



POOL ELECTRICAL INSTALLATION ADVANCED TRAINING MODULE - NEW BRUNSWICK

Residential in-ground, above-ground and storable pools | Public pools | Spas and hot tubs where requirements overlap

PURPOSE

A GoRight standalone teaching, pre-evaluation and field-quality-control document for licensed electricians, apprentices, estimators and project reviewers. It explains the Code-navigation logic, calculations, installation checkpoints and inspection evidence required for safe pool electrical work in New Brunswick.

RIGHT WORK. RIGHT PRICE. RIGHT ON TIME.

Publication basis: New Brunswick Regulation 84-165; C22.1-24, Canadian Electrical Code, Part I (26th edition), as adopted in New Brunswick; Electrical Installation and Inspection Act; WorkSafeNB electrical-safety requirements; approved equipment markings and manufacturer instructions.

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HOW TO USE THIS MODULE

Read Sections 1-9 before design. Use Sections 10-18 during installation and commissioning. Complete the worked problems, field forms and final competency check. Exact rule text and project-specific acceptance always remain subject to the current adopted Code, New Brunswick regulation, approved equipment instructions and the authority having jurisdiction.

1. Learning outcomes and limits

Pool work is a high-consequence specialty. Wet skin lowers body resistance, people may be immersed, large conductive surfaces are reachable at once, and defects can remain hidden until a person bridges a voltage difference.

After completing this module, the learner should be able to:

- + Classify the pool and every connected accessory before selecting rules.
- + Build a site plan that records water edge, pool walls, deck, diving features, receptacles, controls, equipment, overhead conductors and underground routes.
- + Explain the distinct functions of GFCI protection, equipotential bonding, grounding and overcurrent protection.
- + Select approved equipment and create a coordinated one-line and bonding plan.
- + Calculate branch current, feeder load and voltage drop using actual nameplate data.
- + Plan permit, rough-in, inspection, commissioning and handover evidence.
- + Recognize stop-work conditions and escalate uncertain interpretations before construction.

TRAINING LIMIT

This module does not authorize unlicensed work, replace the adopted Code, certify a product, approve a deviation or direct energized work. Rule numbers and dimensions must be checked against the current Code and project conditions.

Competency evidence

Evidence	Minimum demonstration
Knowledge	Explains protection layers and locates the governing rule group.
Calculation	Documents units, assumptions, nameplate inputs and decision.
Field skill	Measures, labels, torques and tests using an approved procedure.
Judgment	Stops when approval, distance, bonding or inspection evidence is missing.

2. New Brunswick conformity framework

The installation must be designed and executed as a New Brunswick electrical installation. Generic North American pool diagrams are not acceptance documents.

Layer	What controls the work
Law	Electrical Installation and Inspection Act and regulations.
Adopted installation standard	C22.1-24, Canadian Electrical Code, Part I, including New Brunswick modifications under Regulation 84-165.
Authorization	Appropriate New Brunswick contractor licence, wiring permit or other authorization as applicable, notifications and inspection.
Worker safety	New Brunswick OHS Act, Regulation 91-191 and the employer written electrical lockout procedure.
Products	Canadian approval markings, ratings, field-evaluation status where applicable, and installation instructions.
Other coordination	Building, pool barrier, public-health, utility and municipal requirements when the project scope engages them.

Code navigation map

Code area	Pool question
Section 2	Approval, marking, environment, workmanship and maintenance access.
Sections 4 and 8	Conductor ampacity and dwelling/service load calculation.
Section 10	Grounding and bonding roles.
Section 12	Wiring methods, wet locations, burial, raceways and mechanical protection.
Sections 14, 26 and 28	Overcurrent protection, receptacles/GFCI, motors and disconnecting means.
Section 30	Lighting requirements that supplement pool-specific rules.
Section 68	Pools, tubs and spas: classification, location, GFCI, bonding, lighting and special equipment.

PERMIT CONTROL

Regulation 84-165 generally prohibits beginning an electrical installation before the required wiring permit or special wiring permit is obtained, subject to its defined exceptions. Determine the installation type and authorization before work—not after burial.

3. Classify the installation before applying details

Section 68 covers more than a permanent in-ground swimming pool. The field decision begins with classification, because factory-built, field-assembled, storable and public installations do not always use the same construction path.

Classification	Field indicators	Do not assume
Permanent in-ground	Concrete, fibreglass or vinyl shell; fixed circulation and lighting; permanent deck.	That non-metallic shell eliminates bonding duties.
Permanent above-ground	Fixed wall system, pump/filter equipment, fixed access and seasonal operation.	That above-ground means temporary.
Storable pool	Designed for disassembly/storage; cord-connected listed equipment may be part of the system.	That any portable pump or extension cord is permitted.
Spa/hot tub	Factory-built or field-assembled vessel with heaters, pumps, controls and jets.	That pool rules and spa rules are interchangeable.
Hydromassage bathtub	Indoor plumbing fixture drained after use; integral pump.	That it is a swimming pool.
Decorative/wading/splash feature	Water accessible to persons; pumps, lights or controls nearby.	That shallow water removes shock risk.
Public/commercial pool	Institutional or commercial occupancy, public access, additional operational requirements.	That a residential detail is adequate.

Classification record

- + Record product model, listing category, intended installation, maximum water dimensions and whether the equipment is factory-integrated.
- + Identify every accessory: pump, heater/heat pump, salt system, cover, light, waterfall, automation, receptacle, sound system and adjacent metal.
- + When classification is uncertain, obtain written product information and inspector/design clarification before pricing as a fixed scope.

4. Shock mechanism and protection layers

A person in water can contact large areas of skin while also touching ladders, rails, deck metal or equipment. A small voltage gradient that would go unnoticed in a dry room can become hazardous.

NO SINGLE DEVICE MAKES A POOL ELECTRICALLY SAFE

1	APPROVED EQUIPMENT	Correct product and instructions
2	LOCATION / SEPARATION	Keep hazards outside required zones
3	GFCI PROTECTION	Detect current imbalance
4	EQUIPOTENTIAL BONDING	Reduce touch-voltage gradients
5	OCPD + CONDUCTORS	Protect wiring and equipment
6	INSPECTION + TESTS	Prove the installed result

Bonding is not a substitute for grounding. GFCI protection is not overload protection. Inspection is not design.

Plain-language model

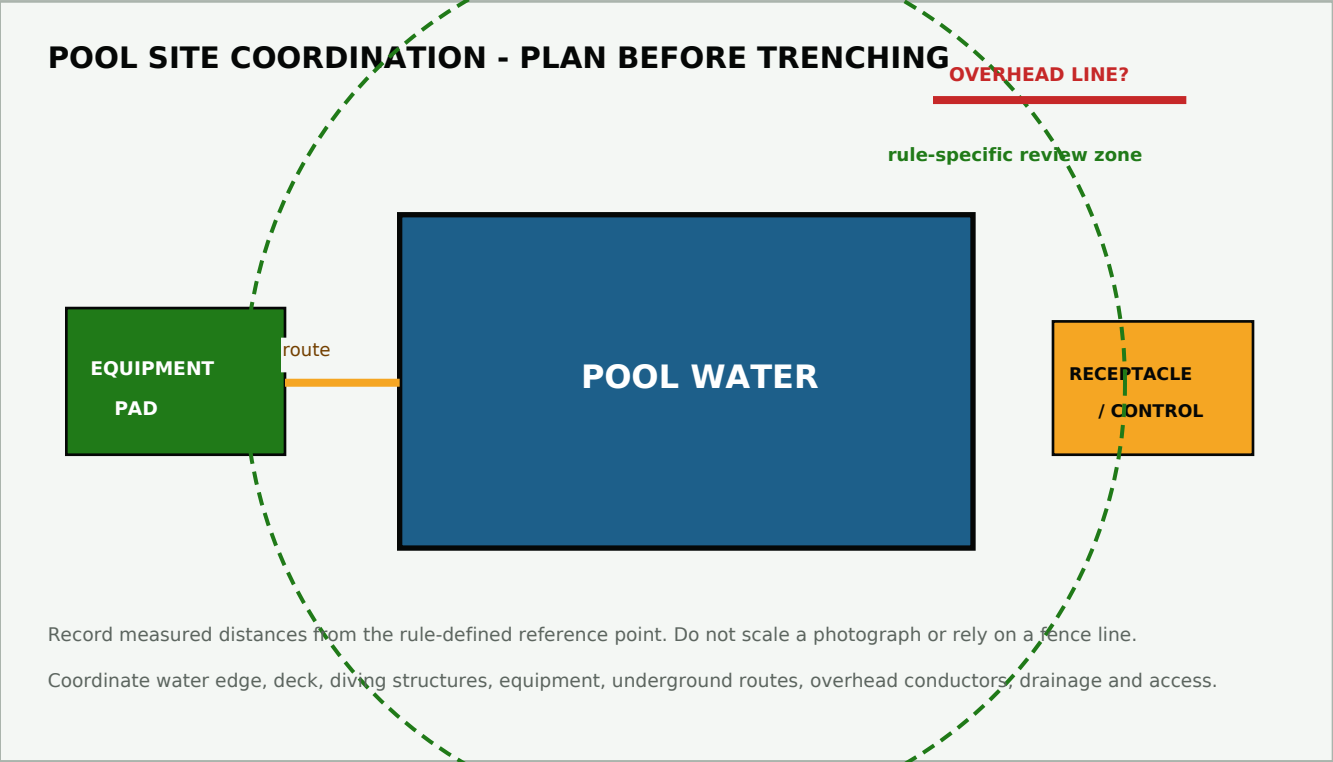
- + GFCI: compares current leaving and returning on all monitored current-carrying conductors; an imbalance causes opening.
- + Equipotential bonding: intentionally connects specified conductive parts so a person is less likely to bridge different voltages.
- + Grounding/bonding for fault clearing: provides an effective fault-current path so protective devices can operate.
- + OCPD: protects conductors and equipment against excessive current; it is not a shock detector.
- + Separation: keeps ordinary electrical equipment outside locations where a person in or near the water could contact it.

FATAL MISCONCEPTION

Never say “the GFCI replaces bonding,” “the pool water is grounded,” or “the breaker will trip if someone is shocked.” Each protection layer solves a different failure mode.

