

RESTREPO STANDARD

Pre-Wall. Substrate. Cut-Line.

Panels

Stone, wood and metal. Mapped to the Restrepo Standard.

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WHY THIS EXISTS

The template is the trade. Hold the line on paper before the stone is cut. Stone, wood and metal panels succeed or fail before the first slab is laid. They succeed when the substrate behind the panel is matched to the panel material per ANSI A108 and AWI ANSI/AWI 0642, when the back-blocking is continuous behind every device, when the back-box and mud-ring are registered to the finished panel face — not to the substrate face — and when the CAD template is signed and released before the first sheet is fabricated. They fail when any of those decisions slides downstream to the panel installer at trim-out. This reference codifies the upstream discipline in the language we use on site so the framer, drywaller, panel fabricator, electrician, and AV integrator are working from the same template, the same tolerances, and the same back-box geometry.

This document supplements manufacturer and industry instructions — it does not replace them. For listed assemblies (ANSI A108 stone/tile, AWI ANSI/AWI 0642 architectural woodwork, Marble Institute DSDM, Lutron Palladiom AppNote #705, Crestron BB-5000 / MMK series, Sonance Invisible, Stealth Linea, Amina Mobius), the published installation guides and code references govern.

The template is the trade.

Hold the line on paper before the stone is cut.

01 SUBSTRATE BY PANEL MATERIAL

CODE INTENT (PARAPHRASED)

The substrate behind a panel is a panel-material decision, not a framing convenience. Stone and dimension stone veneer require cement backerboard or Type X gypsum with a waterproof membrane per ANSI A108 / A118; wood-based substrate (particle, OSB, lauan, softwood ply) is explicitly disallowed for stone and tile. Wood panels require 3/4 in. CDX or moisture-stabilized MDF per AWI ANSI/AWI 0642. Metal composite panels require an 18 mm aluminum honeycomb backer or stable substrate per the panel manufacturer. The substrate is the reference plane for every cut-line and every back-box; if it is wrong at framing, the panel is wrong forever.

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- Stone (slab, tile, thin veneer): cement backerboard / Type X gyp + waterproof membrane per ANSI A108 / A118 — never bare drywall, never wood-based substrate.
- Wood veneer panels: 3/4 in. CDX or moisture-stabilized MDF per AWI ANSI/AWI 0642 — flat, dry, sanded off before veneer fabrication.
- Metal composite (aluminum honeycomb, anodized): 18 mm aluminum honeycomb backer or stable substrate per panel manufacturer; substrate flat to ± 1.0 mm per StoneSheets 044200.
- Substrate face plane verified flat across the device opening — Lutron Palladiom AppNote #705 calls out flatness as the most critical pre-install factor.
- Back-blocking present and continuous behind every device cutout, not just at the perimeter — substrate alone does not carry torque.
- Specifier-driven alternates (Hardibacker, marine ply, plaster-on-stone) only with written direction on the panel shop drawing.

FIELD CHECK · SUBSTRATE BY PANEL MATERIAL

Stand a 4 ft. straightedge across the substrate at three points across each panel opening. If it rocks on either side or shows light past 1/8 in. in 6 ft., the substrate is out of plane — re-skim or re-shim before the panel template is signed, not after.

02 BACK-BOX GEOMETRY & DEPTH

CODE INTENT (PARAPHRASED)

Devices register to the finished panel face, not the substrate face. The back-box is set deeper to absorb panel build-up, the mud-ring is matched to the device family, and the depth is verified against the published manufacturer table before any panel ships. Lutron Palladiom uses the EBB-1-RD/SQ/3COL pre-drywall back-box per AppNote #705. Crestron Cameo and BB-5000 use Crestron's published mounting depth tables. Sonance, Stealth, and Amina speakers behind panels register the bezel face to the finished panel face, not the back-box face.

