Sample B · Same RCC roof, four ways

Orientation (landscape 4L / portrait 2P) × tilt (10° / 15°) · every option shadow-checked for 21 Dec, 10:00–14:00

Landscape 4L · 10°



Landscape 4L · 15°



Portrait 2P · 10°



Portrait 2P · 15°



	Landscape 4L · 10°	Landscape 4L · 15°	Portrait 2P · 10°	Portrait 2P · 15°
Tilt	10°	15°	10°	15°
Table rise (front → back)	0.80 m	1.19 m	0.83 m	1.24 m
Rear leg (front leg 1.0 m)	1.80 m	2.19 m	1.83 m	2.24 m
Row gap needed · 21 Dec 10:00–14:00	1.14 m	1.70 m	1.19 m	1.77 m
Row gap used	1.15 m	1.71 m	1.19 m	1.78 m
Row pitch	5.68 m	6.15 m	5.90 m	6.40 m
Rows	5×4L	4×4L + 1×3L	4×2P + 1×1P	4×2P + 1×1P
Tables	16	16	22	22
Modules (620 Wp)	388	377	372	377
Capacity	**240.6 kWp**	**233.7 kWp**	**230.6 kWp**	**233.7 kWp**
Specific yield (typical)	1,520 kWh/kWp	1,545 kWh/kWp	1,520 kWh/kWp	1,545 kWh/kWp
Year-1 generation	**366 MWh**	**361 MWh**	**351 MWh**	**361 MWh**
Positions kept out of obstacle shadow	24	24	27	22

Why we design every option

Tilt and orientation change the row gap, the number of rows that fit, and the yield per kWp. On this roof **Landscape 4L · 10°** gives the most generation (366 MWh/year). On a different roof depth the answer can change — so we check all four before recommending one.

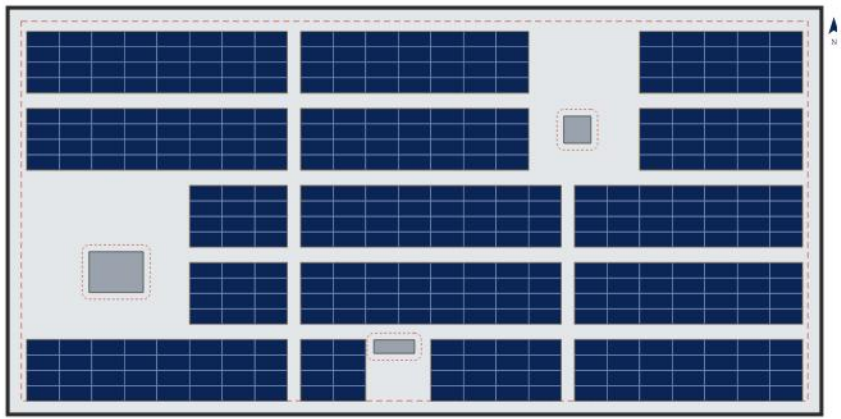
SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Sample B · Landscape: 10° vs 15° tilt

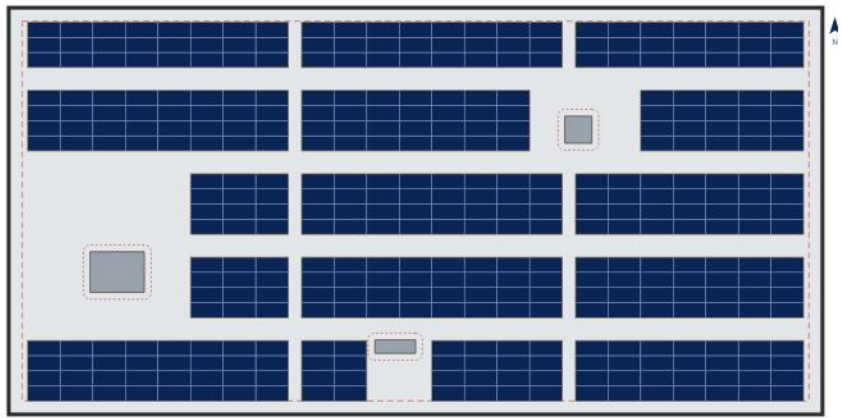
60 m × 30 m RCC roof · south-facing tilted tables · front leg 1.0 m · shadow-free 21 Dec, 10:00–14:00

TITAN SOLAR

Landscape 4L · 10°



Landscape 4L · 15°



	Landscape 4L · 10°	Landscape 4L · 15°
Tilt	10°	15°
Table rise (front → back)	0.80 m	1.19 m
Rear leg (front leg 1.0 m)	1.80 m	2.19 m
Row gap needed · 21 Dec 10:00–14:00	1.14 m	1.70 m
Row gap used	1.15 m	1.71 m
Row pitch	5.68 m	6.15 m
Rows	5×4L	4×4L + 1×3L
Tables	16	16
Modules (620 Wp)	388	377
Capacity	**240.6 kWp**	**233.7 kWp**
Specific yield (typical)	1,520 kWh/kWp	1,545 kWh/kWp
Year-1 generation	**366 MWh**	**361 MWh**
Positions kept out of obstacle shadow	24	24