5. Site survey and measured coordination

The survey must happen before quotation lock-in and before trenching. Photographs help, but dimensions and product data control the design.



Mandatory survey set

- + Scaled plan with property, dwelling, water edge/inside pool wall, deck, fence, stairs, diving board and fixed metal.
- + Existing service rating, panel model, available spaces, conductor/service data and known large loads.
- + Proposed equipment pad, disconnects, receptacles, controls, transformers and lighting.
- + Overhead utility/service conductors and communication lines; underground services and private utilities.
- + Soil, drainage, frost, corrosion, impact and excavation conditions.
- + Proposed route lengths, burial areas, sleeves, expansion points and inspection access.

Measurement	Actual	Requirement verified	Result
Receptacle to pool			
Disconnect/control to pool			
Equipment pad to pool			
Overhead conductor clearance			
Underground route from pool			
Junction/deck box location/elevation			

6. Equipment approval and pre-evaluation

A recognizable brand name is not proof that a device is approved for this installation. Pool equipment is evaluated for a particular environment, voltage, connection method and use.

Verify	Acceptable evidence
Approval mark	Legible Canadian certification mark or accepted field-evaluation label matching the equipment.
Nameplate	Voltage, phase, frequency, current, horsepower/kW, SCCR where applicable, temperature/environment and model.
Instructions	Complete installation instructions for the exact model and accessories.
Enclosure/environment	Wet, damp, outdoor, corrosive and UV exposure suitability.
Compatibility	Pump/controller/heater/light/transformer/GFCI combination permitted by each manufacturer.
Modifications	No field drilling, conductor substitution, cord alteration or enclosure change that invalidates approval.

GoRight pre-evaluation disposition

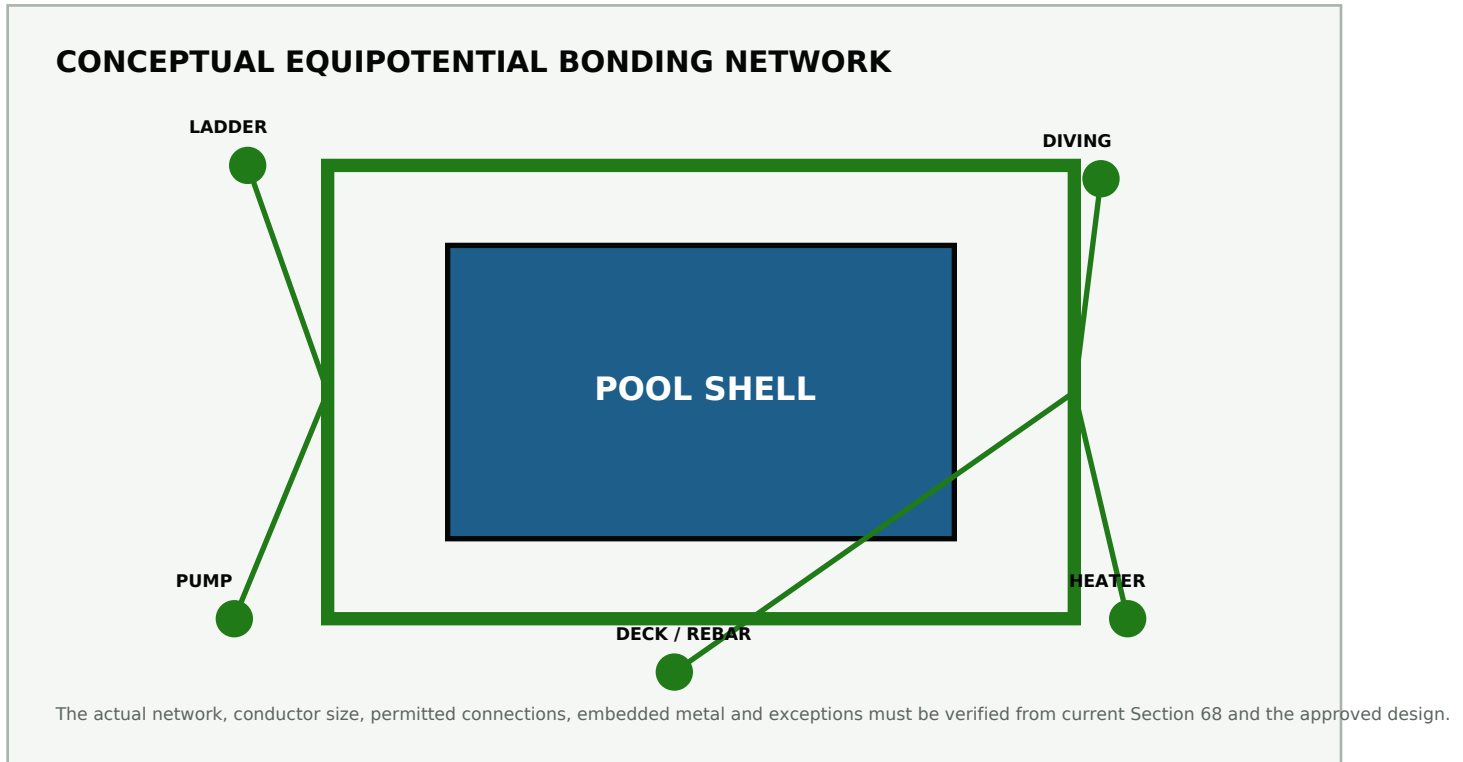
Disposition	Meaning
ACCEPT FOR DESIGN	Approval, ratings, instructions and installation category are clear.
HOLD - INFORMATION	Missing label, model, manual, accessory data or site dimensions.
HOLD - INTERPRETATION	Rule application or product category needs inspector/design confirmation.
REJECT / REPLACE	Unapproved, damaged, incompatible or not rated for the environment.

COST CONTROL

Resolve approval and compatibility before ordering trenches, decks or equipment. A failed label review after concrete placement is a preventable project loss.

7. Equipotential bonding

Bonding is a designed network, not a collection of green wires added after the pool is filled. The most important connections are often concealed by concrete, backfill or finished decking.



Design and field questions

- + Which conductive pool shell components, reinforcing steel or structural metal form the bonding network?
- + Which ladders, rails, diving-board supports, metal fittings, pumps, heaters and other conductive equipment are within the applicable scope?
- + What perimeter/deck bonding arrangement is required for this pool construction?
- + Which connections will be inaccessible after the pour or backfill, and what inspection/photographic hold point proves them?
- + Are listed bonding fittings used and installed on clean metal with the specified conductor and corrosion protection?
- + Does a non-metallic component create an exception, or does associated metal still require bonding? Verify—do not infer.

BONDING VS GROUNDING

The equipotential network limits voltage differences in the pool environment. The equipment bonding conductor provides a fault-return path. They may interconnect, but their design purpose and rule basis must be understood separately.

8. GFCI protection and nuisance-trip discipline

Pool-related GFCI requirements are load- and location-specific. Use the current Section 68 rule group, Section 26 and the equipment instructions to establish which circuits and devices require Class A protection and where it must be located.

Design item	Check
Circuit coverage	Identify pump, heater, light system, receptacle, control and accessory separately.
Poles/conductors	Monitor all required current-carrying conductors; do not route neutrals outside the sensing path.
Neutral integrity	Keep load neutrals separated downstream as required; check shared-neutral or neutral-to-bond faults.
Device rating	Voltage, poles, ampere rating, interrupting rating and enclosure match the circuit.
Accessibility	Test/reset is accessible and located outside prohibited zones.
Commissioning	Use device test function and an appropriate tester/procedure; record result.

Safe trip investigation

1. Remove the affected equipment from service and identify every energy source.
2. Establish and verify the electrically safe work condition.
3. Confirm line/load, neutral isolation, conductor identity, moisture and physical damage.
4. Test components only under an approved manufacturer and employer procedure. Protect electronics from unsuitable insulation-resistance test voltage.
5. Correct the cause, restore covers/barriers, recommission every protective function and document.

NEVER

Never increase the GFCI threshold, bypass the device, lift the equipment bond, combine neutrals or repeatedly reset a tripping circuit without diagnosis.

9. Load calculation and service integration

The pool is part of the dwelling electrical system. A spare breaker space is not proof that the service, feeder or panel has capacity.

Worked problem 1 - pool equipment load inventory

Load	Nameplate basis	Calculated input
Variable-speed pump	240 V, 8.0 A	1.92 kVA
Electric heater	240 V, 6.0 kW	6.00 kVA
Lighting transformer	120 V, 300 VA	0.30 kVA
Salt/control system	120 V, 4.0 A	0.48 kVA
Total before applicable demand treatment		8.70 kVA

Method: calculate each load from its rated input, not marketing output. Reconstruct the existing dwelling calculation under Section 8, then add the pool loads in the correct categories and apply only demand factors that the adopted rules permit. Document what operates simultaneously.

Worked problem 2 - heater current

A 6.0 kW, 240 V single-phase resistance heater has nominal current: $I = P / V = 6000 \text{ W} / 240 \text{ V} = 25.0 \text{ A}$. This arithmetic does not by itself select the breaker or conductor. Apply the nameplate, continuous-duty treatment where applicable, conductor ampacity/termination temperature, OCPD rules and manufacturer instructions.

ESTIMATING RULE

Carry a load-capacity allowance and a written exclusion when the existing service cannot be fully verified before quotation. Do not sell a pool circuit on “there is room in the panel.”

10. Feeders, branch circuits and voltage drop

Select conductors from actual load, protection, temperature, conductor material, terminations, bundling, ambient conditions, underground/wet-location requirements and voltage-drop objectives.

Worked problem 3 - 240 V pump voltage drop

Assume a 240 V, 12 A pump circuit, 35 m one-way conductor length, and copper conductor resistance of 5.21 ohm/km for the selected teaching conductor at the assumed reference temperature.

Loop length = 2 x 35 m = 70 m = 0.070 km
Vdrop = I x R x L = 12 A x 5.21 ohm/km x 0.070 km = 4.38 V
Percent drop = 4.38 / 240 x 100 = 1.83%

The result is acceptable only after checking the actual conductor data, temperature, starting/operating behaviour, total feeder-plus-branch drop and equipment minimum voltage. Upsize when the documented design target or operating performance requires it.

