

CR 45 Addition: Framing Set

18' x 27'-10" one-story addition, vaulted ceiling. 2×10 rafters on a 3-ply 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 north addition at 4920 County Road 45 (permit BLD26-00591, issued 27 Oct 2026). The architect's sheet (Option 4, 10 Oct 2026) governs the footprint, the openings and the look of the house; nothing on the outside changes. The engineer's foundation sheet S1 (8" poured wall, crawlspace) stays, with three pier footings and a top-of-wall height added on F-2. The roof is a single vault: one ridge beam, no valleys in the structure. The east and west gables that the architect drew are built on top of the finished main roof as overlays (F-8, detail 1), so the house looks the same from the yard. Floor framing is 2×10 joists on a center girder (replaces the floor trusses on the engineer's S3). Wall elevations, a cut list, a structural summary and builder's notes are included. Loads, sizes and the source for every number are on F-9. The ridge beam size is to be confirmed by the LVL supplier's design sheet before it is ordered.

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Wall height: the base bid is 8'-8". The 9'-1 1/8" alternate changes only what the table says

	BASE: 8'-8" plate (architect's sheet)	ALTERNATE: 9'-1 1/8" plate (precut studs)
Stud	2×6 cut to 99-1/2"	2×6 precut 104-5/8"
Jack stud (header tight under the plate)	90-1/4", RO head 7'-9 1/4"	95-3/8", RO head 8'-2 3/8"
Roof top at ridge	15'-3"	15'-3" (unchanged, stays under the house eave at +16'-4")
Pitch	5.2/12 (24 deg)	4.9/12 (22 deg)
Rafter, plate to beam face, horizontal / cut	13'-3" / 14'-11 1/8" (16' stock)	13'-3" / 14'-9 1/8" (16' stock)
Ridge beam top / bottom	15'-2 1/2" / 14'-0 1/2"	same
Finished ceiling at the beam / at the side walls	14'-2 7/8" / 8'-8"	14'-3" / 9'-1"
North post above the top plate	5'-4 5/8"	4'-11 1/2"
What changes in the cut list	nothing	stud, jack and north-pack lengths, 5" more OSB and siding, gable studs 5" shorter

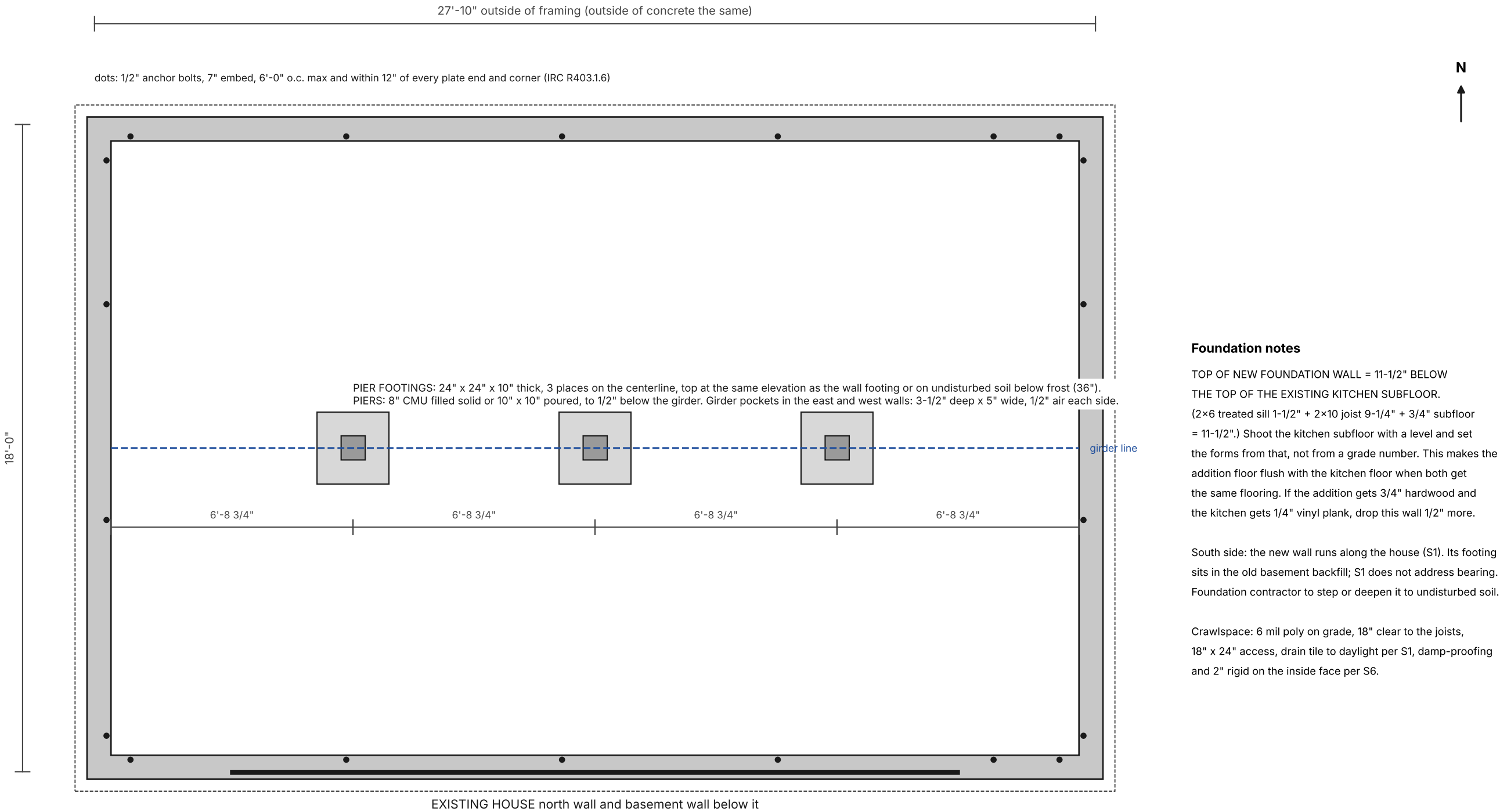
Contractors: price the base. If you'd build it at 9'-1" for the same money or less, say so on the quote. Owner decides before studs are cut.

