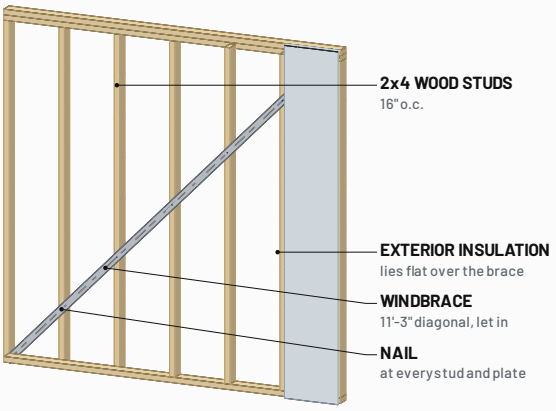
PRODUCT DATA SHEET · DS-13

WINDBRACE (WIND BRACE)

Let-in steel bracing for wood-framed walls



On site: windbrace let into a wood stud wall



PRODUCT 13 · STEEL FRAMING ACCESSORIES

Windbrace is a light galvanized steel brace with a T-shaped section. It runs diagonally across a wood-framed wall, its web set into a single saw kerf and its flat face nailed to every stud and plate. It keeps the frame square and resists racking while the walls are stood, plumbed and sheathed, and because it sits within the stud face, sheathing, exterior insulation or drywall go straight over it.

- 2" face, 1/2" folded web, 11'-3" long
- 33 mil (20 ga), 33 ksi steel
- G40 minimum coating; G60 on request
- One kerf, no notching; inside or outside face

FACE	WEB	THICKNESS	LENGTH	YIELD	COATING
2"	1/2", double	33 mil · 20 ga	11'-3"	33 ksi	G40 · G60 opt.

1 FOUR NAMES, ONE BRACE

Windbrace
The trade name: a steel brace that keeps a framed wall square against wind and the pushes of construction.

Wind brace
The same product written as two words, as on many drawings and order sheets.

Let-in steel brace
What it does: it is let into the studs, so it sits within the wall face instead of on top of it.

T-brace
Its shape: a flat face with a single web down the middle, like a letter T.

2 THE PARTS

1. **Face.** A flat 2" strip that lies on the studs and plates and takes the nails.
2. **Web.** A 1/2" deep web on the centreline, folded double: two leaves of steel with a hairline gap, about 0.08" thick in all.
3. **Fold.** The rounded edge of the web leads it into the saw kerf and leaves no raw edge.
4. **Length.** 11'-3": enough to run corner to corner across an 8' wall at about 46°.

BRACES THE FRAME
Resists racking while the wall goes up and is plumbed

ONE SAW CUT
Web in a single kerf; face nailed flat

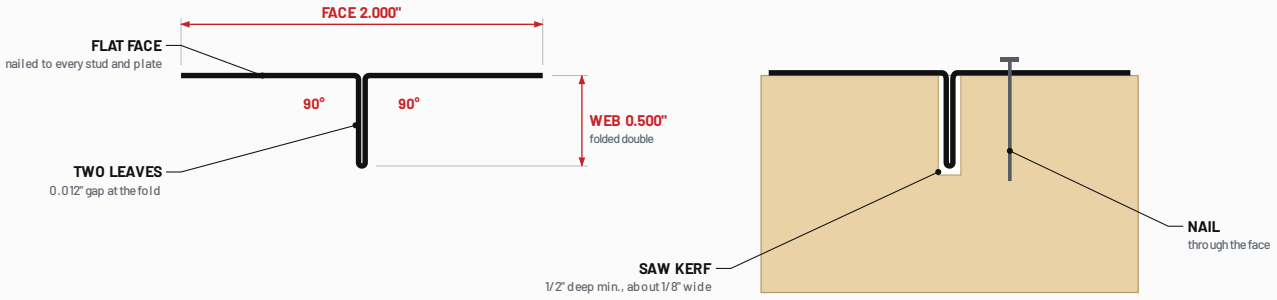
FLAT FACE
Sheathing, exterior insulation or board go straight over

