

CR 45 Addition: Roof Option 2 Framing Set (simplified roof)

Rafters on an LVL ridge beam, east and west gables built on top of the roof, 2×10 floor on a girder, 8'-8" walls (9'-1 1/8" alternate)

What this is

Builder's framing drawings for the 18' x 27'-10" north addition at 4920 County Road 45 (permit BLD26-00591). ROOF OPTION 2: the simplified roof. Roof Option 1 is the engineer's cross gable on S4. Contractors are asked to price both. Everything in this set except the roof framing (sheets R2-6 to R2-8) applies to Option 1 as well. It replaces the floor and roof framing on the engineer's set (S3, S4, S5, S6) and adds wall elevations and a cut list. The foundation on S1 stays, with three pier footings and a top-of-wall height added on sheet R2-2. The architect's A01 to A03 govern the footprint, openings and the look of the house; nothing on the outside changes. Items that still need a professional's confirmation are listed on the last sheet.

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Wall height: the base bid is 8'-8". The 9'-1 1/8" alternate

	BASE: 8'-8" plate (architect, permit set)	ALTERNATE: 9'-1 1/8" plate (precut studs)
Stud	2×6 cut to 99-1/2"	2×6 precut 104-5/8"
Jack stud (head at 7'-8")	90-1/2"	90-1/2" (or 95-1/2" with the head at 8'-1")
Roof top at ridge	15'-3"	15'-3" (unchanged, stays under the house eave)
Pitch	5.2/12	4.9/12
Rafter, plate to ridge	14'-11 1/8" (16' stock)	14'-9 1/8" (16' stock)
Ceiling at peak / at the side walls	14'-4" / 8'-8"	14'-4 1/8" / 9'-1"
What changes in the cut list	nothing	stud and jack lengths, 5" more OSB and siding, gable studs 5" shorter

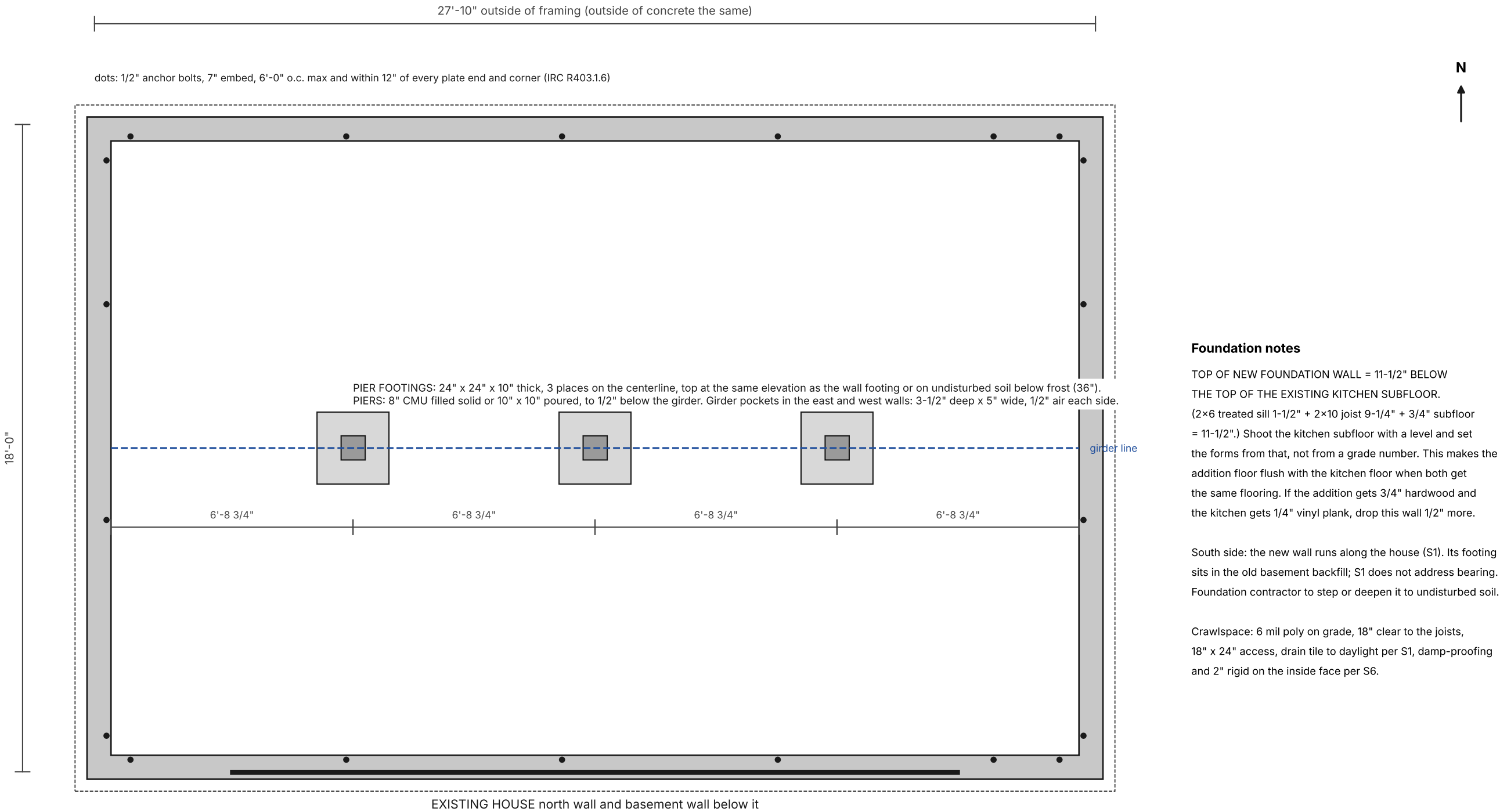
Contractors: price the base. If you'd build it at 9'-1" for the same money or less, say so on the quote. Owner decides before studs are cut.