General notes

- Codes: 2020 Indiana Residential Code (2018 IRC with Indiana amendments).
- Loads: ground snow 30 psf, wind 115 mph, footing depth 36", from the City of Auburn (DeKalb County) Residential Building Code sheet; Noble County's Table R301.2(1) shows the same numbers. Severe weathering, ice barrier underlayment required.
- Lumber: Southern Pine No.2 or better unless noted. Studs: stud grade. Menards Angola stocks SP No.1 in 2×8 to 2×12; No.1 is fine anywhere No.2 is called for.
- 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 spray foam at the roof deck and in the walls. Unvented roof: no ridge or soffit vents. The foam is the only vapor retarder. Overlay gable pockets are outside the foam; louvered vent in each gable face.
- Headers: 3-2×10 at the 5'-10" openings, 2-2×10 at the 2'-0" windows, one jack each side, all tight under the double top plate.
- 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 (F-2).
- Dimensions are to the face of framing unless noted. Verify on site.
- Not sealed. Ridge beam: supplier's design sheet before ordering (F-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

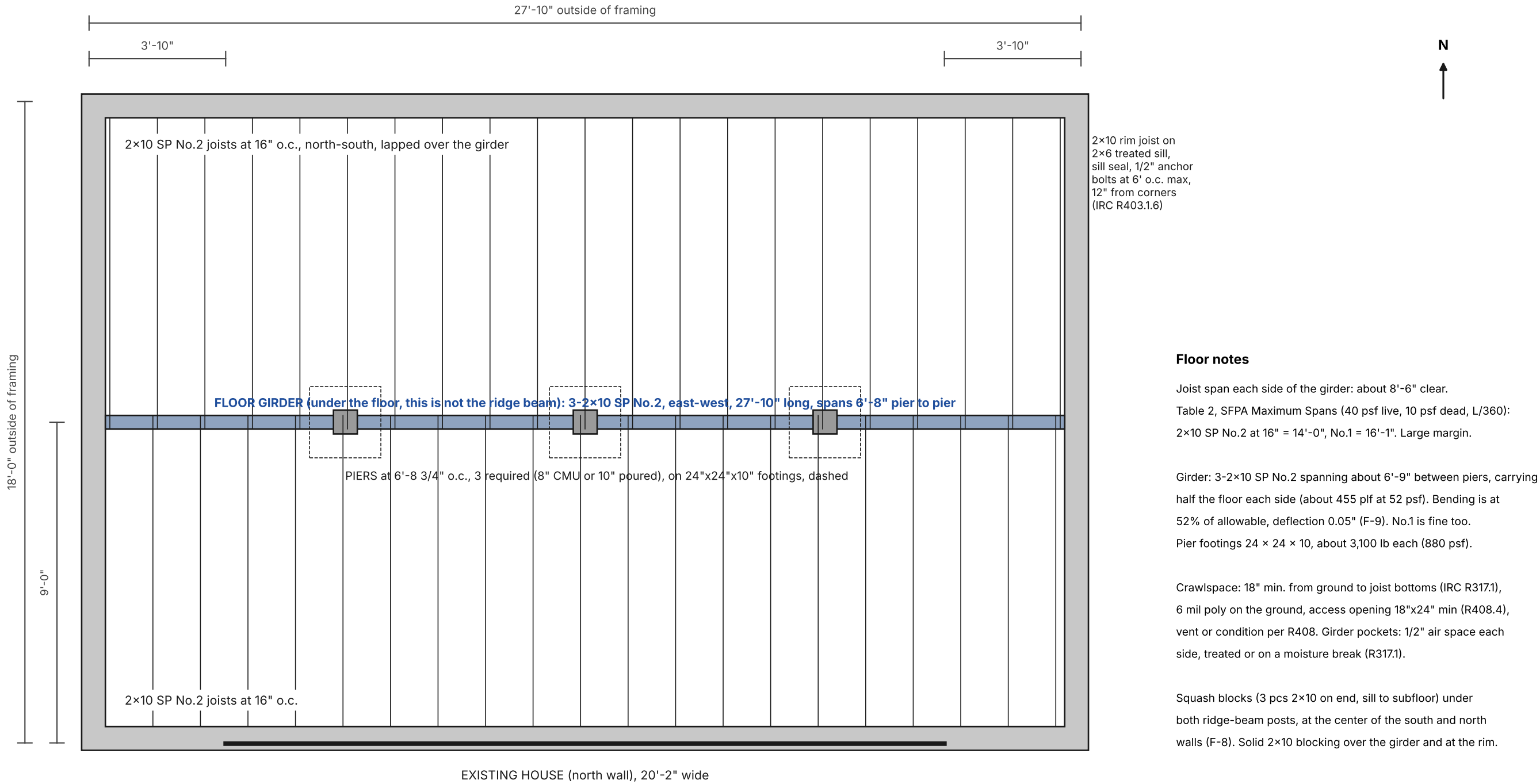
TOP OF NEW FOUNDATION WALL = 11-1/2" BELOW THE TOP OF THE EXISTING KITCHEN SUBFLOOR. (2x6 treated sill 1-1/2" + 2x10 joist 9-1/4" + 3/4" subfloor = 11-1/2".) Shoot the kitchen subfloor with a level and set the forms from that, not from a grade number. This makes the addition floor flush with the kitchen 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.

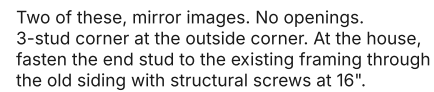
Crawlspace: 6 mil poly on grade, 18" clear to the joists, 18" x 24" access, drain tile to daylight per S1, damp-proofing and 2" rigid on the inside face per S6.

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).

