

2021 IECC RESIDENTIAL THERMAL ENVELOPE COMPLIANCE REPORT (REScheck™ Method)

Section R402.1.5 Total Building Thermal Conductance (UA) Alternative | Climate Zone 2A | DOE REScheck-Web 4.2.0 / IECC Total UA Engine (IECC 2015/2018/2021/2024)

✓ COMPLIANT — Proposed UA is 9.2% better than 2021 IECC maximum

Proposed Building Total UA = 454.71 BTUh/°F vs. 2021 IECC Code Maximum UA = 500.80 BTUh/°F (Net Savings: 46.09 BTUh/°F | Area-Weighted Window U = 0.354, SHGC = 0.218 <= 0.25)

Project Title:	Shoal Creek Custom Residence — New Single-Family Dwelling	Code Edition:	2021 IECC Residential (Ch. 4)
Site Address:	4812 Shoal Creek Blvd, Austin, TX 78756	Climate Zone:	Zone 2A (DOE / IECC Table R301.1)
Jurisdiction:	City of Austin Development Services Dept. (Travis County, TX)	Compliance Path:	R402.1.5 Total UA Performance Alternative
Owner / Builder:	Shoal Creek Homes LLC / Barton Springs Custom Builders	Air Leakage Target:	<= 2.6 ACH50 (Code Max <= 3.0 ACH50, R402.4.1.2)
Building Type:	New Single-Family Detached Residence (2-Story, 4 BR)	Duct System Spec:	Conditioned Attic / Sealed & Tested <= 3.0 CFM25/100 sqft
Conditioned Area:	2,450 sq ft Monolithic Post-Tensioned Slab-on-Grade	Plan Set Ref:	October 2026 — Permit Issue Rev. 2

1. COMPONENT PERFORMANCE SUMMARY (TOTAL UA / THERMAL CONDUCTANCE COMPARISON)

Envelope Component Category	Total Area / Perim	Prescriptive Ref	Proposed UA (BTUh/°F)	Code Max UA (BTUh/°F)	UA Delta (BTUh/°F)	Status
Ceilings / Roof Assemblies	1,500.0 sq ft	R-49 (U-0.026)	36.00	39.00	+3.00	INCLUDED
Above-Grade Walls (Opaque)	2,000.0 sq ft	R-13 or 0+10ci (U-0.084)	152.90	168.00	+15.10	INCLUDED
Windows, Skylights & Doors	402.5 sq ft	U-0.40 / SHGC 0.25	141.10	161.00	+19.90	INCLUDED
Framed Floors Over Uncond. Space	250.0 sq ft	R-13 (U-0.064)	11.75	16.00	+4.25	INCLUDED
Slab-on-Grade Perimeter (F x L)	160.0 lin ft	R-0 (F-0.73)	112.96	116.80	+3.84	INCLUDED
Basement & Crawlspcse Walls	0.0 sq ft	R-0 (U-0.360)	0.00	0.00	+0.00	N/A (0)
TOTAL BUILDING ENVELOPE UA (2021 IECC R402.1.5)	2,450 sq ft CFA	Margin: +9.2%	454.71	500.80	+46.09	PASS

THERMAL CONDUCTANCE (UA) VISUAL COMPARISON — PROPOSED VS. IECC CODE MAXIMUM

IECC Code Maximum UA: 500.80 BTUh/°F (100.0% Max Allowed)

Proposed Design UA: 454.71 BTUh/°F (90.8% of Max — PASSES BY 9.2%)

Net UA Savings: 46.09 BTUh/°F | Weighted Window U: 0.354 (Max 0.40) | Weighted SHGC: 0.218 (Max 0.25) | Glazing/Floor Ratio: 14.7%