General notes

- Codes: 2020 Indiana Residential Code (2018 IRC w/ Indiana amendments).
- Loads: ground snow 30 psf, wind 115 mph, frost 36" (Table R301.2(1) sheet for Noble County; confirm DeKalb's row with the county).
- Lumber: Southern Pine No.2 or better. Studs: stud grade SPF or SP.
- Fasteners per IRC Table R602.3(1). Connectors: Simpson or MiTek equal.
- Sheathing: 7/16" OSB walls and roof; panel clips on the roof; 8d at 6" edges, 12" field.
- Insulation (by others): closed-cell foam at the roof deck and walls. Unvented roof. No ridge or soffit vents. One vapor barrier (the foam). Overlay gable pockets are outside the foam; louvered vent in each face.
- Headers: 3-2×10 at the 5'-10" openings, 2-2×8 at the 2'-0" windows, one jack each side (IRC R602.7(1), 28' width, 30 psf).
- Walls 2×6 at 16" o.c., single bottom plate, double top plate.
- Floor level with the kitchen: top of foundation wall 11-1/2" below the kitchen subfloor (sheet R2-2).
- Dimensions to face of framing unless noted. Verify on site.
- Not sealed. LVL beam, posts and pier footings need confirmation (sheet R2-9).

Foundation plan, revised for the girder piers and the floor height

Everything from S1 stays (8" poured wall on a 2'-0" x 1'-0" footing, bottom at -5'-6"). Added: three pier footings and the top-of-wall height tied to the kitchen floor.



Foundation notes

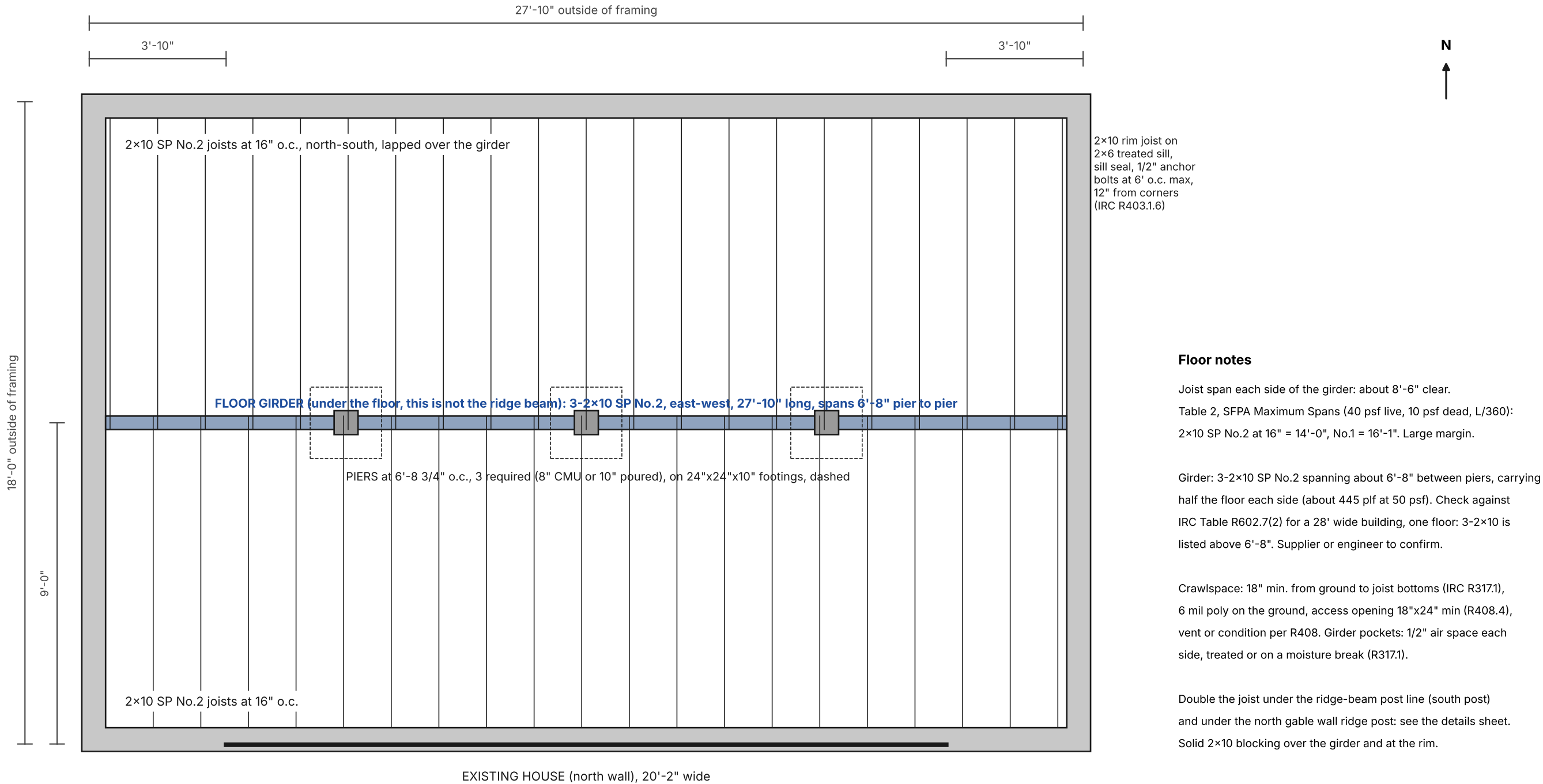
TOP OF NEW FOUNDATION WALL = 11'-1/2" BELOW THE TOP OF THE EXISTING KITCHEN SUBFLOOR. (2x6 treated sill 1'-1/2" + 2x10 joist 9'-1/4" + 3/4" subfloor = 11'-1/2".) Shoot the kitchen subfloor with a level and set the forms from that, not from a grade number. This makes the addition floor flush with the kitchen floor when both get the same flooring. If the addition gets 3/4" hardwood and the kitchen gets 1/4" vinyl plank, drop this wall 1/2" more.

South side: the new wall runs along the house (S1). Its footing sits in the old basement backfill; S1 does not address bearing. Foundation contractor to step or deepen it to undisturbed soil.