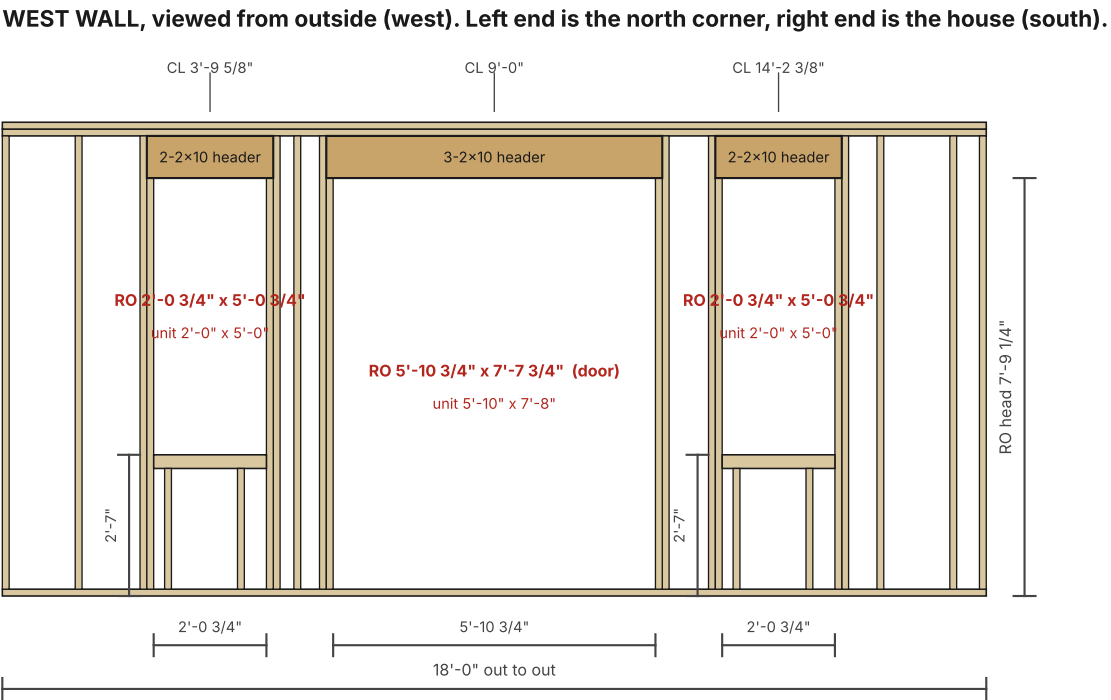
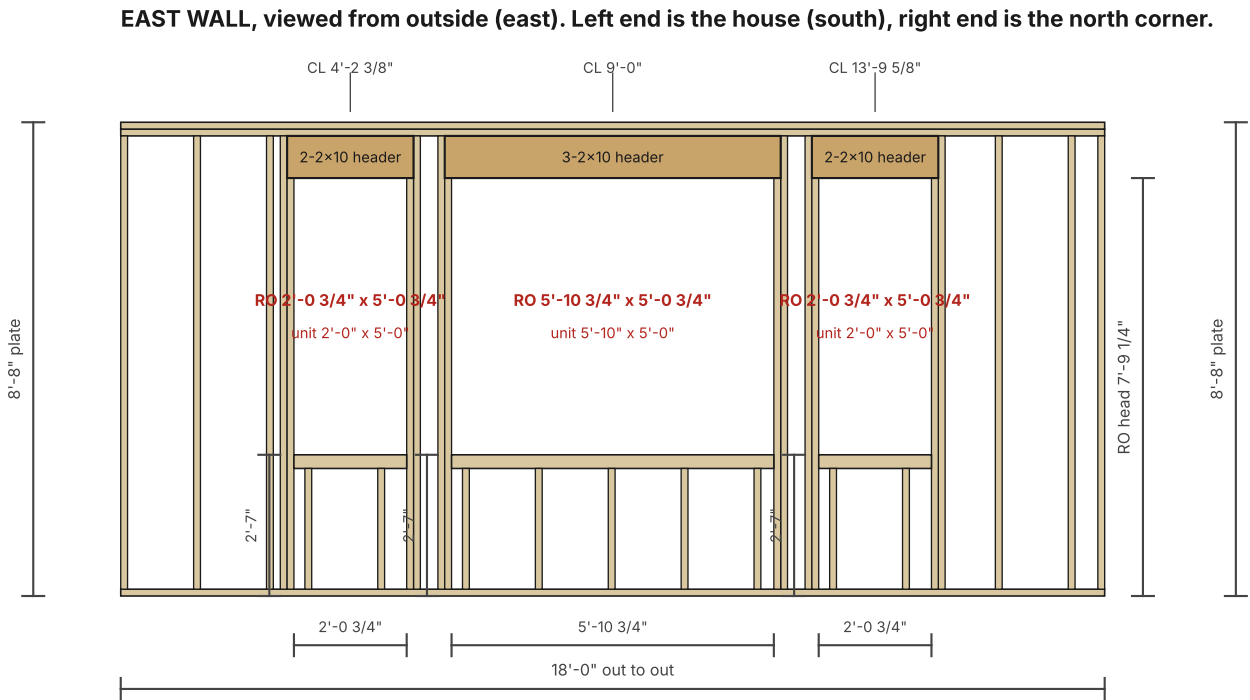
If you go to the 9'-1 1/8" plate: studs 104-5/8" precut, jacks 95-3/8", heads at 8'-2 3/8", still tight to the plate, sills move up the same 5-1/8".

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

RO 5'-10 3/4" x 6'-6 3/4"

