

**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](http://www.townofniagara.com)

AUGUST 2025

**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](mailto: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 \_\_\_\_\_

# Certificate of Attestation of Exemption



**Workers' Compensation Board**

Instructions for obtaining and filing a Certificate of Attestation of Exemption from Workers' Compensation and/or Disability and Paid Family Leave Benefits (CE-200) through New York Business Express

## Follow these steps:

1. Go to **businessexpress.ny.gov**.
2. Select Log in/Register in the top right-hand corner. A NY.gov Business account is required.
3. If you do not have a NY.gov business account, go to **step 4** to set up your account.  
If you have a NY.gov log-in and password, go to **step 16**.
4. Select Register with NY.gov under New Users.
5. Select Proceed.
6. Enter the following:
  - First and Last Name
  - Email
  - Confirm Email
  - Preferred Username (check if username is available)
7. Select I'm not a robot.
  - You may have to complete a Captcha Verification before proceeding.
8. Select Create Account.
  - If you already have a NY.gov account, the screen will display your existing accounts, either Individual or Business.
  - Do one of the following:
    - If the account(s) shown is a NY.gov Individual account, select **Continue**.
    - If the account(s) shown is a NY.gov Business account, select **Email Me the Username(s)**.
9. Verify that the account information is correct.
  - Select **Continue**.
10. An activation email will be sent.
  - If you do not receive an email, see the **No Email Received During Account Creation** page.
11. Open your activation email and select **Click Here**.
  - Specify three security questions.
  - Select **Continue**.
12. Create a password (must contain at least eight characters).
13. Select **Set Password**. You have successfully activated your NY.gov ID.
14. Select **Go to MyNy**.
  - At the top of the screen select **Services**.
  - Select **Business**.
  - Select **New York Business Express**.
  - Select **Log in/Register**.
15. On the New York Business Express home page, do one of the following:
  - Scroll down to Top Requests and select **Certificate of Attestation of Exemption**, or
  - Search Index A-Z for **CE-200**.
16. Under **How to Apply**:
  - Select **Apply as a Business**, or
  - Select **Apply as a Homeowner** (applies to those obtaining permits to work on their residence).
17. Complete application screens.
18. Review Application Summary.
19. Attest and submit.

You will receive an email when your certificate has been issued.

To view your certificate:

- Select **Access Recent Activity** from your email, or
- Access **businessexpress.ny.gov**, and then access your **Dashboard** (under your login name on right).

Print and sign the **Certificate of Attestation of Exemption**.

Submit your **CE-200** for your license, permit or contract to the Issuing Agency.

# PERMANENTLY INSTALLED SWIMMING POOLS

## 2017 National Electrical Code Requirements NEW YORK ELECTRICAL INSPECTION AGENCY

585.436.4460 www.NYEIA.com

PERMANENTLY INSTALLED SWIMMING POOLS ARE THOSE THAT ARE CONSTRUCTED IN THE GROUND OR PARTIALLY IN THE GROUND, AND ALL OTHERS CAPABLE OF HOLDING WATER WITH A DEPTH GREATER THAN 42 INCHES (1067 MM)

### 1) Pool Pump Receptacle (Outlet) and Wiring Method

- Swimming pool pump motor receptacle must be located at least 6' from the inside pool wall, must be grounded, and Ground Fault Circuit Interrupter (GFCI) protected.
- Receptacle must have an extra-duty, in-use, weatherproof cover that can be closed when the cord is plugged in.
- Depending on the horsepower of the pump motor, the circuit line for the pump motor may need to be a continuous line going directly to the panel box, and isolated from all other receptacles and loads. (see NEC Table 430.248)
- Grounding Conductor (ground wire) for the pump motor cannot be less than #12 AWG insulated copper grounded wire, and must be in conduit. (Exception: When entering a building the wire can change to NM) (Cannot use NM wire in conduit).
- Conduit
  - PVC - All PVC conduit\* must be buried at least 18" deep (12" if GFCI protected prior to entering the ground).
  - Metal - All Rigid Metal Conduit\* must be at least 6" deep.

\* Wires used in conduit must be single strand wires (ex: THWN, etc - NO NM or UF CABLE in Conduit).

### 2) Convenience Receptacle (Outlet) and Wiring Method

- At least one (1) 15- or 20-ampere convenience receptacle must be located no closer than 6' and no further than 20' from the inside pool wall (Can be existing and/or wired with any approved wiring method). This receptacle cannot be located more than 6 1/2' above the grade level, deck, or platform serving the swimming pool.
- Convenience receptacle must be Ground Fault Circuit Interrupter (GFCI) protected, Tamper Resistant (TR), and Weather Resistant (WR) type receptacle.
- Must have an extra-duty, in-use, weatherproof cover that can be closed when in use (for all wet locations).
- May need to be separate from the pool pump receptacle wiring.
- Wiring
  - UF cable if buried must be at least 24" deep (12" if GFCI protected prior to entering the ground).
  - PVC - All PVC conduits\* must be buried at least 18" deep (12" if GFCI protected prior to entering the ground).
  - Metal - All Rigid Metal Conduits\* must be at least 6" deep

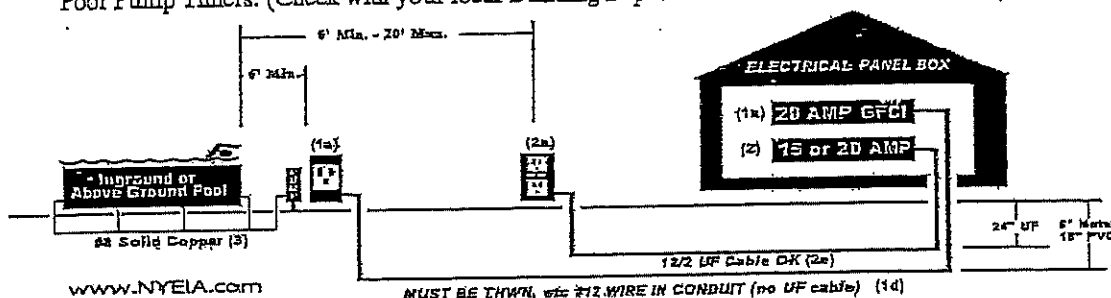
\* Wires used in conduit must be single strand wires (ex: THWN, etc - NO NM or UF CABLE in Conduit).

