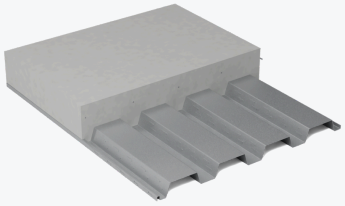
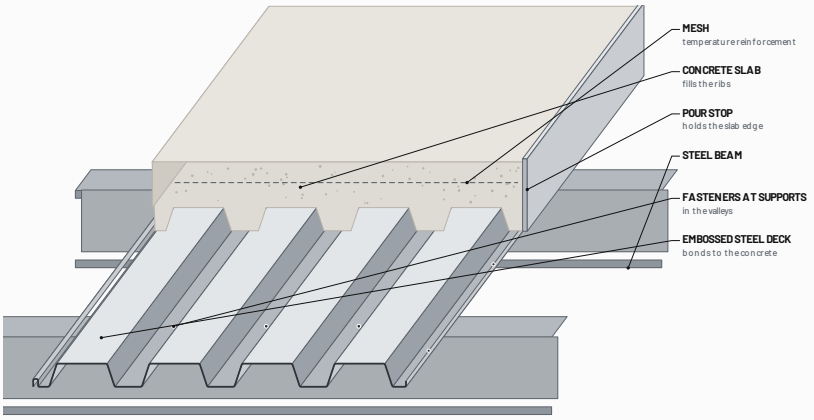
COMPOSITE FLOOR DECK

Embossed galvanneal steel deck for composite concrete slabs · 1-1/2" and 3" profiles



COMPOSITE FLOOR DECK
C15 · 1-1/2" × 6" with a 4-1/2" slab shown



PRODUCT 28 · STEEL ROOF DECK & FLOOR DECK

Saturn Metal composite floor deck is a **galvanneal steel deck with embossed webs**. During the pour it is the **form**: it carries the wet concrete and the crew with little or no shoring. Once the concrete cures, the embossments lock the slab to the steel and the deck becomes the **bottom reinforcement** of a composite slab. Fastened and lapped, it also ties the floor into one **diaphragm**. Four profiles, 1-1/2" and 3" deep, laid **normal or inverted**.

- Form during the pour, reinforcement after it
- 1-1/2" and 3" depths for slabs of 4" to 7"
- Galvanneal for paint and spray fireproofing; G90 on request
- Listed in fire-rated floor designs for the deck product

DEPTHS	COVER	SLABS	GAUGES	FINISH	LAID
1-1/2" · 3"	24" · 32" · 36"	4" to 7" overall	22 · 20 · 18 · 16	Galvanneal · G90	Normal or inverted

1 FOUR NAMES, ONE PRODUCT

Composite floor deck
Our product name: steel deck that works together with the concrete slab.

Composite deck · floor deck
The names on drawings and specifications.

Embossed deck
Names the feature: the embossments in the webs that lock the concrete to the steel.

Inverted deck
The same sheet laid wide flats down, for a heavier, stiffer slab.

2 THE PARTS OF THE DECK

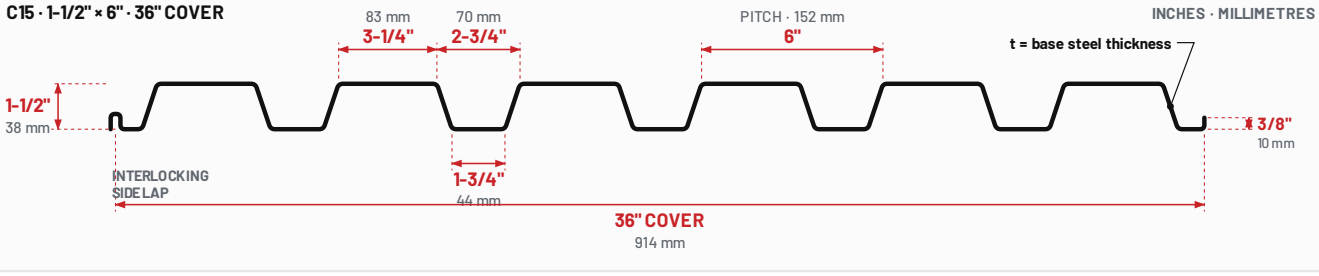
1. **Embossed webs.** raised indentations in every web grip the concrete
2. **Ribs.** fill with concrete and become the bottom of the slab
3. **Top flats and bottom flats.** carry the pour; the bottom flats bear on the beams
4. **Galvanneal finish.** a matte zinc-iron coating that takes paint and fireproofing