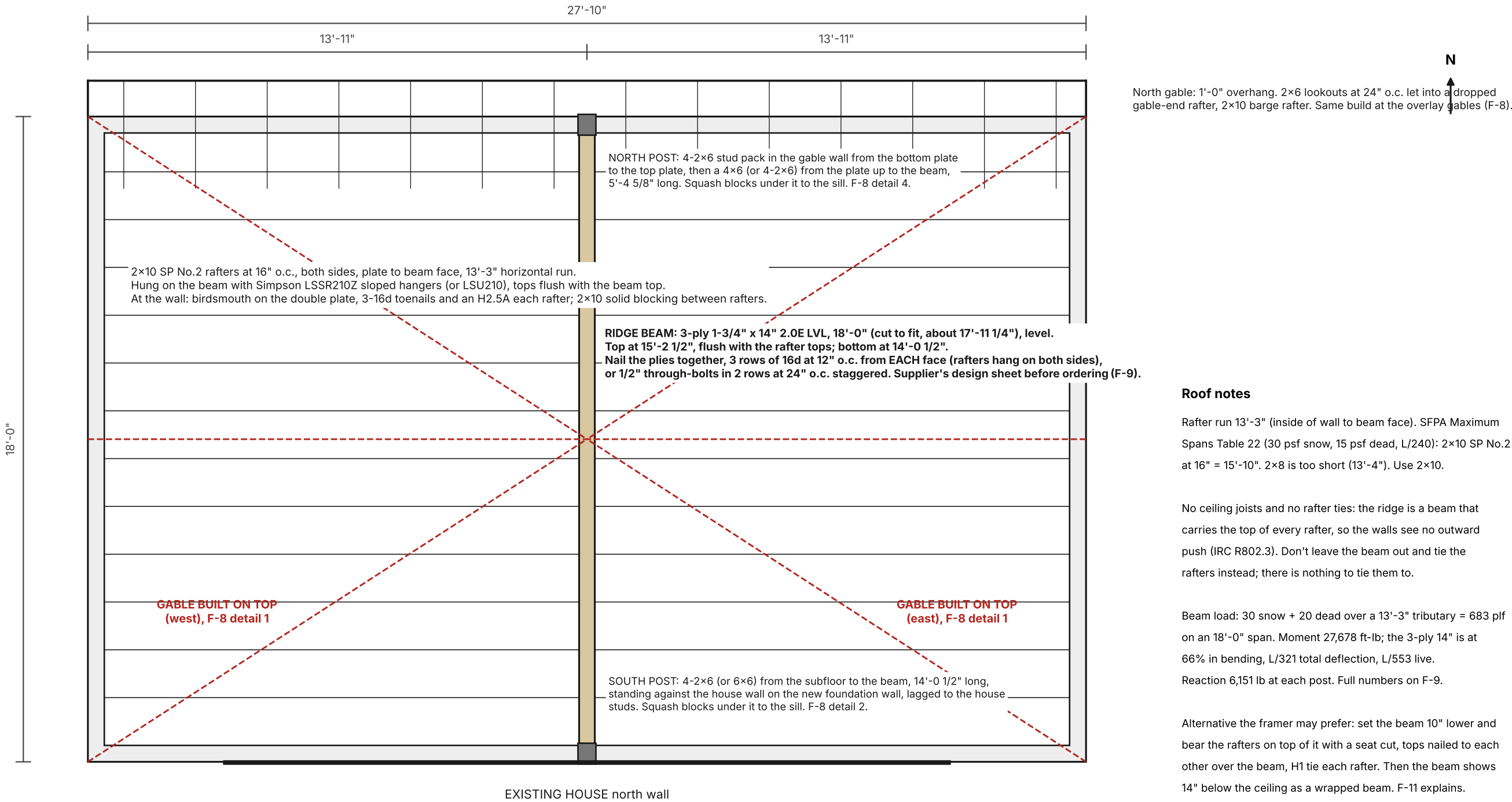
Existing north wall of the kitchen is 2×4, non-bearing per the scan (floor and roof span east-west). Still, treat it as if it carries the old roof's ceiling: header 2-2×10 with 1/2" ply spacer, one jack and one king each side, cut after the addition is weathered in.

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 F-2).

Roof framing plan: 2x10 rafters on a 3-ply LVL ridge beam

Frame and sheathe the main roof first. The east and west gables (red dashed) are built on top of the deck afterward, F-8 detail 1.



Roof notes

Rafter run 13'-3" (inside of wall to beam face). SFPA Maximum Spans Table 22 (30 psf snow, 15 psf dead, L/240): 2×10 SP No.2 at 16" = 15'-10". 2×8 is too short (13'-4"). Use 2×10.

No ceiling joists and no rafter ties: the ridge is a beam that carries the top of every rafter, so the walls see no outward push (IRC R802.3). Don't leave the beam out and tie the rafters instead; there is nothing to tie them to.

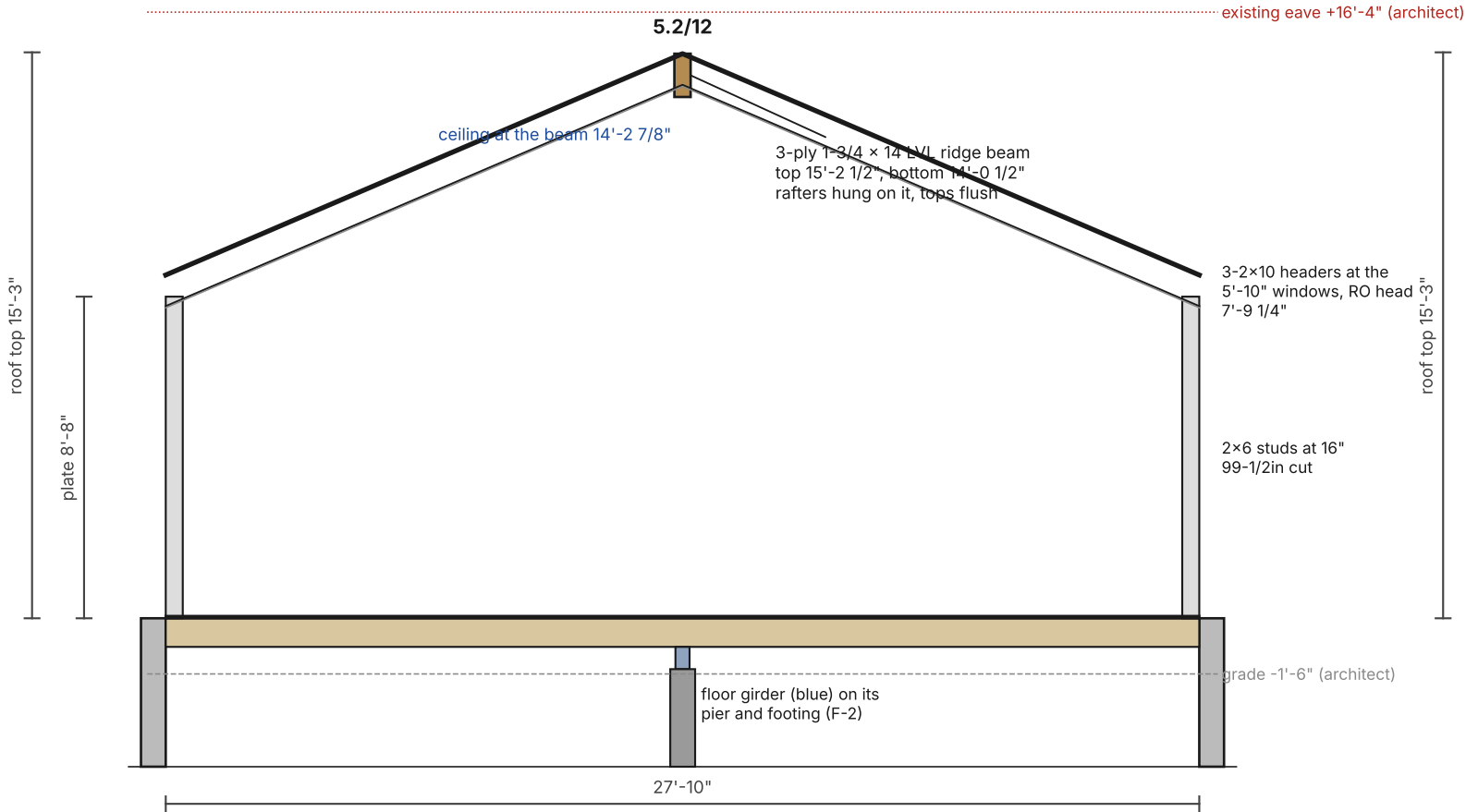
Beam load: 30 snow + 20 dead over a 13'-3" tributary = 683 plf on an 18'-0" span. Moment 27,678 ft-lb; the 3-ply 14" is at 66% in bending, L/321 total deflection, L/553 live. Reaction 6,151 lb at each post. Full numbers on F-9.