### 3) Bonding The Pool

- All metal parts must be bonded together using a #8 (or larger) solid copper wire.
- Must use non-corrosive clamps that are listed for direct burial use.
- Conductive pool shells must be bonded in a minimum of four (4) equal points uniformly spaced around the pool
- Nonconductive pool shells must have a #8 (or larger) solid, bare copper wire 18"-24" from the inside pool wall under the perimeter surface 4"-6" below the final grade.
- A minimum of nine (9) square inches of corrosion resistant metal must be in the water to bond the water.

### 4) Other

- Building Permits are required. Secure a Building Permit from your municipality prior to beginning work.
- Pool Alarms are required. (Check with your local Building Department for additional information).
- Pool Pump Timers: (Check with your local Building Department for additional information).



PLEASE CONTACT YOUR LOCAL INSPECTOR IF YOU HAVE ANY QUESTIONS  
NEW YORK ELECTRICAL INSPECTION AGENCY

Fritz Gunther - Chief Electrical Inspector  
2767 Dewey Avenue \* Rochester, New York 14616 - (585) 436-4460 \* www.NYEIA.com  
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PHONE: (716) 297-2150  
FAX: (716) 297-9262  
[www.townofniagara.com](http://www.townofniagara.com)

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.



[www.atlanticinlandinc.com](http://www.atlanticinlandinc.com)  
[jsgarven@gmail.com](mailto:jsgarven@gmail.com) 716.810.4500

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**John Garven**  
NY State Code Enforcement Officer



**NIAGARA FRONTIER INSPECTION AGENCY**

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

[WWW.NFIA.US.COM](http://WWW.NFIA.US.COM)

Office: 585.436.4460  
Cell: 585.737.7893  
Fax: 585.349.3834



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INSPECTION AGENCY**  
Main Office: 844.436.4460

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**ATLANTIC-INLAND, INC.**

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

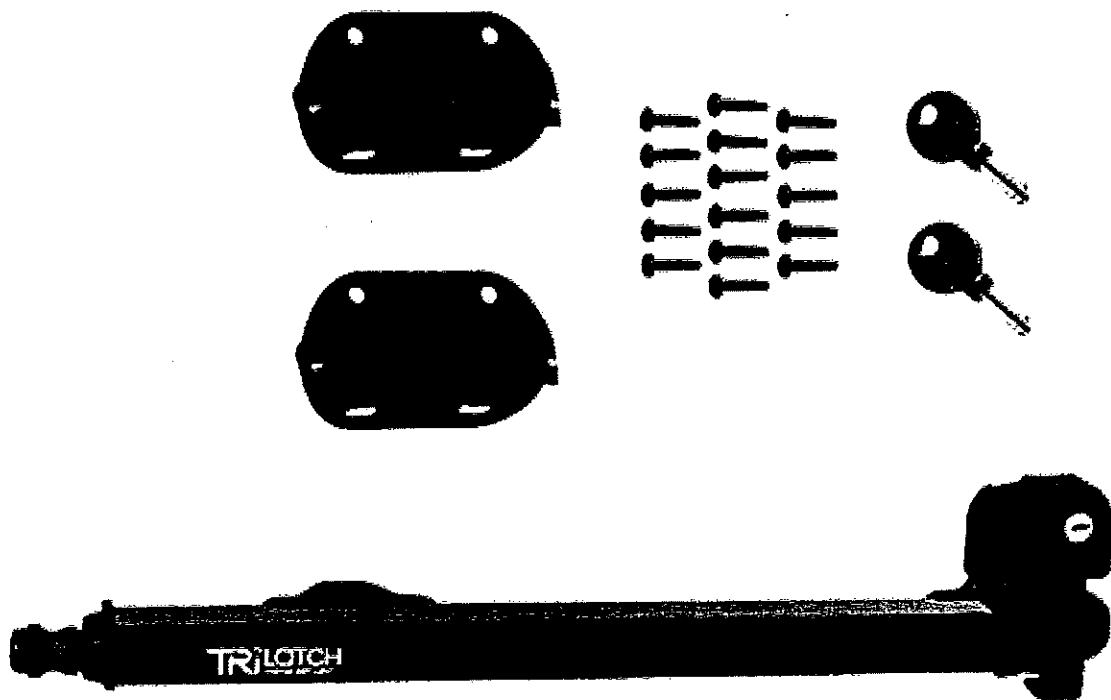
Email: [inspector4856@yahoo.com](mailto:inspector4856@yahoo.com)  
Phone: (716) 329-5075  
Emergency Phone: (716) 225-7400  
Email (Preferred) or Text

