S-Panels Idaho Jobsite Erection Manual

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This manual is how S-Panels Idaho SIP packages go up on a jobsite: S-Panels crews, contractor crews, and owner-builders all follow it. It is written around our own panel system (4′ wide panels, OSB surface splines, recessed lumber, numbered panels and lumber packs), not a generic SIP.

What governs, in order:

1. The job's stamped engineering (fastening, hold-downs, beams, posts, shear walls).
2. The job's S-Panels shop drawings and 3D panel model (panel numbers, cuts, recesses, header types, splines).
3. This manual.
4. The building code and the instructions of other products (windows, roofing, tape, sealant).

If two of these disagree, stop and call S-Panels before cutting or fastening. S-Panels does not provide on-site installation advisors; technical questions are answered by phone and email during installation. Never move a window or door, or field-cut a header, without written approval.

Supersedes: the S-Panels Installation Manual for Wall and Roof Panel Systems, Rev 02 (01/21/2011). Fastening follows S-Panels' ICC-ES evaluation report ESR-2182, which must be kept on the jobsite during installation.

1. The S-Panels system at a glance

Every S-Panels panel is 7/16″ OSB on both faces, bonded to an EPS foam core, cut to the shop drawings before it ships.

Item	S-Panels standard
Exterior wall panel	6-1/2″ overall (5-5/8″ EPS)
Interior / 4-1/2″ wall	4-1/2″ overall (3-5/8″ EPS)
Roof panel	12-1/4″ (11-3/8″ EPS) or 10-1/4″ (9-3/8″ EPS) as the job calls for
Wall panel width	4′ maximum, 10″ minimum

Item	S-Panels standard
Wall-to-wall joint	OSB surface spline ("Spline 1"): 4" OSB spline behind both skins, 2" into each panel; ships separately (not attached to any panel) and is installed on site
Roof-to-roof joint	Double 2x12 spline (2x10 in 10-1/4" roof), shipped separately and installed on site, or the spline the shop drawings call for to meet the span and load
Bottom plate	Single plate, recessed into the panel
Top plate	Double plate, both recessed into the panel
Wall ends and corners	Single stud at each wall end, unless it carries a structural load above
Vertical lumber	Only at openings, corners and columns; never at a plain panel joint
Roof perimeter	1-1/2" recess all around for 2x12, except where a roof butts into a wall; ridge plumb cuts not recessed
Window sills	1-1/8" LSL sill plate
Wire chases	1-1/2" round holes in the foam, horizontal at 14" and 46" above the panel bottom, plus one vertical at the panel center
Ridge, valley and support beams	By others (sized on the engineering, not in the S-Panels package)

Panel numbers. The lowest level starts at 101; each level up adds 100 (201, 301). Numbers run counter-clockwise from the northwest corner, seen from above. Interior common walls come after the loop. The number is written on each panel and matches the layout sheet, the elevations and the packing list.

Headers. Every opening carries a circled header type from the S-Panels header schedule on sheet 1 (#1 to #18). Typical: under 3′ = #1, under 4′ = #2, 4′ to 6′ = #4, overhead doors = #15 glulam sized for the job. Header panels arrive with a 1-1/2" recess on both sides; a **header filler** (a SIP 1" thinner than the wall) sits in that recess above the header.

What ships with every job: shop drawings (PDF), a 3D Model Views PDF, an interactive 3D model link, packing lists (shop and customer copies plus accessories), and lumber packs or pre-cut lumber per the contract.

2. Before the truck arrives

Most erection problems start before delivery: an out-of-square foundation, no lift equipment, or drawings nobody has read.

Two weeks out

- [ ] Signed shop drawings returned to S-Panels; delivery date confirmed.
- [ ] Pre-install meeting (in person or call) with the erector, GC, concrete, electrician and plumber: walk the shop drawings, chase locations, hold-downs, beam pockets and who supplies what.
- [ ] Crane or telehandler booked for the delivery day and the roof day. For crane and crew planning, figure panels at 4 lb/sq ft, plus the weight of any lumber installed in them (a bare 4′x10′ wall panel is about 160 lb; a bare 4′x20′ roof panel is about 320 lb).
- [ ] Ridge beams, posts and any steel by others ordered to arrive before the roof day.

Foundation or deck check (the day before)

Check	Tolerance
Sill or bottom plate level along every wall line	±1/8″ (shim at the plate to reach it)
Square (compare the diagonals)	Within 1/4″ on the longest diagonal
Outside dimensions	Match the S-Panels layout sheet; panel facings bear fully on the plate and deck, never overhang
Clearance to grade	Panels at least 6″ above finish grade (ESR-2182)
Anchor bolts / hold-downs	At the locations on the engineering; none landing in a panel joint or opening
Wall plumb (after setting)	Within 1/4″ in 10′
Wall straight (string line, before top plates)	Within 1/4″ in 10′

Out of tolerance → shim or grind before plates go down, and call S-Panels if a dimension is off by more than 1/2". Do not "fix it in the panels."

Crew and equipment

- Crew of 4 to 5 for walls; add a crane operator and a tag-line hand for the roof.
- Lift: telehandler or all-terrain forklift for unloading; crane for roof panels and tall walls.

Tools

- Chalk line, 4′ and 6′ levels, laser or transit, framing square, 100′ tape
- Circular saws (7-1/4" and a 10" or 16" beam saw), recip saw, hand saw
- Hot knife or foam scoop set to 1-1/2" (for field recesses)
- 1/2" drill with a 1-1/2" x 12" auger bit (chase holes through plates)
- Impact drivers with the SIP-screw bit; pneumatic staplers for 16 ga, 7/16" crown, 1-1/2" staples; framing nailers
- Sausage-tube sealant guns, spray-foam gun, J-roller for tape
- Ratchet straps with 2" webbing and a come-along (to pull joints tight)
- Sledge with a 2x block (never strike the OSB directly)
- Wall braces, stakes, lifting plates or brackets, tag lines, fall protection for roof work

Materials to have on site (check against the Accessories packing list)

- S-Panels-supplied sealant foam, SIP sealant and SIP tape
- 16 ga x 7/16" crown x 1-1/2" staples, 16d and 10d common nails, 8" wall corner screws and roof SIP screws with washers (Section 5 and Section 8)
- Sill seal or gasket, PT sill plates, construction adhesive
- Tarps (white or light-colored) and roof underlayment for same-day dry-in

3. Delivery, unloading and storage

Panels ship on a flatbed in numbered bunks. The receiver has the equipment, crew and a clear, level drop area ready when the truck arrives. Unloading time is 2 hours; time past that is billed to the receiver.