Branch-circuit schedule

Circuit	Voltage	Load A	Conductor	OCPD/GFCI	Route length	VD%
Pump						
Heater/heat pump						
Pool lighting						
Controls/salt system						
Required receptacle						

11. Pumps and motors

Pool pumps combine motor rules, Section 68 location/protection, wet-location wiring, product instructions and maintainability. Variable-speed drives add electronics and leakage-current considerations.

Checkpoint	Field decision
Motor data	Use exact voltage, phase, FLA/SFA or rated input, horsepower, service factor and controller requirements.
Branch protection	Coordinate conductor, overload/embedded protection, short-circuit/ground-fault protection and GFCI.
Disconnect	Correct rating, location, visibility/access and environmental enclosure.
Bonding	Connect the identified bonding point using the required conductor and approved fitting; do not use a paint-coated screw.
Wiring method	Wet/outdoor/corrosive suitability, flex transition, strain relief, raceway support and drainage.
Rotation/prime	Follow manufacturer start-up; protect pump from dry run and closed valves.
Service access	Provide safe access without standing in water or removing permanent structures.

Worked problem 4 - use the nameplate

A 1.5 hp pump nameplate states 240 V, 8.0 A and specifies a maximum branch-circuit protective device. Use the nameplate/instructions and the adopted motor rules. Do not select the circuit from horsepower alone, and do not substitute a larger breaker to stop nuisance trips without diagnosing the cause.

VARIABLE-SPEED PUMPS

Confirm the controller is approved for the motor, the GFCI type is compatible with the listed equipment, the feeder includes required conductors, and commissioning includes minimum/maximum speed and flow verification.

12. Heaters, heat pumps and energy controls

Resistance heaters, heat pumps and combination equipment have different electrical characteristics. Marketing “pool size” is not a circuit rating.

Equipment	Electrical focus
Resistance heater	kW input, conductor/OCPD, contactor, flow interlock, high-limit, corrosion and bonding.
Heat pump	Minimum circuit ampacity, maximum OCPD, compressor starting characteristics, disconnect and condensate/drainage.
Gas heater with electrical controls	Ignition/control circuit, pump interlock, bonding and manufacturer separation.
Solar thermal controls	Pump/controller supply, sensors and multiple energy sources.
Automation load control	Contactor ratings, simultaneous loads, manual override, fail-safe state and labels.

Worked problem 5 - operating cost signal

A 6 kW heater operates 3 h/day for 90 days: $\text{Energy} = 6 \times 3 \times 90 = 1,620 \text{ kWh}$. At an illustrative energy price of \$0.14/kWh, energy cost is \$226.80, before taxes and fixed/demand charges. This is an education estimate, not a tariff quote. Controls, cover use, ambient temperature and heat loss dominate real cost.

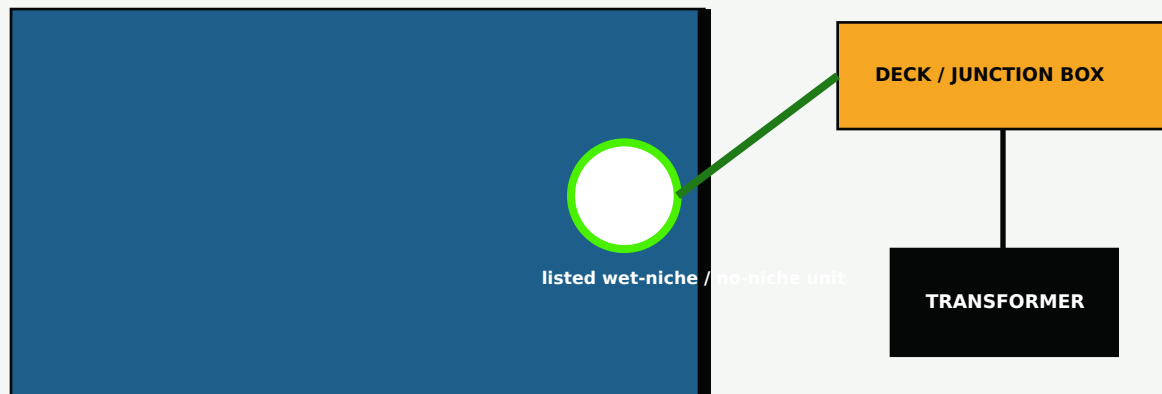
INTERLOCKS ARE SAFETY FUNCTIONS

Prove flow, high-limit and equipment interlocks as required. Do not energize a resistance heater without the circulation conditions specified by the manufacturer.

13. Underwater and near-water lighting

An underwater lighting installation is a complete approved system. The luminaire, niche, cord, conduit, junction/deck box, transformer or power supply, GFCI, bonding and service method must be coordinated.

UNDERWATER LIGHTING - SYSTEM, NOT JUST A LUMINAIRE



Verify product approval, voltage system, source, GFCI, box elevation/location, conduit, bonding, cord storage, accessibility and service procedure.

Required design questions

- + Is the luminaire approved for the exact underwater installation and pool construction?
- + What supply voltage and approved transformer/power unit are required?
- + Where must the junction/deck box be located and elevated, and will it remain accessible after landscaping?
- + Does the cord have the required length and storage arrangement for servicing without splicing?
- + How are niche, forming shell and conductive parts bonded?
- + Is the raceway continuous, suitable for the wet environment and arranged against water migration as required?
- + Can the owner isolate and test the lighting system without entering the water?

Worked problem 6 - low-voltage current

A 300 W, 12 V lighting load draws 25 A on the 12 V side ($300/12$) but only 2.5 A ideally on a 120 V primary ($300/120$). Low-voltage conductors can therefore experience severe voltage drop. Use the approved system tables/instructions and actual route—not the primary current—to size the secondary conductors.

14. Receptacles, switches, controls and disconnects

Every device near the pool must be checked for location, reach, enclosure, GFCI, weather exposure and intended use. A weatherproof cover does not make a prohibited location acceptable.

Device	Questions to answer
Required convenience receptacle	Is its distance/location compliant, GFCI protected, weather-resistant and provided with the required cover?
Pump/heater disconnect	Is it correctly rated, accessible, identifiable and positioned in the permitted location?
Pool controls	Can a user operate equipment without unsafe reach from the water? Is low voltage actually separated and approved?
Outdoor switch	Correct enclosure/cover, environmental rating, grounding/bonding and permitted location?
Audio/landscape equipment	Does ordinary outdoor approval satisfy the pool location? Usually a separate Section 68 review is needed.
Extension cord	Not a substitute for permanent wiring; use only where the approved storable-pool system expressly permits it.

MEASUREMENT DISCIPLINE

Record the actual reference points and path used for every distance decision. “About three metres” is not an inspection record.

15. Underground wiring, raceways and corrosion

Underground raceways are wet locations. Buried work also creates mechanical, drainage, frost and future-excavation risks.

Topic	GoRight control
Burial depth	Use the current Section 12 requirements for the wiring method, location and mechanical protection; record finished grade and inspection evidence.
Conductors	Use conductors approved for wet locations; do not treat a raceway as dry.
Route near pool	Apply Section 68 restrictions and exceptions; keep ordinary wiring away from the pool where practicable.
Sleeves and stub-ups	Protect from impact, settlement and sharp bends; seal only as permitted; maintain pullability.
Expansion	Provide fittings/support for temperature movement where required.
Corrosion	Select fittings, boxes and fasteners for chlorinated/salt air and galvanic compatibility.
Drainage	Prevent equipment pads and boxes from becoming water collection points.
Locating record	Photograph with scale, mark route, record depth, and provide as-built sketch before backfill.

Buried-work hold point

- + Permit/inspection status confirmed.
- + Bonding network complete and visible.
- + Raceway/conductor system and depths verified.
- + Required separation from pool and other services verified.
- + Photographs, measurements and route sketch saved.
- + Inspector release obtained where required before covering.

16. Overhead conductors and utility coordination

Overhead supply or communication conductors can create a contact hazard for people using long cleaning poles, diving structures, cranes or pool-construction equipment.

Survey method

1. Stand at the proposed pool and identify every overhead conductor—not only the dwelling service.
2. Record horizontal and vertical geometry relative to the water, pool edge, deck and diving platform.
3. Identify the conductor owner and voltage class; do not guess from appearance.
4. Compare with the current Section 68 clearance requirements and utility standards.
5. If compliant clearance cannot be demonstrated, stop the pool layout and coordinate relocation or redesign before excavation.
6. Repeat the check for construction equipment and final use conditions.

Condition	Disposition
No overhead conductors in review area	Document photograph and plan note.
Existing service crosses proposed pool area	Hold design; utility/electrical coordination required.
Communication line only	Still classify and verify applicable clearance; do not dismiss.
Unknown conductor/owner	Treat as unresolved hazard; obtain identification.
Proposed conductor relocation	Require completed utility work and as-built verification before acceptance.

17. Above-ground and storable pools

An above-ground pool may be permanent, seasonal or storable. The product classification—not the owner’s intention to “take it down someday”—controls the electrical approach.

