

L1 final engineering audit

Conventional checkerboard piecing | Digital review | 21 October 2026

Result: conventional piecing is feasible

All six approved L1 color charts and their exact 2.4-inch grid are retained. The checkerboards use ordinary 1/4-inch seams with no hybrid exceptions, no blue overlays and no extra ivory foundation. Their finished color boundaries equal the approved L1 construction proof.

Review	Finding
Geometry and appearance	PASS: 48-inch core, 54-inch nominal finish; approved L1 sequences and half rows preserved.
Locked artwork	PASS: V2 SVG byte-identical; 28 fabric pieces and five embroidery paths. Star and snowflake geometry unchanged.
Color inventory	PASS: 82 ivory and 78 blue checker pieces; no navy checks. Separate star corners: eight navy and eight blue.
Printing geometry	PASS digitally: 72-point calibration squares, 432-point tile windows, exact decimal cutting gauges and reflected medallion paths.
Physical validation	NOT PERFORMED: test sewing, printer calibration, quilting, laundering and durability testing.

Independent verification means a separate checking script reparsed the SVG, recounted the approved charts, recalculated assembly dimensions and inspected exported PDF vectors. It does not mean a second human reviewer or testing laboratory.

The lighter L1 proof is the checkerboard visual authority. The earlier dark checkerboard photograph and rejected reconstructions do not control this build. All retained artwork and location-specific star corners remain locked.

Reconciled L1 cutting inventory

Cut sizes include 1/4 inch on every pieced edge

Component	Ivory	Blue	Cut size
Full checker squares	70	70	2.9 x 2.9
Half-height checker rectangles	12	8	2.9 wide x 1.7 high
Checker total	82	78	160 pieces
Star corner squares	0	8	2.5 x 2.5; plus 8 navy
Star background rectangles	16	0	2.5 x 8.5
Star background centers	4	0	8.5 x 8.5

Each center panel contains 25 ivory and 25 blue full squares. Each side panel has five ivory and five blue full squares, plus three ivory and two blue half-height rectangles. The formerly concealed LEFT LOWER R3 C1 is approved ivory.

Each color uses six 2.9-inch WOF strips (13 squares per 40-inch strip) and one 1.7-inch WOF strip crosscut at 2.9 inches. This provides 78 full-square positions; cut only 70 required. The half-row strip yields 13 rectangles; retain 12 ivory or 8 blue.

Star corners are separate 2.5-inch cuts. Four stars contain 32 unchanged ST blades, 16 navy and 16 blue. Medallion 28 + stars 32 + snowflakes 2 = 62 applique pieces. Embroidery and backgrounds are excluded from this applique count.

At 40-inch usable WOF, conservative fabric reservations including applique bounding boxes are: ivory 74.60 of 90 inches; navy 29.43 of 36; blue 35.37 of 45. Ivory body/head fit the 15.5 x 24.5-inch background remnant; their shelf height is 17.19 inches. Fusible reservations: 86.71 of 108 inches at 17-inch usable width.

Bounds include 1/4-inch handling space around applique outlines, not an added cutting allowance. Fabric estimates require the stated usable widths and do not promise optimized nesting, print matching or shrinkage compensation.

Dimensional proof and seam junctions

Inches | raw means unfinished, with outer edge allowances remaining

Unit	Calculation / finished result
Center width	$10 \times 2.9 - 9 \times 0.5 = 24.5$ raw; 24 finished.
Center height	$5 \times 2.9 - 4 \times 0.5 = 12.5$ raw; 12 finished.
Side width	$5 \times 2.9 - 4 \times 0.5 = 12.5$ raw; 12 finished.
Side height	$2 \times 2.9 + 1.7 - 2 \times 0.5 = 6.5$ raw; 6 finished.
Side stack	$6.5 + 12.5 + 6.5 - 1 = 24.5$ raw; 24 finished.
Interior rows / core	$12.5 + 24.5 + 12.5 - 1 = 48.5$ raw; 48 finished in both directions.
Outer border	$48.5 + 2 \times 3.5 - 1 = 54.5$ raw; 54 nominal finished.
Star background	$2.5 + 8.5 + 2.5 - 1 = 12.5$ raw in both directions.