Unloading

- Lift bunks with forks spread as wide as possible, or with straps and a spreader bar. Never lift a panel by its top skin alone, and never drop a panel on a corner.

- Set bunks where the crane or telehandler can reach them in erection order: walls near their walls, roof bunks within crane reach.

Inventory (before the driver leaves)

- [ ] Count bunks and check every panel number against the Customer Copy packing list.
- [ ] Check the Accessories list: lumber packs, splines, headers, header fillers, LSL, sealant, foam, tape, screws.
- [ ] Note damage or shortages on the driver's bill of lading and photograph them. Sign the packing list acknowledgment.
- [ ] Report anything missing or damaged to S-Panels the same day.

Storage

- Keep panels flat on dunnage at least 3″ off the ground, with supports no more than 4′ apart and as long as the panel is wide.
- Cover with white or light-colored tarps; never clear plastic or black poly (EPS softens above 165°F). Leave the ends open for airflow.
- Keep splines, lumber and LSL dry and flat. Never install a wet or frozen spline.
- Store sealant and spray foam warm (around 70°F); never above 120°F.

4. Plates and layout

Straight, square, sealed bottom plates make the walls go up fast; a crooked plate fights you on every panel.

1. **Sill (on concrete).** Set a pressure-treated sill the full panel width over sill seal, so no OSB touches concrete. Anchor per the engineering. Check level and square again.
2. **Snap the wall line.** Set the plate 7/16″ in from the outside edge of the foundation or deck, all the way around, so the outer OSB skin bears fully. Rim joists and framed basement walls are also inset 7/16″ so the sheathing line runs straight from foundation to roof.
3. **Corners.** At butt-joint corners the two plates are offset 7/16″ from each other to make room for the inside skin of the corner panel. Check the corner assembly detail before laying plates. Which wall runs through comes from the job's layout page: the wall whose layout length is the full outside dimension runs through, and its plate goes all the way out to the corner; the wall two wall-thicknesses shorter butts into it, and its plate stops 7/16″ short.

4. **Seal and fasten the plate.** Run a bead of construction adhesive (or SIP sealant on a slab sill) under the plate. Nail through the subfloor into the rim and joists, or into the PT sill per the engineering.
5. **Mark the layout on the plate.** Transfer panel edges, panel numbers, openings, stud packs, posts and hold-downs from the layout sheet. Write the numbers on the plate.
6. **Drill chases as you go.** Where a vertical chase lands over a plate, drill a 1-1/2″ hole through the plate and subfloor. Drill each one as its panel is set, not all at once, so holes line up.
7. **Seal the plate edges.** Just before each panel is set, run a continuous 3/8″ bead of SIP sealant along both edges of the plate where the inside faces of the skins land. Don't seal ahead of the crew: a skinned-over bead does not seal.

5. Wall panel erection

Start at a corner, set panels in number order, and plumb and fasten each panel before the next one goes up.

Prep on the ground (saves lifts and ladder time)

- Check the panel number, height and recesses against the elevation sheet. Horizontal chases go at the bottom (14″ and 46″ up).
- Clean foam crumbs out of the bottom and edge recesses so the skins bear on the plate.
- Wall OSB splines ship separately, bundled on the Accessories list, not attached to the panels. They go in as each joint is made (see step 3).

Setting sequence

1. **First corner panel.** Stand the corner panel over the bottom plate. Plumb it both ways and check the corner with a framing square: this corner controls the whole wall. Fasten it to the plate on both faces and brace it.
2. **Second corner panel.** Seal the face where it meets the first panel, set it, plumb it, and screw through the corner into the end stud with SIP screws. The corner is now self-bracing.
3. **Next panel (spline joint).** Run a 3/8″ bead of SIP sealant on both sides of the foam recess, just inside each skin, and a bead on the foam face. Slide the 4″ OSB spline (2″ into each panel, behind both skins) into the standing panel's recesses. Tilt the new panel in, drop it over the plate and splines, and pull the joint tight with a ratchet strap. Tap only through a 2x block. Or line the two panels up tight first and drop the spline in

from above; with this drop-in method, do NOT put sealant in the spline grooves; run a 3/8″ bead of SIP sealant on the foam face of the panel edge before the panels go together. T-walls: glue (construction adhesive) and screw the new panel's end stud to the face of the wall it meets, then slide the panel over the stud. SIP screws are 8″ in 6-1/2″ walls and 6″ in 4-1/2″ walls.

4. **Plumb, then fasten.** Plumb the panel both ways, then staple both skins to the bottom plate and both skins to the spline. Straighten a wall before it is fastened; pulling it straight afterward opens air leaks.
5. **Openings and posts.** Set stud packs, posts and header panels in sequence as they come up (Section 6).
6. **Brace.** Brace every wall at each end and about every 8′ between, with 2x4 or 2x6 kicker braces at roughly 45° screwed to a block on the upper half of the panel and anchored to the deck or a stake (Detail 13). Leave braces in until the roof is on and fastened. Add braces before a wind forecast; a freestanding SIP wall catches wind like a sail. No wall or roof panels set or flown in wind over 25 mph (lower if the crane operator says so).
7. **Check the run.** Measure each wall against the layout sheet as you go. Small joint gaps add up; if the last panel is long, trim it rather than forcing the wall.