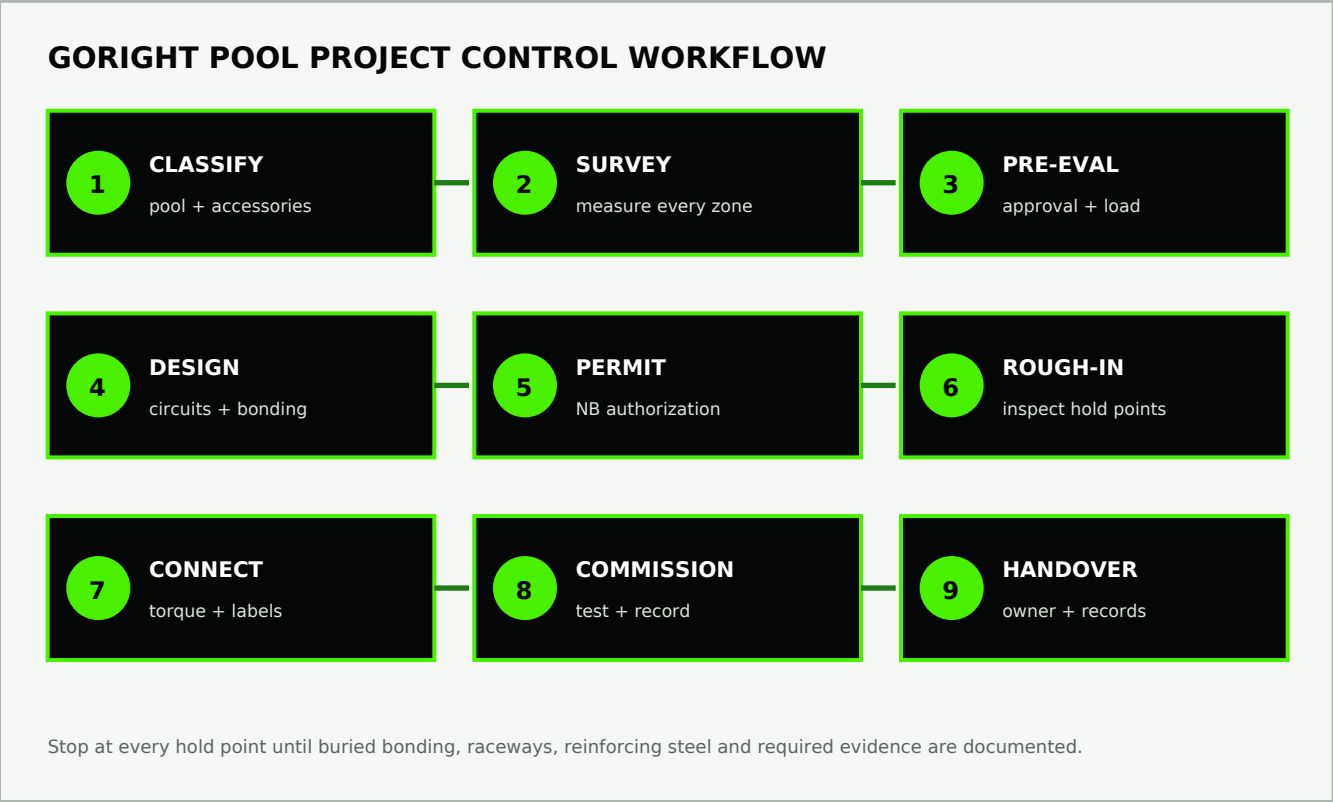
Issue	Permanent above-ground	Storable system
Pump connection	Permanent approved wiring/equipment arrangement as designed.	Use only the listed cord/receptacle arrangement permitted by the system and Code.
Bonding	Evaluate wall, frame, ladder, pump and nearby conductive parts under Section 68.	Apply the specific storable-pool provisions; do not import permanent-pool details without review.
Deck added later	Triggers location and bonding re-evaluation.	May convert practical use/installation beyond the product assumptions.
Extension cords	Not a permanent wiring method.	Not permitted unless the approved system specifically provides the connection arrangement.
Owner setup	Electrical contractor still verifies the electrical installation and approved equipment.	Owner instructions must preserve GFCI, location and cord integrity.

COMMON FAILURE

A seasonal pump is plugged into an ordinary outdoor receptacle using an extension cord. Correct response: stop use, identify pool classification and product instructions, then provide the approved GFCI-protected arrangement in the permitted location.

18. In-ground pool construction control

The electrical work must be sequenced with excavation, steel, forming, concrete, liner/fibreglass shell, decking and landscaping. Missing one hold point can make compliance impossible to prove.



Construction hold points

Hold point	Evidence before release
Before excavation	Approved site plan, utility locate, overhead check, permit status.
Before shell/concrete	Bonding design, reinforcing/structural metal connections, niches and sleeves.
Before backfill	Raceway routes/depths, bonding network, pressure/water controls as applicable, photographs.
Before deck pour	Perimeter/deck bonding, boxes, conduit, fixed metal and inspector release.
Before energization	Labels, torque, insulation/continuity checks under approved procedures, barriers and covers.
Before owner use	GFCI/protective-function tests, operational commissioning, inspection status and handover.

19. Saltwater chlorination, automation and accessories

Saltwater systems remain pool electrical installations. Salt, chlorine and condensation increase corrosion pressure and can expose weak fittings, incorrect metals and poor enclosure practices.

System	Electrical review
Salt chlorinator	Approved controller/cell combination, supply/GFCI, bonding instructions, flow interlock, accessible cell service and corrosion control.
Automation panel	SCCR/ratings, feeder, contactors, low-voltage separation, neutral/bonding arrangement, manual override and labels.
Automatic cover	Motor/controller, limit switches, GFCI as applicable, wet-location routing, emergency operation and bonding of conductive parts.
Water feature	Pump, lighting, accessible water classification, bonding and location rules.
Chemical feeder	Electrical compatibility, ventilation/corrosion, interlock and separation from chemicals.
Solar/renewable integration	Multiple sources, isolation, controls, pump circuits and service/load coordination.

CORROSION IS A DESIGN INPUT

Use compatible listed fittings and enclosure materials. Do not coat over required bonding contact surfaces unless the listed connection system permits it.

20. Spas, hot tubs and hydromassage overlap

Spas and hot tubs share wet-environment principles with pools but have distinct Section 68 rule groups. Use the correct classification and never copy a pool detail automatically.

Installation	Key differences to verify
Factory-built outdoor hot tub	Integral controls/heater, required GFCI, disconnect/control location, perimeter bonding conditions, cord-connected vs permanent supply.
Field-assembled spa	Design responsibility expands to shell, pumps, heaters, bonding, lighting and controls.
Indoor spa	Building environment, ventilation/condensation, surrounding surfaces and indoor location rules.
Hydromassage bathtub	Drained after use; integral pump; access, GFCI and local bonding requirements differ from a pool.
Swim spa	Product classification and dimensions may combine pool and spa features; obtain written approval data and rule interpretation.

Boundary rule

When the project includes both a swimming pool and a hot tub, prepare separate equipment schedules and rule decisions, then coordinate shared feeders, service load, nearby metal and the overall site plan. “Same backyard” does not mean “same circuit” or “same bonding detail.”

21. Electrically safe work condition

Wet work magnifies risk. De-energization, lockout and verification are required before contact with electrical parts. Pool pumps and controls may have several energy sources and automatic starts.

GoRight safe-isolation sequence

1. Identify every source: normal supply, control transformer, generator, solar, automation output, stored energy and mechanical/hydraulic energy.
2. Interrupt the load normally where possible. Open all isolating devices.
3. Apply personal locks and non-conductive tags under the employer written procedure.
4. Verify the test instrument on a known source, test every relevant conductor/phase to establish absence of voltage, then re-verify the instrument.
5. Release or restrain stored energy; prevent automatic pump/heater starts.
6. Protect the work area from water entry, unauthorized reset and public access.
7. After work, inspect, replace barriers, clear personnel/tools, follow lock-removal rules and perform controlled restart.

NEW BRUNSWICK DUTY

WorkSafeNB requires a written electrical lockout procedure, training, an electrically safe work condition, individual verification, locks and non-conductive tags for qualified persons. A breaker switched off without verification is not the completed process.

22. Commissioning and acceptance tests

Commissioning proves that the installed system matches the design, product instructions and protective intent. It is not merely “the pump runs.”

Test/Inspection	Record
Visual conformity	Approval marks, enclosures, covers, access, support, corrosion protection and labels.
Conductor identity	Circuit, phase, neutral, bond and control conductors verified.
Torque	Value, tool ID/calibration status, terminal and technician.
Bonding continuity	Required conductive parts connected; method and result recorded. Do not invent a universal resistance limit.
GFCI	Device test and approved verification procedure; all protected loads identified.
Insulation/ground fault	Only with connected electronics isolated as permitted by manufacturer.
Voltage	No-load and loaded voltage at panel/equipment; compare with ratings.
Motor/heater	Rotation/flow, operating current, interlocks, high-limit and abnormal noise/heat.
Lighting	GFCI, transformer/output, luminaire operation and service accessibility.
Documents	Permit/inspection status, as-built, settings, manuals and owner orientation.

NO UNIVERSAL “BOND OHMS” NUMBER

Continuity testing proves the intended connections, but acceptance criteria depend on the network, instrument and governing requirements. Record method and readings; do not create a pass/fail threshold without an approved basis.

23. Troubleshooting by evidence

A wet or corrosive environment can create intermittent faults. Diagnose safely and preserve all protection—never “test” by bypassing it.