GALVANIZED
Holds up while the frame is open to weather

PROFILE & ITEM

The T section, how it sits in the kerf, and the item

3 PROFILE



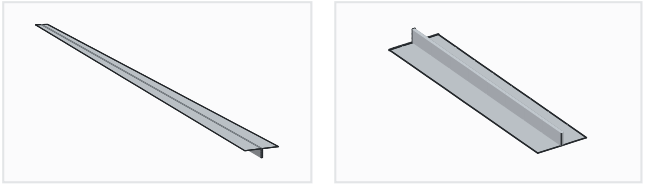
THE PROFILE — IN A STUD, CUT ACROSS THE BRACE

TO SCALE, THICKNESS ENLARGED · THE WEB FILLS A SINGLE SAW KERF, THE FACE LIES ON THE FRAMING

4 AT A GLANCE

PROFILE	T section: flat face, centre web folded double
FACE	2.000"
WEB	0.500" deep, two leaves, 0.012" gap
BENDS	90° face to web
THICKNESS	33 mil (0.033" min., 0.0346" design) · 20 ga
STEEL	Grade 33, 33 ksi (230 MPa) minimum yield
COATING	G40 minimum; G60 minimum on request
LENGTH	11'-3" (135")

5 THE BRACE



Why 11'-3"?

An 8' wall with 92-5/8" studs, one bottom plate and a double top plate stands 97.125" (97-1/8"). A 135" brace corner to corner on it rises at about 46° and covers about 94" of wall, six stud spaces at 16" o.c.: a good angle for a diagonal brace.

6 ITEM

ITEM	FACE × WEB	THICKNESS	GAUGE	DESIGN T (IN)	COATING	LENGTH	LB/FT *	LB PER PIECE *
Windbrace	2" × 1/2"	○ **33**	20	0.0346	G40 · G60 on request	11'-3"	0.35	4.0

* Approximate weight from the developed width (2" face + two 1/2" web leaves = 3") × design thickness, steel at 490 lb/ft^3; for estimating and handling only. The folded web is about 0.081" thick, so it fits a standard saw kerf of about 1/8" with room to spare.

7 AT THE PLATES



AT THE BOTTOM PLATE
the brace starts on the plate and is nailed into it

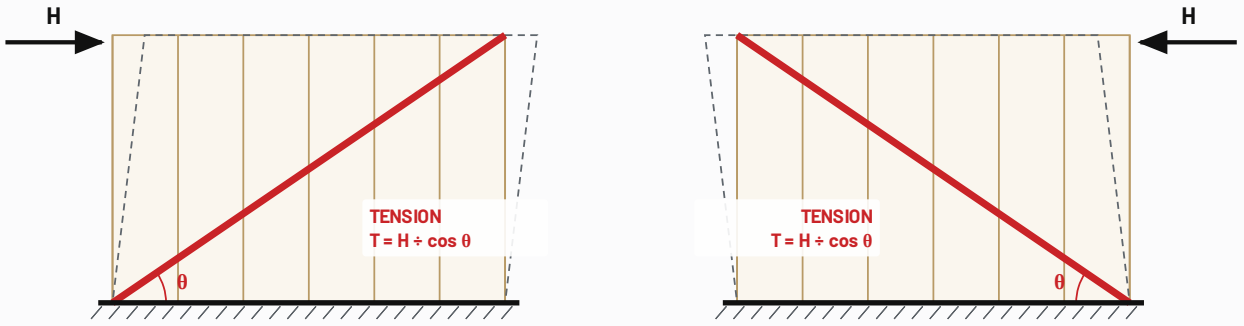
AT THE TOP PLATES
the brace runs onto both top plates and is nailed into each