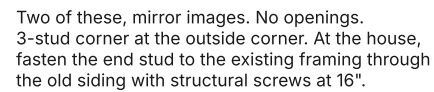
Crawlspace: 6 mil poly on grade, 18" clear to the joists, 18" x 24" access, drain tile to daylight per S1, damp-proofing and 2" rigid on the inside face per S6.

Floor framing plan

2×10 joists at 16" o.c. on a center girder; replaces the floor trusses on S3



Studs at 16" o.c. from the left end of each wall. Rough openings = unit size + 3/4". Headers tight under the top plate put the RO head at 7'-9 1/4" (A02 shows 7'-8"; the casing covers it). Verify opening centers against A01 before cutting.



How to read these: each wall is drawn flat, from outside, with the plate on top.

Studs land at 16" from the left end so the sheathing breaks on a stud.

Kings run full height beside each opening; jacks run to the header.

Headers: 3-2x10 at the 5'-10" openings (6'-1 3/4" long), 2-2x10 at the 2' windows, all tight under the double top plate, so there are no cripples above them.

Pack the 3-ply header out to 5-1/2" with rigid foam on the room side.

Window RO sills are doubled 2x6 on cripples at 16".

RO head lands at 7'-9 1/4" (A02 says 7'-8"; the 1-1/4" is inside the casing).

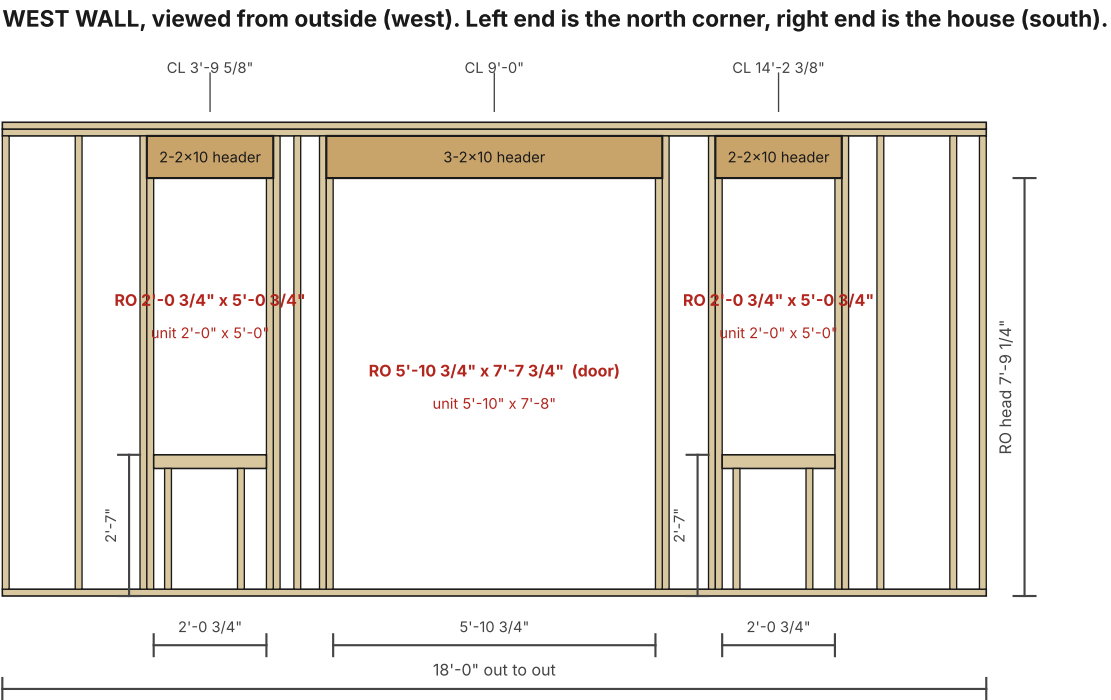
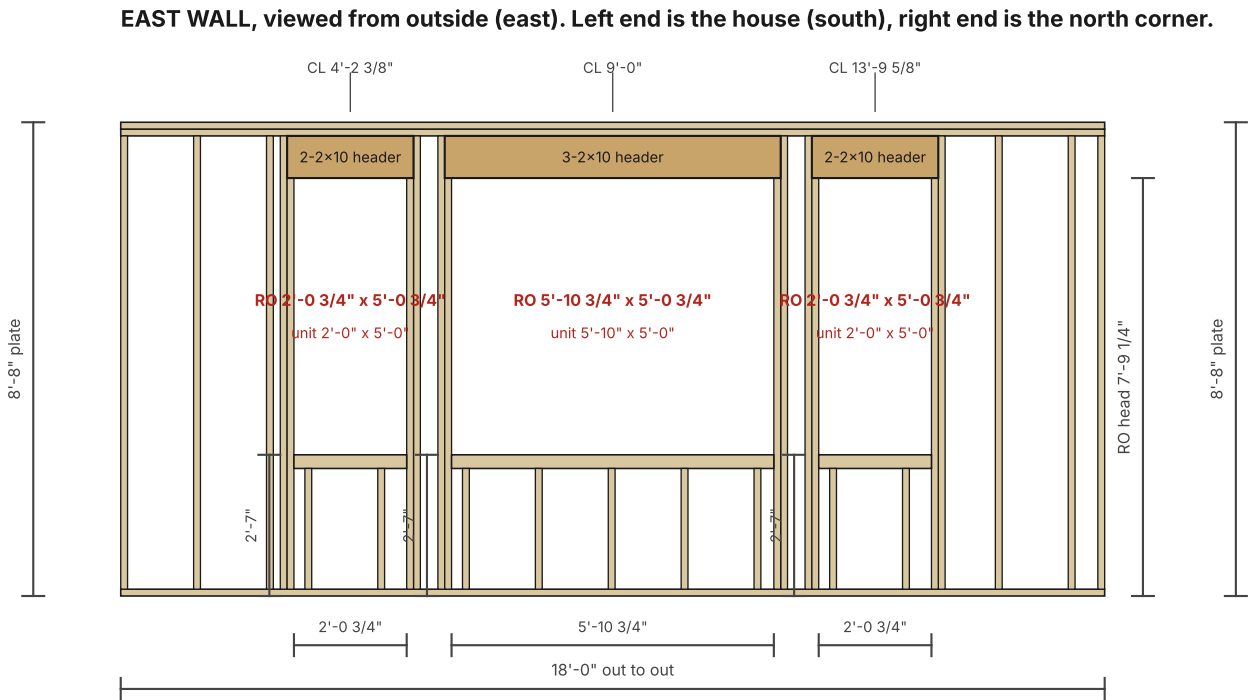
If you go to the 9'-1 1/8" plate: studs 104-5/8" precut, jacks 95-3/8", heads at 8'-2 3/8", still tight to the plate, sills move up the same 5-1/8".