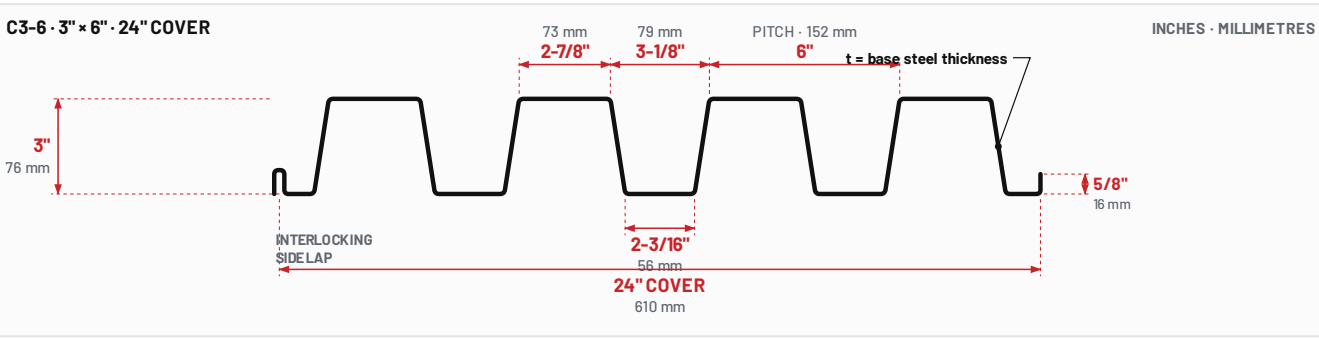
FORM	REINFORCEMENT	DIAPHRAGM	FOUR PROFILES
Carries the pour	Bonds to the slab	One stiff plate	Normal or inverted