ELEVATION · NAIL AT EVERY CROSSING · THE FORCE LEAVES THE BRACE THROUGH THE PLATES

HOW BRACING WORKS

Racking, triangles, tension and the brace angle

9 HOW A DIAGONAL BRACE STOPS RACKING



PUSHED TO THE RIGHT
the brace rising to the right is stretched

PUSHED TO THE LEFT
the opposite brace takes it

ELEVATION · DASHED = RACKED SHAPE, EXAGGERATED · A THIN BRACE WORKS IN TENSION, SO BRACES GO IN PAIRS

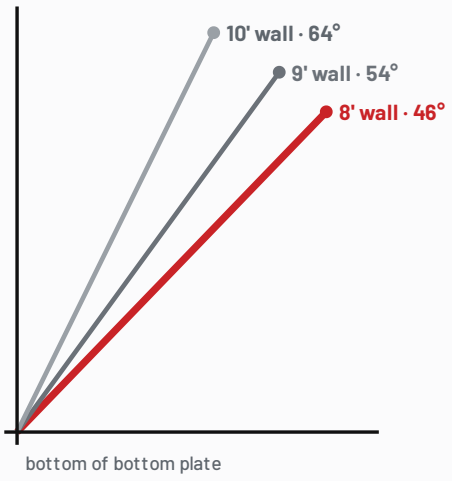
1 **Racking.** Wind, a push during erection or an out-of-plumb lift tries to turn the rectangle of a wall into a parallelogram. Studs pinned to plates by end nails offer almost nothing against it.

2 **A diagonal makes triangles.** A brace from a bottom corner to the top plate turns the frame into triangles, and a triangle does not change shape unless a side changes length. The brace resists that change in length.

3 **Tension, so in pairs.** A thin steel brace is strong pulled and weak pushed: it buckles in compression. It works when the wall is pushed toward its high end. So braces go in pairs, one rising each way, in the same wall line.

4 **The force in the brace.** For a racking force H at the top, the brace carries T = H ÷ cos θ, where θ is its angle from the horizontal. The flatter the brace, the smaller the force: about 1.4 H at 45°, 2 H at 60°.

8 ONE 11'-3" BRACE ON THREE WALL HEIGHTS



ONE 11'-3" LENGTH, CORNER TO CORNER

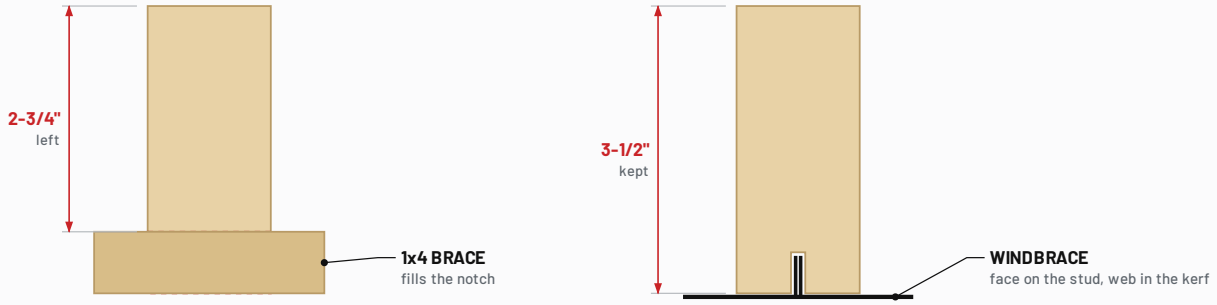
WALL	HEIGHT, PLATES INCL.	BRACE ANGLE Θ	HORIZONTAL RUN	BRACE FORCE T
8' wall	97.1"	46°	94"	1.44 × H
9' wall	109.1"	54°	79"	1.70 × H
10' wall	121.1"	64°	60"	2.26 × H

Geometry calculated for an 11'-3" (135") brace corner to corner, studs 92-5/8", 104-5/8" and 116-5/8" plus three 1-1/2" plates. On taller walls the brace gets steeper and its force grows; the design may call for a different layout there. For understanding the mechanics only, not design values.

LET IN, NOT NOTCHED

Why a single kerf is kinder to the studs, and where the strength comes from

10 A KERF, NOT A NOTCH



1x4 LET-IN NOTCH
3/4" deep across the stud
keeps about 79% of the area · 62% of the section modulus

WINDBRACE KERF
1/2" deep, about 1/8" wide
keeps about 98% of the area · 95% of the section modulus

PLAN CUT THROUGH ONE 2x4 STUD AT THE BRACE · TO SCALE · THE FACE SIDE IS AT THE BOTTOM

Our own calculation for a 2x4 (1-1/2" × 3-1/2"): a 3/4" notch across the stud face against a 1/2" deep kerf about 0.17" wide in a level cut at 46°. Geometric comparison only.