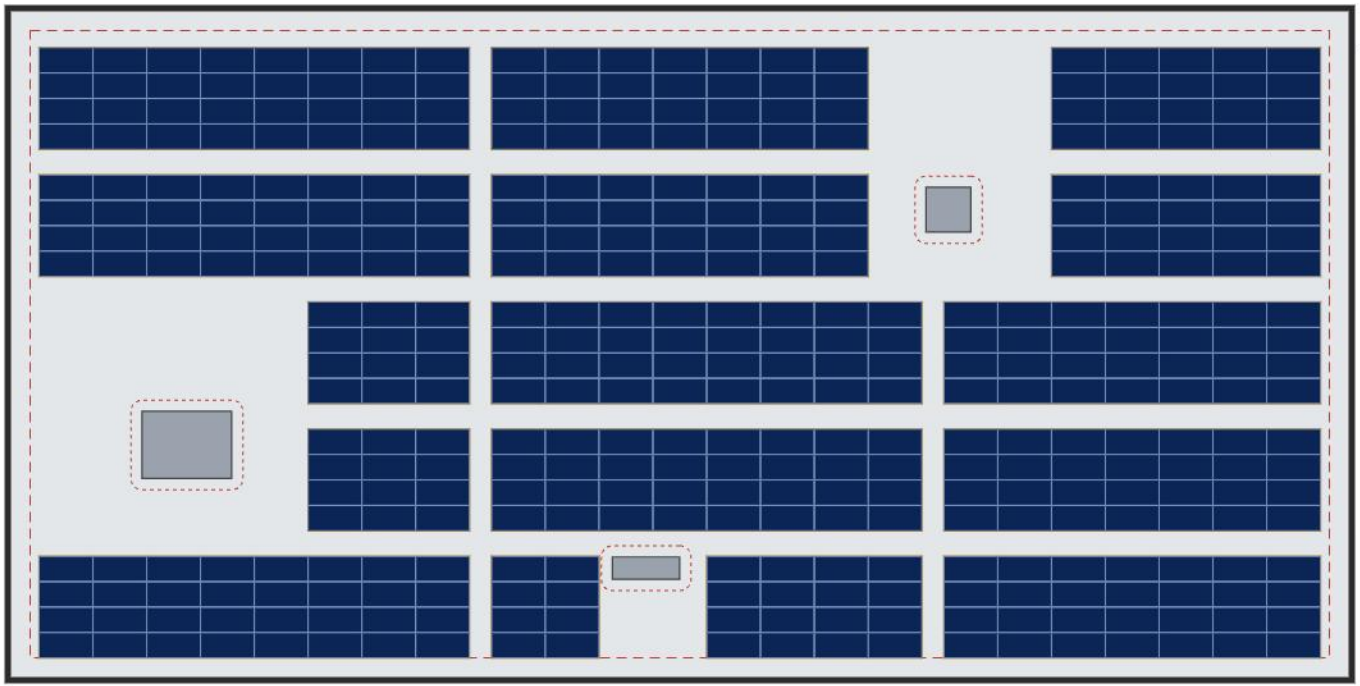
What this shows

Raising tilt from 10° to 15° lifts the back edge 0.39 m higher, so the row gap must grow from 1.15 m to 1.71 m. On this roof that changes capacity by -6.8 kWp, while each kWp yields about 25 kWh more per year. Net year-1 generation: -4.5 MWh. On this roof depth the back row drops from a 4L table to a smaller 3L table.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Rooftop panel layout

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp



DESIGNED CAPACITY

240.6 kWp

388 modules · rows 5×4L · 16 tables

Spacing set by the sun

Row gap 1.15 m (clear, back to front) so no row shades the next on 21 Dec, 10:00–14:00. Lane gap 1.0 m between tables. The back strip uses a smaller table of the same orientation.