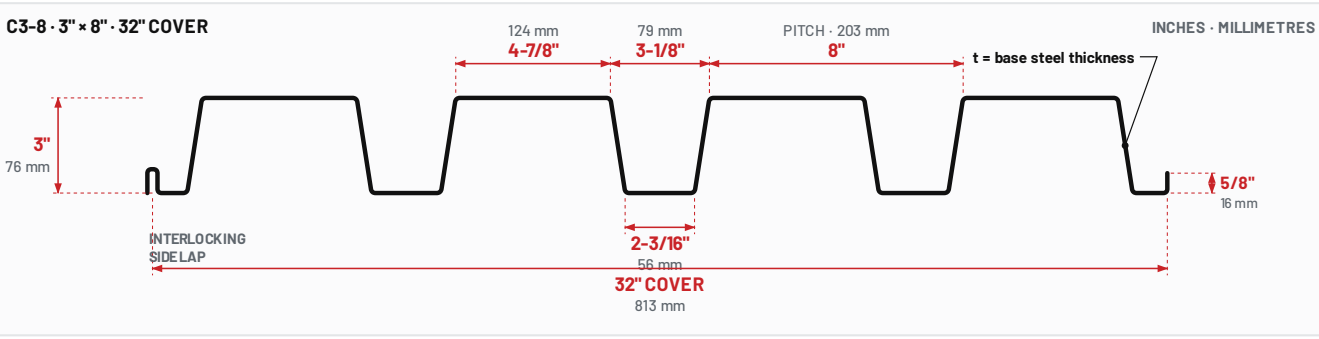
PROFILES

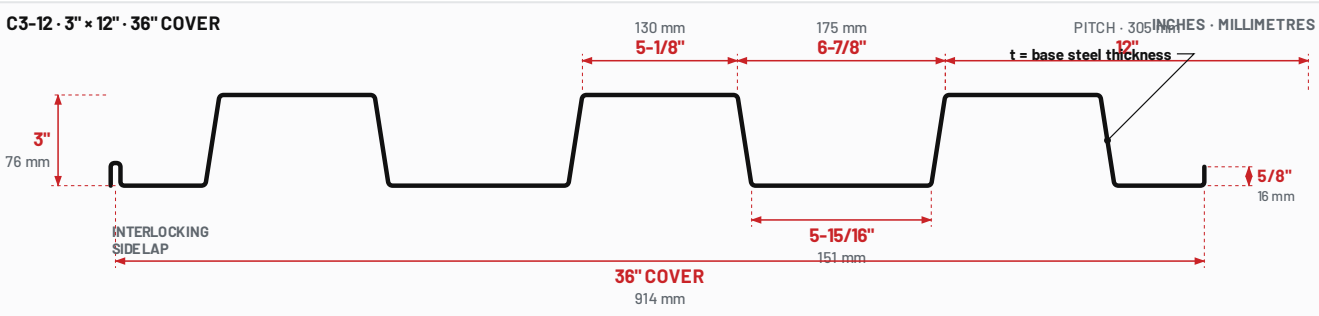
Dimensioned sections of the four composite floor deck profiles, inches and millimetres

3 THE FOUR PROFILES









PROFILE	DEPTH	RIB PITCH	COVER	TOP FLAT	RIB OPENING	BOTTOM FLAT	RIBS / SHEET	EDGE LIP
C15	1-1/2" · 38 mm	6" · 152	36" · 914	3-1/4" · 83	2-3/4" · 70	1-3/4" · 44	6	3/8" · 10
C3-6	3" · 76 mm	6" · 152	24" · 610	2-7/8" · 73	3-1/8" · 79	2-3/16" · 56	4	5/8" · 16
C3-8	3" · 76 mm	8" · 203	32" · 813	4-7/8" · 124	3-1/8" · 79	2-3/16" · 56	4	5/8" · 16
C3-12	3" · 76 mm	12" · 305	36" · 914	5-1/8" · 130	6-7/8" · 175	5-15/16" · 151	3	5/8" · 16

Nominal dimensions, normal orientation (narrow flats down); every profile can also be laid inverted. Embossed webs; interlocking side lap.

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SPECIFICATIONS, PROPERTIES & SLABS

Steel, gauges, finishes, weights, gross section properties and slab weights

4 SPECIFICATIONS

STEEL	Structural quality steel sheet, ASTM A653 / A653M, 33 ksi (230 MPa) minimum yield
GAUGES	22, 20, 18, 16 (0.030", 0.036", 0.048", 0.060" base steel)
EMBOSSMENTS	On both webs of every rib
FINISHES	A25 (ZF75) galvanneal, standard · G90 (Z275) galvanized on request
ORIENTATION	Normal (narrow flats down) or inverted (wide flats down)
LENGTHS	Cut to the length ordered
DESIGN	CSA S136 · CSSBI 12M (composite deck) · load tables as published for the deck product

5 WEIGHT PER SQUARE FOOT, STEEL DECK

GAUGE	BASE STEEL	C15	C3-6	C3-8	C3-12
22	0.030" · 0.76 mm	1.73 psf · 8.4 kg/m²	2.41 psf · 11.8 kg/m²	2.12 psf · 10.3 kg/m²	1.84 psf · 9.0 kg/m²
20	0.036" · 0.91 mm	2.07 psf · 10.1 kg/m²	2.88 psf · 14.1 kg/m²	2.53 psf · 12.4 kg/m²	2.21 psf · 10.8 kg/m²
18	0.048" · 1.21 mm	2.74 psf · 13.4 kg/m²	3.82 psf · 18.7 kg/m²	3.36 psf · 16.4 kg/m²	2.93 psf · 14.3 kg/m²
16	0.060" · 1.52 mm	3.41 psf · 16.6 kg/m²	4.76 psf · 23.2 kg/m²	4.18 psf · 20.4 kg/m²	3.65 psf · 17.8 kg/m²

Calculated from the nominal profile with galvanneal coating.