Fastening schedule (minimum, unless the engineering or shop drawings say more)

Connection	Fastener	Spacing	Notes
Wall panel facings to OSB spline, both faces, both sides of the joint	No. 16 ga staple, 7/16″ crown, 1-1/2″ long	3″ o.c.	Crown about 45° to the panel length; 3/16″ edge distance (ESR-2182)
Facings to bottom plate and to both top plates, both faces	Same staple	3″ o.c.	Crown perpendicular to the panel end; plates are 2x Douglas fir-larch sized to the core (ESR-2182)
Facings to lumber at each side of openings, at wall corners and at each end of shear walls, both faces	Same staple	3″ o.c.	ESR-2182

Connection	Fastener	Spacing	Notes
Facings to headers, sills, header fillers and posts, both faces	Same staple	3″ o.c.	S-Panels standard, same pattern as above
Wall corner, panel to panel through the end stud	8″ SIP screw (6-1/2″ wall)	12″ o.c., first screw 6″ from top and bottom	Industry range is 12″ to 24″ o.c.; use 12″
Top plate to top plate	16d common nail (3-1/2″ x 0.162″)	12″ o.c. staggered; (2) at each lap	
Bottom plate to wood floor	16d common nail	16″ o.c. into rim and joists	IRC Table R602.3(1) minimum
Bottom plate to concrete	Anchor bolts or straps	Per the engineering	PT sill over sill seal
King, trimmer and cripple packs (stud to stud)	10d common nail (3″ x 0.148″)	24″ o.c. staggered	IRC Table R602.3(1)
Studs to plates	(2) 16d common end-nailed, or (4) 8d common toe-nailed	Each end	IRC Table R602.3(1)
Header to king studs	(4) 16d common	Each end	Or per the engineering
Shear walls, hold-downs, straps	Per the engineering	Per the engineering	ESR-2182 racking values apply only in Seismic Design Categories A, B and C

Source: ESR-2182, reissued June 2026, Section 4.2.1. If the report and this manual ever disagree, the report governs. Nail sizes for lumber-to-lumber joints are the IRC Table R602.3(1) minimums. Don't substitute nails for the 16 ga staples at panel facings without the engineer's written approval.

Drive staples, nails and screws flush; never countersink through the OSB. SIP screws need at least 1″ of penetration into wood; use longer screws where there are shims.

6. Openings, headers and header fillers

Openings arrive pre-cut with the foam recessed for the stud packs and header; the crew installs the lumber, never re-sizes the opening.

Stud packs (S-Panels standard)

Opening	King studs each side	Trimmers each side	Cripple under sill
4′ and under	1	1	1
Over 4′	2	2	1
Type #4 header (to 6′)	1	1 (2 at a 6′ opening)	1
Overhead door	Per the overhead-door table on sheet 1 (2 minimum)	Per the table (2 minimum)	n/a

Install order at each opening

Order at every opening: set the full panels on both sides of the opening first, then the window sill panel, then the header panel last. Doors go the same way, without a sill panel.

1. Set the panel beside the opening. King studs run full height; trimmers run up to the underside of the header. The trimmer strip above is left open for the header end and filler.
2. Seal the foam recess and set the stud pack. Staple both skins to the kings at 3″ o.c.
3. **Windows:** the 1-1/8″ LSL sill comes installed in the sill panel from the factory. After both side panels are up, seal the bottom plate, drop the sill panel over it between them, check the sill is level, and staple both skins to the plate and side panel studs at 3″ o.c.
4. **Header panel:** set the header panel with its header (type per the circled number on the elevation). The header runs past each side of the opening onto the trimmers, 1-1/2″ per trimmer.
5. **Header filler:** seal and slide the header filler into the 1-1/2″ side recess above each header end, up to the top plates. Staple both skins.
6. **Openings over 6′ that aren't overhead doors** are flagged "? HEADER BY ENGINEER" on the drawings. Install only the header the engineer specified.

Do not: cut a new opening, enlarge an opening, or notch a header without written approval from S-Panels. Field-added openings need foam routed back 1-1/2″ and full blocking on all four sides, plus the engineer's header.

7. Top plates and upper levels

Top plates lock the panels into a straight wall, so set them only after every wall on that level is plumb, straight and braced.

1. **Final check.** String-line each wall top and re-plumb any panel that has drifted.
2. **First top plate.** Run a sealant bead along both inside skin edges, then drop the first plate into the top recess. Break plate joints at least 2′ away from any panel joint. Staple both skins at 3″ o.c.
3. **Second top plate.** Seal and set the second plate (also recessed), lapping the first at corners and intersections. Stagger its joints from the first plate's so the plates tie the panels together (at least 24″ apart, per IRC R602.3.2). Nail plate to plate with 16d at 12″ o.c.
4. **Sloped walls (gables, sheds).** Plates are 3″ measured square to the slope; studs under them are cut to the slope, not square.
5. **Chase holes.** Drill a 1-1/2″ hole through both plates at every vertical chase, and mark the spot on the plate so the electrician can find it.
6. **Upper floors.** Frame the floor system per the drawings: platform framing on the top plates, or joists hung from the plates. Seal the rim and the joint between floor and wall. Upper-level panels (201, 301…) then go up exactly like the first level.
7. **Beam pockets and posts.** Set posts in the recesses shown on the drawings so the beam bears on solid end grain. Ridge and support beams are by others; confirm they match the engineering before roof day.

8. Roof panel erection

Roof panels are crane work: prep each panel on the ground, fly it once, and dry the roof in the same day.

Before the first lift

- [ ] All walls plumb, straight, braced, top plates on, chase holes drilled.
- [ ] Ridge beam, valley beams, posts and purlins set and fastened per the engineering (by others). Secure the ridge against bowing while panels go on.

- [ ] SIP tape laid over the ridge beam and every support, release paper still on, extending at least 2-1/2″ each side of the support.
- [ ] Bearing lines checked against the roof sheet: every panel bears on its walls and beams.

Ground prep for each panel

1. Check the panel number, the ridge plumb cut, the eave cut and the 1-1/2″ perimeter recess against the roof sheet.
2. Seal and install the 2x12 perimeter lumber (subfascia, rake) in the recesses. Roof splines ship separately, not attached to the panels: seal and set the double 2x12 spline in the leading edge, the first 2x12 fully in that panel's recess and the second face-nailed to it (16d common, 12″ o.c., 2 rows staggered) so it sticks out 1-1/2″ to take the next panel (Detail 9). Staple both skins to the first 2x12.
3. Rig the panel with S-Panels lifting plates screwed to the top skin, or with eyebolts and washers through a drilled hole. Plates can also lift several panels that were joined on the ground. On pitches over 4:12, move the pick point toward the ridge (about 3″ per pitch step over 4:12) so the panel hangs at the roof pitch.
4. Tie on a tag line. Mark the pick-point hole so it is foamed later.