**COMMONWEALTH ELECTRICAL  
INSPECTION SERVICE INC.**

**MIKE GARGUIOLO**  
EAST AURORA  
716-553-6695  
[mgarg1059@gmail.com](mailto:mgarg1059@gmail.com)

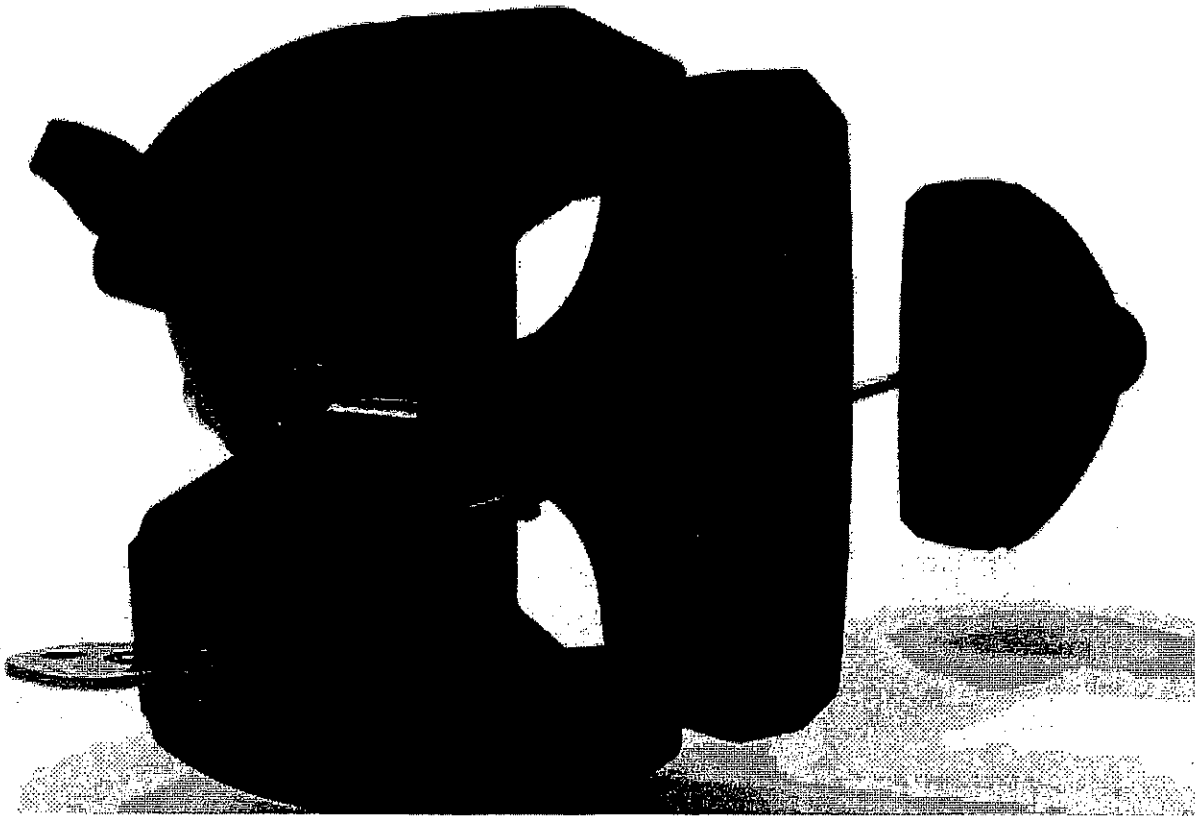
**JOE PRYBYLSKI**  
LANCASTER  
716-983-7998  
[ceisjkgp@proton.me](mailto:ceisjkgp@proton.me)

# EXAMPLE



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EXAMPLE FOR A 6FT FENCE





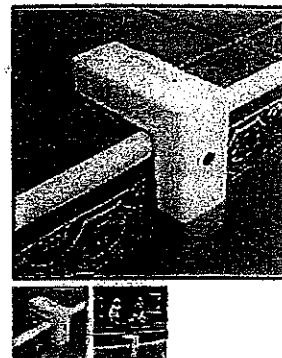
The new Model PGRM-2 introduces "Negative Displacement Technology", a new sensing method that requires no adjustments. Entry into the pool by children, pets, or intruders is detected by the unit's electronic sensor and sets off a loud, pulsating alarm both in the home and at the pool. Safe, simple and 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 similar to a one year old child weighing 18 pounds and up. The alarm system can be used with a solar 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 deactivated 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.**

RECEIVED

MAY 10 2022

TOWN OF NIAGARA  
BLDG. INSP. OFFICE

#### Poolguard InGround Alarm



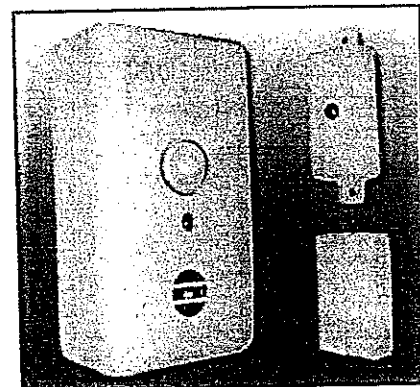
## EXAMPLE

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

- 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.

#### Poolguard Door Alarm DAPT-WT



DOOR ALARM - Model DAPT-WT -



*Town of Niagara, NY  
Tuesday, August 15, 2023*

## 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



Town of Niagara, NY  
Tuesday, August 15, 2023

## Chapter 221. Swimming Pools

### § 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.<sup>[1]</sup>
- [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, algicide 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.<sup>[1]</sup>

[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.<sup>[2]</sup>

[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.<sup>[1]</sup>

[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.<sup>[1]</sup>

- [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.

