard. [680.23(A)(5) and (A)(6)]

E4206.5 Wet-niche luminaires. Forming shells shall be installed for the mounting of all wet-niche underwater luminaires and shall be equipped with provisions for conduit entries. Conduit shall extend from the forming shell to a suitable junction box or other enclo-

sure located as provided in Section E4206.9. Metal parts of the luminaire and forming shell in contact with the pool water shall be of brass or other *approved* corrosion-resistant metal. [680.23(B)(1) and (B)(2)]

The end of flexible-cord jackets and flexible-cord conductor terminations within a luminaire shall be covered with, or encapsulated in, a suitable potting compound to prevent the entry of water into the luminaire through the cord or its conductors. If present, the connection of the equipment grounding conductor within a luminaire shall be similarly treated to protect such connection from the deteriorating effect of pool water in the event of water entry into the luminaire. [680.23(B)(4)]

Luminaires shall be bonded to and secured to the forming shell by a positive locking device that ensures a low-resistance contact and requires a tool to remove the luminaire from the forming shell. [680.23(B)(5)]

E4206.5.1 Servicing. All wet-niche luminaires shall be removable from the water for inspection, relamping or other maintenance. The forming shell location and length of cord in the forming shell shall permit personnel to place the removed luminaire on the deck or other dry location for such maintenance. The luminaire maintenance location shall be accessible without entering or going into the pool water. In spa locations where wet-niche luminaires are installed low in the foot well of the spa, the luminaire shall only be required to reach the bench location, where the spa can be drained to make the bench location dry. [680.23(B)(6)]

E4206.6 Dry-niche luminaires. Dry-niche luminaires shall have provisions for drainage of water. Other than *listed* low-voltage luminaires not requiring grounding, a dry-niche luminaire shall have means for accommodating one equipment grounding conductor for each conduit entry. Junction boxes shall not be required but, if used, shall not be required to be elevated or located as specified in Section E4206.9 if the luminaire is specifically identified for the purpose. [680.23(C)(1) and (C)(2)]

E4206.7 No-niche luminaires. No-niche luminaires shall be *listed* for the purpose and shall be installed in accordance with the requirements of Section E4206.5. Where connection to a forming shell is specified, the connection shall be to the mounting bracket. [680.23(D)]

E4206.8 Through-wall lighting assembly. A through-wall lighting assembly shall be equipped with a threaded entry or hub, or a nonmetallic hub, for the purpose of accommodating the termination of the supply conduit. A through-wall lighting assembly shall meet the construction requirements of Section E4205.6 and be installed in accordance with the requirements of Section E4206.5 Where connection to a forming shell is specified, the connection shall be to the conduit termination point. [680.23(E)]

E4206.9 Junction boxes and enclosures for transformers or ground-fault circuit interrupters. Junction boxes for underwater luminaires and enclosures for transformers and ground-fault circuit interrupters that supply underwater luminaires shall comply with Sections E4206.9.1 through E4206.9.5. [680.24(A)]

E4206.9.1 Junction boxes. A junction box connected to a conduit that extends directly to a forming shell or mounting bracket of a no-niche luminaire shall be:

1. *Listed, labeled and identified* as a swimming pool junction box; [680.24(A)(1)]
2. Equipped with threaded entries or hubs or a nonmetallic hub; [680.24(A)(1)(1)]
3. Constructed of copper, brass, suitable plastic, or other *approved* corrosion-resistant material; [680.24(A)(1)(2)]
4. Provided with electrical continuity between every connected metal conduit and the grounding terminals by means of copper, brass or other *approved* corrosion-resistant metal that is integral with the box; and [680.24(A)(1)(3)]
5. Located not less than 4 inches (102 mm), measured from the inside of the bottom of the box, above the ground level or pool deck, or not less than 8 inches (203 mm) above the maximum pool water level, whichever provides the greatest elevation, and shall be located not less than 4 feet (1219 mm) from the inside wall of the pool, unless separated from the pool by a solid fence, wall or other permanent barrier. Where used on a lighting system operating at the low-voltage contact limit or less, a flush deck box shall be permitted provided that a potting compound is used to fill the box to prevent the entrance of moisture; and the flush deck box is located not less than 4 feet (1219 mm) from the inside wall of the pool. [680.24(A)(2)]

