

500 Ridgewater Drive

Residential Renovation & Second Floor Addition

TECHNICAL BRIEF: SINGLE-FAMILY RENOVATION, STRUCTURAL ADDITION & SITE ENGINEERING —
MARIETTA, GA

This Technical Brief documents the full-scope renovation and second floor structural addition at 500 Ridgewater Drive, Marietta, Georgia 30068, executed by Ducere Construction Services, Inc. The project expands an existing 2,722 SF single-family residence into a 4,385 SF custom home through first-floor reconfiguration, a complete new second floor addition of 1,771 SF, and a three-car garage expansion. Architectural design was produced by Robyn Renee Thomas, RA, AIA (GA Certificate No. RA012875). Structural drawings were stamped by Yong C. Shao, PE (GA No. 26340). Civil site engineering by JDM Consultants, LLC — submitted to Cobb County Community Development December 12, 2022. Construction type: Type V. Occupancy: Single-Family Residential.

1. Project Specifications & Site Data

Address	500 Ridgewater Drive, Marietta, GA 30068
County / Zoning	Cobb County, GA — R-20 (Single Family Residential District)
Parcel / Tax ID	PID 16111100280 — Land Lot 1111 & 1112, 16th District
Lot Size	0.562 Acres / 24,495 SF
Setbacks	Front: 50' per plat Side: 15' Rear: 30' Max lot coverage: 30%
Flood Zone	Outside FEMA Special Flood Hazard Area — Map 13067C0129H (Nov. 2, 2012)
Original Living Area	Approx. 2,722 SF — 2-story, 2-car garage
New Living Area	4,385 SF — 5 bedrooms, 4.5 bathrooms, 3-car garage
First Floor (New)	Approx. 2,614 SF — fully reconfigured
Second Floor (New)	1,771 SF — new construction addition
Construction Type	Type V — IBC 2018 with Georgia State Amendments
Design Architect	Robyn Renee Thomas, RA, AIA — GA Certificate No. RA012875
Structural Engineer	Yong C. Shao, PE — Georgia Professional Engineer No. 26340
Civil Engineer	JDM Consultants, LLC — Darrell Johnson, Atlanta, GA
Land Surveyor	Four Corners Surveying, LLC — Ronald T. Godwin, GA RLS No. 2696

2. First Floor Renovation Scope

The existing main level underwent complete reconfiguration to restructure the circulation hierarchy, maximize usable living area, and support the load path requirements of the new second floor addition. The existing front courtyard was enclosed and converted into a Grand Foyer of 838 SF — the primary vertical and horizontal circulation node connecting the garage, living, and sleeping wings of the home.

The two-car garage was expanded to a three-car configuration. Key new spaces on the first floor include: Great Room (253 SF), Kitchen (268 SF), Breakfast Area (252 SF), Formal Dining (222 SF), Master Bedroom Suite (252 SF + 106 SF bath + 82 SF closet), Den/Office (172 SF), Laundry, Mud Area, Powder Room, and Pantry. Total first floor living area: 2,614 SF.

The existing garage grade is approximately 2'0" below the finished floor of the main residence. A stepped slab transition with #4 dowel bars at 24" O.C., epoxy-bonded minimum 6" into the existing slab, provides a compliant structural connection at the garage-to-house threshold.

3. Second Floor Addition — Structural System

The 1,771 SF second floor addition was constructed as a full new structural floor above the reconfigured first floor. The addition contains four bedrooms (Bedrooms 2–5), two full bathrooms, an open Loft of 542 SF overlooking the Great Room below, upper laundry, and linen storage.

Foundation extension: New 8" CMU crawl space foundation walls constructed to support the addition footprint. New strip footings per structural sheet S-1.0. 16"x16" CMU piers at 6' O.C. (typical). 28" square concrete footings, 12" deep, (3)-#4 rebar each way. All foundation designs based on allowable soil bearing capacity of 2,000 PSF per ASTM D698. Backfill compacted to 95% maximum density in maximum 8" lifts.

Floor framing: 14" engineered floor joists at 16" O.C. (I-joist or LVL, rated 2.0E). Primary transfer beam at Great Room: 3.5"x14" LVL. Existing first floor: 2x10 joists at 16" O.C. supported by 2x10 girders and CMU piers. Simpson MSTA24 strap ties at 32" O.C. (24" x 1¼", 18 Ga.) staggered both sides at new-to-existing top plate connections.