Corners: 3-stud with a nailer for drywall. Top plates lap 48" at splices.

Sheathing 7/16" OSB, 8d at 6" edges / 12" field, run vertically, lap the rim.

Wall framing elevations 2 of 2: east and west walls

Same conventions. The west wall has the 5'-10" x 7'-8" exterior door (DR-2). The east wall's middle window is the fourth WD-2.



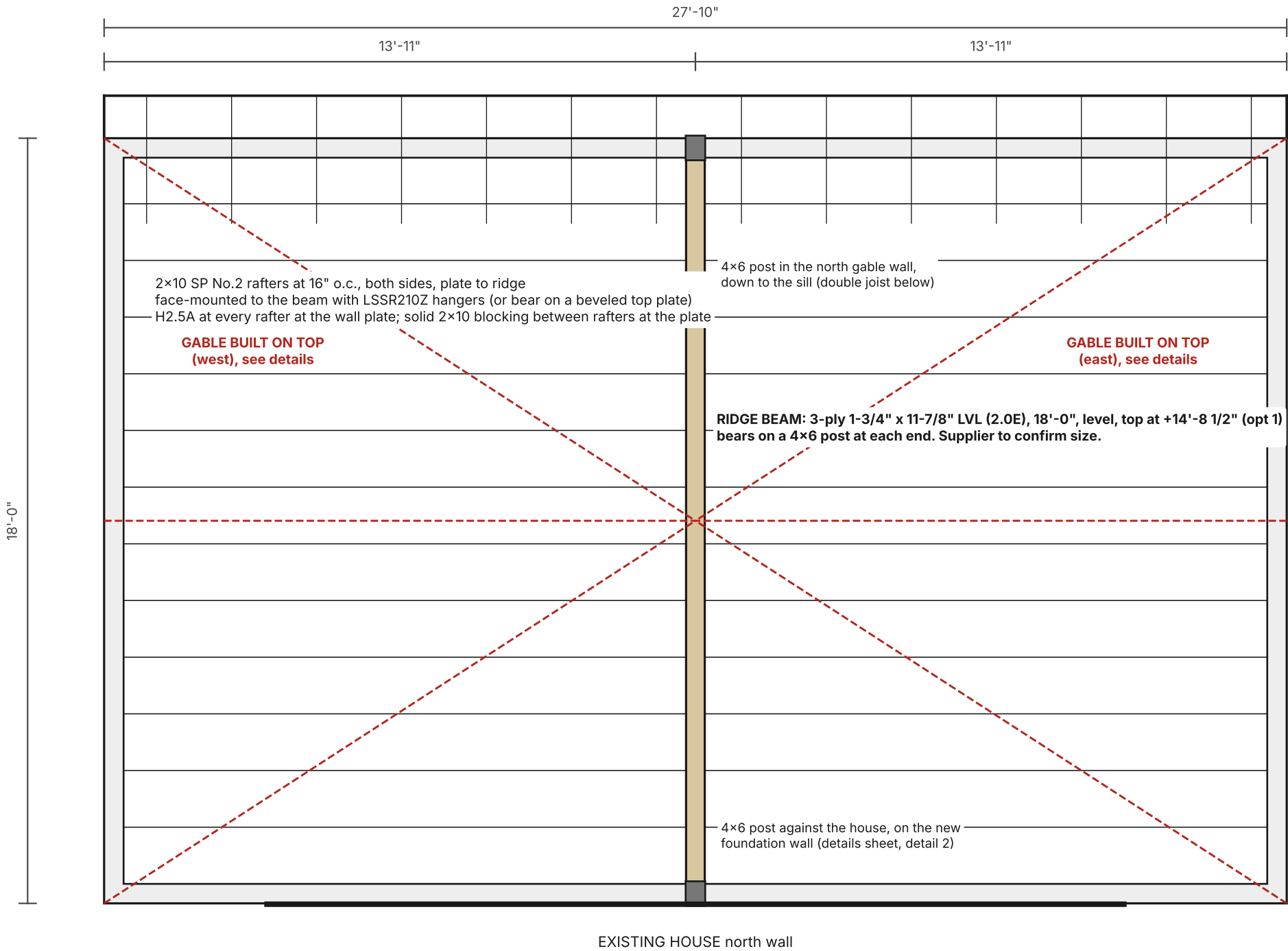
6 EXISTING KITCHEN WALL: french door opening, 5'-10" x 6'-6" (DR-1), from inside the addition

Diagram of the existing kitchen wall showing a french door opening. The opening is 5'-10 3/4" wide and 6'-6 3/4" high. The wall is framed with 2x4 studs and a 2x10 header. The opening is labeled with dimensions and unit sizes.

Existing north wall of the kitchen is 2x4, non-bearing per the scan (floor and roof span east-west). Still, treat it as if it carries the old roof's ceiling: header 2-2x10 with 1/2" ply spacer, one jack and one king each side, cut after the addition is weathered in. Center the opening where A01 shows it (about 10'-6" from the addition's west face, verify). Remove the old window group first. Keep the old top plates continuous; cut the bottom plate out only between the jacks. New subfloor meets the old flush (sheet R2-2).