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- Lutron Palladiom international: round (EBB-1-RD), square (EBB-1-SQ), or 3-COL (EBB-1-3COL) per AppNote #705 — minimum wallboard depth 25 mm (1 in.).
- Crestron Cameo: drywall spring-clamp (no back-box) or 1-gang with MMK-G1-CBF-T mud ring — the preferred mount where panel build-up creates an irregular cutout.
- Crestron Cameo 2 / Horizon keypads: MMK-CBF-T adjustable mud ring per Crestron Cameo 2 install — mounted off the substrate, registered to the panel face.
- Crestron BB-5000 lectern/wall back-box: pre-drywall mount, fastened to stud or supplied template is the only legitimate cut-line.
- Adjustable mud rings (Hubbell HBL869AMR, 1/2 in. – 1-3/8 in.) are the Restrepo standard where panel + substrate stack varies inch-to-inch.
- Speaker back-boxes (Sonance VP, Stealth Linea, Amina Mobius CV345) registered to the finished panel face per the manufacturer install guide.

FIELD CHECK · BACK-BOX GEOMETRY & DEPTH

With the substrate complete and before any panel template is signed, register a depth gauge or scrap of the panel build-up against every back-box. If the device face will not land flush to within bezel coverage, re-shim the back-box — never trim the bezel to fit.

03 CAD TEMPLATE RELEASE & CUT-LINE TOLERANCE

CODE INTENT (PARAPHRASED)

The template is the trade. Restrepo issues a CAD template package per project covering every device cutout, every penetration, and every blocking note before the panel shop drawing is released for fabrication. Cut-line tolerance is dimensioned from the substrate to the panel face and held by panel material: stone $\pm 1/16$ in., wood veneer $\pm 1/32$ in., metal composite ± 0.5 mm. Tolerances tighten where bezel + mud-ring + panel cut + substrate cut + back-box opening all sum to the same bezel coverage — the chain is only as tight as its loosest link.

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- Templates dimensioned from two reference edges per opening, not from a centerline alone — eliminates rotational drift on rectangular cutouts (Crestron BB-5000, Cameo, Palladiom EBB-1-3COL).
- Manufacturer template (Crestron BB-5000, MMK-G1-CBF-T, Palladiom EBB-1-3COL) included as-is on the shop drawing — not photocopied, not redrawn.
- Template release log: file name, revision, date, recipient — kept in the project record. Every template change reissues the log entry.
- Field deviations from the released template require written authorization before the cut. Verbal field changes are not authorized cuts.
- Natural stone slab and large-format tile: $\pm 1/16$ in. (1.6 mm) cut-line tolerance per Marble Institute Dimension Stone Design Manual — held at the saw, not at the wall.
- Wood veneer panel (sliced veneer over MDF/CDX core) per MDF/CDX core and AWI ANSI/AWI 0642: $\pm 1/32$ in. (0.8 mm) on visible cutouts; book-match and slip-match panels held tighter.
- Metal composite panel: per StoneSheets/manufacturer spec — width ± 1.0 mm, length ± 2.0 mm, thickness ± 0.2 mm; cut-out tolerance ± 0.5 mm at the bezel line.

FIELD CHECK · CAD TEMPLATE RELEASE & CUT-LINE TOLERANCE

Before the first panel ships, dry-fit a sample bezel + mud-ring against the released CAD template. If the bezel does not cover the cut-line by full coverage on every side, the cut is too loose for the chosen device family — reissue the template before the run is fabricated.

04 SEAM, JOINT & SYMMETRY COORDINATION

CODE INTENT (PARAPHRASED)

Devices never land in the field of a panel where they will read against a vertical seam, a horizontal break, or a book-match centerline. The panel layout reviewed against device location is a Restrepo template overlay flagging seam conflicts at the shop-drawing review, not at the wall. Wall niche / hot-spot devices (intercom, thermostat) located on the visually quiet panel — not on the focal book-match or slab feature. The symmetry rule: if two devices flank a centerline, both land on identically book-matched panel pairs, dimensioned from the centerline outward.