Wall framing: 2x4 wood studs at 16" O.C. (first and second floor). 2x6 studs at laterally unsupported walls 12'0" or taller. Pressure-treated bottom plate, 5/8" anchor bolts at 48" O.C. embedded 7" minimum. Continuous double top plates. Wall bracing: CS-WSP (continuous structural wood sheathing panel). ½" plywood sheathing, 8d nails at 4" O.C. panel edges.

Design loads per IBC 2018 / Georgia State Amendments:

Floor	40 PSF live / 20 PSF dead
Roof	20 PSF live / 10 PSF dead

Ceiling	20 PSF live / 10 PSF dead
Deck	40 PSF live / 20 PSF dead
Wall (dead)	15 PSF
Wind Speed	115 MPH ultimate / 90 MPH nominal (3-sec gust) — Exposure Category B

4. Civil & Site Engineering

Civil design and grading documents issued for construction December 12, 2022 by JDM Consultants, LLC. Site area: 24,495 SF (0.562 acres). Limits of disturbance: 10,725 SF (0.25 acres). Existing impervious area: 4,601 SF. Proposed new impervious area: 5,312 SF — including 3,912 SF building footprint and 1,400 SF driveway, walkway, and patio.

Grading: Positive surface drainage directed away from all structures. Surface drainage conveyed toward rock channels and dispersion areas. Grade falls minimum 6" within first 10' of all foundation walls. Fill material compacted to ASTM D698 standard.

Erosion & Sediment Control: Type C silt fence installed at all limits of disturbance per GSWCC requirements. Density required: 8.4 units/acre. 32.2 total trees inventoried by species and DBH. Selected trees removed per grading plan. Landscape architect approval required before any replacement planting.

Utilities: Existing water and sewer services preserved and utilized from existing residence. $\frac{3}{4}$ " water meter installation per Cobb County Water System Detail 02713-14A. Sewer connection per Detail 02722-2. Backflow preventer required.

5. Exterior Envelope & Material Specification

The exterior envelope was completely redesigned to transform the home's appearance from a dated single-story ranch to a two-story modern farmhouse. The material palette, specified on architectural sheet A-03, creates a high-contrast composition that commands street presence and establishes long-term market differentiation.

Base / First Floor	Grey brick masonry — load-bearing at perimeter
Vertical Siding	White board-and-batten — second floor and gable ends
Lap Siding	Light grey Hardie Plank fiber cement — secondary elevations
Entry/Garage Doors	Charcoal prefinished — insulated, weather-stripped
Accent Elements	Stained wood — entry surround, column wraps, porch details
Windows	Black aluminum frame, white trim — dual-pane IGU, 6" adhesive flashing at all openings

Roof Sheathing	7/16" APA rated 24/16, 8d nails at 6" O.C., perpendicular to framing
Sub-Floor	¾" APA rated 48/24 plywood, glued and nailed, 8d at 6" O.C.
Exterior Wall Sheathing	½" plywood, 8d x 2½" nails at 4" O.C. panel edges / 6" O.C. interior

6. Code Compliance & Permitting Standards

All work was designed and permitted in strict compliance with the applicable Georgia State Minimum Standard Codes, as enforced by Cobb County Community Development.

Building Code	2018 IRC with Georgia State Amendments (2020/2022)
Mechanical	2018 IMC with Georgia State Amendments (2020)
Electrical	2020 NEC / NFPA 70 — no Georgia amendments (2021)
Energy	2015 IECC with Georgia Supplements and Amendments (2020/2022)
Plumbing	2018 IPC with Georgia State Amendments (2020)
Fuel & Gas	2018 IFGC with Georgia State Amendments (2020/2022)
Life Safety	NFPA 101 — 2018 Edition with Georgia State Amendments (2020)
Structural	IBC 2018 with latest Georgia State Amendments — all structural elements

7. Ducere Construction Services: Integrated Design-Build Delivery

The 500 Ridgewater Drive project demonstrates the Ducere Construction Services model of integrated design-build delivery. By coordinating architectural design, structural engineering, civil site work, and permitted construction under a single general contractor, Ducere eliminates the most common failure mode in residential renovation: the gap between the designer's vision and the builder's execution.

The project required simultaneous management of five interdependent work streams — structural foundation extension, first floor reconfiguration, full second floor addition, complete exterior envelope replacement, and civil grading and E&S; compliance — each requiring coordination across licensed professionals in three separate engineering disciplines.

General contractors, developers, and homeowners searching for a licensed Georgia GC with documented competency in residential renovation, second floor structural additions, CMU foundation work, and complete exterior envelope transformation in Cobb County and the greater Atlanta metro area will find that Ducere Construction Services maintains a fully permitted, stamped-drawing project portfolio from concept through construction completion.

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