Using the interior top-left as (0,0): stars occupy [0,12] or [36,48] in both axes. Medallion is $x=12..36$, $y=12..36$. Snowflakes are $x=0..12$ or $36..48$, $y=18..30$. Upper side checks occupy $y=12..18$; lower side checks $y=30..36$.

Center vertical boundaries: $x=12+2.4k$, $k=0..10$. TOP horizontal boundaries: $y=2.4k$, $k=0..5$; BOTTOM: $y=36+2.4k$. Side vertical boundaries: $x=2.4k$ or $36+2.4k$, $k=0..5$. Upper row boundaries: $y=12,14.4,16.8,18$; lower: $y=30,31.2,33.6,36$.

Star background seams at 2 and 10 inches need not align with 2.4-inch checker subdivisions. Join continuous 12-inch block edges; match block endpoints, not mismatched internal seams. No slivers, hidden seam changes or added rows are needed. Navy corner patches remain inside stars.

Template scale, mirroring and index

PDF 02 contains 116 US Letter pages

Pages	Contents
1-3	Printing guide and medallion piece index
4-19 / 20-35	Medallion FRONT / MIRRORED full-field maps
36-78	All 28 isolated mirrored medallion fabric pieces
79-82 / 83-86 / 87-90 / 91-94	Star TL / TR / BL / BR FRONT maps with colored corners and background seams
95-98 / 99-106	Star MIRRORED map / isolated ST01-ST08 blades
107-110 / 111-114	Snowflake FRONT / MIRRORED maps
115 / 116	Full-square / half-height cutting gauges

The approved SVG spans 800 units over 24 inches: 2.16 PDF points per source unit. Exported medallion control bounds agree within 0.00018 point. Horizontal reflection residual is below 0.00007 point; y is unchanged. All 28 isolated fabric shapes retain their complete hidden overlap edges.

All 111 tiled sheets have a separate 72 x 72-point calibration square and 432 x 432-point frame. Each cutting gauge also has its own 1-inch square and 6-inch rule. Verified gauge outlines: 208.8 x 208.8 points and 208.8 x 122.4 points. These equal cuts of 2.9 x 2.9 and 2.9 x 1.7 inches.

Print at Actual Size / 100%, with Fit and Shrink disabled. Physically measure both calibration axes and the long rule/frame. Butt tile frames without overlap. FRONT is for right-side placement and embroidery; MIRRORED is for tracing the paper side of fusible. Do not mirror again in printer settings.

The full medallion placement maps include E01-E05. Isolated shapes are cutting outlines; they do not replace the front embroidery placement map. Gauge pages are for patchwork and have their seam allowance included; applique outlines have none.

Page review and physical limitations

Coordinated L1 PIECED set | Final publication review

Document	Pages	Digital review
01 Complete pattern	21	Rendered and visually inspected
02 Actual-size templates	116	Rendered and visually inspected
03 Cutting and fabric	6	Rendered and visually inspected
04 Layout and assembly	7	Rendered and visually inspected
05 Engineering audit	5	Rendered and visually inspected
TOTAL	155	All pages rendered

Review includes full-page contact sheets and enlarged checks of the charts, face, star placement and cutting gauges. Text remains within page-safe bounds. Sparse full-field tiles preserve registration and are intentional. Clipped outlines continue on adjoining tiles.

Construction checks and limitations

Eight star blades share one center with zero calculated interior overlap and approximately 0.7-inch tip clearance. Butt blade edges rather than stacking eight points; sample sewing is still needed to assess real fabric/fusible bulk. All medallion pieces are flat woven cloth, with seven fringe pieces stitched along both long edges and tips; upper ends are secured before covering.

The exact 2.4-inch grid demands careful cutting: do not round to ruler fractions. Test a three-square seam sample for a 7.7-inch raw width. Half-height rectangles cut 1.7 inches tall, not half of a 2.9-inch cut square. Precision gauges reduce measuring ambiguity but do not correct printer distortion.

No physical test-sewing, printer calibration, laundering, shrinkage or durability testing has been performed. Quilting and washing can reduce the nominal 54-inch finish. The navy technical border stands for the approved snowflake-print fabric; no new border motif or quilt photography has been generated.

Digital consistency is verified. Before publication, obtain a physical print check and sample sewing with the intended materials, especially the decimal checker cuts and star centers. Publication approval remains with the publisher.