Alternative the framer may prefer: set the beam 10" lower and bear the rafters on top of it with a seat cut, tops nailed to each other over the beam, H1 tie each rafter. Then the beam shows 14" below the ceiling as a wrapped beam. F-11 explains.

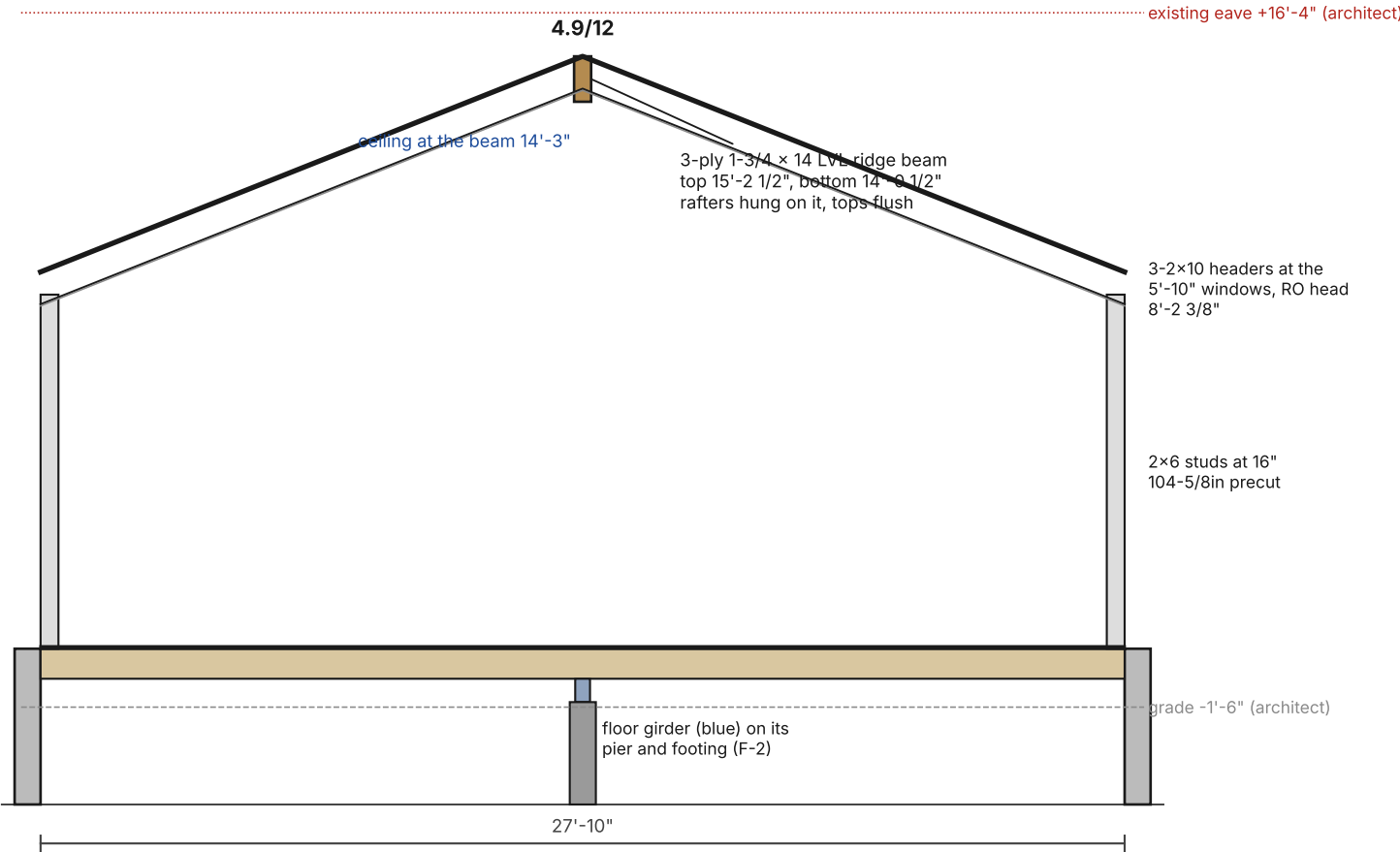
Building section looking north, both wall heights

Left: 8'-8" plate, the base. Right: 9'-1 1/8" plate, the alternate. The ridge stays at +15'-3" in both; only the pitch and the stud length change.