Less wood removed
A 1x4 let-in brace needs a notch 3/4" deep across every stud: about 21% of the stud's section gone at that point. The windbrace kerf removes about 2%.

Faster
One saw pass along a line, no second cut, no chisel. The brace is its own straightedge for the run line.

Flush face
The face sits on the framing, its thickness about 1/32". Sheathing, exterior insulation or drywall lie flat over it.

Inside or outside
The flat face lets it go on the interior or the exterior face of the wall, wherever the layout and the finishes suit.

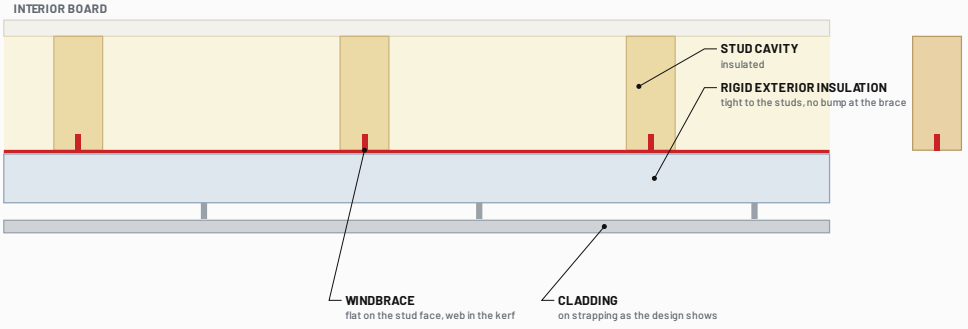
11 WHERE THE STRENGTH IS

The steel itself is rarely the weak link. The brace has a gross area of about 0.104 in² (3" × 0.0346"), which at 33 ksi is about 3.4 kips at yield in tension. What limits a let-in brace in practice is how it is held: the nails at each stud and at the plates, the wood around them, and the plate-to-floor connection that takes the force out of the wall.

So the brace is only as good as its nailing and its ends. Run it plate to plate, in one piece, and nail every crossing.

Gross yield of the steel, for understanding only. It is not a capacity of the braced wall; that comes from the design, the code and the connections.