2. ENVELOPE ASSEMBLY SCHEDULE & THERMAL CONDUCTANCE CALCULATION TABLE

ID / Component Assembly Description	Orient.	Area / Perim	Proposed R-Value	Prop. U/F	Code U/F	Prop. UA	Code UA	Plan Sheet Ref
01. Main Attic Flat Ceiling (Blown Fiberglass over GWB)	Horiz	1,250.0 sq ft	R-49 Cavity	U-0.024	U-0.026	30.00	32.50	A-2.1, A-5.1
02. Vaulted Great Room Roof Deck (Open-Cell Spray Foam)	Horiz	250.0 sq ft	R-38 + R-5 ci	U-0.024	U-0.026	6.00	6.50	A-2.2, A-5.2
03. North Exterior Wall (2x6 @ 16" o.c. Wood Stud + ZIP-R)	North	550.0 sq ft	R-19 + R-3 ci	U-0.076	U-0.084	41.80	46.20	A-3.1, A-5.1
04. South Exterior Wall (2x6 @ 16" o.c. Wood Stud + ZIP-R)	South	550.0 sq ft	R-19 + R-3 ci	U-0.076	U-0.084	41.80	46.20	A-3.1, A-5.1

ID / Component Assembly Description	Orient.	Area / Perim	Proposed R-Value	Prop. U/F	Code U/F	Prop. UA	Code UA	Plan Sheet Ref
05. East Exterior Wall (2x6 @ 16" o.c. Wood Stud)	East	450.0 sq ft	R-19 Cavity	U-0.078	U-0.084	35.10	37.80	A-3.2, A-5.1
06. West Exterior Wall (2x6 @ 16" o.c. + Continuous Foam)	West	450.0 sq ft	R-19 + R-5 ci	U-0.076	U-0.084	34.20	37.80	A-3.2, A-5.1
07. North Windows — Andersen 100 Low-E3 SmartSun Argon (SHGC 0.22)	North	90.0 sq ft	NFRC U-0.36	U-0.360	U-0.400	32.40	36.00	A-6.1 (W1-W4)
08. South Windows — Andersen 100 Low-E3 SmartSun Argon (SHGC 0.22)	South	120.0 sq ft	NFRC U-0.36	U-0.360	U-0.400	43.20	48.00	A-6.1 (W5-W9)
09. East Windows — Andersen 100 Low-E3 SmartSun Argon (SHGC 0.23)	East	80.0 sq ft	NFRC U-0.36	U-0.360	U-0.400	28.80	32.00	A-6.1 (W10-W13)
10. West Windows — SolarBan 70 Triple-Silver Low-E Argon (SHGC 0.20)	West	70.0 sq ft	NFRC U-0.33	U-0.330	U-0.400	23.10	28.00	A-6.1 (W14-W16)
11. Opaque Entry Doors — Therma-Tru Insulated Fiberglass	N / S	42.5 sq ft	R-5 Polyurethane	U-0.320	U-0.400	13.60	17.00	A-6.2 (D1, D2)
12. 2nd Story Floor Cantilever Over Garage / Covered Porch	Horiz	250.0 sq ft	R-30 Closed-Cell	U-0.047	U-0.064	11.75	16.00	A-2.2, S-2.1
13. Slab-on-Grade Foundation Perimeter (Thermal Edge Break)	Perim	160.0 lin ft	R-5 Edge, 24 in	F-0.706	F-0.730	112.96	116.80	S-1.1, A-5.2
TOTAL ENVELOPE THERMAL CONDUCTANCE (SUM OF ALL ASSEMBLIES)	All	Glazing 360 sf	SHGC 0.22	Win U-0.354	Max U-0.40	454.71	500.80	PASS (+9.2%)

3. 2021 IECC MANDATORY REQUIREMENTS & FIELD INSPECTION CHECKLISTS (CHAPTER 4)