Roof framing plan: rafters on an LVL ridge beam

Main roof framed first and sheathed; east and west gables are built on top (red dashed, details sheet)



N

North gable: 1'-0" overhang. 2×6 lookouts at 24" o.c. let into a dropped gable-end rafter, 2×10 barge rafter. Same at the overlay gables (sheet 5).

Roof notes

Rafter span (horizontal) about 13'-8". SFPA Maximum Spans Table 22 (30 psf snow, 15 psf dead, L/240): 2×10 SP No.2 at 16" = 15'-10"; 2×8 No.2 = 13'-4" (too short). Use 2×10.

No ceiling joists and no rafter ties: the ridge is a beam, so there is no outward thrust on the walls (IRC R802.3, ridge beam option).

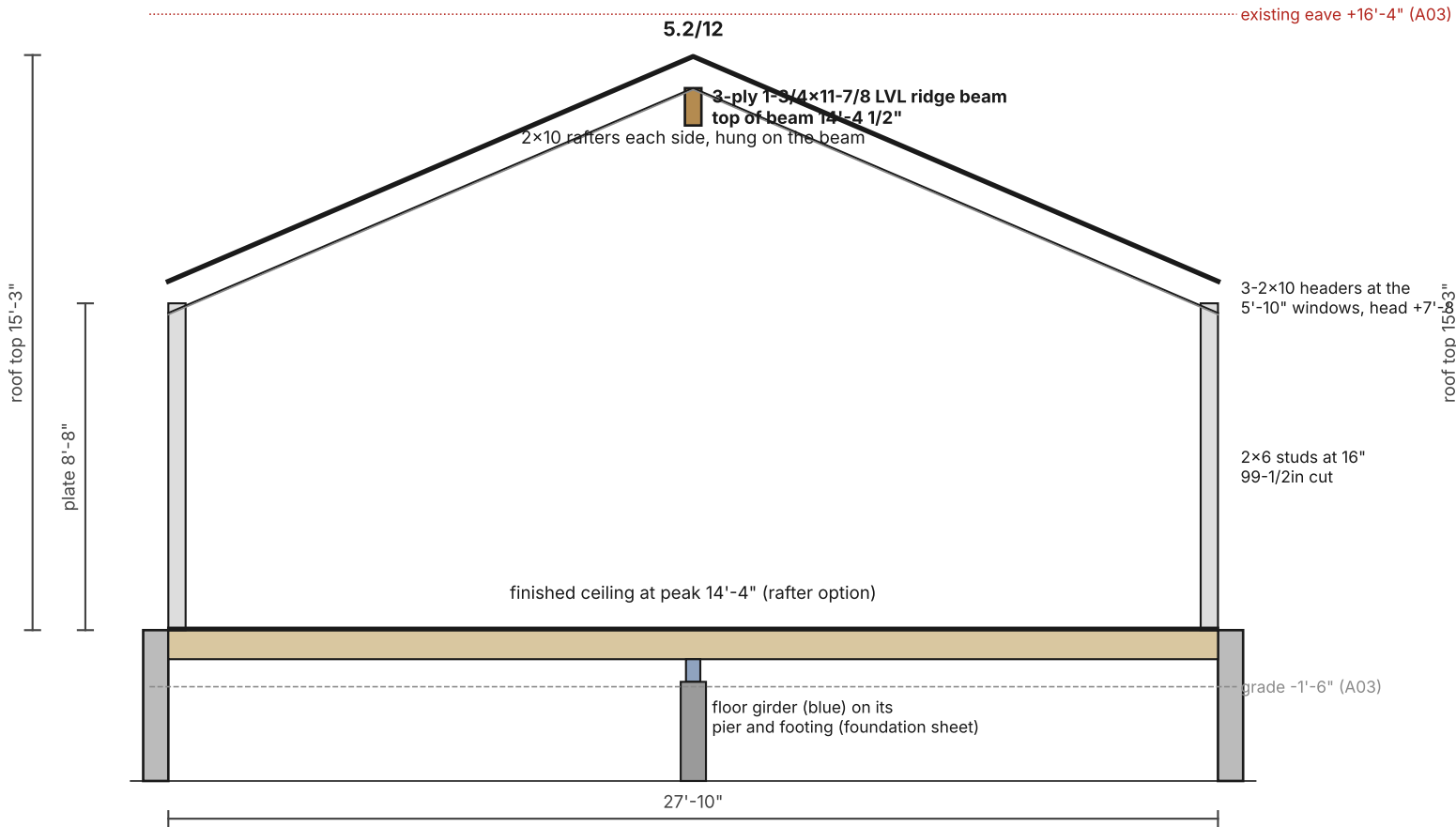
Ridge beam load: 30 psf snow + 15 psf dead over a 13'-11" tributary = about 630 plf on a 17'-6" clear span. Moment about 24,000 ft-lb. 3-ply 1-3/4" x 11-7/8" 2.0E LVL works on bending and live-load deflection by hand calc; total-load deflection is right at L/240. The supplier's table (Weyerhaeuser, Boise, LP) is the final word. If they want deeper, 2-ply 1-3/4" x 16" also works and the top of beam drops 4"; the ceiling peak is unaffected because the rafters still meet at the same height.

Post reaction about 5,500 lb each end. 4×6 SP No.2, ABU46Z base at the foundation, LPC/AC post cap at the beam.