# ZONING

## APPENDIX A ZONING SCHEDULE TOWN OF NIAGARA, NIAGARA COUNTY, NEW YORK Part 2 [Amended 10-21-2003; 4-19-2005 by L.L. No. 1-2005]

District	Permitted Uses	Minimum Lot Requirements		Setbacks (feet)						Maximum Building Height (feet)	Maximum Lot Coverage	Minimum Floor Area (square feet)
		Area (square foot or acres)	Width (feet)	Principal Building			Accessory Building					
				Front	Rear	Side	Front	Rear	Side			
SINGLE FAMILY R-1	Places of worship	3 acres	200	60	50	50	50	50	50	35	20%	Exclude garage 1,200
	One-family dwellings	7,500	60	40	10	7		4	4	33	25%	
	Cluster residential developments <sup>1</sup>											
	One-family	7,500	60	40	10	7		4	4	33	30%	Exclude garage 1,200
	Two-family	7,500	85	40	10	5		4	4	33	30%	Each unit 1,000
FAMILY R-1	Corner lots	7,500	60	40	10	7/13		4	Note <sup>2</sup>		25%	Exclude garage 1,200
	Multiple-family <sup>1</sup>	2,800 each unit	110	40	15	10		4	4	35	35%	Each unit 800
	Planned unit development <sup>1</sup>	See Article X										
	Quasi-public building and recreation areas <sup>1</sup>	2 acres	200	60	50	50		50	50	35	30%	
	Hospitals, philanthropic or charitable uses <sup>1</sup>	2 acres	200	60	50	50		50	50	35	30%	

### NOTES:

<sup>1</sup> Permitted with special use permit and/or Town and Planning Board approval.

<sup>2</sup> Refer to § 245-29B.



## CHAPTER 3 GENERAL REQUIREMENTS

### SECTION 303 SWIMMING POOLS, SPAS AND HOT TUBS

#### **303.1 Swimming pools.**

Swimming pools shall be maintained in a clean and sanitary condition, and in good repair.

#### **[NY] 303.2 Enclosures.**

The provisions of this section shall control the maintenance of barriers for swimming pools, spas and hot tubs installed, constructed or substantially modified after December 14, 2006. Design controls are intended to provide protection against potential drowning and neardrowning by restricting access to swimming pools, spas and hot tubs.

##### **[NY] 303.2.1 Compliance with other codes.**

Enclosures for residential swimming pools, spas and hot tubs shall be in compliance with Section R326 of the *Residential Code of New York State*. Enclosures for public swimming pools, spas and hot tubs shall be in compliance with Section 3109 of the *Building Code of New York State*.

##### **[NY] 303.2.2 Temporary barriers.**

An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be surrounded by a temporary barrier during installation or construction in compliance with Section R326.4 of the *Residential Code of New York State* or Section 3109.3.2 of the *Building Code of New York State*, as applicable.

#### **[NY] 303.3 Swimming pool and spa alarms.**

A swimming pool or spa installed, constructed or substantially modified after December 14, 2006, shall be equipped with an approved pool alarm in compliance with Section R326.7 of the *Residential Code of New York State* or Section R3109.5 of the *Building Code of New York State*.

##### **Exceptions:**

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

#### **[NY] 303.4 Entrapment protection for swimming pools and spas.**

Swimming pools and spas shall maintain body entrapment protections for suction outlets in accordance with the *Building Code of New York State* or the *Residential Code of New York State*, as applicable.



## CHAPTER 3 BUILDING PLANNING

### SECTION R326 SWIMMING POOLS, SPAS AND HOT TUBS

#### [NY] R326.1 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 pools for the shared use of multiple townhouse units shall be regulated by the *Building Code of New York State*.

#### [NY] R326.1.1 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 Section 8003 (Federal swimming pool and spa drain cover standard) of Title 15 of the United States Code (CPSC 15 USC 8003), where applicable.

#### [NY] R326.2 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 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, waterheating 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 OUTLET.** A fitting, fitting assembly, cover/grate, sump, and related components that provide a localized low-pressure area for the transfer of water from a swimming pool.

**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] R326.3 Compliance with other standards.

##### [NY] R326.3.1 In-ground pools.

In-ground pools shall be designed and constructed in conformance with ANSI/APSP/ICC 5 (American National Standard for Residential Inground Swimming Pools, 2011).

##### [NY] R326.3.2 Above-ground and on-ground pools.

Above-ground and on-ground pools shall be designed and constructed in conformance with ANSI/APSP/ICC 4



(American National Standard for Aboveground/Onground Residential Swimming Pools, 2012).

**[NY] R326.3.3 Permanently installed spas and hot tubs.**

Permanently installed spas and hot tubs shall be designed and constructed in conformance with ANSI/APSP/ICC 3 (American National Standard for Permanently Installed Residential Spas and Swim Spas, 2014).

**[NY] R326.3.4 Portable spas and hot tubs.**

Portable spas and hot tubs shall be designed and constructed in conformance with ANSI/APSP/ICC 6 (American National Standard for Residential Portable Spas and Swim Spas, 2013).



**[NY] R326.4 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 the dwelling, and persons in other parts of the property not contained within the pool enclosure.

**[NY] R326.4.1 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 R326.4.2 is provided.

**Exceptions:**

1. Above-ground or on-ground pools where the pool structure constitutes a barrier in compliance with Section R326.4.2.9.
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] R326.4.1.1 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] R326.4.1.2 Replacement by a permanent barrier.**

A temporary barrier shall be replaced by a complying permanent barrier within either of the following periods:

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

**[NY] R326.4.1.2.1 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] R326.4.2 Permanent barriers.**

Swimming pools shall be completely enclosed by a permanent barrier complying with Sections R326.4.2.1 through R326.4.2.6.

**[NY] R326.4.2.1 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 R326.4.2.2 and R326.4.2.3.

**[NY] R326.4.2.2 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] R326.4.2.3 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<sup>3</sup>/<sub>4</sub> inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall be not greater than 1<sup>3</sup>/<sub>4</sub> inches (44 mm) in width.