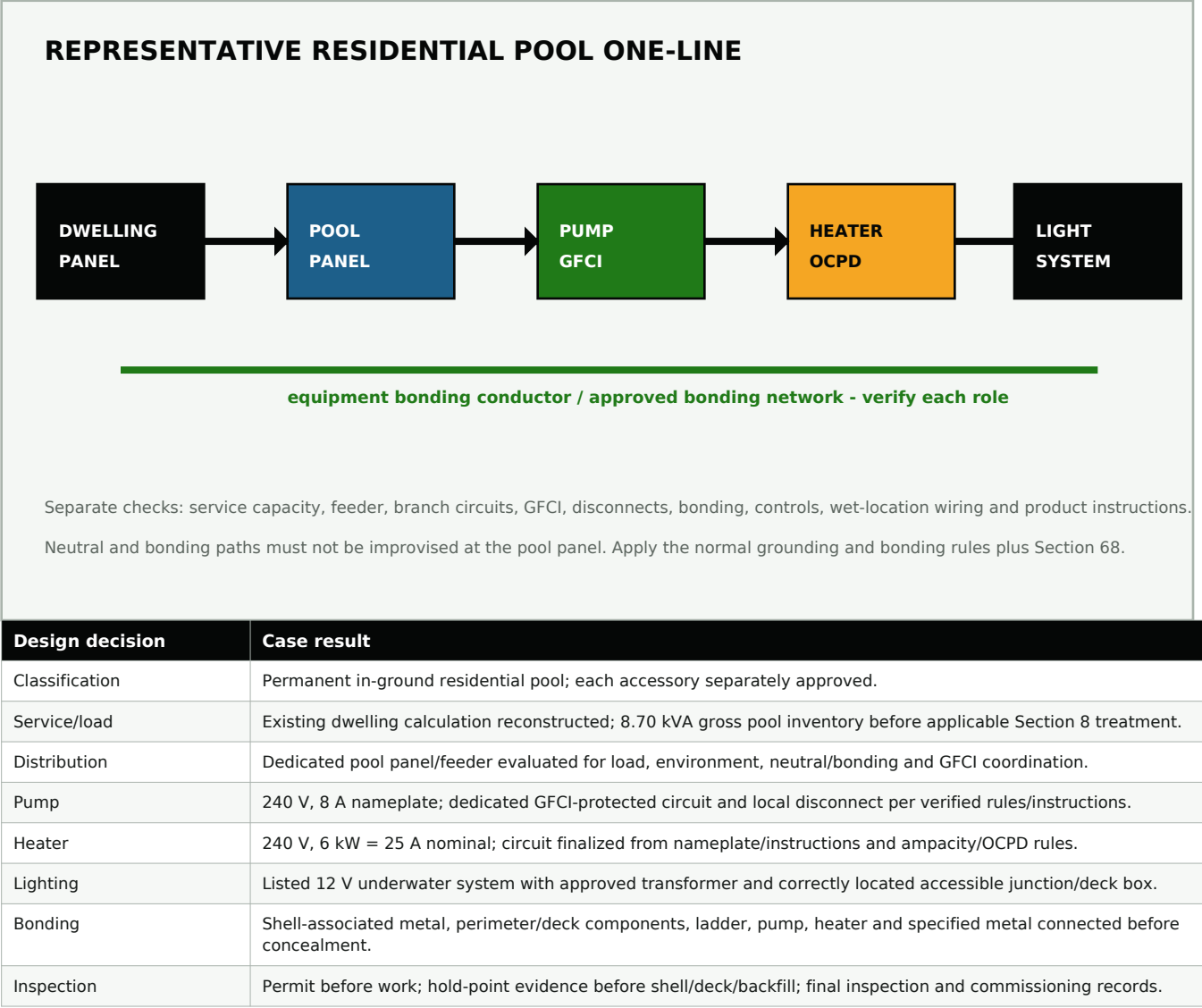
Symptom	Evidence path
GFCI trips immediately	Line/load reversal, neutral-to-bond connection, crossed neutral, damaged cable, wet enclosure, failed equipment.
Trips after rain	Covers, seals, low points, raceway water, condensation, cord entry and corrosion.
Pump will not start	Supply, disconnect, controller command, overload, interlock, seized motor and prime/flow conditions.
Heater will not energize	Flow switch, high-limit, controller demand, contactor, supply and manufacturer fault code.
Lights dim/flicker	Supply/transformer rating, secondary voltage drop, connection heating, water ingress and product compatibility.
Tingle complaint	Immediate shutdown. Establish safe condition; investigate bonding, neutral faults, utility/adjacent sources and voltage gradients with qualified methods.
Corroded bonding point	Remove from service as required; restore using approved materials and connection method; evaluate network continuity.

TINGLING IS AN EMERGENCY SIGNAL

Keep people out of the water and prevent re-energization until the source is identified and the entire protective system has been recommissioned.

24. Representative New Brunswick installation

Teaching case: a Saint John-region residence adds a permanent in-ground fibreglass pool with a variable-speed pump, 6 kW electric heater, salt system, 12 V underwater LED system and an equipment pad 35 m from the dwelling panel.



25. Precise CEC Section 68 navigation

Use this map to find the controlling rule group in C22.1-24. It is an original GoRight navigation summary, not reproduced Code text. Read the complete rule, definitions, Appendix B notes, cross-references and New Brunswick modifications before making the field decision.

Rule	Navigation purpose	Field deliverable
68-000	Scope: pools, associated electrical equipment and specified nearby metal accessories.	Classification and scope boundary.
68-050	Section 68 terminology.	Recorded definitions used for pool type/equipment.
68-052	Wiring/equipment in pool walls or water.	Approved exception/system identified.
68-054	Overhead wiring and pool/diving/adjacent geometry.	Measured plan and elevation.
68-056 + Table 61	Underground wiring horizontal separation.	Route, wiring method and measured separation.
68-058	Pool shell, deck/perimeter and associated metal bonding.	Bonding plan and concealed-work evidence.
68-060	Junction and deck boxes, bonding terminals and water control.	Box detail, location/elevation and seals.
68-062	Transformers and transformer enclosures.	Location, barrier and bonding record.
68-064	Receptacle location and Class A GFCI conditions.	Measured receptacle schedule.
68-066	Pool luminaires and lighting equipment.	Approved system and service detail.
68-068	GFCI coverage, location, testing access and warning.	Protection matrix and test record.
68-070	Other electrical/communication equipment.	Accessory review.
68-072	Disconnecting means for pumps, spas and hot tubs.	Location, rating and lockability check.

26. Permanent, storable and tub rule pathways

After the general rules, use the dedicated part that matches the actual installation. Do not blend pathways because equipment looks similar.

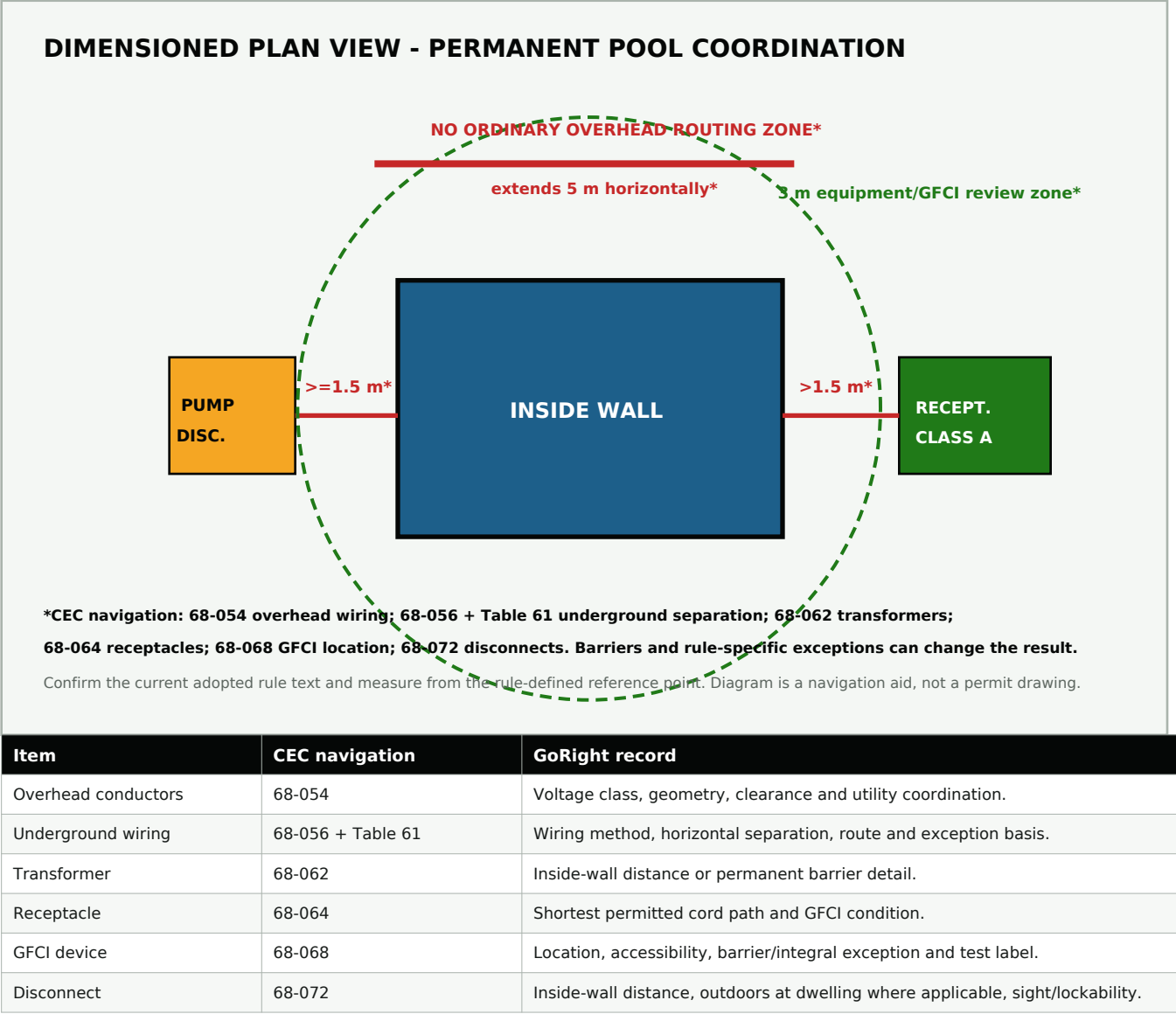
Installation	Dedicated rules	Decision pathway
Permanent swimming pool	68-100	Apply general Rules 68-050 to 68-072, then permanent-pool wiring method and conductor segregation/drainage requirements.
Storable swimming pool	68-200 and 68-202	Verify equipment suitability, pump marking, permanent receptacle arrangement, location and GFCI conditions.
Hydromassage bathtub	68-300 to 68-308	Protection, control, dedicated receptacle arrangement and other bathroom equipment.
Spa or hot tub	68-400 to 68-408	Bonding, controls/equipment, leakage-current collectors where applicable and field-assembled construction.
Public/commercial pool	Applicable pool pathway plus occupancy requirements	Coordinate emergency controls, public access, supervision, health/building requirements and engineered documentation as applicable.
Splash/decorative/wading feature	68-000 classification plus applicable general/specific rules	Confirm whether people can contact water and how equipment, luminaires and boxes are approved.

Field classification decision tree

1. Identify whether the vessel is permanently installed, storable, hydromassage, spa/hot tub, decorative, wading, splash or public/commercial.
2. List every electrical load and every non-electrical conductive accessory within the Section 68 scope.
3. Apply Rules 68-050 through 68-072 as relevant.
4. Apply the dedicated rule part for the classified installation.
5. Apply Sections 2, 4, 8, 10, 12, 14, 26, 28 and 30 where Section 68 supplements or amends them.
6. Record any interpretation requiring confirmation before the quotation becomes fixed.