Setting

1. Start at the end shown on the roof sheet (usually a gable end), and work along the ridge.
2. Fly the panel in rough side up, guide it with the tag line, and land the eave on the wall and the plumb cut at the ridge. Nobody stands under a load.
3. Before landing the panel, run SIP sealant beads on the protruding spline at both skin lines and in the new panel's recess. Land it on the spline, pull it tight to its neighbor with ratchet straps, and check eave and rake overhangs before fastening.
4. Where the roof sheet shows butt joints, alternate them row to row.
5. Fasten through the panel into the wall top plates, ridge beam and every support with SIP screws:

Roof panel thickness	SIP screw length (thickness + 1-1/2″ to 2″)	Washer	Spacing at every bearing
10-1/4″	12″	2″ diameter minimum (S-Panels supplies 3″ washers)	12″ o.c. maximum
12-1/4″	14″	2″ diameter minimum	12″ o.c. maximum
12-3/4″ (ESR-2182 roof panel)	14-1/2″	2″ diameter minimum	12″ o.c. maximum

ESR-2182 Table 1 requires wind-uplift fasteners with a 2″ diameter washer at 12″ o.c. maximum, and at least 1″ of bearing at every support. Closer spacing on the engineering governs. Screws go in square to the panel and flush, never countersunk through the top skin.

6. Staple both skins to the 2x12 splines and to the subfascia and rake lumber with the 16 ga, 7/16″ crown, 1-1/2″ staples at 3″ o.c., crown about 45° to the panel length. End-nail the subfascia into each spline with (3) 16d common.
7. **Ridge and valleys.** Fill the gap at the ridge plumb cuts and valley cuts full depth with low-expansion SIP foam. Tape the joints on the interior side (see Section 9).
8. **Pick holes and gaps.** Fill lifting holes and any gap over 1/4″ with SIP foam, trim flush when cured.

Overhangs follow the drawings. Any cantilever longer than shown, or over 24″ without engineering, needs approval before it is built.

Ridge cuts. Roof panels are always plumb cut at the ridge.

Splines. S-Panels does not install splines at the factory. Each roof joint uses the spline the shop drawings call for to meet the span and load (usually a double 2x12; 2x10 in a 10-1/4″ roof).

Ledgers. Where a roof meets a wall (a garage roof against the house), its high end bears on a ledger fastened to that wall. Tack the ledger in place on the outside of the wall, then drive SIP screws from the inside face of the wall, through the panel, into the ledger: wall thickness + 1-1/2″ into the ledger (8″ screws in a 6-1/2″ wall), in the screw pattern the engineering calls out on the shop drawings. Do it before drywall or ceilings cover the

inside face. Where the ledger lands on a floor rim (between wall levels), bolt it to the rim instead: through-bolts with washers both sides (or lag bolts) in the pattern the engineering calls out. Roof panels bear 1″ minimum on the ledger and get SIP screws with washers into it at 12″ o.c.

9. Sealing and taping

Air sealing is what makes a SIP building perform, and a missed joint can let warm, moist air rot the OSB from the inside. Every joint gets sealed as it is assembled, not afterward. Use the sealant foam, SIP sealant and SIP tape that S-Panels supplies with the package (listed on the Accessories packing list). Any substitute must be compatible with EPS foam and approved by S-Panels first.

Where	What	How
Plate to slab or sill	Sill seal + sealant	Gasket under the sill; bead under the plate
Panel to bottom and top plates	SIP sealant	Continuous 3/8″ bead along both skin lines, just before setting
Wall spline joints	SIP sealant	Bead each side of the recess at both skins, plus the foam face
Stud packs, posts, headers, fillers	SIP sealant	Bead where each skin meets the lumber
Roof spline and perimeter lumber	SIP sealant	Bead each side, both skins
Ridge, valleys, hips	Low-expansion SIP foam + SIP tape	Fill full depth, then tape over the joint
Roof panel joints and roof-to-wall line	SIP tape	Interior side of the joints, centered and rolled tight
Gaps 1/4″ or less	SIP sealant	Tool into the gap
Gaps over 1/4″, pick holes, voids	Low-expansion SIP foam	Fill and trim flush
Windows and doors	Window-rated low-expansion foam	Never SIP foam, which can bow jambs

Rules

- Only use sealants and foams made for EPS; solvent-based products melt the core.
- Sealant and foam need dry surfaces and warm product; check each product's minimum application temperature.
- Tape goes on dry, clean OSB, overlaps at least 2-1/2″ where pieces cross, and gets rolled with a J-roller. Patch any puncture.
- Never put a vapor-tight layer on both sides of the same joint.
- Before close-in, walk the building with a flashlight (or a blower-door test) and seal every gap you find.

10. Electrical, plumbing and field changes

Wiring runs through the factory chases; no plumbing in SIP walls, interior or exterior, unless the shop drawings show a plumbing chase; never notch or drill plates, splines or skins for plumbing. Dryer vents and fan ducts: plan the spot before the walls go up, in the field of a panel and never through a spline, plate, stud, header or panel joint. Use 4″ rigid smooth metal duct with foil-taped joints (35′ maximum developed length unless the dryer maker allows more), cut a 4-1/2″ hole through both skins, fill the gap in the core with low-expansion foam, seal both skins to the duct, and flash the cap into the weather barrier. The cap needs a backdraft damper and no screen, at least 3′ from doors and windows and 12″ above grade (IRC M1502). Any bigger hole, or any hole in a roof panel: call S-Panels first.

Electrical

- Chases in every wall panel: 1-1/2″ round, horizontal at 14″ and 46″ above the panel bottom, and one vertical at the panel center.
- Drill plates, splines and studs in line with chases as the panels go up, and mark each hole. It is much harder to find them after drywall.
- Have the electrician on site, or at least walk the drawings with them, before panels are set.
- Cut box holes at chase height, remove foam to box depth, and use old-work boxes that clamp to the OSB. Seal around boxes and wire penetrations.
- **Never** cut a horizontal groove in an OSB skin to run wire; it weakens the panel. To get between chases, call S-Panels before cutting any hole other than a box hole at chase height.
- Roof panels have no chases: run roof wiring through interior partitions or furred-out ceilings.