E4206.9.2 Other enclosures. An enclosure for a transformer, ground-fault circuit interrupter or a similar device connected to a conduit that extends directly to a forming shell or mounting bracket of a no-niche luminaire shall be:

1. *Listed* and *labeled* for the purpose, comprised of copper, brass, suitable plastic or other *approved* corrosion-resistant material; [680.24(B)(1), 680.24(B)(1)(2)]
2. Equipped with threaded entries or hubs or a nonmetallic hub; [680.24(B)(1)(1)]
3. Provided with an *approved* sealing compound identified for use with cable insulation, conductor insulation, bare conductor shield or other components at the conduit connection, that prevents circulation of air between the conduit and the enclosures; [680.24(B)(1)(3)]
4. Provided with electrical continuity between every connected metal conduit and the grounding terminals by means of copper, brass or other *approved* corrosion-resistant metal that is integral with the enclosures; and [680.24(B)(1)(4)]
5. Located not less than 4 inches (102 mm), measured from the inside bottom of the enclosure, above the ground level or pool deck, or not less than 8 inches (203 mm) above the maximum pool water level, whichever provides the greater elevation, and shall be located not less than 4 feet (1219 mm) from the inside wall of the pool, except where separated from the pool by a solid fence, wall or other permanent barrier. [680.24(B)(2)]

E4206.9.3 Protection of junction boxes and enclosures. Junction boxes and enclosures mounted above the grade of the finished walkway around the pool shall not be located in the walkway unless afforded additional protection, such as by location under diving boards or adjacent to fixed structures. [680.24(C)]

E4206.9.4 Grounding terminals. Junction boxes, transformer and power supply enclosures, and ground-fault circuit-interrupter enclosures connected to a conduit that extends directly to a forming shell or mounting bracket of a no-niche luminaire shall be provided with grounding terminals in a quantity not less than the number of conduit entries plus one. [680.24(D)]

E4206.9.5 Strain relief. The termination of a flexible cord of an underwater luminaire within a junction box, transformer or power supply enclosure, ground-fault circuit interrupter, or other enclosure shall be provided with a strain relief. [680.24(E)]

E4206.10 Underwater audio equipment. Underwater audio equipment shall be identified as underwater audio equipment. [680.27(A)]

E4206.10.1 Speakers. Each speaker shall be mounted in an *approved* metal forming shell, the front of which is enclosed by a captive metal screen, or equivalent, that is bonded to and secured to the forming shell by a positive locking device that ensures a low-resistance contact and requires a tool to open for installation or servicing of the speaker. The forming shell shall be installed in a recess in the wall or floor of the pool. [680.27(A)(1)]

E4206.10.2 Wiring methods. Rigid metal conduit of brass or other identified corrosion-resistant metal, rigid polyvinyl chloride conduit, rigid thermosetting resin conduit or liquid-tight flexible nonmetallic conduit (LFNC-B) shall extend from the forming shell to a suitable junction box or other enclosure as provided in Section E4206.9. Where rigid nonmetallic conduit or liquid-tight flexible nonmetallic conduit is used, an 8 AWG solid or stranded insulated copper bonding jumper shall be installed in this conduit with provisions for terminating in the forming shell and the junction box. The termination of the 8 AWG bonding jumper in the forming shell shall be covered with, or encapsulated in, a suitable potting compound to protect such connection from the possible deteriorating effect of pool water. [680.27(A)(2)]

E4206.10.3 Forming shell and metal screen. The forming shell and metal screen shall be of brass or other *approved* corrosion-resistant metal. Forming shells shall include provisions for terminating an 8 AWG copper conductor. [680.27(A)(3)]