RESTREPO STANDARD

- Devices land in the field of a panel — never on a vertical seam, horizontal break, or book-match centerline.
- Panel layout reviewed against device location: Restrepo's template overlay flags seam conflicts at the shop-drawing review, not at the wall.
- Stone tile field cuts kept ≥ 1 full course off any device cutout perimeter — eliminates sliver-cut grout joints adjacent to bezels.
- Multi-device gangs (paired keypads, gang of three Palladiom) sized to a single panel face — never split across a seam, even where geometry permits.
- Symmetry rule: if two devices flank a centerline, both land on identically book-matched panel pairs, dimensioned from the centerline outward.
- First-panel inspection: one panel installed, walked, signed — every project, every panel material. Damaged cuts replaced from spare archive, not field-patched.

FIELD CHECK · SEAM, JOINT & SYMMETRY COORDINATION

Before the first panel hangs, lay the elevation flat in chalk on the substrate. Trace every device location and every panel seam. If any device falls within 1 in. of a seam, miter, or book-match centerline, reissue the panel layout — not the device location.

05 PANEL-STAGE QC, SPARES & CLOSEOUT**CODE INTENT (PARAPHRASED)**

Panel-stage QC is where the discipline becomes the surface. Substrate and back-blocking are inspected before panel install closes the wall. Back-box depth is registered to the finished panel face. The first panel on every run is walked and signed before the run continues. Spare panels and signed CAD templates are archived at closeout: minimum 5% of each panel material, one panel from each book-match or slab batch held for warranty. Bezel face is flush to panel face within bezel coverage; flatness is checked across bezel and adjacent panel — gap > 0.5 mm rejected.

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- Substrate face plane checked with a 6 ft. straightedge — out-of-plane > 1/8 in. in 6 ft. is rejected and re-skimmed before panel mount.
- Back-blocking present, fastened to studs, and continuous around every device cutout perimeter.
- Class 2 SELV/PELV separation from line-voltage maintained inside any back-box that lands behind a panel — Vol 02 still applies behind the stone.
- Photographs of every substrate opening captured, dated, and filed before panel install closes the wall.
- Bezel registers to the panel face, not the substrate; mud ring or back-box buried below panel face per the bezel coverage tolerance.
- Engineered-flush bezels (Vol 07) require panel cut-line within $\pm 1/64$ in. of the bezel face dimension.
- Skim-coat or plaster touch-up held to the bezel-face line — no compound on bezel face, no panel scuffing.
- Spare panels: $\geq 5\%$ of each panel material at closeout; one panel from each book-match or slab batch held for warranty. Signed template archive at closeout.

FIELD CHECK · PANEL-STAGE QC, SPARES & CLOSEOUT

Walk the first installed panel on every run end-to-end before the run continues. If any cut bleeds outside bezel coverage, any seam reads against a device, or any panel rocks on its substrate, do not release the run — reset the template, debug, and re-test before the wall closes.

06 APPLIES-TO MATRIX

SITUATION	CODE	RESTREPO ACTION
Stone slab / dimension stone veneer	\$01	Cement backerboard or Type X gyp + waterproof membrane per ANSI A108 / A118. No wood-based substrate.
Wood veneer panel (sliced veneer over MDF/CDX)	\$01	3/4 in. CDX or moisture-stabilized MDF per AWI ANSI/AWI 0642. Flat, dry, sealed before veneer.
Metal composite (aluminum honeycomb)	\$01	18 mm aluminum honeycomb backer or stable substrate per panel manufacturer. Substrate flat to ±1.0 mm.
Lutron Palladiom keypad behind panel	\$02	EBB-1-RD/SQ/3COL pre-drywall back-box per AppNote #705. Minimum wallboard depth 25 mm (1 in.).
Crestron Cameo / Cameo 2 keypad	\$02	MMK-G1-CBF-T or MMK-CBF-T mud ring per Crestron install. Adjustable depth, registered to panel face.
Crestron BB-5000 wall back-box	\$02	Pre-drywall mount, fastened to stud or supplied template. Manufacturer template included as-is on shop drawing.
Hubbell HBL869AMR adjustable mud ring	\$02	1/2 in. – 1-3/8 in. range. Restrepo standard where panel + substrate stack varies inch-to-inch.
Sonance / Stealth / Amina speaker behind panel	\$02	Back-box per manufacturer install. Bezel face registered to finished panel face, not back-box face.
CAD template release	\$03	Restrepo CAD template package released and signed before panel shop drawing. Cut-line tolerance held by panel material.
Seam / book-match coordination	\$04	Devices never on seams or book-match centerlines. Panel layout overlay flags conflicts at shop-drawing review.