Plumbing

- No supply or drain lines in exterior SIP walls. Use interior walls or a furred-out chase.
- Vent, flue and fan penetrations through the roof: frame them per the drawings and seal with foam and tape.

Field cutting and changes

- Measure for a field cut only after the previous panel is in its final position.
- Cut both skins with a circular saw from each side (or a beam saw), finish with a hand saw, and recess the foam 1-1/2″ with a hot knife or scoop for the new lumber.

- Seal every field-cut edge before covering it.
- Call S-Panels before cutting any opening, notching a header, or cutting through a spline or plate.

11. Weather protection and close-in

OSB edges swell when they get wet, so the shell gets covered the day it goes up.

- Tarp panel tops and open edges at the end of every day and whenever rain or snow is coming.
- Roof: underlayment goes on the same day the roof panels are set. Wet OSB must dry before roofing goes on.
- Trim cured foam flush and sand swollen OSB edges before underlayment or roofing.
- Walls: install a weather-resistive barrier over the OSB, lapped shingle-style, before siding. Leave a 3/8″ drained gap behind the siding wherever the siding maker calls for one. Brick or stone veneer sits on its own foundation ledge and always gets a 1″ minimum air space with weep holes; it never touches the panel.
- The SIP roof does not need venting. Roofing goes over underlayment directly on the panels, unless the roofing maker requires furring or a vented deck for its warranty. In that case, install 2x furring at 16″ to 24″ o.c. over the underlayment, then sheathing, with eave and ridge vents.
- Never use torches or heaters to clear snow or frost from roof panels.
- Interior finish goes only over dry panels. Run drywall across panel joints, or offset its seams at least 12″ from them.
- A tight SIP shell needs mechanical fresh air (HRV or ERV) sized by the HVAC designer. Tell the customer this at the pre-install meeting.

Siding, veneer, stucco and cabinets on SIPs. A SIP wall has no studs behind most of its face, and 7/16″ OSB holds a fastener less well than a stud, so finishes need a tighter schedule than on a stud wall.

- **Lap siding** (vinyl, wood, fiber cement, composite, metal): 8d ring-shank nails at 12″ o.c. into the SIP face. A screw may replace a nail at the siding maker's own spacing. All fasteners corrosion resistant.
- **Fiber cement:** the siding maker's pattern and approved fasteners for 7/16″ OSB. **LP SmartSide 38 Series lap:** 0.092″ hot-dip galvanized ring-shank nails at 8″ o.c. maximum. Code fallback for siding up to 3 psf: IRC Table R703.3.3.

- Every siding fastener goes through the OSB and at least 1/4″ past it. Wood and fiber-cement siding go over furring for a 1/4″ minimum air space; vinyl and aluminum need none. Siding over 3 psf needs an engineered schedule.
- **Brick and stone ties:** the code tie and spacing, with 25% more tie fasteners than the tie maker calls for (16″ o.c. becomes 12″ o.c.), screwed or ring-shank nailed through the OSB. Weeps and flashing at the base and over openings.
- **Adhered stone and stucco:** over a drainage mat; stucco gets a layer of building paper between the mat and the stucco. Stucco lath is fastened to the OSB with corrosion-resistant wafer-head or disc-head screws, 25% more than the stucco system calls for.
- **Cabinets:** follow the cabinet maker's SIP instructions first. Before drywall, glue and screw 1/2″ or thicker plywood strips to the inside OSB behind the cabinet rails. Without backing, use screws that go fully through the skin, and more of them than on a stud wall. Heavy uppers: an engineer sets the screw count from S-Panels fastener pullout values.

Required by ESR-2182

- The panels and their fasteners must be inspected by the code official before they are covered with the water-resistive barrier or roofing. Schedule that inspection before close-in.
- Interior thermal barrier: 1/2″ gypsum board on the inside of every wall and roof panel, fastened with No. 6 x 1-1/4″ Type W screws at 16″ o.c. on the edges and 12″ o.c. in the field, plus drywall adhesive.
- Exterior walls get an approved wall covering over a water-resistive barrier; roofing nails must be long enough to go through the top skin.
- Panels stay at least 6″ above finish grade.

12. Safety

The erector is responsible for jobsite safety and for following OSHA and the crane company's rules; these are the SIP-specific points.

- **Lifting:** use only rated straps, plates and brackets, installed per their maker's instructions. Inspect rigging before every lift. Use a tag line on every flown panel, and never stand or work under a load.
- **Wind:** a SIP is a sail. Stop flying panels when gusts make them hard to control, and brace walls before wind is forecast.

- **Roof work:** fall protection is required on roof panels and at open edges. Walk boards on steep pitches. Don't step on unsupported overhangs.
- **Handling:** two people per wall panel by hand; mechanical lift for anything bigger or for roof panels.
- **Cutting foam:** hot-knife fumes need ventilation; keep flames and sparks away from EPS and spray foam.
- **PPE:** hard hats when anything is overhead, eye and ear protection when cutting, gloves for OSB edges and foam.
- **Power:** GFCI-protected cords in damp or wet conditions.

13. Inspection checklists and sign-off

The lead installer completes each checklist, photographs the work, and sends the photos and signed sheet to S-Panels with the job number.

Walls complete (before top plates)

- [ ] Every panel number matches the layout sheet; no openings moved
- [ ] Every wall plumb, straight and within layout dimensions
- [ ] Sealant at every plate and spline joint; splines fully seated
- [ ] Staples on both faces at 3″ o.c. at every spline, plate and piece of lumber (ESR-2182)
- [ ] Stud packs, LSL sills, headers and header fillers per the elevation sheets
- [ ] Hold-downs and straps per the engineering
- [ ] Chase holes drilled and marked
- [ ] Walls braced

Roof complete (before underlayment)

- [ ] Every panel bearing on its walls and beams as shown on the roof sheet
- [ ] SIP screws at every support, correct length and spacing
- [ ] Splines and perimeter lumber nailed both skins
- [ ] Ridge, valleys, pick holes and gaps foamed; tape applied and rolled
- [ ] Overhangs match the drawings

Close-in (same day as roof)

- [ ] Underlayment on the roof; wall tops and open edges covered
- [ ] Leftover panels, lumber and accessories counted and reported to S-Panels

Sign-off

Job name / job #	Lead installer	Date	Signature

Warranty note: the S-Panels 20-year limited warranty depends on the panels being installed and sealed per the shop drawings and this manual. Keep this signed sheet and the photos with the job file.

