

CODE IS THE FLOOR. STANDARD IS THE CEILING.

Scope: Residential pool and spa automation platforms (Pentair IntelliCenter, Jandy AquaLink RS, Hayward OmniLogic), variable-speed pump hydraulics, gas and heat-pump heating, salt/UV/ozone/AOP sanitization, and NEC 2023 Article 680 equipotential bonding and grounding — governed by NEC 2023 Article 680, VGBA, DOE 10 CFR 431, NSF/ANSI 50/60, APSP/PHTA standards, and NJ UCC — all sequenced, sealed, and signed off before the deck pours. Smart-home integration via Crestron Home, Lutron RA3, and Control4 driver ecosystem. Owner-grade water, residential-only, NJ Climate Zone 4A.

§01	OPERATING PRINCIPLES
- Six-pillar pool suite — automation, hydraulics, heating, sanitization, lighting, and bonding — each a one-shot rough-in discipline; residential-only posture throughout. - Code-first — NEC 2023 Article 680, VGBA, DOE 10 CFR 431, NSF/ANSI 50/60, APSP/PHTA standards, and NJ UCC are the floor, not the ceiling. - One-shot bond grid — equipotential bonding conductor (#8 AWG solid copper, NEC 680.26) set, photographed, and approved before gunite is placed; no corrective access after pour. - NJ Climate Zone 4A — freeze-protection sequences, cover interlocks, and heat-pump COP derating govern all heating and automation design decisions. - Spare hardware ≥5% delivered + labeled — salt cells, pump seal kits, light modules, electrodes, fuses, and controller components included at closeout. - One-line electrical diagram and as-built RS-485 bus diagram archived with owner before final payment; automation backup configuration committed to cloud and local media.	

§02	AUTOMATION PLATFORMS
- Pentair IntelliCenter i5P (5 circuits), i8P (8 circuits), and i10P (10 circuits) — RS-485 bus, ScreenLogic2 remote, Pentair app, and iAquaLink-compatible driver; Pentair IntelliConnect Wi-Fi bridge for legacy ScreenLogic. - Jandy AquaLink RS Z4/Z6/Z8 — RS-485 bus, iAquaLink IQ900 Wi-Fi interface, Jandy app; All-Button panel at equipment pad; TRIAC dimmer for LED lights. - Hayward OmniLogic (wired RS-485) and OmniHub (Wi-Fi mesh) — full touchscreen interface, virtual circuit scheduling, temperature sensor integration, Alexa/Google Home voice skill. - Crestron Home native pool driver, Lutron RA3 with Pentair IntelliCenter driver via driverCentral, and Control4 driverCentral pool driver — all execute locally without cloud dependency. - Dedicated pool VLAN — pool automation controller, booster pump, and any IP cameras on an isolated VLAN; managed PoE switch in NEMA 3R enclosure at equipment pad. - Cat6A shielded wired drop from MDF to equipment pad, pulled through 1-inch PVC conduit; static IP assignments documented; Wi-Fi bridge as fallback only.	

§03	PUMPS & HYDRAULICS
- Specified pumps: Pentair IntelliFlo3 VSF, Hayward TriStar VS 900/950, Jandy VS FloPro and ePump, Waterway Power Defender 270 — all variable-speed, DOE 10 CFR 431 compliant (effective 2021-07-19). - DOE 10 CFR 431 Subpart Z prohibits single-speed pool pumps above 0.711 THP for filtered pools and above 1.0 THP for pressure-cleaner booster pumps; ENERGY STAR WEF certification preferred. - Suction piping — 2-inch nominal minimum on main suction; sweep elbows (no sharp 90s) on suction side; pipe velocity ≤3 ft/s on suction, ≤6 ft/s on discharge. - VGBA dual main drains — minimum two main drain sumps with centers ≥3 ft apart; ASME/ANSI A112.19.8 or ANSI/APSP-16 anti-vortex covers rated for installed pump GPM; SVRS on all suction outlets. - In-floor cleaning booster (Polaris PB4-60 or Paramount PV3) on dedicated circuit; vanishing-edge surge tank sized for negative-edge pump volume; stub-outs for future feature pump during construction. - Hydraulic design documented — friction loss calculation, pump curve selection, and programmed speed setpoints (low/medium/high/boost) archived with closeout package.	

§04	HEATING
- Gas heaters: Pentair MasterTemp 400/250, Jandy LXi (200K–400K BTU) and JXi (260K/400K BTU), Hayward H-Series Universal — all low-NOx, electronic ignition, cupro-nickel heat exchanger for saltwater. - Heat pumps: Pentair UltraTemp ETi Hybrid (218 kBTU gas + heat pump, full-flow bypass), Jandy AE-Ti, Hayward HeatPro, AquaCal HeatWave SuperQuiet — sized per pool surface area and NJ Climate Zone 4A COP derating below 50°F	

QC GATE — VERIFY BEFORE CLOSE-IN

- ☐ Bonded grid resistance reading — equipotential bond measured with NEC 680.26 bond height verified field closeout
- ☐ Pump VFD commissioning report — speed setpoints programmed
- ☐ Heater venting and gas pressure test passed
- ☐ Pool light transformer feed verified
- ☐ Pool pump motor branch circuit installed
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