6 NOMINAL GROSS SECTION PROPERTIES, PER FOOT OF WIDTH

GAUGE	C15 A in²/ft	C15 I in⁴/ft	C15 S in³/ft	C3-6 A in²/ft	C3-6 I in⁴/ft	C3-6 S in³/ft	C3-8 A in²/ft	C3-8 I in⁴/ft	C3-8 S in³/ft	C3-12 A in²/ft	C3-12 I in⁴/ft	C3-12 S in³/ft
22 · 0.030"	0.501	0.192	0.220	0.699	0.973	0.633	0.614	0.891	0.510	0.535	0.884	0.548
20 · 0.036"	0.601	0.228	0.262	0.837	1.162	0.757	0.736	1.064	0.609	0.641	1.056	0.655
18 · 0.048"	0.799	0.298	0.344	1.114	1.535	0.999	0.979	1.406	0.804	0.854	1.396	0.866
16 · 0.060"	0.995	0.366	0.422	1.389	1.901	1.237	1.222	1.741	0.996	1.066	1.729	1.073

Gross properties of the steel deck alone (A, I and the smaller S), calculated from the nominal profile and base steel thickness; metric: A × 2117 = mm²/m · I × 1366 = ×10³ mm⁴/m · S × 53.8 = ×10³ mm³/m. **Design properties, construction-stage spans and composite load tables for the deck product on your order come with the quotation** and govern.

7 SLAB WEIGHT AND CONCRETE, NORMAL-WEIGHT CONCRETE

C15 · NORMAL

SLAB	PSF	KPA	YD³/100 FT²	M³/10 M²
4"	40	1.93	0.95	0.78
4-1/2"	47	2.23	1.10	0.90
5"	53	2.53	1.25	1.03
5-1/2"	59	2.83	1.41	1.16
6"	65	3.13	1.56	1.29

C15 · INVERTED

SLAB	PSF	KPA	YD³/100 FT²	M³/10 M²
4"	45	2.16	1.06	0.87
4-1/2"	51	2.46	1.22	1.00
5"	58	2.75	1.37	1.13
5-1/2"	64	3.05	1.52	1.25
6"	70	3.35	1.68	1.38

C3-6 · NORMAL

SLAB	PSF	KPA	YD³/100 FT²	M³/10 M²
5"	44	2.13	1.03	0.85
5-1/2"	51	2.43	1.18	0.97
6"	57	2.73	1.34	1.10
6-1/2"	63	3.03	1.49	1.23
7"	69	3.33	1.64	1.35

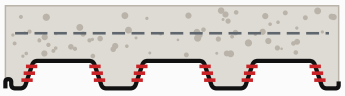
Overall slab depth from the bottom of the deck. Concrete at 150 pcf (2,400 kg/m³) plus the 20 gauge deck; lightweight concrete at about 115 pcf weighs roughly a quarter less. C3-8 and C3-12 are close to C3-6. Before waste; add for camber and deflection ponding.

HOW IT WORKS

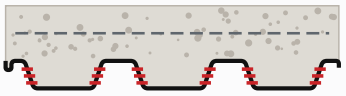
Normal and inverted, the slab in section, shoring and the design stages