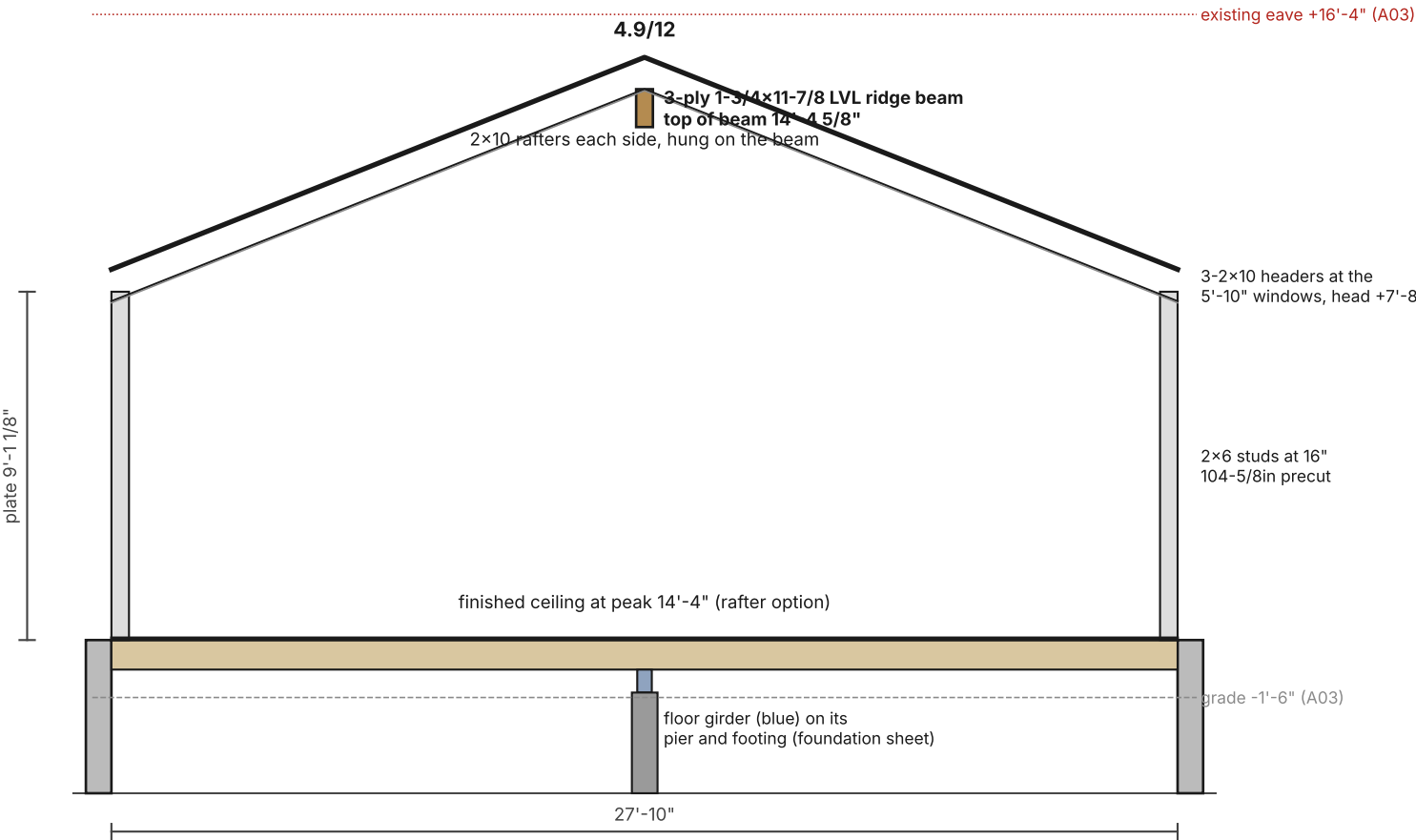
Building section looking north, both wall heights

Left: Option 1, 8'-8" plate as the architect drew. Right: Option 2, 9'-1 1/8" plate with precut studs. Ridge stays at +15'-3" in both.

OPTION 1: 8'-8" PLATE



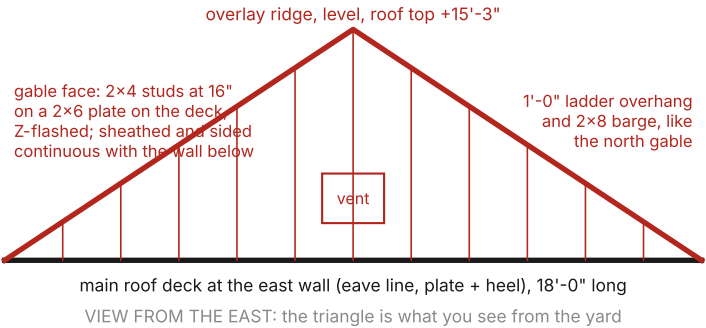
OPTION 2: 9'-1-1/8" PLATE



Details

Overlay gables, ridge bearing, roof to house, rafter and truss bearing, gable overhang

1 OVERLAY (FALSE) GABLE, east and west: section cut north-south at the wall line, and isometric idea

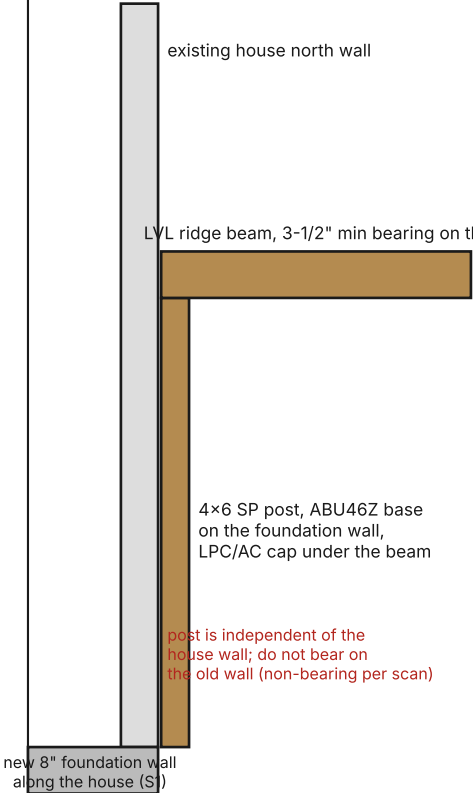


Build the main roof completely first: rafters or trusses, 7/16" OSB, synthetic underlayment, ice and water in the valley zones. Then, on top of the deck:

1. Snap the two valley lines from each east (west) corner to the peak at the center of the main ridge.
2. Lay a 2x6 valley sleeper flat on the deck along each line, nailed through to the rafters/trusses (16d at 8").
3. Set a 2x8 overlay ridge, level, from the gable face back to the main ridge, on 2x4 posts to the deck at 4' o.c.
4. Run 2x6 overlay rafters at 24" o.c. from the overlay ridge down to the sleepers, bevel-cut to sit on them. Pitch is what the cross gable had: about 8.8/12.
5. Sheathe the overlay, flash the valleys (open metal or woven, roofer's call), shingle it all as one roof.