E4206.11 Electrically operated pool covers. The electric motors, controllers and wiring for pool covers shall be located not less than 5 feet (1524 mm) from the inside wall of the pool except where separated from the pool by a wall, cover or other permanent barrier. Electric motors installed below grade level shall be of the totally enclosed type. The electric motor and controller shall be connected to a branch circuit protected by a ground-fault circuit interrupter. The device that controls the operation of the motor for an electrically operated pool cover shall be located so that the device operator has full view of the pool. [680.27(B)(1) and (B)(2)]

Exceptions:

1. Motors that are part of *listed* systems with ratings not exceeding the low-voltage contact limit and that are supplied by *listed* transformers or power supplies that comply with Section E4206.1 shall be permitted to be located less than 5 feet (1524 mm) from the inside walls of the pool. [680.27(B)(1) Exception]
2. Motors that are part of *listed* systems with ratings not exceeding the low-voltage contact limit and that are supplied by *listed* transformers or power supplies that comply with Section E4206.1 shall not be required to be connected to a branch circuit protected by a ground fault circuit-interrupter. [680.27 and (B)(2) Exception]

E4206.12 Electric pool water heaters. Electric pool water heaters shall have the heating elements subdivided into loads not exceeding 48 amperes and protected at not more than 60 amperes. The ampacity of the branch-circuit conductors and the rating or setting of overcurrent protective devices shall be not less than 125 percent of the total nameplate load rating. (680.10)

E4206.13 Electrically powered swimming pool heat pumps and chillers. Electrically powered swimming pool heat pumps and chillers using the circulating water system and providing heating, cooling, or both, shall be listed and rated for their intended use. The ampacity of the branch-circuit conductors and the rating or setting of overcurrent protective devices shall be sized to comply with the nameplate. [680.10(B)]

E4206.14 Pool area heating. The provisions of Sections E4206.14.1 through E4206.14.3 shall apply to all pool deck areas, including a covered pool, where electrically operated comfort heating units are installed within 20 feet (6096 mm) of the inside wall of the pool. [680.27(C)]

E4206.14.1 Unit heaters. Unit heaters shall be rigidly mounted to the structure and shall be of the totally enclosed or guarded types. Unit heaters shall not be mounted over the pool or within the area extending 5 feet (1524 mm) horizontally from the inside walls of a pool. [680.27(C)(1)]

E4206.14.2 Permanently wired radiant heaters. Electric radiant heaters shall be suitably guarded and securely fastened to their mounting devices. Heaters shall not be installed over a pool or within the area extending 5 feet (1524 mm) horizontally from the inside walls of the pool and shall be mounted not less than 12 feet (3658 mm) vertically above the pool deck. [680.27(C)(2)]

E4206.14.3 Radiant Heating Cables Prohibited. Radiant heating cables embedded in or below the deck shall be prohibited. [680.27(C)(3)]

E4206.15 Gas-fired water heater. Circuits serving gas-fired swimming pool and spa water heaters operating at voltages above the low-voltage contact limit shall be provided with ground-fault circuit-interruper protection.

SECTION E4207—STORABLE SWIMMING POOLS, STORABLE SPAS AND STORABLE HOT TUBS

E4207.1 Pumps. A cord-and-plug-connected pool filter pump for use with storable pools shall incorporate an *approved* system of double insulation or its equivalent and shall be provided with means for the termination of an equipment grounding conductor for the connection to the internal and nonaccessible noncurrent-carrying metal parts of the pump.

The means for grounding shall be an equipment grounding conductor run with the power-supply conductors in a flexible cord that is properly terminated in a grounding-type attachment plug having a fixed grounding contact. Cord-and-plug-connected pool filter pumps shall be provided with a ground-fault circuit-interrupter that is an integral part of the attachment plug or located in the power supply cord within 12 inches (305 mm) of the attachment plug. (680.31)

E4207.2 Ground-fault circuit interrupters required. Electrical equipment, including power-supply cords, used with storable pools shall be protected by ground-fault circuit interrupters. All receptacles rated 125-volts through 250 volts, 60 amperes or less, located within 20 feet (6096 mm) of the inside walls of a storable pool, storable spa or storable hot tub shall be protected by a Class A ground-fault circuit interrupter. In determining these dimensions, the distance to be measured shall be the shortest path that the supply cord of an appliance connected to the receptacle would follow without passing through a floor, wall, ceiling, doorway with hinged or sliding door, window opening or other effective permanent barrier. (680.32)