8 NORMAL OR INVERTED

NORMAL · NARROW FLATS DOWN

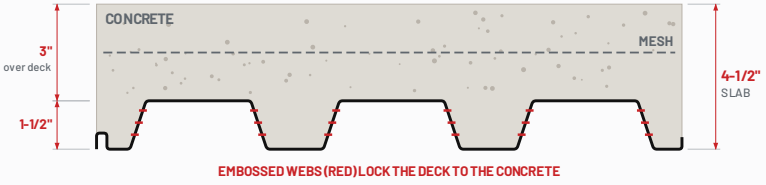


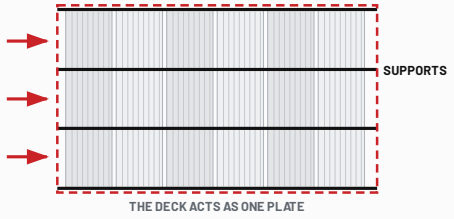
INVERTED · WIDE FLATS DOWN



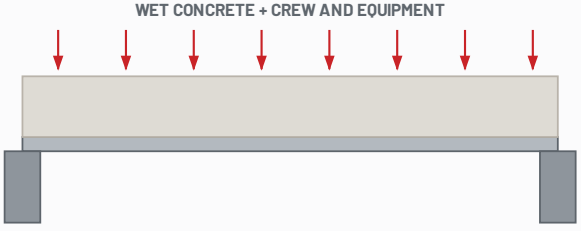
The same sheet is laid either way up. **Normal**, narrow flats down, gives the lightest slab. **Inverted**, wide flats down, puts more concrete in the ribs: a heavier, stiffer slab with more concrete over the beams, often chosen for longer spans or heavier floors. The structural drawings say which.

9 THE SLAB, IN SECTION



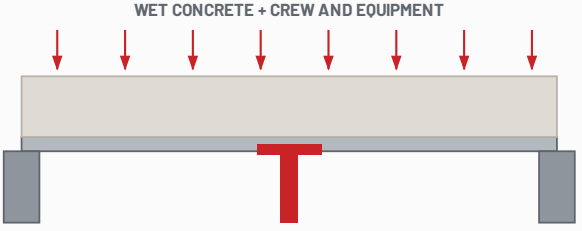


10 SHORING



UNSHORED

the deck alone carries the pour: span within the unshored limit



SHORED AT MIDSPAN

a temporary shore halves the span for the pour (shaded areas of the table)

11 DESIGN NOTES

Construction stage

The deck alone carries the wet concrete plus a construction load of about 20 psf (1 kPa). The unshored span depends on gauge and slab depth; beyond it, a shore at midspan carries the pour (the shaded part of the tables).

Composite stage

After curing, the embossments transfer shear between concrete and steel and the deck acts as the bottom reinforcement. Welded wire mesh or fibres control shrinkage and temperature cracking; bars over supports where the slab is continuous.

Fire resistance

Ratings come from ULC or UL floor-ceiling designs that list the deck product, slab depth and concrete type, with or without fireproofing or a ceiling. Tell us the rating required.

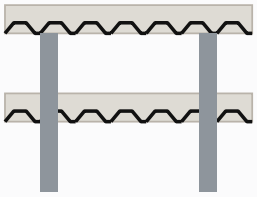
Bearing and web crippling

Tables assume a minimum bearing: about 1-1/2" at the ends and 4" at interior supports for 1-1/2" deck, 3" and 6" for 3" deck. Shorter bearing needs a web crippling check for the pour.

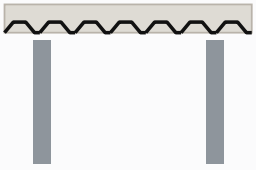
WHERE IT GOES & ON SITE

Floors on steel frames, mezzanines and roof slabs; delivery, placing, studs and the pour

12 WHERE IT GOES



OFFICE & RESIDENTIAL
floors on steel frames



MEZZANINES
in warehouses and plants



PARKING & RAMPS
with the right concrete and coating



ROOF SLABS
where a concrete roof is wanted

13 ON SITE

Delivery and storage

Bundles arrive banded by profile, gauge and length. Store off the ground, tilted to drain, under a ventilated cover. White storage stain on galvanneal is cosmetic.

Placing and fastening

Ribs across the beams, end laps on supports, bearing as the tables assume. Fasten to every support with arc spot welds, screws or pins, and fasten the side laps, in the pattern designed.

Shear studs

Where beams are designed composite, studs are welded through the deck to the beam flange at the spacing shown; the deck must sit tight on a clean, dry flange.

Before the pour

Fit pour stops at slab edges, closures at columns and open rib ends, and shores where the tables call for them. Check openings are framed and sleeves are in. Clean the deck.