**[NY] R326.4.2.4 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  $1\frac{3}{4}$  inches (44 mm) in width.

**[NY] R326.4.2.5 Chain link dimensions.**

Maximum mesh size for chain link fences shall be a  $\frac{2}{4}$  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  $1\frac{3}{4}$  inches (44 mm).

**[NY] R326.4.2.6 Diagonal members.**

Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be not greater than  $1\frac{3}{4}$  inches (44 mm).

**[NY] R326.4.2.7 Gates.**

Gates shall comply with the requirements of Sections R326.4.2.1 through R326.4.2.6, and with the following requirements:

**[NY] R326.4.2.7.1 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 pool.

**[NY] R326.4.2.7.2 Latching.**

All gates shall be self-latching, with the latch handle located within the enclosure (i.e., on the pool side of the enclosure) and at least 40 inches (1016 mm) above grade. In addition, if the latch handle is located less than 54 inches (1372 mm) from grade, the latch handle shall be located at least 3 inches (76 mm) below the top of the gate, and neither the gate nor the barrier shall have any opening greater than 0.5 inch (12.7 mm) within 18 inches (457 mm) of the latch handle.

**[NY] R326.4.2.7.3 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.

**X [NY] R326.4.2.8 Dwelling wall as barrier.**

A wall or walls of a dwelling may serve as part of the barrier, provided that the wall or walls meet the applicable barrier requirements of Sections R326.4.2.1 through R326.4.2.6, and one of the following conditions shall be met:

1. a) Doors with direct access to the 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 in accordance with UL 2017. The audible alarm shall activate within 7 seconds and 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; and  
b) Operable windows in the wall or walls used as a barrier shall have a latching device located no less than 48 inches above the floor. Openings in operable windows shall not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position; and  
c) Where the dwelling is wholly contained within the pool barrier or enclosure, alarms shall be provided at every door with direct access to the pool; or
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] R326.4.2.8.1 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] R326.4.2.9 Pool structure as barrier.**

Where an above-ground 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 R326.4.2.1 through R326.4.2.8. 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; or
2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Sections R326.4.2.1 through R326.4.2.8.

**[NY] R326.4.3 Indoor swimming pool.**

Walls surrounding an indoor swimming pool shall comply with Section R326.4.2.8.

**[NY] R326.4.4 Prohibited locations.**

Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barrier.

**[NY] R326.5 Entrapment protection for swimming pool and spa suction outlets.**

Suction outlets shall be designed to produce circulation throughout the pool or spa. Single-outlet systems, such as automatic vacuum cleaner systems, or multiple suction outlets, whether isolated by valves or otherwise, shall be protected against user entrapment.

**[NY] R326.5.1 Compliance.**

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] R326.6 Suction outlets.**

Suction outlets shall be designed to produce circulation throughout the pool or spa. Single-outlet systems, such as automatic vacuum cleaner systems, or multiple suction outlets, whether isolated by valves or otherwise, shall be protected against user entrapment.

**[NY] R326.6.1 Compliance alternative.**

Suction outlets may be designed and installed in accordance with ANSI/APSP/ICC 7.

**[NY] R326.6.2 Suction fittings.**

Pool and spa suction outlets shall have a cover that conforms to ANSI/ASME A112.19.8, or an 18 inch by 23 inch (457 mm by 584 mm) drain grate or larger, or an approved channel drain system.

**Exception:** Surface skimmers.

**[NY] R326.6.3 Atmospheric vacuum relief system required.**

Pool and spa single- or multiple-outlet circulation systems shall be equipped with atmospheric vacuum relief should grate covers located therein become missing or broken. This vacuum relief system shall include at least one approved or engineered method of the type specified herein, as follows:

1. Safety vacuum release system conforming to ASME A112.19.17; or
2. An approved gravity drainage system.

**[NY] R326.6.4 Dual drain separation.**

Single or multiple pump circulation systems have a minimum of two suction outlets of the approved type. A minimum horizontal or vertical distance of 3 feet (914 mm) shall separate the outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum relief-protected line to the pump or pumps.

**[NY] R326.6.5 Pool cleaner fittings.**

Where provided, vacuum or pressure cleaner fitting(s) shall be located in an accessible position(s) at least 6 inches (152 mm) and not more than 12 inches (305 mm) below the minimum operational water level or as an attachment to the skimmer(s).

**[NY] R326.7 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 (Standard Specification for Pool Alarms), 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] R326.7.1 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] R326.7.2 Alarm activation.**

Pool alarms shall activate upon detecting entry into the water and shall sound poolside and inside the dwelling.

**[NY] R326.7.3 Prohibited alarms.**

The use of personal immersion alarms shall not be construed as compliance with this section.





## CHAPTER 42 SWIMMING POOLS

### 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, fountains, 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)

#### E4201.2 Definitions.

(680.2)

**CORD-AND-PLUG-CONNECTED LIGHTING ASSEMBLY.** A lighting assembly consisting of a cord-and-plug-connected transformer and a luminaire intended for installation in the wall of a spa, hot tub, or storable pool.

**DRY-NICHE LUMINAIRE.** A luminaire intended for installation in the floor or wall of a pool, spa or fountain in a niche that is sealed against the entry of water.

**FORMING SHELL.** A structure designed to support a wet-niche luminaire assembly and intended for mounting in a pool or fountain structure.

**FOUNTAIN.** Fountains, ornamental pools, display pools, and reflection pools. The definition does not include drinking fountains.

**HYDROMASSAGE BATHTUB.** A permanently installed bathtub equipped with a recirculating piping system, pump, and associated equipment. It is designed so it can accept, circulate and discharge water upon each use.