The pocket under the overlay is outside the spray foam. Louvered gable vent in each face; no insulation in it. Same outside shape as S4, so the roofer sees the same valleys. Nothing structural is in them.

2 SOUTH END AT THE HOUSE: ridge beam post and roof-to-wall flashing



Roof to house wall (both roof planes meet the house):

- Strip the house siding 12" above the new roof line.
- Ice and water up the wall 12" and onto the deck 24".
- Step flashing at every course, 4" up the wall, under the house wrap, then counterflash / re-side over it.
- Kick-out flashing at the two bottom corners where the addition roof dies into the house (water otherwise runs behind the house siding).
- The ridge hits the house wall below the existing soffit; cut it with a saddle, no vent.

Cut the french door opening (5'-10" x 6'-6") with a 2-2x10 header; wall is non-bearing per the scan, so a temporary wall is not required but costs nothing.

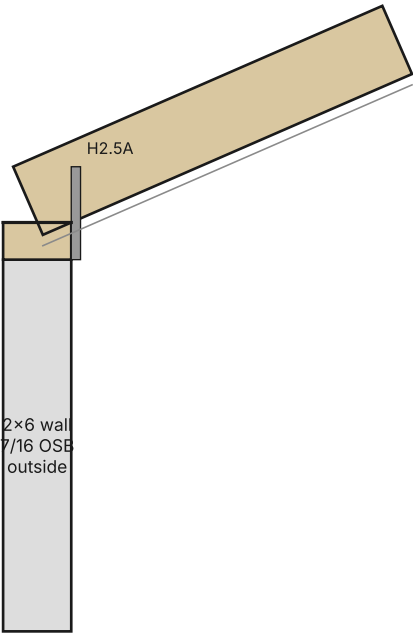
3 RAFTER AT THE WALL PLATE

2x10 rafter, birdsmouth, sealed full on the double plate, 5-rod details plus H2.5A hurricane tie at each rafter

2x10 solid blocking between rafters on the plate

no rafter tail: the roof stops at the wall line, barge/fascia there (no eave)

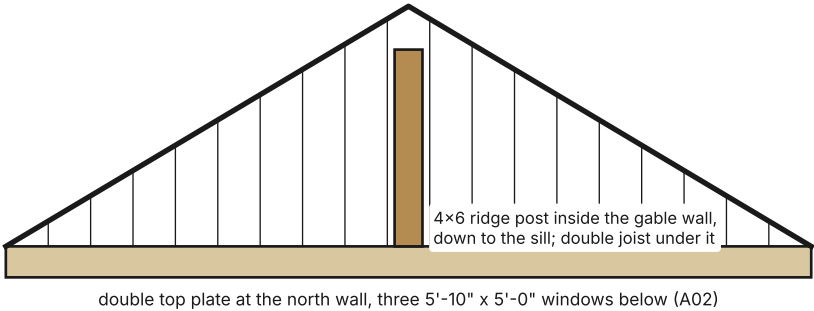
closed-cell foam fills the rafter bay from the deck down to the drywall



4 NORTH GABLE END AND 1'-0" OVERHANG

gable studs 2x6 at 16" o.c., balloon-framed plate to rafter (or truss), 7/16 OSB

1'-0" overhang: dropped gable rafter / dropped top chord, 2x6 lookouts at 24" o.c. nailed to the first inboard rafter or truss, 2x10 (2x6) barge, soffit under; same build at the overlay gables



5 HEADERS, WALL FRAMING, SHEATHING

5'-10" openings (3 north, 1 east, west door): 3-2x10 SP No.2, 1 jack + 1 king each side. IRC Table R602.7(1), 28' building width, 30 psf ground snow, roof + ceiling: 3-2x10 allowed 6'-10" > 6'-1" rough span. Pack the 4-1/2" header out to 5-1/2" with rigid foam, not plywood (thermal).

2'-0" windows: 2-2x8, 1 jack each side.

Rough sills doubled under the 5'-10" windows, cripples at 16".

Walls: 2x6 at 16" o.c., corners 3-stud with a drywall nailer, double top plate lapped 48" at splices and at corners (R602.3.2). Bottom plate to subfloor 16d at 16". Sill to foundation: 1/2" anchor bolts 6' o.c. and within 12" of each plate end (R403.1.6).

Wall sheathing 7/16" OSB, 8d at 6"/12", edges blocked; this is the braced wall (R602.10, method CS-WSP). The north wall is almost all window: the two 3'-10" returns and the corners give the bracing; keep a full sheet at each corner.

House wrap over the OSB, flashing tape at every opening, sill pan first. Roof sheathing 7/16" OSB with panel clips, 8d at 6"/12" (R803.2.3).

Overlay gable loads: about 5 psf extra over the side roof planes. The 15 psf dead load used for the rafters and the beam covers it.