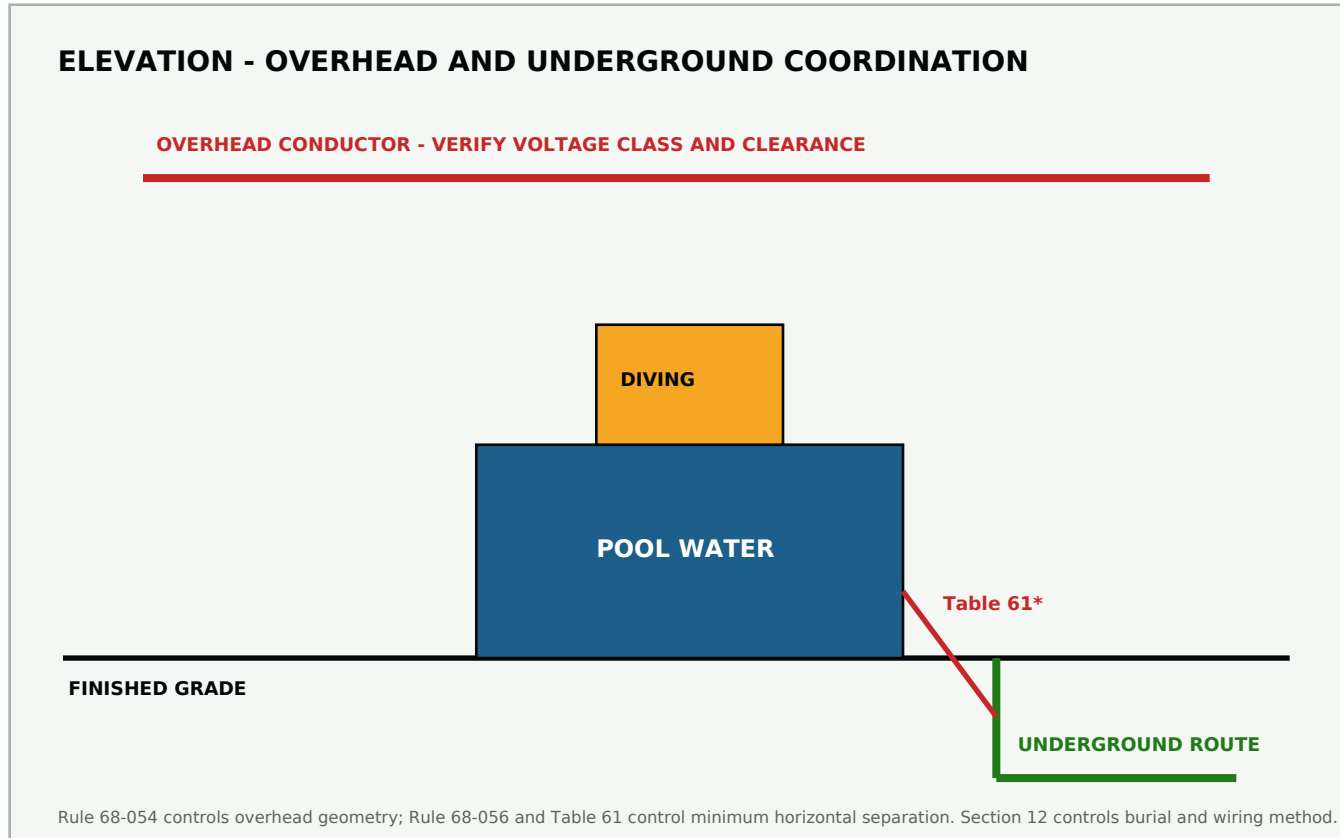
27. Dimensioned pool-equipment coordination

Distances must be designed and measured—not estimated from a photograph. Every dimension is tied to a specific rule and reference point.



28. Elevation, overhead and underground geometry

A plan view alone cannot prove overhead clearance, junction-box elevation, finished grade or burial. Add elevation drawings before approval.



Required elevation annotations

- + Normal water level, finished deck, finished grade and pool inside wall.
- + Diving platform, slide, observation or other elevated surfaces.
- + Overhead conductor owner, voltage class and lowest conductor elevation.
- + Underground wiring method, depth, horizontal separation and mechanical protection.
- + Junction/deck-box elevation, drainage direction and accessible service route.
- + Transformer, control and disconnect locations relative to the water and permanent barriers.

DO NOT TRANSFER DIMENSIONS

The current Code provides different distances and exceptions for different equipment. A 1.5 m disconnect rule does not automatically establish a transformer, GFCI or underground-wiring location.

29. Equipotential bonding construction package

Rule 68-058 is not completed by one conductor at the pump. Prepare separate details for the conductive shell, pool deck/perimeter, associated metal, electrical equipment and water-contact provision where applicable.

BONDING HOLD POINT - ACCEPTABLE EVIDENCE VS FAILURE

ACCEPTABLE CONTROL

- Four distributed shell/rebar connections where required
- No. 6 AWG Cu grid/ring geometry verified
- Listed corrosion-resistant connectors
- Ladder, rail, pump and heater points identified
- Scaled photos before concrete/backfill
- Inspector hold-point release recorded

UNACCEPTABLE / STOP

- ✗ Single loose conductor called “the pool ground”
- ✗ Grid spacing or depth not measured
- ✗ Paint/rust under improvised clamp
- ✗ Deck poured before required connections
- ✗ Raceway assumed to be bonding path
- ✗ No photos, dimensions or inspection evidence

Rule 68-058 is the core navigation point. The exact bonding method depends on shell, perimeter construction and associated conductive parts.

Construction	Required design evidence
Reinforced concrete shell	Unencapsulated structural reinforcing-steel network and distributed connections where required.
Metal panel shell	Panel continuity method, bolted/welded construction and bonding point.
Non-conductive shell	Required copper grid or other Code method, associated metal and water-contact provision.
Concrete deck	Reinforcing-steel bonding or specified copper-grid method before pour.
Paver/soil perimeter	Specified grid/ring geometry, depth, securement and protection before covering.
Fibreglass/vinyl pool	Do not confuse non-conductive liner/shell with absence of conductive infrastructure.
Above-ground pool	Classify permanent/storable; evaluate wall/frame, ladder, pump and perimeter construction.

30. Underwater-lighting installation details

Rules 68-060, 68-062, 68-066, 68-068 and 68-100 must be read as one coordinated lighting system. Product instructions establish the exact approved components and assembly.

System element	Design and inspection detail
Wet-niche luminaire	Approved forming shell, voltage/depth rating, corrosion-resistant metal, service cord and bonding.
No-niche/submersible luminaire	Approved for direct submersion and exact pool construction; service/removal method documented.
Dry-niche luminaire	Accessible dry service space/recess, voltage limit and separation from water.
Deck/junction box	Correct location/elevation, drainage, exclusive conductors, independent bonding terminals and watertight entries.
Transformer/power unit	Approved isolating system, required location/barrier, shield bonding and primary protection.
Flexible cord	Supplied/approved for luminaire, wet-location rating, sufficient service length and no field splice.
Raceway	Approved corrosion-resistant method, drainage and watertight transition to forming shell/box.
GFCI	Correct coverage, permanent connection, accessible testing, location and warning label.

Inspection sequence

1. Verify exact matched system before rough-in.
2. Inspect niche, conduit and bonding before shell/deck closure.
3. Verify deck/junction box location and drainage before landscaping.
4. Confirm transformer and GFCI locations before energization.
5. Test GFCI, voltage, luminaire operation and service removal method before filling/owner use.

31. Advanced pump, heater and feeder calculations

Calculations establish an engineering trail. Final selections still require the current rules, product nameplate, conductor conditions and terminal ratings.

Worked problem A - 7.5 kW heater branch circuit

Rated input: 7,500 W at 240 V single phase. $I = P/V = 7,500/240 = 31.25$ A. If the applicable rules/instructions require 125% treatment, the design current becomes 39.06 A. Select the conductor using corrected ampacity and termination temperature, then select/coordinate the permitted OCPD from the nameplate and rules. The arithmetic alone does not authorize a 40 A circuit.

Worked problem B - pool feeder load

Load	Input
Variable-speed pump	2.40 kVA
Heat pump MCA basis for feeder design	4.80 kVA
Lighting transformer	0.30 kVA
Salt/automation	0.48 kVA
Convenience/other documented load	1.50 kVA
Gross inventory	9.48 kVA

At 240 V, the gross single-phase equivalent is $9,480/240 = 39.5$ A. This is not automatically the final feeder ampacity. Apply the actual load categories, simultaneous operation, Section 8 demand treatment, motor requirements, panel ratings and future-load policy.

MCA / MOCP DISCIPLINE

For a listed heat pump or packaged unit, use the marked minimum circuit ampacity and maximum overcurrent protection as directed; do not reconstruct compressor sizing from watts alone.

32. Voltage drop and low-voltage lighting

Pool equipment can be remote from the dwelling. A compliant ampacity may still produce weak motor starting, nuisance control faults or dim underwater lighting.

Worked problem C - 240 V pump at 55 m

Teaching assumptions: 14 A, 55 m one-way, conductor resistance 3.28 ohm/km. Loop length = 0.110 km. $V_{drop} = 14 \times 3.28 \times 0.110 = 5.05 \text{ V}$. Percentage = $5.05/240 \times 100 = 2.10\%$. Add upstream feeder drop and confirm conductor resistance at operating temperature.

Worked problem D - 12 V, 240 W luminaires

Secondary current = $240/12 = 20 \text{ A}$. If a 20 m one-way circuit has loop resistance 0.066 ohm, drop = $20 \times 0.066 = 1.32 \text{ V}$, or 11% of 12 V. That may be unacceptable even though 1.32 V seems small. Use the approved transformer taps/system tables, conductor size, route and luminaire voltage limits.

Worked problem E - transformer loading

Three 70 W luminaires total 210 W. On a 300 VA listed transformer, simple utilization is $210/300 = 70\%$. Confirm the manufacturer permits the luminaire count, conductor configuration, secondary protection and distance; do not apply an invented spare-capacity rule.

Record	Value	
Dwelling service to pool panel drop		
Pool feeder drop		
Worst branch-circuit drop		
Total drop at maximum operating condition		
Minimum measured equipment voltage		

33. Public and commercial pools

Public access changes the risk, operating controls and documentation expectations. The electrical installation remains governed by the adopted Code, but additional occupancy, health, building and operational requirements may apply.