BASE: 8'-8" PLATE



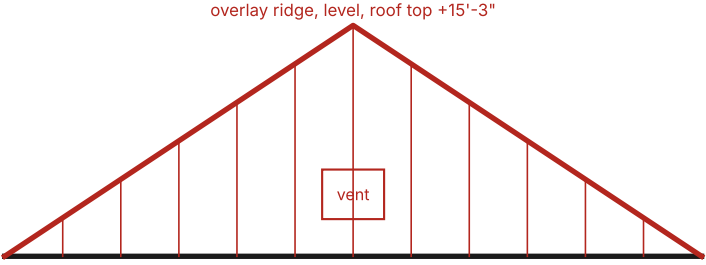
ALTERNATE: 9'-1 1/8" PLATE



Details

Overlay gables, south post at the house, rafter at the plate, north gable and post, headers and wall framing

1 OVERLAY (FALSE) GABLE, east and west: what you see from the yard, and how it is built on the deck



overlay ridge, level, roof top +15'-3"

main roof deck at the east wall (eave line, plate + heel), 18'-0" long

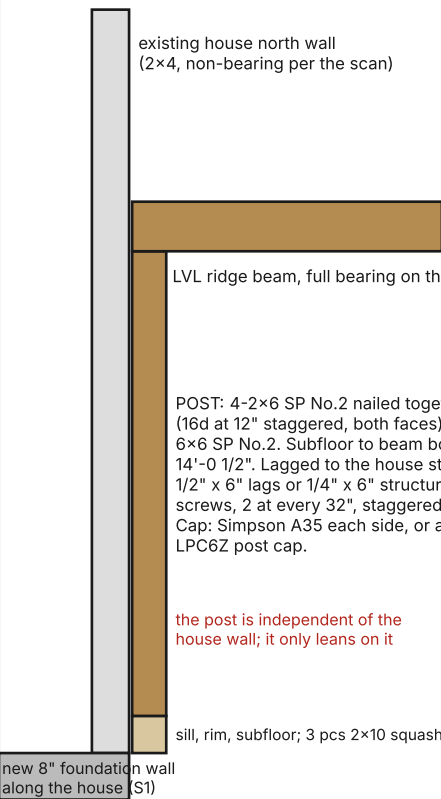
VIEW FROM THE EAST: the triangle is what you see from the yard. Pitch 8/12 (34 deg on the architect's elevation).

Build the main roof completely first: rafters, 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 2×6 valley sleeper flat on the deck along each line. Fasten through the deck into every rafter it crosses: 1/4" x 4-1/2" structural screws, 2 per rafter.
3. Set a 2×8 overlay ridge, level, from the gable face back to the main ridge, on 2×4 posts to the deck at 4' o.c.
4. Run 2×6 overlay rafters at 24" o.c. from the overlay ridge down to the sleepers, bevel-cut to sit on them. Pitch 8/12, same as the architect's cross gable.
5. Gable face: 2×4 studs at 16" on a 2×6 plate on the deck, Z-flashed; sheathed and sided continuous with the wall below. 1'-0" ladder overhang, 2×8 barge.
6. 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 the cross gable; nothing structural is in it. It adds about 5 psf, carried in the beam and rafter numbers. (The architect's section shows the cross ridge 2" below the main ridge; level with it is fine too.)

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



existing house north wall (2×4, non-bearing per the scan)

LVL ridge beam, full bearing on the post (5'-1/2"); 1-5/8" is all it needs

POST: 4-2×6 SP No.2 nailed together (16d at 12" staggered, both faces), or a 6×6 SP No.2. Subfloor to beam bottom, 14'-0 1/2". Lagged to the house studs: 1/2" x 6" lags or 1/4" x 6" structural screws, 2 at every 32", staggered. Cap: Simpson A35 each side, or an LPC6Z post cap.

the post is independent of the house wall; it only leans on it

sill, rim, subfloor; 3 pcs 2×10 squash blocks under the post

new 8" foundation wall along the house (S1)

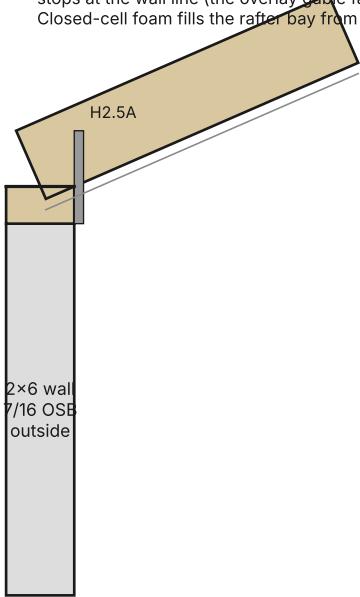
Roof to house wall (both roof planes meet the house):

- 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.
- The ridge hits the house wall below the existing soffit; cap it with a saddle, no vent.

Kitchen french door opening (5'-10" x 6'-6"): 2-2×10 header, cut after the addition is weathered in (F-5).

3 RAFTER AT THE WALL PLATE

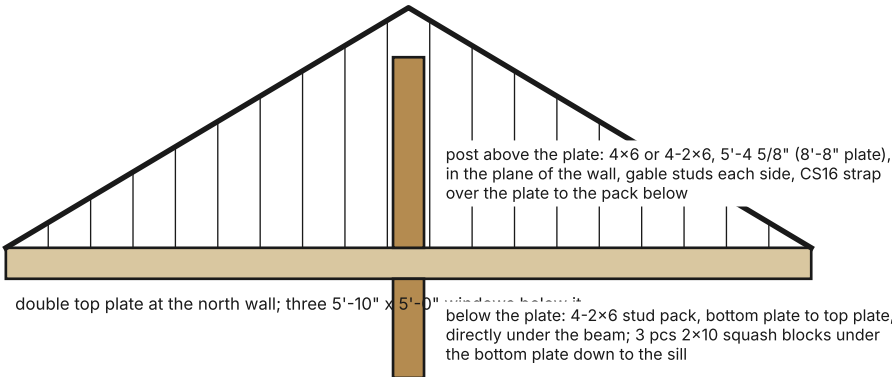
2×10 rafter, birdsmouth seated full on the double plate (seat 5-1/2", heel about 7" above the plate), 3-16d toenails plus an H2.5A at each rafter. Uplift per rafter is only about 65 lb (IRC Table R802.11, 115 mph, exp. B), so the toenails alone satisfy the code; the H2.5A is cheap insurance. 2×10 solid blocking between rafters on the plate. No rafter tail: the roof stops at the wall line (the overlay gable face sits on the deck there). Closed-cell foam fills the rafter bay from the deck down to the drywall.