E4207.3 Luminaires. Luminaires for storable pools, storable spas and storable hot tubs shall not have exposed metal parts and shall be *listed* for the purpose as an assembly. In addition, luminaires for storable pools shall comply with the requirements of Section E4207.3.1 or E4207.3.2. (680.33)

E4207.3.1 Within the low-voltage contact limit. A luminaire installed in or on the wall of a storable pool shall be part of a cord-and-plug-connected lighting assembly. The assembly shall:

1. Have a luminaire lamp that is suitable for the use at the supplied voltage;
2. Have an impact-resistant polymeric lens, luminaire body and transformer enclosure;
3. Have a transformer meeting the requirements of Section E4206.1 with a primary rating not over 150 volts; and
4. Have no exposed metal parts. [680.33(A)]

E4207.3.2 Over the low-voltage contact limit but not over 150 volts. A lighting assembly without a transformer or power supply, and with the luminaire lamp(s) operating at over the low-voltage contact limit, but not over 150 volts, shall be permitted to be cord-and-plug-connected where the assembly is *listed* as an assembly for the purpose and complies with all of the following:

1. It has an impact-resistant polymeric lens and luminaire body.
2. A ground-fault circuit interrupter with open neutral conductor protection is provided as an integral part of the assembly.
3. The luminaire lamp is permanently connected to the ground-fault circuit interrupter with open-neutral protection.
4. It complies with the requirements of Section E4206.4.
5. It has no exposed metal parts. [680.33(B)]

E4207.4 Receptacle locations. Receptacles shall be located not less than 6 feet (1829 mm) from the inside walls of a storable pool, storable spa or storable hot tub. In determining these dimensions, the distance to be measured shall be the shortest path that the supply cord of an appliance connected to the receptacle would follow without passing through a floor, wall, ceiling, doorway with hinged or sliding door, window opening or other effective permanent barrier. (680.34)

E4207.5 Clearances. Overhead conductor installations shall comply with Section E4203.7, and underground conductor installations shall comply with Section E4203.8. [680.30]

E4207.6 Disconnecting means. Disconnecting means for storable pools and storable/portable spas and hot tubs shall comply with Section E4203.3. [680.30]

E4207.7 Ground-fault circuit interrupters. Ground-fault circuit interrupters shall comply with Section E4206.2. [680.30]

E4207.8 Pool water heaters. Electric pool water heaters shall comply with Section E4206.12.

SECTION E4208—SPAS AND HOT TUBS

E4208.1 Ground-fault circuit interrupters. The outlet(s) that supplies a self-contained spa or hot tub, or a packaged spa or hot tub equipment assembly, or a field-assembled spa or hot tub shall be protected by a ground-fault circuit interrupter. (680.44)

A *listed* self-contained unit or *listed* packaged equipment assembly marked to indicate that integral ground-fault circuit-interrupter protection is provided for all electrical parts within the unit or assembly, including pumps, air blowers, heaters, lights, controls, sanitizer generators and wiring, shall not require additional ground-fault protection. [680.44(A)]

E4208.2 Electric water heaters. Electric spa and hot tub water heaters shall be *listed* and shall have the heating elements subdivided into loads not exceeding 48 amperes and protected at not more than 60 amperes. The ampacity of the branch-circuit conductors, and the rating or setting of overcurrent protective devices, shall be not less than 125 percent of the total nameplate load rating. (680.10)

E4208.3 Underwater audio equipment. Underwater audio equipment used with spas and hot tubs shall comply with the provisions of Section E4206.10. [680.43(G)]