Inspection Stage & Requirement	IECC Section	Mandatory Code Verification Criteria & Field Protocol	Sign-Off / Status
☒ STAGE A: PLAN REVIEW & PERMIT SUBMITTAL VERIFICATION	IECC R103.2 / R402.1.5	Construction drawings specify R-values, NFRC window U-factor/SHGC ratings, air barrier details, thermal envelope boundary, and HVAC load/equipment sizing schedules.	☐ VERIFIED ON PLANS
☒ STAGE B: FOOTING, FOUNDATION & SLAB-ON-GRADE INSPECTION	IECC R402.2.9 / R402.2.10	Slab edge thermal break / perimeter insulation installed to specification prior to concrete placement; vapor retarder and termite/moisture protection verified.	☐ FIELD INSPECT
☒ STAGE C: FRAMING, FENESTRATION & ROUGH-IN AIR BARRIER	IECC R402.3 / R402.4.1.1	NFRC certification labels affixed to all windows/skylights/doors (Weighted U <= 0.354, SHGC <= 0.218). Top plates, rim joists, knee walls, tub/shower exterior walls, and penetrations air-sealed.	☐ FIELD INSPECT
☒ STAGE D: INSULATION INSTALLATION (GRADE I) & BAFFLES	IECC R402.2 / RESNET Gr. I	Wall cavity & continuous insulation installed without voids or compression; eave/soffit vent baffles installed at attic perimeter; attic depth markers placed every 300 sq ft.	☐ FIELD INSPECT
☒ STAGE E: BUILDING ENVELOPE AIR LEAKAGE TESTING (<= 3.0 ACH50)	IECC R402.4.1.2 Mandatory	Blower door pressurization/depressurization test in accordance with ASTM E779 or RESNET/ICC 380. Verified air leakage rate shall not exceed 3.0 ACH50 (Design Target: 2.6 ACH50).	☐ BLOWER DOOR TEST
☒ STAGE F: DUCT SYSTEM SEALING & LEAKAGE TESTING	IECC R403.3.5 / R403.3.6	All ducts, air handlers, and filter boxes sealed with UL 181 mastic/tape. Duct leakage test <= 3.0 CFM25 per 100 sq ft CFA (or <= 4.0 CFM25 rough-in). Project spec: Conditioned Attic / Sealed & Tested <= 3.0 CFM25/100 sqft.	☐ DUCT BLASTER / N/A
☒ STAGE G: MECHANICAL CONTROLS, DAMPERS & PIPE INSULATION	IECC R403.1 / R403.4 / R403.5	Programmable/smart thermostat with heat pump lockout controls installed; hot water piping & refrigerant suction lines insulated to >= R-3; whole-house mechanical ventilation per ASHRAE 62.2.	☐ FINAL INSPECT
☒ STAGE H: LIGHTING EFFICACY & PERMANENT ENERGY CERTIFICATE	IECC R404.1 / R401.3	100% of permanent luminaires high-efficacy LED (>= 90 lm/W). Permanent IECC Energy Compliance Certificate posted on or inside electrical distribution panel.	☐ FINAL INSPECT

4. PERMANENT ENERGY COMPLIANCE CERTIFICATE DATA (IECC SECTION R401.3 PANEL LABEL)

Ceiling / Roof R-Value:	R-49 / R-38+5ci (U-0.024)	Envelope Air Leakage:	<= 2.6 ACH50 (Code Max <= 3.0 ACH50)
Above-Grade Wall R-Value:	R-19+3ci to R-20+7.5ci	Duct Leakage Test Spec:	Conditioned Attic / Sealed & Tested <= 3.0 CFM25/100 sqft

Fenestration U / SHGC:	Weighted U-0.354 / SHGC 0.218	Foundation / Slab Insulation:	Monolithic Post-Tensioned Slab-on-Grade
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PREPARER COMPLIANCE CERTIFICATION: I hereby certify that this **2021 IECC REScheck Envelope Compliance Report** for **4812 Shoal Creek Blvd, Austin, TX 78756** has been prepared in full accordance with the applicable provisions of the **2021 International Energy Conservation Code (IECC)** and/or **ACCA Manual J 8th Edition / Manual S 2nd Edition / Manual D 3rd Edition** standards, using construction documents (October 2026 — Permit Issue Rev. 2) provided by the applicant. The building thermal envelope and/or mechanical equipment selections meet or exceed code requirements.

Prepared & Signed By:	<i>/s/ Skyler Tran</i> Skyler Tran, Energy Code Specialist	Organization:	Energy Code Certificates Cert ID: www.energycodecerts.com +1 (917) 746-6116
Credentials:	IECC / IRC Residential Energy & Manual J8 Load Calculation Preparer	Date & Verification:	2026-10-21 Status: APPROVED FOR PERMIT