4 NORTH GABLE END, 1'-0" OVERHANG, AND THE NORTH POST

gable studs 2×6 at 16" o.c., balloon-framed plate to rafter, 7/16 OSB

1'-0" overhang: dropped gable rafter, 2×6 lookouts at 24" o.c. nailed to the first inboard rafter, 2×10 barge, soffit under; same build at the overlay gables



5 HEADERS, WALL FRAMING, SHEATHING

5'-10" openings (3 north, 1 east, west door): 3-2×10 SP No.2, 1 jack + 1 king each side. IRC Table R602.7(1), 28' building width, 30 psf ground snow, roof + ceiling: 3-2×10 allowed 6'-10" > 6'-1 3/4" rough span. Pack the 4-1/2" header out to 5-1/2" with rigid foam, not plywood (thermal). 2'-0" windows: 2-2×10, 1 jack each side (same depth, no cripples). Rough sills doubled under the windows, cripples at 16".

Walls: 2×6 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).

Structural summary: every size, the load behind it, and where the number comes from

For the rough-in inspector and the lumber yard. Hand calcs by the owner's AI assistant, allowable stress design, checked against published tables. The LVL supplier's design sheet is the final word on the beam.

Item	What is drawn, and the load on it	Where the number comes from
Design loads	Ground snow 30 psf (used as the roof load, as the IRC tables do), roof dead 15 psf + 5 psf for the overlay gables, floor 40 live / 12 dead, wind 115 mph ultimate, exposure B	City of Auburn Residential Building Code sheet (DeKalb County) and Noble County Table R301.2(1): snow 30, wind 115, footing depth 36", weathering severe
Rafters	2×10 SP No.2 at 16" o.c., 13'-3" horizontal run, 5.2/12 (base) or 4.8/12	SFPA Maximum Spans Table 22 (30 snow / 15 dead / L/240): 15'-10" allowed at 16". Reaction at the beam about 440 lb per rafter
Ridge beam	3-ply 1-3/4" x 14" 2.0E LVL, 18'-0" span. Load 683 plf, moment 27,678 ft-lb, shear 6,151 lb	Fb 2,600 psi x 1.15 snow x depth factor, Fv 285, E 2.0 million (Weyerhaeuser TJ-9020). Bending 66%, shear 38%, deflection L/321 total (0.67"), L/553 live. IRC R301.7 asks L/240 live. SUPPLIER TO CONFIRM
smaller / larger	3-ply 11-7/8": bending 89%, L/197 total. Passes, but no margin; not used.	3-ply 16": bending 52%, L/477. Fine if the yard only has 16"; the beam then hangs 2" lower
Method check	The same arithmetic reproduces Weyerhaeuser's printed snow table exactly: 2-ply 16" at 18'-6" = 820 plf, 2-ply 18" = 1,023 plf	TJ-9020 (March 2024), 2.0E Microllam snow-load table, L/180 total
Posts	Reaction 6,151 lb each end. South: 4-2×6 SP No.2 or 6×6, 14'-0 1/2" tall, lagged to the house wall. North: 4-2×6 pack under the plate + 4×6 above	NDS column formula, SP No.2 Fc 1,400 psi (2x), 525 psi (6×6), Cp from Emin. South 4-2×6: 65% worst axis (nailed built-up, Kf 0.6); 6×6: 65%. A single 4×6 is NOT enough on the weak axis unbraced. North pack: 28%
Bearing	Beam on post: 1.56" needed, 5-1/2" provided (LVL Fc-perp 750 psi). Post on plate: 186 psi vs 565 allowed (SP)	Weyerhaeuser TJ-9020; NDS SP Fc-perp 565 psi
Rafter to beam	Simpson LSSR210Z field-sloped hanger (or LSU210), tops flush	Simpson catalog download for LSSR210Z is in the 1,000 lb class vs 440 lb needed; confirm the exact number in the current catalog when ordering
Rafter to plate	3-16d toenails and an H2.5A per rafter	IRC Table R802.11, 115 mph exp. B, 16" o.c.: about 66 lb per rafter (extrapolated from the 12' and 18' rows); under 200 lb so R602.3(1) nailing alone complies
Floor joists	2×10 SP No.2 at 16" o.c., about 8'-6" clear each side of the girder	SFPA Table 2 (40/10, L/360): 14'-0" allowed
Girder	3-2×10 SP No.2, 6'-8 3/4" between piers, 456 plf, moment 2,582 ft-lb	SP No.2 2×10 Fb 925 psi: bending 52%, shear 32%, deflection 0.051". No.1 (Menards) is better still
Pier footings	3 at 24" x 24" x 10", 3,129 lb each, about 882 psf on the soil	IRC Table R401.4.1 presumptive 1,500 psf (clay) and up; 2 #4 each way. Foundation contractor confirms the soil at the footer inspection
Headers	3-2×10 at the 5'-10" openings, 2-2×10 at the 2' windows	IRC Table R602.7(1), 28' width, 30 psf, roof + ceiling: 3-2×10 allowed 6'-10"
Walls / bracing	2×6 at 16", 7/16" OSB, CS-WSP	IRC R602.3(5), R602.10
Overlay gables	2×6 sleepers screwed to rafters, 2×8 overlay ridge on 2×4 posts, 2×6 rafters at 24", 8/12	Non-structural; 5 psf allowance carried in the rafter and beam loads

What still needs to happen before it is built

- The LVL ridge beam: take F-6 and this sheet to the lumber yard. Their software (Weyerhaeuser Forte, Boise BC Calc, LP SolidStart) prints a design sheet for a 3-ply 1-3/4 × 14 at 18'-0" carrying 683 plf; keep that sheet with the permit for the rough-in inspection. If they size it differently, theirs governs.
- Pier footings: 24 × 24 × 10 assumes ordinary clay at 1,500 psf. The foundation contractor checks the soil when the perimeter footing is dug.
- Not sealed. Indiana does not require a design professional for a one- or two-family dwelling; the county issued the permit on the application and site plan.