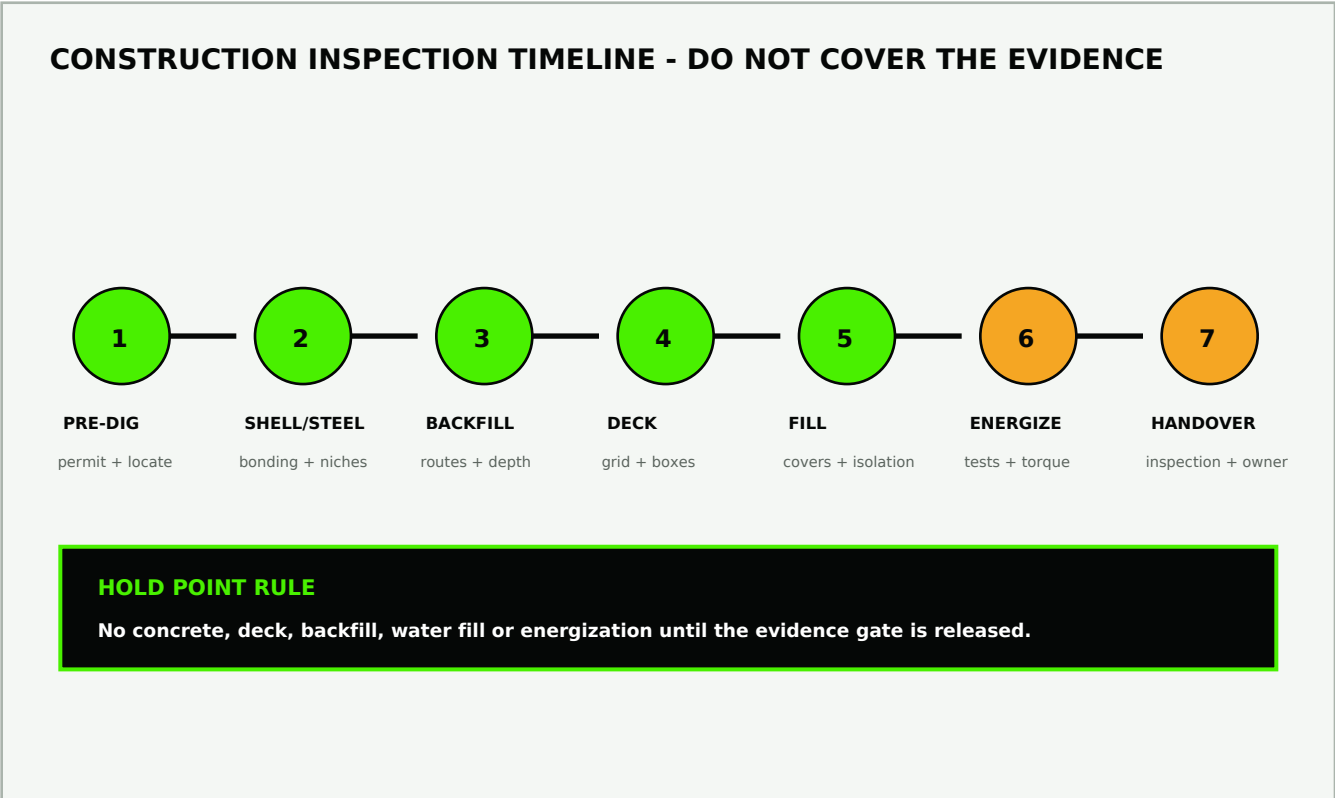
Control area	Commercial/public project action
Design responsibility	Identify when sealed engineering drawings, plan approval or coordinated specifications are required.
Emergency control	For non-dwelling spas/hot tubs, navigate Rule 68-404 emergency shut-off provisions; for pools, coordinate facility emergency procedures and equipment controls.
Wet support spaces	Review receptacles and GFCI in associated locker/change/wet areas under Rule 68-068 and other applicable sections.
Public access	Protect disconnects, panels, transformers and controls from unauthorized operation while maintaining required accessibility.
Multiple pumps/heaters	Document sequence, interlocks, SCCR, feeder demand and selective operation.
Maintenance	Provide lockout points, identification, as-builts, test schedules and corrosion inspection program.
Commissioning	Witnessed testing, deficiency closure and operator training with retained records.

COORDINATION BOUNDARY

This electrical module does not replace public-health, structural, barrier, accessibility or water-treatment design. Record responsible disciplines and unresolved interfaces.

34. Inspection hold points and photographic evidence

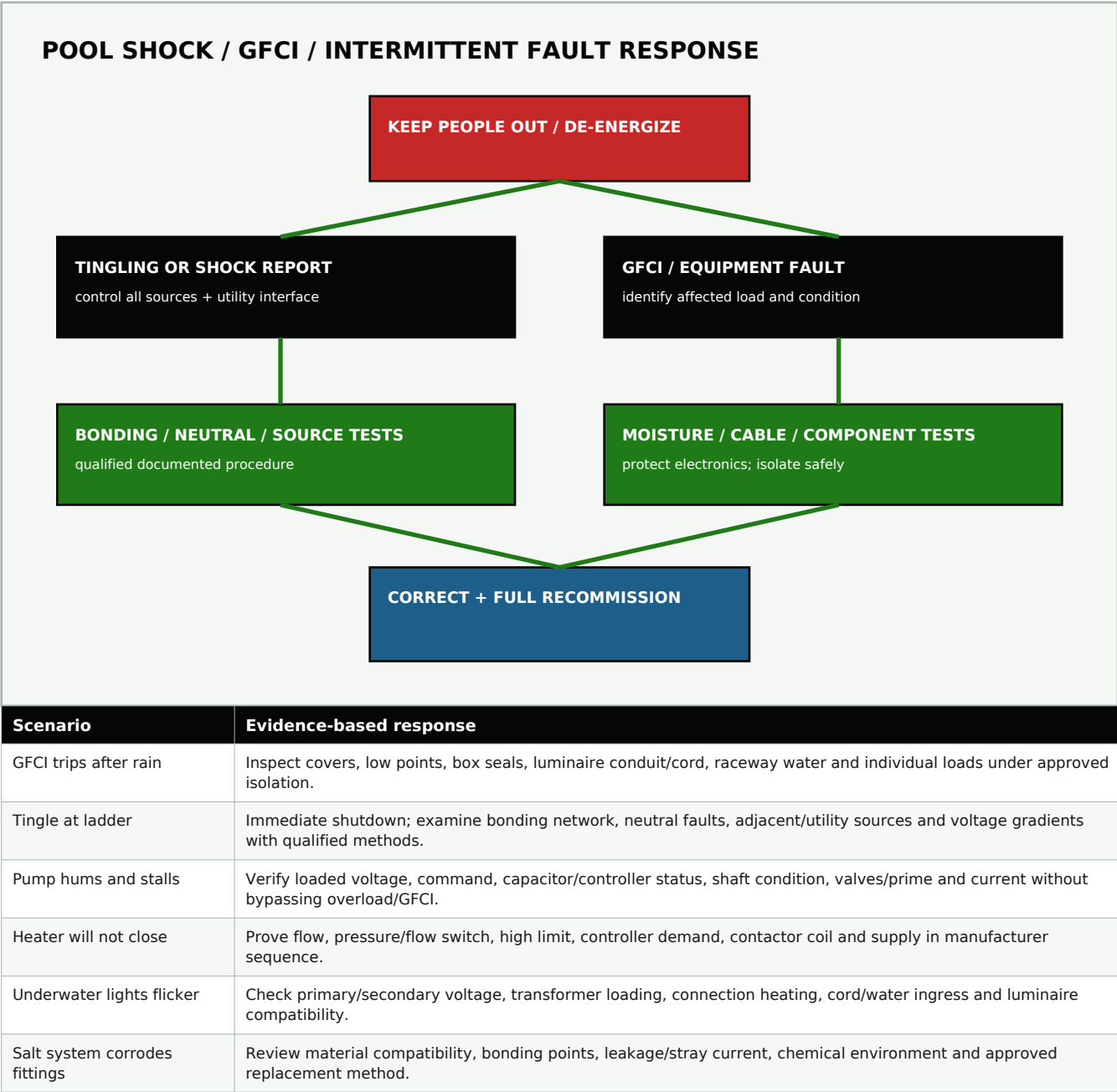
Inspection planning is part of design. Some of the most important Section 68 work becomes invisible after one construction operation.



Hold point	Minimum record
Before excavation	Permit, utility locate, scaled plan, overhead evaluation and approved products.
Before shell/concrete	Bonding network, distributed connections, niches/sleeves, measured photos and inspector release.
Before backfill	Underground routes, wiring method, separation, depth and mechanical protection.
Before deck/pavers	Perimeter grid/rebar, fixed metal, deck boxes, conductor continuity and dimensions.
Before filling	Covers/barriers, luminaire service method, boxes, bonding completion and water-contact provision.
Before energization	Torque, conductor identity, insulation/continuity checks, GFCI, disconnects and labels.
Final handover	Inspection status, commissioning values, as-builts, manuals, owner training and deficiency closure.

35. Realistic troubleshooting scenarios

Every scenario begins with public exclusion, safe isolation and preservation of all protective devices.



36. Saint John-region project - inquiry through survey

Case: an existing 200 A dwelling receives a fibreglass in-ground pool, variable-speed pump, 7.5 kW heater, salt system, two 12 V underwater lights and a future automatic cover. The equipment pad is approximately 42 m from the service panel.

Project gate	Completed action
Customer inquiry	Define pool model, contractor interfaces, schedule, future accessories and fixed-price exclusions.
Document collection	Obtain pool drawings, equipment submittals, Canadian approval evidence and exact manuals.
Site survey	Measure pool/equipment geometry, overhead service, underground utilities, panel/service data, routes and drainage.
Classification	Permanent in-ground residential pool; general Rules 68-050 to 68-072 plus Rule 68-100.
Pre-evaluation	Confirm shell/deck bonding method, lighting system, heater MCA/MOCP or input, pump GFCI compatibility and box locations.
Estimate risk	Carry allowances for service/load outcome, trench conditions, rock, utility relocation and owner-supplied equipment uncertainty.