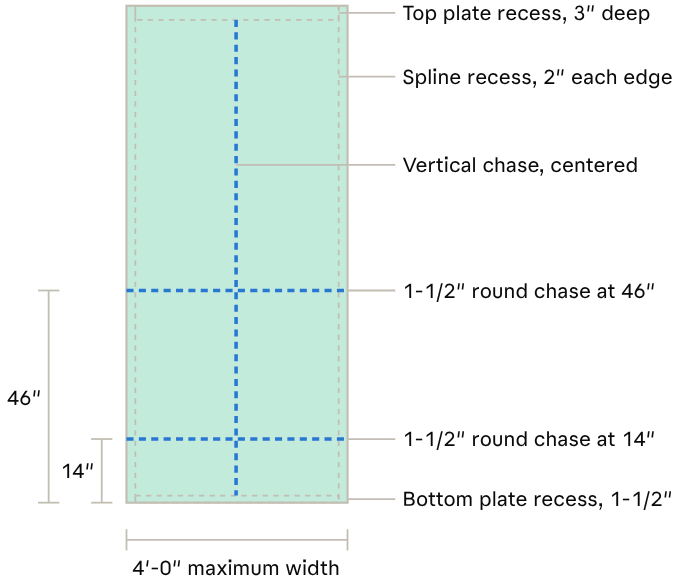
14. Typical details

These are the standard S-Panels connections, drawn to show where each part goes and how it is fastened. They are typical: the job's shop drawings and engineering govern where they differ. Fasteners follow the schedule in Section 5 and ESR-2182.

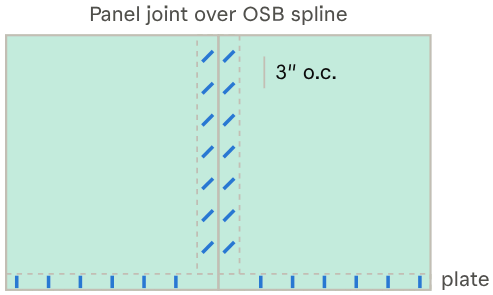
Key: green = OSB skin · white = EPS foam · orange = lumber, with an X on a cut end · dotted = recess or hidden lumber · blue = sealant, chases and tape.

Every wall panel ships recessed and chased; staple it at 3″ o.c.

Detail 1 · Wall panel as shipped (elevation)



Detail 2 · Staple pattern (outside face)

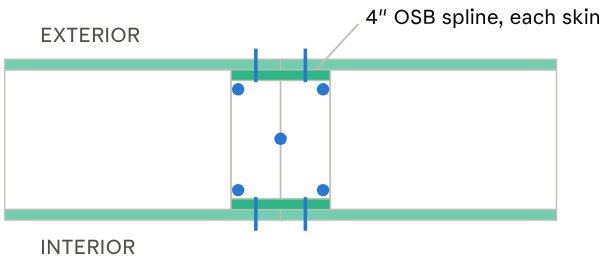


Staple: No. 16 ga, 7/16″ crown, 1-1/2″ long
At splines: crown about 45°, 3″ o.c., both faces
At plates: crown square to the panel end, 3″ o.c.
Same pattern at kings, corners, headers, sills
3/16″ minimum edge distance (ESR-2182)

Details 1-2 · wall panel as shipped and staple pattern

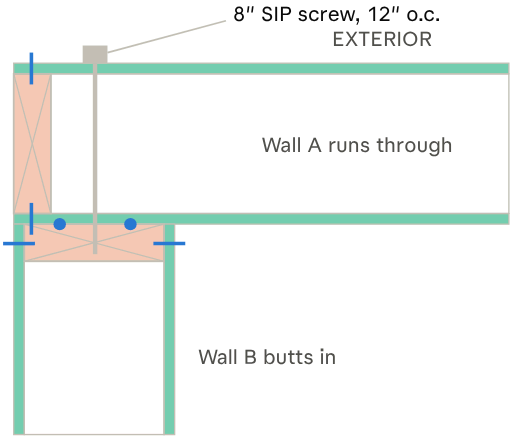
Joints get an OSB spline behind both skins; corners butt and screw

Detail 3 · Wall panel joint, Spline 1 (plan)



Spline ships separate; 2″ into each panel, each skin
Sealant at both spline edges and on the foam face
Staple both faces, both sides of the joint, 3″ o.c.
No lumber at a plain panel-to-panel joint

Detail 4 · Butt-joint corner (plan)

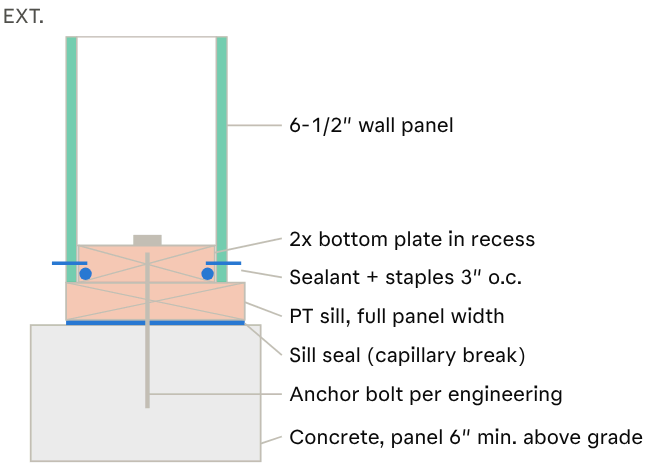


Wall A runs to the corner; wall B butts its inside face
Single 2x end stud in each wall end, staples 3″ o.c.
Sealant on the butt face; plates offset 7/16″
8″ SIP screws through A into B's end stud

Details 3-4 · wall panel joint and butt-joint corner

Both skins bear fully on the sill or subfloor; no OSB on concrete

Detail 5 · Bottom plate on concrete (section)



Detail 6 · Bottom plate on a wood floor (section)