E4208.4 Emergency switch for spas and hot tubs. A clearly *labeled* emergency shutoff or control switch for the purpose of stopping the motor(s) that provides power to the recirculation system and jet system shall be installed at a point that is readily accessible to the users, adjacent to and within sight of the spa or hot tub and not less than 5 feet (1524 mm) away from the spa or hot tub. This requirement shall not apply to one-family *dwellings*. [680.41(A)]

E4208.5 Equipment exceeding the low-voltage contact limit. Except for self-contained spas and hot tubs, equipment with ratings exceeding the low-voltage contact limit shall be located at least 5 feet (1.5 meters) horizontally from the inside walls of a spa or hot tub, unless separated from the spa or hot tub by a solid fence, wall, or other permanent barrier. [680.41(B)]

E4208.6 Receptacles supplying power to spas and hot tubs. Receptacles that provide power for a spa or hot tub shall not exceed 150 volts to ground and shall be GFCI protected. [680.43(A)(3)]

SECTION E4209—HYDROMASSAGE BATHTUBS

E4209.1 General. Installations of hydromassage bathtubs, as defined in Chapter 35, shall be required to comply only with Section E4209. The branch circuit wiring method(s) supplying a hydromassage bathtub shall comply with Chapter 38. (680.70)

E4209.2 Ground-fault circuit interrupters. Hydromassage bathtubs and their associated electrical components shall be supplied by an individual branch circuit(s) and protected by a readily accessible ground-fault circuit interrupter. All 125-volt, single-phase receptacles not exceeding 30 amperes and located within 6 feet (1829 mm) measured horizontally of the inside walls of a hydromassage tub shall be protected by a ground-fault circuit interrupter(s). (680.71)

E4209.3 Other electric equipment. Luminaires, switches, receptacles and other electrical equipment located in the same room, and not directly associated with a hydromassage bathtub, shall be installed in accordance with the requirements of this code relative to the installation of electrical equipment in bathrooms. (680.72)

E4209.4 Accessibility. Hydromassage bathtub electrical equipment shall be accessible without damaging the building structure or building finish.

Where the hydromassage bathtub is cord- and plug-connected with the supply receptacle accessible only through a service access opening, the receptacle shall be installed so that its face is within direct view and not more than 12 inches (305 mm) from the plane of the opening. (680.73)

E4209.5 Bonded parts. The following parts shall be bonded together:

1. Metal fittings within or attached to the tub structure that are in contact with the circulating water.
2. Metal parts of electrical equipment associated with the tub water circulating system, including the pump and blower motors.
3. Metal-sheathed cables, metal raceways and metal piping that are within 5 feet (1524 mm) of the inside walls of the tub and that are not separated from the tub area by a permanent barrier.
4. Exposed metal surfaces that are within 5 feet (1524 mm) of the inside walls of the tub and not separated from the tub area by a permanent barrier.
5. Noncurrent-carrying metal parts of electrical devices and controls that are not associated with the hydromassage tubs and that are located within 5 feet (1524 mm) from such units. [680.74(A)]

Exceptions:

1. Double-insulated motors and blowers shall not be bonded.
2. Small conductive surfaces not likely to become energized, such as air and water jets, supply valve assemblies and drain fittings not connected to metal piping, and towel bars, mirror frames and similar nonelectric equipment not connected to metal framing shall not be required to be bonded. [680.74(A) Exceptions 1 and 2]
3. Small conductive surfaces of electrical equipment not likely to become energized, such as the mounting strap or yoke of a listed light switch or receptacle that is grounded, shall not be required to be bonded. [680.74(A) Exceptions 1, 2 and 3]

E4209.6 Method of bonding. Metal parts required to be bonded by this section shall be bonded together using a solid copper bonding jumper, insulated, covered or bare, not smaller than 8 AWG. The bonding jumper(s) shall be required for equipotential bonding in the area of the hydromassage bathtub and shall not be required to be extended or attached to any remote panelboard, service equipment or electrode. In all installations, a bonding jumper long enough to terminate on a replacement nondouble-insulated pump or blower motor shall be provided and shall be terminated to the equipment grounding conductor of the branch circuit of the motor where a double-insulated circulating pump or blower motor is used. [680.74(B)]