12 UNDER EXTERIOR INSULATION

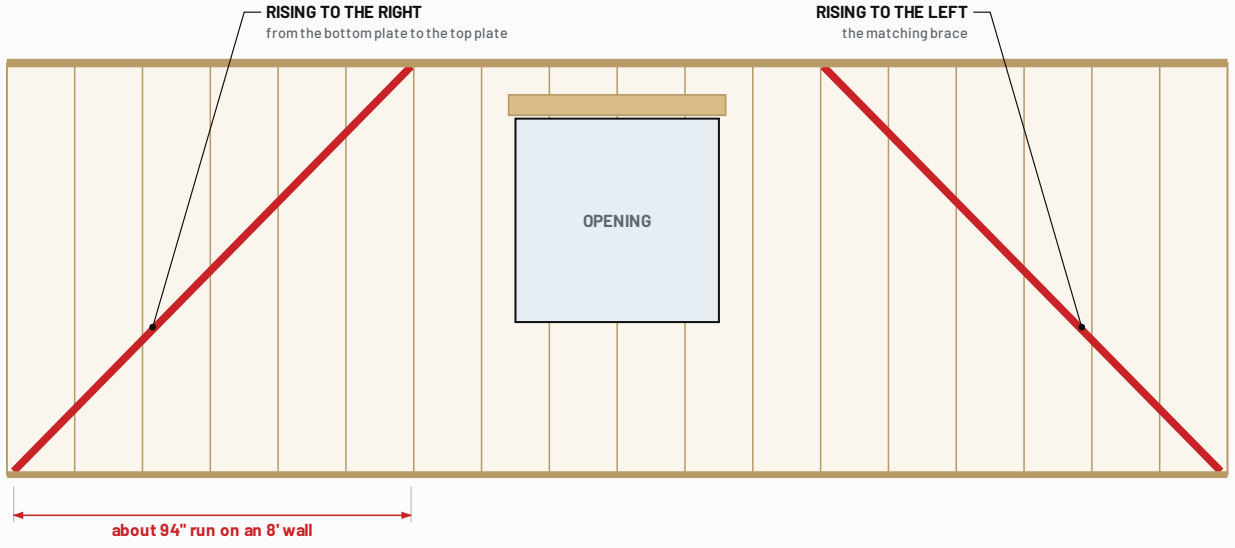


PLAN · A LET-IN BRACE KEEPS THE OUTSIDE FACE FLAT FOR CONTINUOUS EXTERIOR INSULATION · SCHEMATIC

LAYOUT

Where the braces go in a wall

13 LAYOUT ON A WALL

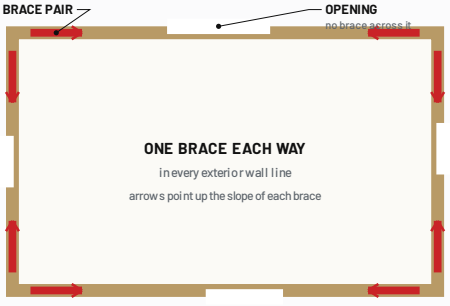


ELEVATION · 24' WALL, 2x4 AT 16" O.C. · ONE CONTINUOUS BRACE EACH WAY, CLEAR OF OPENINGS · LAYOUT BY THE DESIGN

14 LAYOUT RULES OF THUMB

1. **Plate to plate.** Each brace runs in one piece from the bottom plate to the top plate, crossing every stud on the way. No splices.
2. **Near 45°.** Between about 45° and 60° from the horizontal. Flatter is stronger; on an 8' wall one length lands at about 46°.
3. **In pairs.** One brace rising to the right and one rising to the left in each wall line, so the wall is held whichever way it is pushed.
4. **Clear of openings.** Keep the brace out of window and door openings and their headers. Put it in a solid run of studs, commonly near the ends of the wall.
5. **By the design.** How many braces, where, and whether they count toward the wall bracing the code requires is set by the designer and the authority having jurisdiction.

15 BRACED WALL LINES



PLAN · BRACED WALL LINES · LAYOUT BY THE DESIGN

16 WHERE IT IS USED

Exterior walls
Wood-framed houses and low-rise buildings, before and under the sheathing or exterior insulation.

Interior walls
Long partitions, garage and basement walls that need to be kept square while framing.

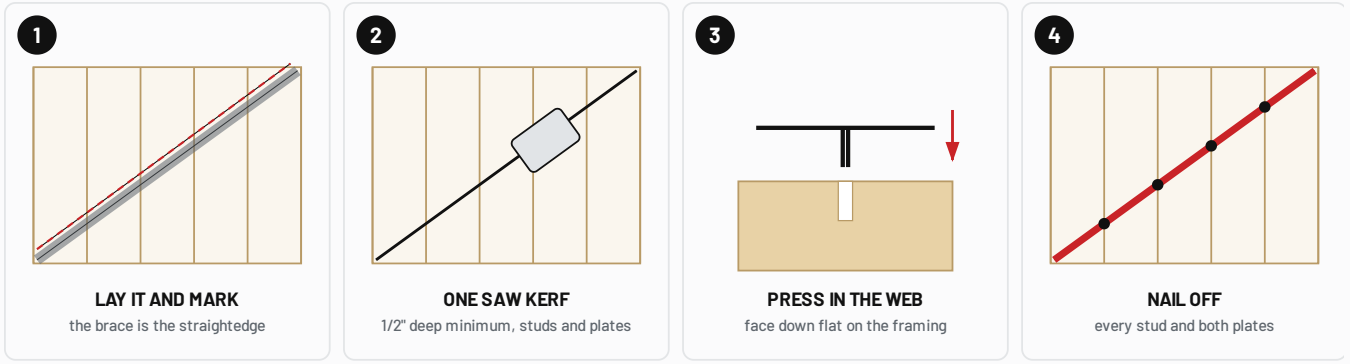
Walls with exterior insulation
Where rigid insulation goes on the studs instead of structural sheathing, the frame still needs bracing; a let-in brace stays inside the face.