07 QC GATE · MATCHES THE REFERENCE CARD

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| ☐ Substrate matched to panel material spec | ☐ Cut-line tolerance held per panel material spec |
| ☐ Back-blocking continuous behind every device cutout | ☐ No device cutouts on seams or book-match centerlines |
| ☐ Back-box depth registered to finished panel face | ☐ First-panel inspection signed before run continues |
| ☐ CAD template signed and released before panel fabrica... | ☐ 5% spare panels & signed template archive at closeout |

08 CITATIONS & FURTHER READING**Marble Institute — Dimension Stone Design Manual (2022)**

Authoritative reference for cut-line tolerance, substrate compatibility, and stone panel installation.

<https://marble-institute.com/dimension-stone-design-manual/>

CSI — Thin Stone Veneer Installation Guidelines

Industry reference for thin-set stone veneer over masonry and gypsum substrates.

<https://www.csiresources.org/standards/thin-stone-veneer-guidelines>

Natural Stone Council — Installation General Reference

NSC general reference for stone slab and tile installation, joints, and tolerances.

<https://www.naturalstoneinstitute.org/installation/>

StoneSheets — Spec Sheet 044200

Lightweight stone composite panel — substrate flatness, cut tolerance, fastening guidance.

<https://stonesheets.com/spec-044200.pdf>

Architectural Woodwork Standards (AWS) — Section 4 (AWI ANSI/AWI 0642)

AWI custom architectural woodwork standard — substrate, veneer, cut-line, finish tolerance.

<https://awinet.org/standards/aws-section-4/>

Lutron — Palladiom Keypad International (App Note #705)

Palladiom international back-box (EBB-1-RD/SQ/3COL) — minimum wallboard depth, substrate flatness.

<https://www.lutron.com/TechnicalDocumentLibrary/AppNote705.pdf>

Lutron — Palladiom Keypad Install (041496)

Palladiom keypad install guide — mounting, fastening, depth registration.

<https://www.lutron.com/TechnicalDocumentLibrary/041496.pdf>

Crestron — BB-5000 Back-Box Install

Pre-drywall back-box install — fastening, manufacturer template, depth tables.

<https://www.crestron.com/getmedia/bb5000-install.pdf>

Crestron — Cutout Dimensions & Mounting Guide

Crestron device cutout dimensions and mounting depth tables across product families.

<https://www.crestron.com/getmedia/cutout-dimensions.pdf>

Crestron — MMK-G1-CBF-T Mud Ring

Cameo 1 mud ring — cut-line, fastening, finish coverage.

<https://www.crestron.com/getmedia/mmk-g1-cbf-t.pdf>

Crestron — MMK-CBF-T Cameo 2 Mud Ring

Cameo 2 / Horizon adjustable mud ring — mounting, finish coverage.

<https://www.crestron.com/getmedia/mmk-cbf-t.pdf>

Hubbell — HBL869AMR Adjustable Mud Ring

1/2 in. – 1-3/8 in. adjustable mud ring — the Restrepo standard for variable substrate stack.

<https://www.hubbell.com/wiringdevice-kellems/en/Products/Electrical-Electronic/Wallplates-Boxes/Mounting-Brackets/HBL869AMR>

Sonance — Invisible Series Install Manual

Invisible Series back-box, depth gauge (SKU 93491), substrate registration behind plaster or veneer.

<https://www.sonance.com/manuals/invisible-series-install.pdf>

Stealth — Linea Response Quickstart

Stealth Linea Response invisible speaker — back-box, mud width, veneer registration.

<https://stealthacoustics.com/manuals/linea-response-quickstart.pdf>

08 CITATIONS & FURTHER READING (CONT.)**Amina — Speaker Handbook v4.5**

Amina invisible speaker handbook — substrate, back-box CV345, perimeter shim alignment.

<https://www.amina.co.uk/handbook-v4-5.pdf>