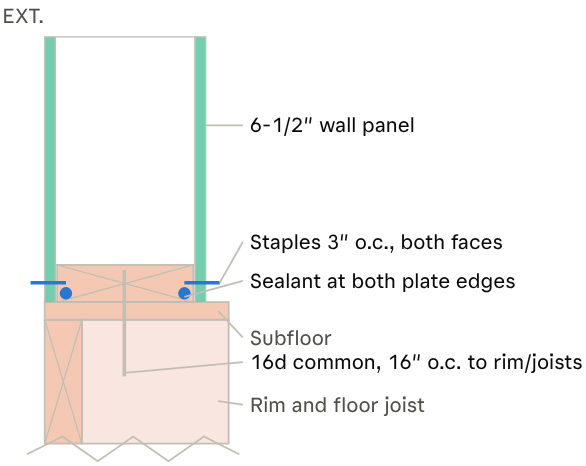
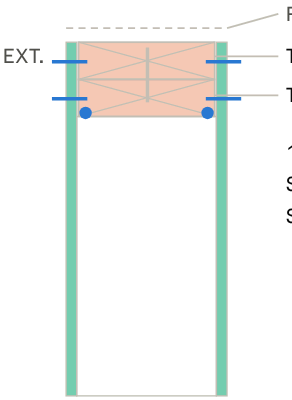


Plate set 7/16″ in from the deck edge so both skins bear

Details 5-6 · bottom plate on concrete and on a wood floor

Two recessed top plates tie the wall; headers bear on trimmers

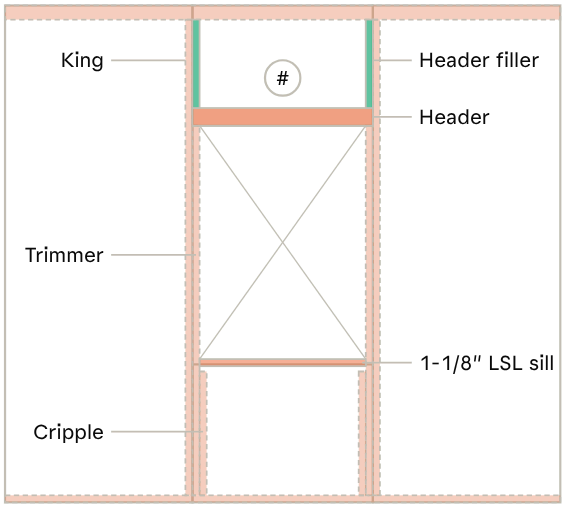
Detail 7 · Double top plate (section)



16d plate to plate, 12″ o.c.
Staples 3″ o.c., each plate, both faces
Sealant at both skin edges

Break plate joints 2′ from panel joints and 24″ min. between the two plates′ joints

Detail 8 · Opening, inside elevation

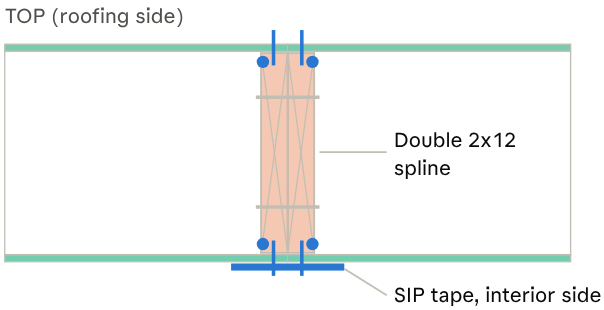


King full height; trimmer stops at the header
Header bears 1-1/2″ on each trimmer
Header filler fills the recess above each header end
Header type = the circled number on the elevation
Pack sizes per Section 6; staples 3″ o.c. to all lumber

Details 7-8 · double top plate and opening framing

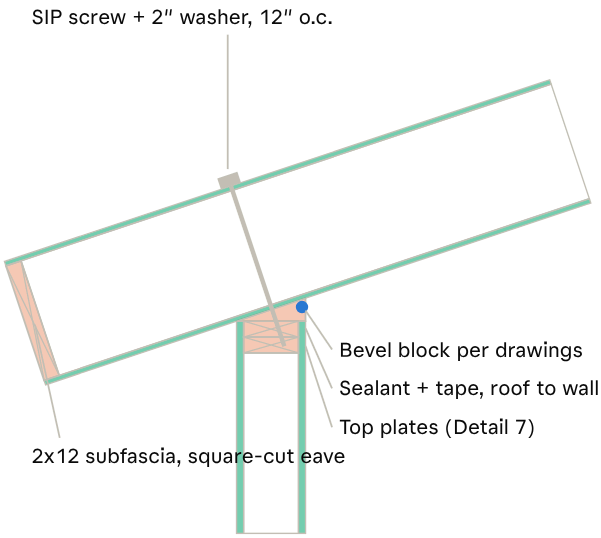
Roof joints take a field-set double 2x12; screw down at 12″ o.c.

Detail 9 · Roof panel joint (section)



Ships separate; set on site (2x10 in 10-1/4″ roof)
First 2x12 in the leading panel, second nailed to it
2x to 2x: 16d common, 12″ o.c., 2 rows staggered
Staples 3″ o.c., both skins, crown about 45°
Sealant at all four recess edges
Butt joints, where used, alternate row to row

Detail 10 · Eave at bearing wall (section)

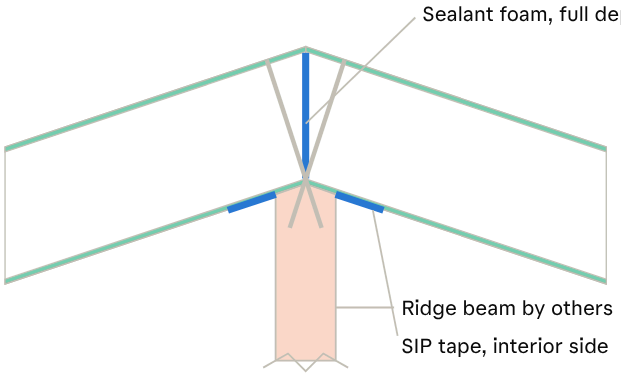


Wall stops at the bottom of the roof panel
Screw length = panel + 1-1/2″ to 2″ (14″ in 12-1/4″)
1″ minimum bearing (ESR-2182)
Overhang per drawings; over 24″ needs engineering