Wall panels
Walls framed flat on the deck or in a shop, braced before they are stood up.

INSTALLATION

On the deck or on a standing wall

17 STEP BY STEP



FRAMED ON THE DECK: SET THE WEB, ONE NAIL AT THE TOP PLATE, STAND AND PLUMB THE WALL, THEN NAIL OFF

18 TYPICAL INSTALLATION

1. Frame the wall and check it square: the two diagonals measure the same.
2. Lay the brace across the studs from the bottom plate at one end to the top plate, at about 45°. Use it as a straightedge and mark the run line along its edge on every stud and both plates.
3. Set the saw to cut at least 1/2" deep and make one kerf along the line through each stud and plate. Keep to the line so the face sits flat.
4. Press the web into the kerf until the face lies flat on the framing along its whole length.
5. Wall framed on the deck: drive one nail at the top plate only. Stand the wall, plumb it, then nail off.
6. Nail through the face into every stud and into the bottom and top plates, as the nailing schedule requires. Add the matching brace rising the other way.

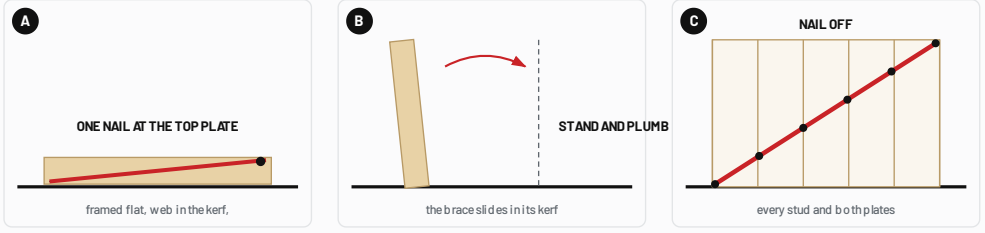
19 CHECK BEFORE SHEATHING

- Wall square before the kerf is cut; plumb before nail-off
- Kerf 1/2" deep or more, on the line, through every member crossed
- Face flat and tight on every stud and plate
- Nail at every crossing and at both plates
- A brace rising each way in each wall line
- No brace through an opening or a header

20 DO & DON'T

DO	use the brace as the straightedge for the run line
DO	nail every crossing, plates included
DO	pair the braces, one each way
DON'T	cut the kerf so deep that it weakens the plates; 1/2" to about 5/8" is enough
DON'T	splice, bend round corners or stop a brace short of a plate
DON'T	treat windbrace as a substitute for structural sheathing or a shear wall the design calls for

21 FRAMED ON THE DECK



WALLS FRAMED ON THE DECK

MATERIAL, TAKEOFF & QUESTIONS

Steel and coating, a worked takeoff, standards and common questions

22 MATERIAL

STEEL	Sheet steel, Grade 33: 33 ksi (230 MPa) minimum yield, to ASTM A653
COATING	Hot-dip galvanized, G40 minimum; G60 minimum on request
THICKNESS	33 mil: 0.033" minimum, 0.0346" design (20 ga)
LENGTH	11'-3" (135")
MATERIAL CERTIFICATES	On request, with the order

23 STORAGE

Store bundles flat, dry and off the ground; the long, thin brace kinks if lifted by one end. Edges are sharp: use gloves and appropriate PPE.