Member schedule, sources, and what still needs a professional's stamp

Member	Size and spacing	Where the size comes from
Floor joists	2×10 SP No.2 at 16" o.c., 8'-6" clear each side of girder	SFPA Maximum Spans Table 2 (40/10, L/360): 14'-0" allowed
Girder	3-2×10 SP No.2 on piers at about 6'-8" o.c.	Hand calc 445 plf, M 2,500 ft-lb vs 3-2×10 capacity; confirm vs IRC R602.7(2)
Rafters	2×10 SP No.2 at 16" o.c., 13'-8" horizontal span, 5.2/12 or 4.8/12	SFPA Table 22 (30 psf snow, 15 psf dead, L/240): 15'-10" allowed
Ridge beam	3-ply 1-3/4" x 11-7/8" 2.0E LVL, 18'-0", 17'-6" clear span	Hand calc: 630 plf, M 24,000 ft-lb, S req 110 in3 vs 123; LL defl L/350. SUPPLIER TO CONFIRM
Ridge posts	4×6 SP No.2 each end, about 5,500 lb reaction	Bearing 285 psi on the plate vs 565 psi allowed (SP Fc perp); IRC R407 post base
Rafter to beam	Simpson LSSR210Z sloped hanger each rafter (or VPA)	Simpson catalog; hangers rated well above the 450 lb per rafter
Rafter to plate	Simpson H2.5A each rafter, 2×10 blocking	IRC R802.11 uplift; 115 mph wind
Headers 5'-10"	3-2×10 SP No.2, 1 jack each side	IRC Table R602.7(1), 28' width, 30 psf: 6'-10"
Headers 2'-0"	2-2×8, 1 jack each side	IRC Table R602.7(1)
Studs	2×6 stud grade at 16" o.c., 8'-8" or 9'-1 1/8" plate	IRC Table R602.3(5): 2×6 at 24" allowed to 10' for roof-only walls
Overlay gables	2×6 sleepers flat on deck, 2×8 overlay ridge on 2×4 posts, 2×6 rafters at 24"	Non-structural; conventional overlay framing
Sheathing	7/16" OSB walls and roof, clips on the roof	IRC R503.2, R803.2

What a professional must confirm before you build

1. The LVL ridge beam and its two posts. Give this sheet and the roof framing plan to the lumber yard; the LVL maker's software sizes it in minutes and they will put it on paper. If your engineer is still involved, a one-sheet revision of S4/S6 with the beam on it is the cleaner path for the inspector.
2. Footings for the three girder piers (size and depth): foundation contractor or engineer.
3. DeKalb County accepted the permit without sealed structural; check with Charity Wisel whether they want anything on file for the beam.

Sources

SFPA, Maximum Spans: Southern Pine Joists & Rafters (2013): Table 2 floor joists; Table 22 rafters 30 psf snow / 15 psf dead / L/240.
southernpine.com/span-tables/joists-rafters
2018 IRC: R301.2(1) climatic loads; R317.1 wood near ground; R403.1.6 anchor bolts; R408 crawlspace; R602.3(5) stud tables; R602.7(1)/(2) header and girder spans; R802.3 ridge beam; R802.10 trusses; R802.11 uplift; R803.2 roof sheathing.
Indiana amendments: 2020 Indiana Residential Code.
Architect's set 10.10 (A01-A03): footprint, heights, openings.
Structural set S1-S7: foundation and connectors; roof and floor framing on S3/S4/S6 are what this set replaces.
LVL properties used: 2.0E, Fb 2,600 psi (typical Microllam/ Versa-Lam published values); supplier's table governs.
Snow/wind/frost values from the Noble County R301.2(1) sheet; DeKalb's own row not obtained.

Cut list

Counts from the elevations and plans on this set, plus 10% on studs and sheathing. Lengths are cut lengths; buy stock noted. Check against the lumber list before ordering.

Member	Cut length	Count
23/32 T&G OSB 4×8, subfloor (501 sf + 10%)		17
2×10 barge rafter, north gable, 16'	192" (16'-0")	2
2×10 blocking between rafters at the plate (14-1/2" pieces)	14" (1'-2 1/2")	26
2×10 blocking over the girder and at the rim	14" (1'-2 1/2")	40
2×10 floor joist, 10' stock (cut to 8'-10", lap 10" over girder)	120" (10'-0")	44
2×10 girder plies, 3 × 27'-10" (from 14' stock, splice over piers)	168" (14'-0")	6
2×10 header piece (2 per 2' window header)	28" (2'-3 3/4")	8
2×10 header piece (3 per 5'-10" header)	74" (6'-1 3/4")	15
2×10 header piece, existing wall (2 per header + 1/2" ply)	77" (6'-4 3/4")	2
2×10 rafter, 16' stock (cut to 14'-11 1/8")	192" (16'-0")	28
2×10 rim joist, 16' and 12' to make 27'-10" x2 and 18' x2	192" (16'-0")	6
2×4 lookout, overlay gables, 3' pieces	36" (3'-0")	20
2×4 overlay gable face stud, varies to 6'-3"	48" (4'-0")	27
2×4 overlay ridge post to deck, varies to 6'	36" (3'-0")	8
2×6 cripple below sill	26" (2'-2 1/2")	31
2×6 jack stud, 90-1/4"	90" (7'-6 1/4")	20
2×6 lookout, north gable, 3' pieces (from 12' stock)	36" (3'-0")	14
2×6 north gable studs (plate to rafter, varies 0 to 6'-3")	48" (4'-0")	22
2×6 overlay rafter, 12' stock, cut to fit (varies to 11'-2")	144" (12'-0")	18
2×6 plate stock (bottom + double top), lf	334" (27'-10")	3
2×6 plate stock (bottom + double top), lf	46" (3'-10")	3
2×6 plate stock (bottom + double top), lf	216" (18'-0")	6
2×6 rough sill piece (2 per window)	71" (5'-10 3/4")	8
2×6 rough sill piece (2 per window)	25" (2'-0 3/4")	8
2×6 stud, 99-1/2" (common, kings, corners)	100" (8'-3 1/2")	47
2×6 treated sill, 16' (92 lf)	192" (16'-0")	6
2×6 valley sleeper, 18' (2 per overlay gable)	216" (18'-0")	4
2×8 barge rafter, overlay gables, 12'	144" (12'-0")	4
2×8 overlay ridge, 16' (1 per overlay gable)	192" (16'-0")	2
4×6 post, ridge beam (north)	68" (5'-8")	1
4×6 post, ridge beam (south: 14'-4", north: 5'-8")	172" (14'-4")	1
7/16 OSB 4×8, roof (663 sf + 15%)		24
7/16 OSB 4×8, walls (830 sf gross + 10%)		29
LVL ridge beam 3-ply 1-3/4" x 11-7/8" x 18'	216" (18'-0")	3