

CODE IS THE FLOOR. STANDARD IS THE CEILING.

Scope: Residential access control coordination for luxury construction — door classification and code authority · fail-safe and fail-secure logic per NFPA 101 and NFPA 80 · electric strike, maglock and electrified mortise hardware · PDK io and Brivo cloud-managed panels · LiftMaster gate operators under UL 325 entrapment compliance · Crestron Home and Control4 lock integration · Lutron HomeWorks CCI keypad-triggered unlock · power supply, PoE and backup battery discipline · pre-door rough-in inspection · credential commissioning and access-stage QC.

| §01 | OPERATING PRINCIPLES                                                                                                                                                        |
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| ■   | Fail-safe is a code decision, not a field preference. Door classification, occupancy, NFPA 101 §7.2 and AHJ determine the mode — written and on file before hardware order. |
| ■   | The door is the system. Frame, strike, reader, hinge, power transfer and credential coordinated as one assembly — never sourced independently.                              |
| ■   | Credential on the wall. Logic in the cloud. PDK io and Brivo separate reader placement from access policy — credentials and schedules are owner decisions.                  |
| ■   | Every controlled door has a written schedule entry: rating, egress, fail mode, hardware model, power circuit, battery runtime.                                              |

| §02 | DOOR CLASSIFICATION & CODE AUTHORITY                                                                                                                                                                    |
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| ■   | Every door classified before hardware order: fire-rated or non-fire-rated (NFPA 80), egress or non-egress (NFPA 101 §7.2), occupancy (IBC), AHJ overlays.                                               |
| ■   | Fire-rated egress doors require positive latching per NFPA 80 — fail-safe strike incompatible. Specify electric latch retraction (Adams Rite 8800 EL/MLR) where both latching and reentry are required. |
| ■   | Delayed-egress: NFPA 101 §7.2.1.6.1 — 15-sec standard, 30-sec only by AHJ written approval. Building fully sprinklered or supervised.                                                                   |
| ■   | UL 294 governs access control units (ALVY/FWAX). UL 1034 governs burglary-resistant locking mechanisms (CVXS/CVXY/CVYT). 2024 IBC requires both listings as applicable.                                 |
| ■   | Vehicular gates: UL 325 7th Ed (Aug 2018) + ASTM F2200. IBC 2009+ requires operators labeled and listed to UL 325.                                                                                      |

| §03 | WITHOUT WRITTEN DIRECTION — DO NOT DEFAULT                                                                                                        |
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| ■   | Maglock as sole hardware on a fire-rated door — maglocks do not positively latch; fire rating voided unless architect and AHJ confirm in writing. |
| ■   | Delayed-egress timing programmed to 30 sec — NFPA 101 default is 15 sec; 30 sec requires AHJ written approval in the project file.                |
| ■   | Fail-secure on a primary egress door — voids NFPA 101 §7.2.1.5 free egress unless an approved controlled-egress exception is on file.             |
| ■   | Gate operator energized without two independent UL-listed model-compatible entrapment means per direction — UL 325 7th Ed.                        |
| ■   | Z-Wave or Wi-Fi-only battery lock as sole credential path on a perimeter entry — owner risk acknowledgment required in writing.                   |
| ■   | Brivo ACS6000 powered from 24 VDC — boards require 12 VDC; 24 VDC causes irreversible damage.                                                     |
| ■   | Hardware on any door that has not passed the §11 Pre-Door Inspection.                                                                             |

| §04 | PRODATAKEY (PDK IO) — CLOUD HUB & DOOR CONTROLLERS                                                                      |
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| ■   | Architecture: Red Cloud Node hub + distributed Single io at each door, or Eight io central. Cloud Node always required. |
| ■   | Single io: 30W PoE+ (IEEE 802.3at Class 4); 1.5A battery-backed bus.                                                    |
| ■   | Eight io: 12 VDC from Altronix SMP10; 10A bus; 5.0 Ah backup; no PoE.                                                   |
| ■   | UL 294: every controller-to-device wire <98.5 ft (30 m). Reader 22/5 or 22/6; REX 18/4, 7-15 ft mount, 3-min settle.    |

| §05 | BRIVO — ESTATE CLOUD ACCESS                                                                                           |
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| ■   | ACS6000: 12 VDC board only. 24 VDC kills the board — irreversible.                                                    |
| ■   | Distance limits: chassis-to-transformer 100 ft; door board to strike 500 ft; expansion chassis 1,500 ft.              |
| ■   | Dual-voltage installs: two supplies or LSP FPO + B100 — never a shared 24 VDC bus.                                    |
| ■   | Cloud tier: Onair, Access, or Onsite (air-gapped). Owner admin account created; field credentials deleted at handoff. |