24 TAKEOFF EXAMPLE

EXAMPLE · A 24' × 36' HOUSE, FOUR EXTERIOR WALLS, 8' HIGH	QTY	HOW
Braces, one each way in each wall line	8 pcs	4 walls × 2
Studs crossed by one brace on an 8' wall	6	about 94" run ÷ 16" o.c.
Nailed crossings per brace, plates included	9	6 studs + bottom plate + 2 top plates
Weight to handle	32 lb	8 × 4.0 lb

25 STANDARDS AND CODES

- ASTM A653 · steel and coating
- National Building Code of Canada, Part 9 · wood-frame bracing
- Provincial building codes
- National Energy Code for Buildings · envelope (exterior insulation)
- CSA O86 · engineered wood design

26 COMMON QUESTIONS

Is windbrace structural?
It resists racking during construction. Whether it counts toward the wall bracing the code requires depends on the design and the authority having jurisdiction; it is not a substitute for sheathing or shear walls the design calls for.

Why not just use a 1x4?
A 1x4 let-in brace needs a 3/4" notch across every stud. Windbrace needs one saw kerf, removes far less wood and is quicker.

Can it go under exterior insulation?
Yes. The face lies flat within the stud face, so rigid insulation or sheathing goes straight over it.

What angle?
About 45° to 60° from the horizontal; flatter is better. One 11'-3" length gives about 46° on an 8' wall.

Can it be used on steel studs?
It is designed to be let into wood. Steel stud walls use flat strap bracing or sheathing as the design shows.

G40 or G60?
G40 is standard and suits walls that are closed in. G60 is offered on request for longer exposure or damper conditions.

SPECIFYING & NOTICE

Checklist, submittals, specification guide and certification

27 BEFORE YOU ORDER: CHECKLIST

- Number of braces: one each way in each wall line, or as the design shows
- Coating: G40 standard, or G60 on request
- Nails as the nailing schedule requires
- Wall heights: one 11'-3" length suits 8' walls corner to corner; check taller walls
- Material certificates, if the specification asks for them

28 TYPICAL SUBMITTALS

- Product data for the windbrace
- Framing plans showing brace locations and directions
- Nailing schedule
- Material test reports, when requested

29 SPECIFICATION GUIDE

Section 06 10 00, Rough Carpentry (wood framing). Let-in steel wall brace (windbrace), T section with a 2" flat face and a 1/2" folded web, 33 mil (20 ga), Grade 33 steel, hot-dip galvanized G40 minimum (G60 where shown) to ASTM A653, 11'-3" lengths; Saturn Metal DS-13. Install diagonally at about 45° from the bottom plate to the top plate, one brace rising each way in each wall line or as shown, web in a single saw kerf at least 1/2" deep, face nailed to every stud and both plates per the nailing schedule. Bracing does not replace structural sheathing or shear walls shown on the drawings.

Certification: our cold-formed framing members are product certified by CISC to CSSBI 61:24. Certification covers only the members named in our current Product Scope Listing; confirm the status of a specific member with us before relying on it.
Related: Angle/L-Track DS-14 · flat stock DS-24 · Z-bar DS-25 · custom bent profiles DS-30 · clips & connectors DS-21.
Technical questions and quotes: +1 (416) 746-8000 · Sales@SaturnMetal.ca · www.SaturnMetal.ca

30 IN ONE MINUTE

What	Why	How	Watch
A galvanized T-section steel brace, 2" × 1/2", 11'-3" long.	Keeps wood-framed walls square against racking while they go up.	One saw kerf, web in, face nailed to every stud and plate.	In pairs, plate to plate, clear of openings; layout by the design.

IMPORTANT NOTICE

This data sheet gives general product information only. It is not engineering, design or installation advice. A qualified design professional must review every application, and the building code and project documents always govern. Windbrace is a framing aid for bracing walls during construction; it does not replace structural sheathing, braced wall panels or shear walls required by the design, and this sheet gives no capacities for braced walls. Calculated angles, forces, section comparisons and the gross steel yield are for understanding the mechanics only and are not design values. Drawings are schematic and not to scale unless noted; dimensions are nominal and subject to standard tolerances. Standards are referenced by name for identification; always use the edition required by the governing code. Saturn Metal may change products and information without notice; confirm current data before ordering or specifying. Warranties and remedies, if any, are only those in Saturn Metal's written terms of sale. Names of standards bodies and certification programs belong to their owners. Saturn Metal is a manufacturer and/or supplier of metal products; this data sheet does not mean that the product shown is manufactured by Saturn Metal. © Saturn Metal