Sources

City of Auburn, Residential Building Code sheet (ci.auburn.in.us DocumentCenter/View/82)
Noble County, 2020 IRC Table R301.2(1) sheet (in.gov/counties/noble)
SFPA, Maximum Spans: Southern Pine Joists & Rafters (2013), Tables 2 and 22
Weyerhaeuser TJ-9020, Trus Joist beams, headers and columns (Mar 2024): LVL design values and snow-load tables
NDS 2018: column stability (3.7), built-up columns (15.3), SP design values
2018 IRC / 2020 Indiana Residential Code: R301.2, R301.7, R401.4.1, R403.1.6, R408, R602.3, R602.7, R602.10, R802.3, R802.11, R803.2
Architect's sheet, Option 4 (10 Oct 2026): footprint, heights, openings, pitches
Engineer's S1: foundation wall and footing (unchanged)
Permit BLD26-00591, issued 27 Oct 2026: inspections footer, underslab, walls, rough-ins, electric temporary/permanent, final

Cut list

Counts from the elevations and plans in this set, plus 10% on studs and sheathing. Lengths are cut lengths; buy stock as noted. The base 8'-8" wall; the 9'-1 1/8" alternate changes stud, jack and pack lengths (F-1).

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")	28
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 about 14'-11 1/8", make a pattern first)	192" (16'-0")	30
2×10 rim joist, 16' and 12' to make 27'-10" x2 and 18' x2	192" (16'-0")	6
2×10 squash blocks under the posts (9-1/4" pieces, 3 per post)	9" (0'-9 1/4")	6
2×4 lookout, overlay gables, 3' pieces	36" (3'-0")	20
2×4 overlay gable face stud, varies to 6'	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 5'-5")	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), If	334" (27'-10")	3
2×6 plate stock (bottom + double top), If	46" (3'-10")	3
2×6 plate stock (bottom + double top), If	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
2×6 × 16' for the south post (4 plies, cut to 14'-0 1/2")	192" (16'-0")	4
2×6 × 99-1/2" for the north stud pack under the plate (4 plies)	100" (8'-3 1/2")	5
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 × 6' for the north post above the plate (cut to 5'-4 5/8")	72" (6'-0")	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, 1-3/4" x 14" 2.0E x 18' (3 plies)	216" (18'-0")	3
Simpson A35 (2 at the south post cap, 2 at the north) and CS16 strap 2'		4
Simpson H2.5A hurricane tie		30
Simpson LSSR210Z rafter hanger (or LSU210)		30

Builder's notes: the questions this roof usually raises, answered

Plain-language notes for the framing crew. If something here contradicts a sheet, the sheet wins; call the owner.

Why a beam at all? Can't we just tie the rafters?

There is no flat ceiling, so there are no ceiling joists to tie the rafters together. Without the beam the rafters push the side walls out. The beam carries the top of every rafter, the walls carry the bottoms, and nothing pushes sideways. That is the whole structure of this roof.

How heavy is the beam, and how do we set it?

3-ply 1-3/4 × 14 × 18' is about 385 lb. Build the walls, stand both posts, then four guys or a telehandler put it up. Set it level, top at 15'-2 1/2" above the subfloor. Nail the plies per F-6 before it goes up (or bolt them in place).

Can the rafters sit on top of the beam instead of hangers?

Yes. Drop the beam so its top is at the underside of the rafters (about 14'-3 1/2" at the beam faces, with the top beveled or a 2x bevel plate on it), seat-cut the rafters over it, nail the opposing rafter tops together over the beam, H1 tie each rafter to the beam. The ceiling line at the rafters doesn't change; the beam then shows 14" below the ceiling and gets wrapped. Owner's call on the look; the structure is the same either way.

What if the yard wants to sell us a different beam?

Fine, as long as their printed design sheet shows it carrying 683 plf on an 18'-0" simple span with live deflection at L/240 or better. A 3-ply 11-7/8" technically passes but is at 89% in bending; don't go below the 14". Deeper is fine; the ceiling at the beam drops the same amount.

Why does the south post go all the way to the foundation? The house wall is right there.

The house wall is a 2×4 non-bearing wall on the scan and its basement wall is a different height. The new foundation wall runs right along the house (S1), so the post stands on that through squash blocks, and it only leans on the house for bracing (lags). Nothing from the new roof lands on the old house.

What's holding the posts up and down?

Compression: solid 2×10 squash blocks from the sill to the subfloor directly under each post, so the load doesn't crush the rim or the subfloor. Uplift and sideways: A35s at the beam, lags to the house studs on the south post, the gable wall sheathing and a CS16 strap on the north post.

Rafter cuts

Run 13'-3" horizontal from the inside of the wall to the beam face. Base pitch 5.2/12 (call it 5-3/16 in 12) with the 8'-8" plate; 4.9/12 with the 9'-1 1/8" alternate. Plumb cut at the beam, birdsmouth on the plate with a 5-1/2" seat, about 7" of rafter left above the plate. Cut one, check it in place at both ends, then cut the rest from it. 16' stock.

Sequence

Foundation (with the 3 pier footings and pockets) > sill, girder, joists, subfloor > walls, headers, north stud pack > both posts > beam > rafters, blocking, H2.5A > roof OSB, underlayment > overlay gables on the deck > wall OSB, house wrap > windows (by others). Cut the kitchen door opening last, after the roof is dried in.

The gables on the sides

They are furniture on the roof. Snap the valley lines, screw the 2×6 sleepers through the deck into the rafters, set the little ridge on posts, run 2×6 rafters at 24" down onto the sleepers at 8/12, sheathe, vent, done. Build them after the main roof is sheathed and papered so the deck under them is a finished roof. The roofer flashes the valleys like any valley.

Floor height

The addition floor must land flush with the kitchen floor. Top of the new foundation wall is 11-1/2" below the top of the kitchen subfloor (sill 1-1/2 + joist 9-1/4 + subfloor 3/4). Shoot the kitchen subfloor with a level before the forms are set. If the room gets 3/4" hardwood and the kitchen gets vinyl plank, drop it another 1/2".

Wall height

Base is 8'-8" (99-1/2" studs). The alternate is 9'-1 1/8" with 104-5/8" precuts. The roof top stays at +15'-3" either way (it has to clear the house eave at +16'-4"), so the taller wall just flattens the pitch a hair. Nothing in the beam or rafter sizes changes.

What the inspector will look at

Footer: the perimeter footing and the 3 pier footings. Walls: the poured wall, anchor bolts. Rough-in: rafter size and spacing, the beam with its supplier sheet, the posts and what they sit on, hangers and ties, blocking, headers, sheathing nailing. Keep F-9 and the LVL sheet on site.