**LOW-VOLTAGE CONTACT LIMIT.** A voltage not exceeding the following values:

1. 15 volts (RMS) for sinusoidal ac.
2. 21.2 volts peak for nonsinusoidal ac.
3. 30 volts for continuous dc.
4. 12.4 volts peak for dc that is interrupted at a rate of 10 to 200 Hz.

**MAXIMUM WATER LEVEL.** The highest level that water can reach before it spills out.

**NO-NICHE LUMINAIRE.** A luminaire intended for installation above or below the water without a niche.

**PACKAGED SPA OR HOT TUB EQUIPMENT ASSEMBLY.** A factory-fabricated unit consisting of water-circulating, heating and control equipment mounted on a common base, intended to operate a spa or hot tub. Equipment may include pumps, air blowers, heaters, luminaires, controls and sanitizer generators.

**PERMANENTLY INSTALLED SWIMMING, WADING, IMMERSION AND THERAPEUTIC POOLS.** Those that are constructed in the ground or partially in the ground, and all others capable of holding water with a depth greater than 42 inches (1067 mm), and all pools installed inside of a building, regardless of water depth, whether or not served by electrical circuits of any nature.

**POOL.** Manufactured or field-constructed equipment designed to contain water on a permanent or semipermanent basis and used for swimming, wading, immersion, or therapeutic purposes.

**POOL COVER, ELECTRICALLY OPERATED.** Motor-driven equipment designed to cover and uncover the water surface of a pool by means of a flexible sheet or rigid frame.

**SELF-CONTAINED SPA OR HOT TUB.** A factory-fabricated unit consisting of a spa or hot tub vessel with all water-circulating, heating and control equipment integral to the unit. Equipment may include pumps, air blowers, heaters, luminaires, controls and sanitizer generators.

**SPA OR HOT TUB.** A hydromassage pool, or tub for recreational or therapeutic use, not located in health care facilities, designed for immersion of users, and usually having a filter, heater, and motor-driven blower. They are installed indoors or outdoors, on the ground or supporting structure, or in the ground or supporting structure. Generally, a spa or hot tub is not designed or intended to have its contents drained or discharged after each use.

**STORABLE SWIMMING, WADING OR IMMERSION POOLS; OR STORABLE/PORTABLE SPAS AND HOT TUBS.** Swimming, wading, or immersion pools that are intended to be stored when not in use, that are constructed on or above the ground and that are capable of holding water with a maximum depth of 42 inches (1067 mm), or a pool, spa, or hot tub that is constructed on or above the ground with nonmetallic, molded polymeric walls or inflatable fabric walls



regardless of dimension.

**THROUGH-WALL LIGHTING ASSEMBLY.** A lighting assembly intended for installation above grade, on or through the wall of a pool, consisting of two interconnected groups of components separated by the pool wall.

**WET-NICHE LUMINAIRE.** A luminaire intended for installation in a forming shell mounted in a pool or fountain structure where the luminaire will be completely surrounded by water.

## CHAPTER 42 SWIMMING POOLS

### 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 E4202.2.1 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 (A) and (B); 680.21(A); 680.23(B) and (F); 680.25(A); 680.42; 680.43; and 680.70]

**TABLE E4202.1<sup>a</sup>**  
**PERMITTED WIRING METHODS IN CORROSIVE ENVIRONMENTS**

WIRING LOCATION OR PURPOSE (Application allowed where marked with an "A")	IMC <sup>b</sup> , RMC <sup>b</sup> , RNC <sup>e</sup>	LF MC	LFN MC	M C <sup>g</sup>	FLEX CORD
Panelboard(s) that supply pool equipment: from service equipment to panelboard	A <sup>f</sup>	—	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 <sup>j</sup>	—	A	—	A <sup>d</sup>
Dry niche: from branch circuit OCPD to luminaires	A	—	A	—	—
Pool-associated motors: from branch circuit OCPD to motor/h	A	A <sup>c</sup>	A <sup>c</sup>	A	A <sup>d</sup>
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 <sup>d</sup>
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 <sup>d</sup>
Indoor spas and hot tubs, and other pool, spa or hot tub associated equipment: from branch circuit OCPD to equipment	A	A	A	—	A <sup>d</sup>
Connection at pool lighting transformers or power supplies	A	A <sup>i</sup>	A	—	—

For SI: 1 foot = 304.8 mm.

- a. For all wiring methods, see Section E4205 for equipment grounding conductor requirements.
- b. See Section E4202.2.1 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 E4202.2.
- 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 E4202.3 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 Corrosive environment.

Areas where pool sanitation chemicals are stored, areas with circulation pumps, automatic chlorinators or filters, open areas under decks adjacent to or abutting the pool structure and similar locations shall be considered to be corrosive



environments. The air in such areas shall be considered to be laden with acid, chlorine and bromine vapors or any combination of acid, chlorine or bromine vapors; and any liquids or condensation in those areas shall be considered to be laden with acids, chlorine and bromine vapors, or any combination of acid, chlorine or bromine vapors. [680.14 (A)]

#### **E4202.2.1 Wiring methods.**

Wiring methods in the areas described in Section E4202.2 shall be listed and identified for use in such areas. Rigid metal conduit (RMC), intermediate metal conduit (IMC), rigid polyvinyl chloride conduit (RNC) and reinforced thermosetting resin conduit shall be considered to be resistant to the corrosive environment specified in Section E4202.2. [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 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), (B), and (C); 680.21(A)(5)]
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 grounded by an insulated copper equipment grounding conductor that is an integral part of the cord or cable. Such grounding conductor shall be connected to a grounding terminal in the supply junction box, transformer enclosure, or other enclosure and 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 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 bonding grid is connected to the equipment grounding conductor of the motor circuit 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)]

CHAPTER 42 SWIMMING POOLS  
SECTION E4203  
EQUIPMENT LOCATION AND CLEARANCES

**E4203.1 Receptacle outlets.**

Receptacle outlets shall be installed and located in accordance with Sections E4203.1.1 through E4203.1.5. Distances shall be measured as the shortest path that an appliance supply cord connected to the receptacle would follow without penetrating 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 of the grounding type, located not less than 6 feet (1829 mm) from the inside walls of pools and outdoor spas and hot tubs, and ground-fault circuit-interrupter protected.