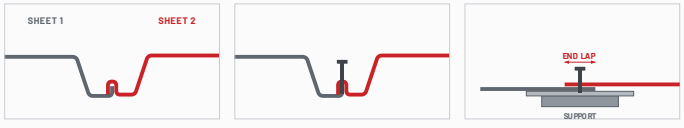
The pour

Place concrete evenly; do not heap it. Run pump hoses and buggies on runways over the deck. Screed to the slab depth shown; allow for deflection on long spans.

After the pour

Cure the slab as specified. Strip shores only when the concrete has the strength the design requires. Cut openings through the cured slab only where the design shows.

14 LAPS



INTERLOCKING SIDE LAP
the bead on one sheet hooks over the lip of the next

SIDE-LAP FASTENER
screw, button punch or weld, at the spacing designed

END LAP ON A SUPPORT
sheet ends overlap on the support, fastened through both

15 DO & DON'T

DO	Place the mesh at the height the design shows, on chairs.
DO	Keep the slab depth: ponding on a deflected deck adds weight the design did not count.
DON'T	Drop or heap concrete in one spot, or park a buggy between supports.
DON'T	Weld studs through a wet, painted or dirty deck.

ACCESSORIES, QUESTIONS & NOTICE

Pour stops, closures, cover plates, edge angles, ridge plates and sumps; common questions

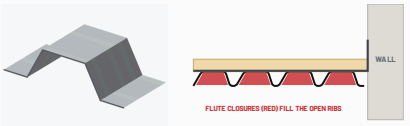
16 DECK ACCESSORIES

Galvanized accessories that close the deck for the pour, cut to length. Fasteners and sealants by the decking and concrete trades, as the design shows.



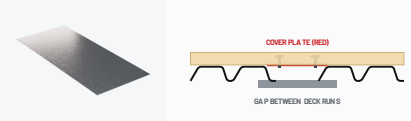
Pour stop

A galvanized angle, 20 to 12 gauge, fastened at the slab edge to hold the wet concrete; its vertical leg is the slab depth.



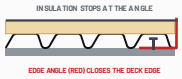
Flute closures

Metal or foam closures that fill the open ribs where the deck ends at a wall, parapet, curb or beam: they stop air, concrete, insulation and fire-stopping from passing through.



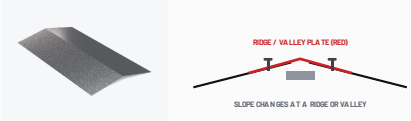
Cover plate

A flat galvanized strip that bridges the gap where deck runs meet, change direction or stop short at a beam.



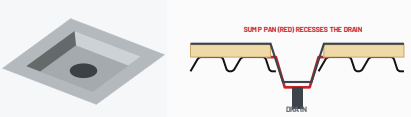
Edge angle

A galvanized angle along the deck edge that closes the ribs and gives the insulation or the slab edge a stop.



Ridge & valley plate

A bent galvanized plate that covers the gap where the deck changes slope at a ridge or a valley, so insulation and membrane stay supported.



Sump pan

A recessed galvanized pan set into the deck at a roof drain, so the membrane slopes into the drain.

17 COMMON QUESTIONS

Which slab depth?

The structural design sets it from span, load and fire rating: commonly 4" to 6" over 1-1/2" deck and 5" to 7" over 3" deck, overall.

Normal or inverted?

Normal is lighter; inverted puts more concrete in the ribs for a stiffer slab. The drawings say which; the load tables differ.

Do I need shoring?

Only where the construction-stage span exceeds what the deck carries alone: the shaded part of the load table. One shore at midspan is usual.

Galvanneal or galvanized?

Galvanneal is the standard: its matte surface takes spray fireproofing and paint. G90 galvanized where the design asks for it.

What about fire ratings?

Through ULC or UL floor-ceiling designs that list the deck product, slab and concrete. Ask us for the listings.

How do I estimate concrete?

From the slab table, plus waste and ponding on long spans.

Related: DS-02 load-bearing stud framing · DS-03 cold-formed joists · DS-26 steel roof deck · DS-27 acoustic roof deck · DS-29 form deck

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IMPORTANT NOTICE

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