QC GATE — VERIFY BEFORE CLOSE-IN

☐ Door classification confirmed in writing for every controlled opening

☐ Fail-safe / fail-secure logic matches NFPA 101 and NFPA 80

☐ PoE injector or 12 VDC supply confirmed for the controller model

☐ Backup battery installed, charged, and 30-minute load test logged

☐ Every credential issued, tested, revoked and re-issued on commissioning

☐ REX walk-tested with 3-minute settle on every controlled door

☐ UL 325 entrapment protection on every gate operator — both means delayed and direct compatible

☐ Signs, delayed and direct compatible signage verified before owner occupancy

☐ Lutron CCI integration tested end-to-end on every integrated keypad

☐ Owner administrator account active; every field credential removed from the platform

| §06 | LIFTMASTER GATE OPERATORS & UL 325 COMPLIANCE                                                                                                                                       |
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| ■   | RSW12UL: residential swing; 16 ft / 1,000 lb; 12 VDC; integrated myQ; battery backup (147 cycles / 63 days); solar-ready; UL 325 + UL 991.                                          |
| ■   | RSL12UL: residential slide; 25 ft / 800 lb; 12 VDC; myQ; battery backup; solar-ready.                                                                                               |
| ■   | CSW24UL: high-traffic swing for staff or service gates; 18 ft / 1,600 lb; 24 VDC; million-cycle rated.                                                                              |
| ■   | UL 325 7th Ed.: two independent entrapment means per direction of travel — inherent plus external monitored sensors listed with the operator model. Mix-and-match is not permitted. |
| ■   | Monitoring: operator monitors external sensor fault — missing or failed sensor disables automatic operation.                                                                        |
| ■   | Pedestrian separation: vehicle-only operator. A separate pedestrian gate is required by code.                                                                                       |
| ■   | Access controls mounted at least 6 ft from any moving gate part, and positioned so a user cannot reach over, under or through.                                                      |
| ■   | myQ to Crestron Home: Intrinsic Dev official licensed driver (June 2024); up to 12 devices; internet required.                                                                      |

| §07 | CRESTRON HOME, CONTROL4 & LUTRON INTEGRATION                                                                                                                                              |
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| ■   | Crestron Home OS 4.5+ native locks (infiNET EX): Yale Pro 2, Yale Assure, Yale nexTouch, Baldwin Boulder/Soho, Kwikset SmartCode — all with infiNET EX module.                            |
| ■   | OS 4.5 third-party door lock driver type: any wireless lock with a CSP driver — full user management inside Crestron Home.                                                                |
| ■   | Control4: Yale Assure / nexTouch (AYR202 Zigbee), Schlage Connect (Z-Wave Plus + C4 Z-Wave module), Baldwin Home Connect (Zigbee). AYR202 is not a routing node — needs nearby repeaters. |
| ■   | Lutron HWI-CCI-8: 8 dry-contact inputs; keypad link two-pair shielded; 4,000 ft max from processor; 15 VDC from link.                                                                     |
| ■   | Welcome Home: access controller dry contact (HWI-CCO-8) → CCI input → HomeWorks scene (lighting, shades, HVAC, audio).                                                                    |
| ■   | Reverse path: HWI-CCO-8 → access controller input — never a Lutron dimmer.                                                                                                                |
| ■   | myQ on Control4: no native official driver — relay bypass or HomeBridge; flagged as platform limitation.                                                                                  |

| §08 | ELECTRIC STRIKES, MAGLOCKS & ELECTRIFIED HARDWARE                                                                  |
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| ■   | HES 1006 strike: 12/24 VDC; 480/240 mA; UL 10C fire-rated; UL 1034; UL 294; A156.31 Grade 1; fail-secure standard. |
| ■   | HES 9600 surface strike: 250/450 mA; windstorm-rated; UL 1034; UL 294.                                             |
| ■   | Securiton M38 (interior 600 lb) / M62-OS (weatherproof 1,200 lb) — fail-safe by design.                            |
| ■   | Adams Rite 8800 EL/MLR: electric latch retraction; 24 VDC; 1.5A inrush, 370 mA hold; UL 294/305.                   |
| ■   | Schlage L Series electrified mortise: 12/24 VDC auto; EL fail-safe / EU fail-secure; UL 10C 3-hour.                |
| ■   | Diode at every strike/maglock terminal — 1N4004 min.                                                               |