**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.**

Not 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 15- and 20-ampere, single phase, 125-volt receptacles located within 20 feet (6096 mm) of the inside walls of pools and outdoor spas and hot tubs shall be protected by a ground-fault circuit interrupter. Outlets supplying pool pump motors supplied from branch circuits rated at 120 volts through 240 volts, single phase, whether by receptacle or direct connection, shall be provided with ground-fault circuit-interrupter protection for personnel. [680.21(C) and 680.22(A)(4)]

**E4203.1.5 Indoor locations.**

Receptacles shall be located not less than 6 feet (1829 mm) from the inside walls of indoor spas and hot tubs. A minimum of one 125-volt receptacle 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 125-volt receptacles rated 30 amperes or less and located within 10 feet (3048 mm) of the inside walls of spas and hot tubs installed indoors, shall be protected by ground-fault circuit interrupters. [680.43(A)(2)]

**E4203.2 Switching devices.**

Switching devices shall be located not less than 5 feet (1524 mm) horizontally from the inside walls of pools, spas and hot tubs except where separated from the pool, spa or hot tub by a solid fence, wall, or other permanent barrier or the switches are listed for use within 5 feet (1524 mm). Switching devices located in a room or area containing a hydromassage bathtub shall be located in accordance with the general requirements of this code. [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 at least 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.**



## CHAPTER 42 SWIMMING POOLS

### SECTION E4204 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.

#### 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. 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. Connections shall be made by exothermic welding, by listed pressure connectors or clamps that are labeled as being suitable for the purpose and that are made of stainless steel, brass, copper or copper alloy, machine screw-type fasteners that engage not less than two threads or are secured with a nut, thread-forming machine screws that engage not less than two-threads, or terminal bars. Connection devices or fittings that depend solely on solder shall not be used. Sheet metal screws shall not be used to connect bonding conductors or connection devices: [680.26(B)]

1. Conductive pool shells. Bonding to conductive pool shells shall be provided as specified in Item 1.1 or 1.2. Poured 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. Vinyl liners and fiberglass composite shells shall be considered to be nonconductive materials.
  - 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 and shall include unpaved surfaces, poured concrete surfaces 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 or 2.2 and 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. For nonconductive pool shells, bonding at four points shall not be required.

#### Exceptions:

1. Equipotential bonding of perimeter surfaces shall not be required for spas and hot tubs where 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.
  - 2.1. Structural reinforcing steel. Structural reinforcing steel shall be bonded in accordance with Item 1.1.
  - 2.2. Alternate means. Where structural reinforcing steel is not available or is encapsulated in a nonconductive compound, a copper conductor(s) shall be used in accordance with Items 2.2.1 through



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 ground-fault circuit interrupter. [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 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. [680.22(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 4204.2(7). [680.22 (B) (7)]

#### **E4203.5 Other outlets.**

Other outlets such as for remote control, signalling, 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 Overhead conductor clearances.**

Except where installed with the clearances specified in Table E4203.6, the following parts of pools and outdoor spas and hot tubs shall not be placed under existing service-drop conductors, overhead service conductor, 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 E4203.6 for conductors operating at 0 to 750 volts to ground.

Utility-owned, -operated and -maintained communications conductors, community antenna system coaxial cables and the supporting messengers 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. [680.8(A), (B), and (C)]

**TABLE E4203.6 [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	
		0-15 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.

#### **E4203.7 Underground wiring.**

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 or Type MC cable, suitable for the conditions subject to that location. The minimum cover depth shall be in accordance with Table E3803.1. (680.11)



2.2.5:

- 2.2.1. At least one minimum 8 AWG bare solid copper conductor shall be provided.
- 2.2.2. The conductors shall follow the contour of the perimeter surface.
- 2.2.3. Splices shall be listed.
- 2.2.4. The required conductor shall be 18 to 24 inches (457 to 610 mm) from the inside walls of the pool.
- 2.2.5. The required conductor shall be secured within or under the perimeter surface 4 to 6 inches (102 mm to 152 mm) below the subgrade. [680.26(B)(2)]

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. 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. [680.26(B)(5)]

6. Electrical equipment. Metal parts of electrical equipment associated with the pool water circulating system, including pump motors and metal parts of equipment associated with pool covers, including electric motors, shall be bonded. [680.26(B)(6)]

**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 bonding grid to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool bonding grid 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. [680.26(B)(7)]

**Exceptions:**

1. 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]
2. Those greater than 5 feet (1524 mm) horizontally from the inside walls of the pool shall not be required to be bonded. [680.26(B)(7) Exception No. 2]
3. Those greater than 12 feet (3658 mm) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, or platforms, or any diving structures, shall not be required to be bonded. [680.26(B)(7) Exception No. 3]

**E4204.3 Pool water.**

Where none of the bonded parts is 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<sup>2</sup>) 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.

**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. 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 the intent to require 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)]

#### **E4204.5.2 Connections.**

Connections to bonded parts shall be made in accordance with Section E3406.14.1.