Details 9-10 · roof panel joint and eave at bearing wall

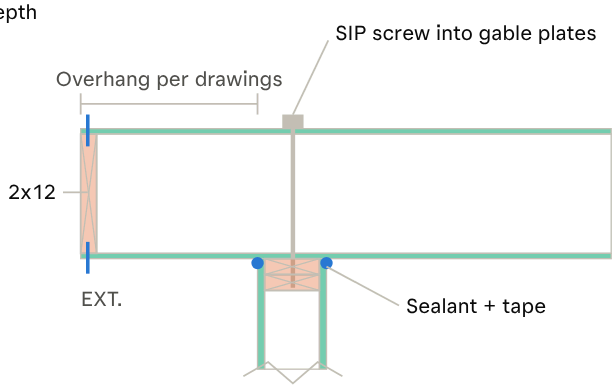
Seal the ridge full depth; rakes take a 2x12 in the perimeter recess

Detail 11 · Ridge at ridge beam (section)



Plumb cuts meet over the beam; bevel or shim its top
SIP screws each side into the beam, 12″ o.c., 2″ washers
Fill the joint full depth; tape panel to beam inside
The ridge is the most important air-seal joint on the roof

Detail 12 · Gable rake (section)

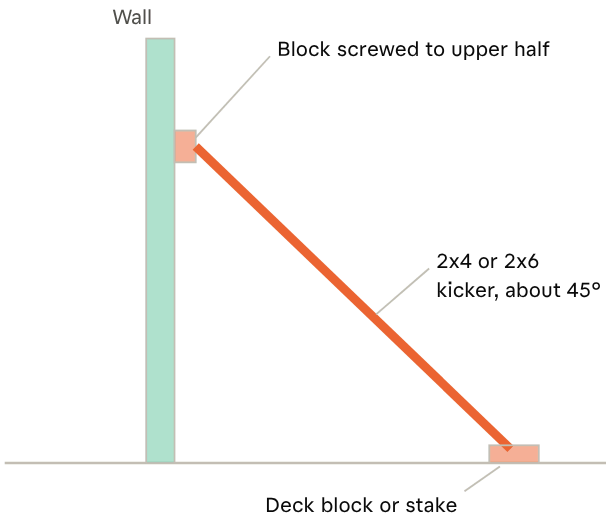


2x12 rake set in the 1-1/2″ perimeter recess
Staples 3″ o.c., both skins, into the rake board
SIP screws into the gable top plates, 12″ o.c.
Gable plates 3″ measured square to the slope
Rake overhang over 24″ needs engineering

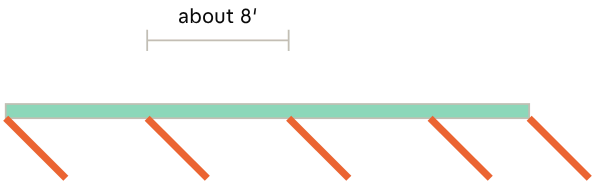
Details 11-12 · ridge at ridge beam and gable rake

Brace each wall at its ends and about every 8′ until it is tied in

Detail 13a · Kicker brace (section)



Detail 13b · Brace layout (plan)



Plumb the wall, then fasten the brace
Leave braces until top plates and the floor or roof are fastened
Add braces before wind; a freestanding SIP wall catches wind like a sail
Brace at both sides of tall gable walls

Detail 13 · temporary wall bracing

Appendix A. Open item

One item remains open; it is for S-Panels and the job engineer, not the installer.

- [ ] **ESR-2182 scope.** The report covers 6-1/2″ walls and 12-3/4″ roof and floor panels, with splines attached in the factory. Current practice ships wall and roof splines separately and uses 10-1/4″ and 12-1/4″ roof panels with double 2x12 splines. Appendix B gives interpolated loads for these panels; each job's engineer must confirm them until the report is updated at a renewal.

Appendix B. Roof panel allowable loads, 10-1/4" and 12-1/4" (interpolated)

These values are scaled from the 12-3/4″ roof panel loads in ESR-2182 Table 1. They are not part of the ICC-ES report, so the job's engineer must review them before relying on them.

How they were derived: a SIP roof panel's stiffness and strength come from the distance between its two OSB skins. Each ESR value was multiplied by $(d / d_0)^2$, where d is the panel thickness minus 7/16″ (11.8125″ for 12-1/4″, 9.8125″ for 10-1/4″) and d_0 = 12.3125″ for the 12-3/4″ panel. The square is the conservative choice: it matches how deflection scales, and strength drops less than that. Factors: 0.920 for 12-1/4″ panels and 0.635 for 10-1/4″ panels. Values are rounded down.

12-1/4″ roof panel, allowable load (psf), each cell L/180 / L/240 / L/360

Span (ft)	Live load	Snow load	Wind uplift
8	145 / 145 / 100	126 / 94 / 63	65
10	115 / 115 / 76	99 / 74 / 49	53
12	93 / 93 / 59	80 / 60 / 40	46
14	79 / 76 / 47	68 / 50 / 34	39
16	68 / 62 / 38	57 / 43 / 29	35
18	59 / 51 / 31	50 / 37 / 24	32
20	52 / 43 / 25	44 / 33 / 22	29
22	46 / 35 / 21	38 / 28 / 19	27
23	45 / 33 / 19	36 / 27 / 18	26

10-1/4″ roof panel, allowable load (psf), each cell L/180 / L/240 / L/360

Span (ft)	Live load	Snow load	Wind uplift
8	100 / 100 / 69	87 / 65 / 43	45
10	79 / 79 / 52	68 / 51 / 34	36
12	64 / 64 / 41	55 / 41 / 27	31
14	54 / 52 / 33	47 / 34 / 23	27
16	47 / 43 / 26	40 / 29 / 20	24
18	41 / 35 / 21	34 / 26 / 17	22
20	36 / 29 / 17	30 / 22 / 15	20
22	32 / 24 / 14	26 / 19 / 13	19
23	31 / 22 / 13	25 / 19 / 12	18

The ESR-2182 notes carry over: splines no more than 4′ apart; the load is the total applied load, not counting panel self-weight; at least 1″ of bearing at every support; and for wind uplift, fasteners with a 2″ washer at 12″ o.c. maximum. The 10-1/4″ panel takes 2x10 splines

instead of 2x12, which the engineer should also confirm. Source: ESR-2182 Table 1 (reissued June 2026).