Survey finding

The first layout placed a transformer 2.4 m from the inside wall without a qualifying permanent barrier and routed an existing communication cable across the proposed pool zone. The design is held. Rule 68-062 navigation and Rule 68-054/related communication requirements are reviewed; the transformer and cable route are redesigned before excavation.

37. Saint John-region project - design, permit and rough-in

The approved design separates assumptions from verified facts and identifies every inspection hold point.

Design package	Case decision
Load calculation	Existing dwelling calculation reconstructed; pool inventory added using marked inputs and correct Section 8 treatment.
Distribution	Pool feeder/panel selected for calculated load, environment, neutral separation, bonding and future cover allowance.
Pump	Dedicated 240 V GFCI-protected circuit; disconnect arranged under Rule 68-072.
Heater	7.5 kW resistance unit: 31.25 A nominal; conductor/OCPD finalized from nameplate and applicable treatment.
Lighting	Matched listed 12 V system; transformer relocated; deck box and service cords coordinated under Rules 68-060/062/066/100.
Bonding	Shell/perimeter method, ladder/rail, pump, heater and water-contact provision detailed under Rule 68-058.
Permit	Required New Brunswick authorization obtained before installation; documents and sticker posted/retained as required.
Rough-in	Bonding, niches, routes and deck work held for evidence/inspection before concealment.

CHANGE CONTROL

The pool contractor proposes moving the ladder after deck steel is placed. Electrical work stops at that interface until the bonding detail, dimensions and inspection evidence are revised.

38. Saint John-region project - commissioning and handover

The pool is not released because equipment turns on. Release follows a documented inspection and commissioning sequence.

Commissioning item	Case evidence
Visual/approval	All labels, enclosures, barriers, supports and corrosion controls verified.
Torque	Panel, disconnect, heater, pump and bonding terminals recorded with tool identification.
Bonding	Required network and conductive parts verified; concealed-stage photographs cross-referenced.
GFCI	Each protected circuit identified and tested using device function and approved verification method.
Voltage/current	No-load and loaded values recorded at pool panel, pump, heater and lighting transformer.
Interlocks	Pump/heater flow sequence, high limit, automation and safe restart demonstrated.
Lighting	Primary/secondary voltage, luminaire operation, box accessibility and service method verified.
Inspection	Deficiencies closed and final status documented before owner use.
Owner handover	GFCI test routine, isolation, no-extension-cord warning, corrosion checks, winterization and emergency response reviewed.

Representative results

Measurement	Result	Disposition
Pool-panel loaded voltage	238.6 V	Within equipment rating; total drop documented.
Pump operating current	7.8 A at programmed speed	Matches expected operating condition.
Heater current	31.0 A	Consistent with 7.5 kW nominal input.
Lighting secondary loaded voltage	11.7 V	Within approved system operating range.
GFCI functional tests	Pass - all identified circuits	Record retained; owner test instruction provided.

39. GoRight pool quality-control system

Use these records as a coordinated package rather than isolated checklists.

Record	Owner	Release condition
GR-POOL-01 Inquiry and scope	Estimator	Pool/accessory classification and exclusions complete.
GR-POOL-02 Product pre-evaluation	Electrician-in-charge	Approval, ratings, manuals and compatibility accepted.
GR-POOL-03 Site survey	Designer/estimator	Measured plan/elevations and utility conflicts resolved.
GR-POOL-04 Load and circuit schedule	Designer/EIC	Service, feeder, branches and voltage drop documented.
GR-POOL-05 Bonding plan	EIC	Shell, perimeter, metal and water-contact method released.
GR-POOL-06 Concealed-work inspection	EIC/inspector	Required evidence accepted before cover.
GR-POOL-07 Commissioning record	Qualified electrician	Protection, torque, voltage/current and functions passed.
GR-POOL-08 Handover package	Project lead	Inspection status, as-built, manuals and owner training complete.

Supervisor review questions

- + Which rule controls this decision, and what other Section does it cross-reference?
- + What evidence proves the product is approved for this exact use?
- + Which dimension was measured, from what reference point, and by what path?
- + What becomes concealed next, and who releases the hold point?
- + What fault mode is controlled by this device or bonding connection?
- + What test proves the installed result without damaging connected electronics?
- + What information must the owner receive to preserve protection after handover?

A1 ELECTRICIAN STANDARD

The strongest installer can explain the rule path, installation physics, product limitation, construction interface, test method and retained evidence—not only make the connection.

40. Worked problem set

Show formulas, units, assumptions and the rule/product data still required. Answers appear on the next page.

No.	Problem
1	A 240 V pump draws 10 A at full programmed speed. Calculate input kVA.
2	A 7.2 kW, 240 V resistance heater: calculate nominal current.
3	A 120 V, 300 VA lighting transformer: calculate ideal primary current.
4	The same 300 W lighting load operates at 12 V: calculate secondary current.
5	A 240 V, 12 A pump uses a 40 m one-way conductor with assumed resistance 3.28 ohm/km. Calculate voltage drop and percent.
6	Pump 1.92 kVA + heater 6.0 kVA + lighting 0.30 kVA + controls 0.48 kVA: total gross connected kVA.
7	Name four items that must be inspected before deck concrete hides the work.
8	Explain why GFCI protection cannot replace equipotential bonding.
9	A GFCI trips only when the heater contactor closes. State a safe evidence sequence.
10	Explain why an empty breaker space does not prove service capacity.

APPRENTICE STANDARD

A correct number without units, assumptions or a design decision is incomplete. Where the problem lacks nameplate or rule data, state what must still be obtained.

41. Worked problem answers

These answers demonstrate reasoning. They do not replace actual product data or the adopted rules.

No.	Answer
1	$S = V \times I = 240 \times 10 = 2,400 \text{ VA} = 2.40 \text{ kVA}$.
2	$I = P/V = 7,200/240 = 30.0 \text{ A}$ nominal; circuit selection still requires nameplate/instructions and applicable sizing rules.
3	$I = 300/120 = 2.50 \text{ A}$ ideal, before efficiency/inrush considerations.
4	$I = 300/12 = 25.0 \text{ A}$; secondary voltage drop is therefore critical.
5	Loop length 0.080 km. $V_{\text{drop}} = 12 \times 3.28 \times .080 = 3.15 \text{ V}$. Percent = $3.15/240 \times 100 = 1.31\%$.
6	$1.92 + 6.00 + .30 + .48 = 8.70 \text{ kVA}$ gross connected; apply Section 8 only after load classification.
7	Examples: bonding connections/network, niches/boxes, raceway routes/depths, reinforcing/structural metal, fixed metal, measurements and inspector release.
8	GFCI opens for current imbalance; bonding reduces voltage differences between specified conductive parts. Different hazard controls.
9	Remove from service; lock out/verify absence; confirm circuit/neutral; inspect moisture and wiring; isolate/test heater only under approved procedure; repair and recommission.
10	Capacity depends on calculated demand, service/feeder ratings, conductor/termination limits, panel ratings and actual loads—not physical space.

42. Pre-installation field worksheet

Complete before fixed-price commitment and before permit submission.

Client / project / civic address

Pool make, model and classification

Installer / pool contractor / designer

Existing service and panel data

Pump / heater / lighting / controls nameplate schedule

Scaled site plan reference

Overhead/underground utility review

Bonding design reference

Permit / inspection communication

Open interpretation or product-approval items

43. Installation and commissioning record

Retain with project documents and provide the applicable handover record.

- ☐ Permit/authorization confirmed before work
- ☐ Approved equipment labels and exact instructions retained
- ☐ Site distances measured and recorded
- ☐ Overhead and underground conflicts resolved
- ☐ Bonding network completed before concealment
- ☐ Raceway/conductor routes, burial and protection verified
- ☐ Required GFCI protection installed and tested
- ☐ Disconnects, receptacles and controls correctly located
- ☐ Torque values recorded using suitable tool
- ☐ Pump, heater, lighting and interlocks commissioned
- ☐ As-built, photographs and inspection status retained
- ☐ Owner instructed on GFCI testing, isolation and service warnings

Deficiencies / corrective work / retest evidence

Technician / licence / date / signature

44. Apprentice practical assessment

Supervisor observes the work and records evidence. The learner must explain why, not only perform the motion.

Task	Competent evidence	Result
Classify a sample installation	Identifies pool type, accessories, approval data and correct rule groups.	
Create a site plan	Measures required reference points; marks equipment, overhead and underground conditions.	
Build load schedule	Uses nameplate values, units and service/load method.	
Explain protection layers	Distinguishes GFCI, equipotential bonding, fault path and OCPD.	
Prepare bonding plan	Identifies concealed hold points and specified conductive parts.	
Select a wiring method	Explains wet-location, burial, mechanical and corrosion factors.	
Demonstrate safe isolation	Identifies all sources, locks/tags, tests absence and controls restart.	
Commission system	Records torque, GFCI, continuity, voltage/current, interlocks and documents.	

Supervisor comments and development plan

45. Final GoRight conformity gate

A project is ready for owner use only when every required gate is supported by evidence.

Gate	Release question
Scope	Are pool classification, accessories and boundaries documented?
Approval	Is every product approved and used within its rating/instructions?
Design	Are load, conductor, OCPD, GFCI, bonding, location and wiring-method decisions complete?
Authorization	Was the required NB permit/authorization obtained before construction?
Concealed work	Were bonding, niches, raceways and burial reviewed before covering?
Safety	Were lockout, absence-of-voltage and wet-work controls followed?
Commissioning	Do measured results and functional tests support acceptance?
Inspection	Is inspection status clear and are deficiencies closed?
Handover	Did the owner receive operating, test, maintenance and emergency instructions?

GORIGHT RELEASE RULE

No missing approval. No unverified distance. No hidden bonding assumption. No bypassed protection. No owner use before the required inspection and commissioning evidence is complete.

Revision and governing basis

Prepared as an original GoRight Electric Inc. standalone training and field-control document for New Brunswick.

Technical baseline: New Brunswick Regulation 84-165 and its adoption of C22.1-24; Electrical Installation and Inspection Act; New Brunswick Regulation 91-191 electrical lockout duties; applicable approved equipment markings and manufacturer instructions. Verify amendments, bulletins, permit conditions and inspector direction at each project date.