| §09 | DOOR FRAME, HINGE & HARDWARE COORDINATION                                                                                                 |
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| ■   | Frame drives strike: hollow metal ANSI 4-7/8; aluminum narrow-stile Adams Rite 7100; wood frame reinforcement plate sized to model.       |
| ■   | Mortise prep confirmed at frame fabrication — never field-cut. Strike pocket locked at door schedule release.                             |
| ■   | Power transfer: electrified continuous hinge (Hager, Markar, Allegion Connect) or EPT device — no coiled door cord on luxury residential. |
| ■   | Fire-rated assemblies: every component listed and labeled per NFPA 80.                                                                    |
| ■   | Maglock armature seating: ≤1/8 in. gap; door alignment and weatherstrip confirmed at install.                                             |
| ■   | Hold-open devices on fire doors: listed, fire-alarm-connected, release on alarm/smoke/power loss.                                         |

| §10 | POWER SUPPLY, POE & BACKUP BATTERY                                                                                                                         |
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| ■   | Power supply sizing: sum peak load (lock + reader + REX + DPS), add 20% safety factor, select next tier (2A, 4A, 6A). Dedicated fused circuit per opening. |
| ■   | PoE: PDK Single io requires 30W injector (PoE+ IEEE 802.3at Class 4). Verify wattage at the patch panel before energizing.                                 |
| ■   | Backup battery: 4-hour minimum runtime per NFPA 101 emergency lighting and UL 294 standby power.                                                           |
| ■   | Battery sizing: Total A × Hours × 1.25 derating = min Ah. Example: 1.5 A × 4 h × 1.25 = 7.5 Ah → specify 8 Ah sealed lead-acid.                            |
| ■   | Wire gauge: 18 AWG to ~100 ft at 12 VDC / 0.5A; 16 AWG longer; 14 AWG extended. Reader 22/5 or 22/6; DPS 22/2; REX 18/4.                                   |
| ■   | PDK UL 294: every controller-to-device wire under 98.5 ft (30 m) — use distributed Single io if exceeded.                                                  |
| ■   | NEC 725: Class 2/3 circuits physically separated from Class 1 line voltage unless reclassified per 725.130.                                                |

| §11 | PRE-DOOR INSPECTION — ROUGH-IN GATE                                                                                     |
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| ■   | Door schedule signed: fire rating, egress, hardware mode, model, frame prep, power supply circuit, controller location. |
| ■   | J-box at reader: centered at confirmed height; oversized for wire management; weatherproof gasket on exterior.          |
| ■   | Conduit: 3/4 in. EMT at exterior reader; 1/2 in. at strike; 3/4-1 in. at controller; 3/4-1 in. RMC at gate operator.    |
| ■   | Strike pocket prep verified before frame is hung; wood frame reinforcement plate installed.                             |
| ■   | Reader, DPS, REX and lock conductor pulled, labeled and slack-coiled before drywall — never field-fished after closure. |
| ■   | Controller location: equipment closet with plywood backboard, 120 VAC outlet within 6 ft, ventilation, conditioned.     |
| ■   | Inspection signed by integrator and GC before drywall — gate recorded in project file.                                  |

| §12 | COMMISSIONING & OWNER HANDOFF                                                                                                       |
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| ■   | Credential issued, tested at every door, revoked, re-issued — event log captured before owner handoff.                              |
| ■   | REX walk-test on every door: 3-minute settle, dwell time confirmed, no false triggers.                                              |
| ■   | Fail-safe / fail-secure power-cycle test: state confirmed against schedule on every door.                                           |
| ■   | Backup battery load test: 30-minute minimum on battery only; runtime logged.                                                        |
| ■   | Gate operator: limits set; both entrapment means tested; sensor fault disables automatic operation; pedestrian separation verified. |
| ■   | Lutron CCI end-to-end test: keypad button → HWI-CCO-8 → access controller → unlock log → door release. On every integrated keypad.  |
| ■   | Delayed-egress: 15-sec delay timed; sprinkler/alarm and power-loss immediate release confirmed; signage installed.                  |
| ■   | Owner administrator account active; every field credential removed from the platform.                                               |

| §13 | ACCESS-STAGE QC, SPARES & CLOSEOUT                                                                                                                  |
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| ■   | QC gate walked at install, commissioning and owner walkthrough — same 10-item checklist.                                                            |
| ■   | Spare credentials: owner count plus 10%; spare hardware: one reader per platform, one of each strike and maglock model, one battery per controller. |
| ■   | Warranty registered with each manufacturer (PDK, Brivo, HES, Securiton, Adams Rite, Schlage, LiftMaster); confirmation filed.                       |