## CHAPTER 42 SWIMMING POOLS

### SECTION E4205 GROUNDING

#### E4205.1 Equipment to be grounded.

The following equipment shall be grounded:

1. Through-wall lighting assemblies and underwater luminaires other than those low-voltage lighting products listed for the application without a grounding conductor.
2. All electrical equipment located within 5 feet (1524 mm) of the inside wall of the pool, spa or hot tub.
3. All electrical equipment associated with the recirculating system of the pool, spa or hot tub.
4. Junction boxes.
5. Transformer and power supply enclosures.
6. Ground-fault circuit interrupters.
7. Panelboards that are not part of the service equipment and that supply any electrical equipment associated with the pool, spa or hot tub. (680.7)

#### E4205.2 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 E4202.2.1 or shall be liquid-tight flexible nonmetallic conduit (LFNMC). 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 E3908.12 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 overcurrent device in such circuit.

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), (F)(2) and 680.23(F)(2) Exception]

#### 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)]

#### E4205.3 Nonmetallic conduit.

Where a nonmetallic conduit is installed between a forming shell and a junction box, transformer enclosure, or other enclosure, a 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)]

#### E4205.4 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 grounded by an insulated copper equipment grounding conductor that is an integral part of the cord or cable. This grounding conductor shall be connected to a grounding terminal in the supply junction box, transformer enclosure, or other enclosure. The grounding conductor shall not be smaller than the supply conductors and not smaller than 16 AWG. [680.23(B)(3)]

#### E4205.5 Pool motors.

Wiring methods installed in the corrosive environment described in Section E4202.2.1 shall comply with Section E4202.2.2 or shall be Type MC cable listed for that location. Wiring methods installed in corrosive environments



described in Section E4202.2.1 shall contain an insulated copper equipment conductor sized in accordance with Table E3908.12 but not smaller than 12 AWG.

Where installed in noncorrosive environments, branch circuit wiring methods shall comply with Chapter 38. [680.21(A)(1)].

#### **E4205.6 Feeders.**

These provisions shall apply to any feeder on the supply side of panelboards supplying branch circuits for pool equipment covered in this chapter and on the load side of the service equipment. Where feeders are installed in corrosive environments as described in Section E4202.2, the wiring method of that portion of the feeder shall comply with Section E4202.2.1 or shall be liquid-tight flexible nonmetallic conduit (LFNMC). Wiring methods installed in corrosive environments as described in Section E4202.2.1 shall contain an insulated copper equipment grounding conductor sized in accordance with Table E3908.12, but not smaller than 12 AWG.

Where installed in noncorrosive environments, feeder wiring methods shall comply with Chapter 38. [680.25(A)].

#### **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. [680.7(C)]

#### **E4205.8 Other equipment.**

Other electrical equipment shall be grounded in accordance with Section E3908. (Article 250, Parts V, VI, and VII; and 680.6)

#### **E4205.9 Grounding and bonding terminals.**

Grounding and bonding terminals shall be identified for use in wet and corrosive environments. Field-installed grounding and bonding connections in a damp, wet or corrosive environment shall be composed of copper, copper alloy or stainless steel and shall be listed for direct burial use. (680.7)

## CHAPTER 42 SWIMMING POOLS

### 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.**

Ground-fault circuit interrupters shall be self-contained units, circuit-breaker types, receptacle types or other approved types. (680.5)

#### **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. The installation of the ground-fault circuit interrupter shall be such that there is no shock hazard with any likely fault-condition combination that involves a person in a conductive path from any ungrounded part of the branch circuit or the luminaire to ground. 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 enclosure 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)]

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 grounding connection 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. [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 E4205.4 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 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 an approved 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)]
2. Equipped with threaded entries or hubs or a nonmetallic hub; [680.24(B)(2)]
3. Provided with an approved seal, such as duct seal at the conduit connection, that prevents circulation of air between the conduit and the enclosures; [680.24(B)(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)(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 for the purpose. [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 operator has full view of the pool.

##### **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.
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(B)(1) and (B)(2)]

#### **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. (680.9)

#### **E4206.13 Pool area heating.**

The provisions of Sections E4206.13.1 through E4206.13.3 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)]

##### **E4206.13.1 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)]

##### **E4206.13.2 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)]



**E4206.13.3 Radiant heating cables prohibited.**

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



## CHAPTER 42 SWIMMING POOLS

### 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 grounding only the internal and nonaccessible noncurrent-carrying metal parts of the appliance.

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. 125-volt, 15- and 20-ampere receptacles 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 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 E4203.6 and underground conductor installations shall comply with Section E4203.7.

#### E4207.6 Disconnecting means.

Disconnecting means for storable pools and storable/portable spas and hot tubs shall comply with Section E4203.3.

#### E4207.7 Ground-fault circuit interrupters.



Ground fault circuit interrupters shall comply with Section E4206.2.

**E4207.8 Grounding of equipment.**

Equipment shall be grounded as required by Section E4205.1.

**E4207.9 Pool water heaters.**

Electric pool water heaters shall comply with Section E4206.12.

## CHAPTER 42 SWIMMING POOLS

### 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 with a heater load of 50 amperes or less, 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 that the outlet supply be protected by a ground-fault circuit-interrupter. [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 over-current protective devices, shall be not less than 125 percent of the total nameplate load rating. (680.9)

#### **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)



## CHAPTER 42 SWIMMING POOLS

### SECTION E4209 HYDROMASSAGE BATHTUBS

#### **E4209.1 General.**

Installations of hydromassage bathtubs shall be required to comply only with Section E4209. The branch circuit wiring method(s) supplying a hydromassage bathtub shall comply with Chapter 38.

#### **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 and 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. Electrical devices and controls that are not associated with the hydromassage tubs and that are located within 5 feet (1524 mm) from such units.

#### **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.

#### **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)