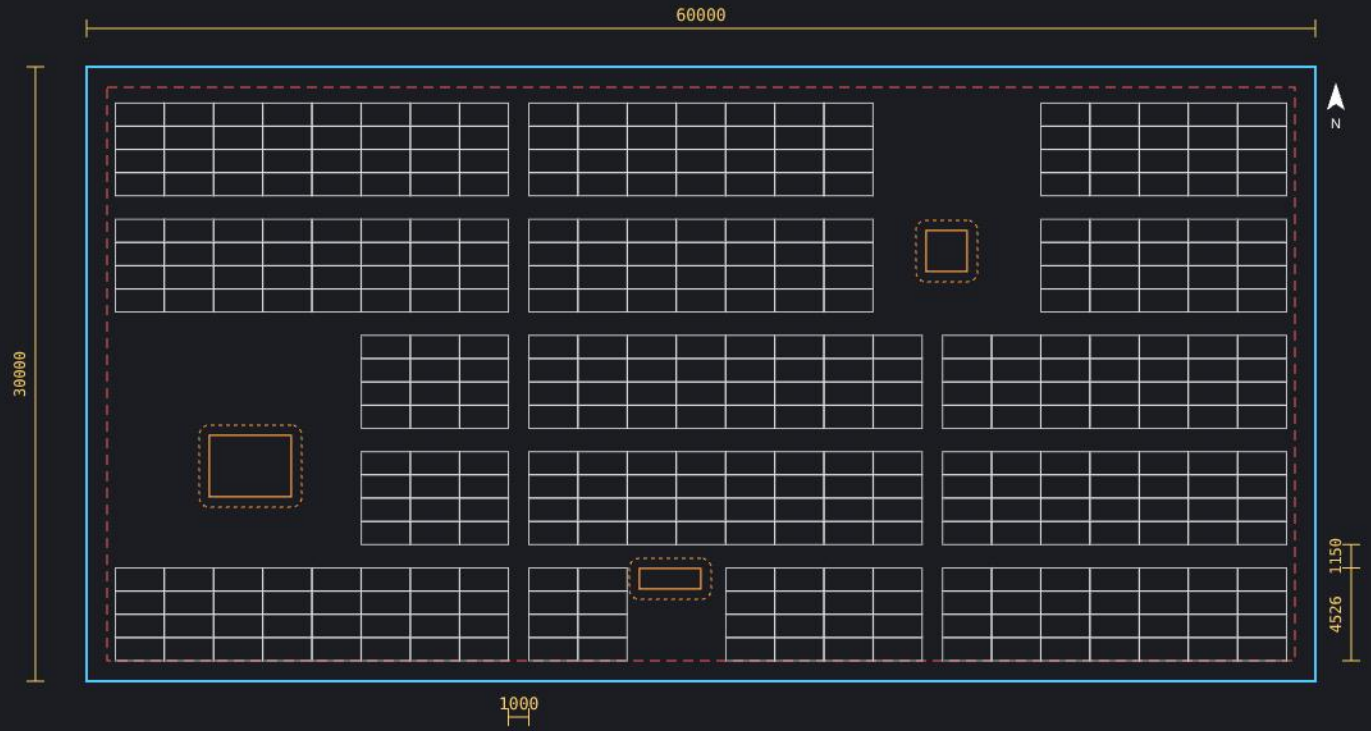
- Module 2382 × 1134 mm, tilted
- Table outline
- Edge setback 1.0 m
- Stair room / tank / AC units
- Safe clearance 0.5 m around obstacles

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-1 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Layout drawing (DWG)

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp



DRAWING NOTES

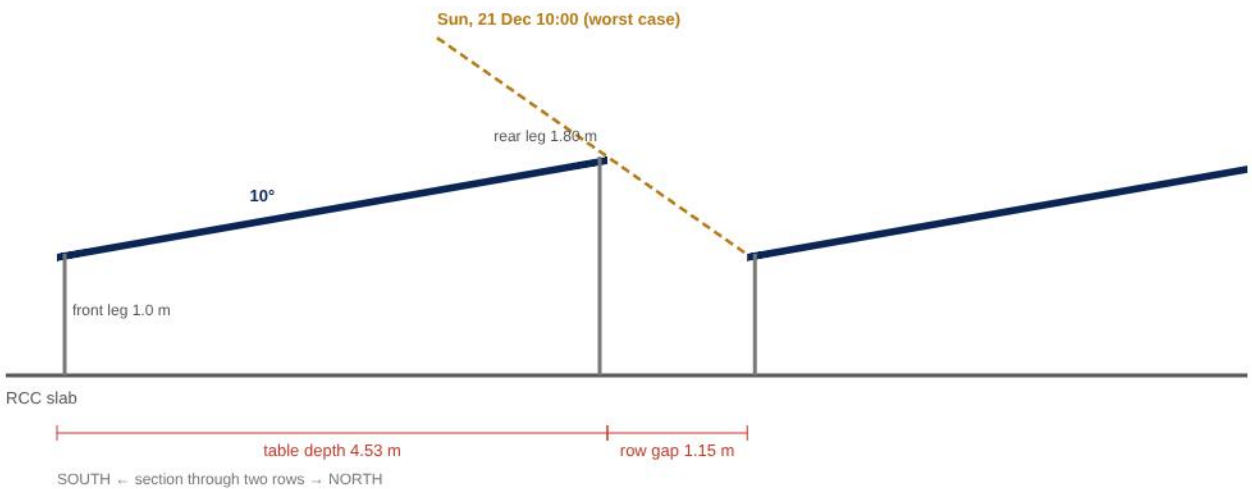
1. RCC roof 60.0 × 30.0 m, south-facing rows.
2. Tables 4L, tilt 10°.
3. Front leg 1000 mm, rear leg 1798 mm.
4. Row gap 1150 mm (clear, from 21 Dec 10:00–14:00 shadow).
5. Lane gap 1000 mm between tables.
6. Edge setback 1000 mm.
7. Delivered as DWG; opens in AutoCAD.

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-2 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Row spacing & shadow check

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp



ROW-TO-ROW SHADING · 21 DEC · 10:00–14:00

Table rises **0.80 m** from front to back edge. The longest shadow of the top edge falls at 10:00: **1.14 m**. Row gap used: **1.15 m**, so no row shades the next in the window.

Solar time	Sun alt.	Azimuth	Gap needed
10:00	30.6°	148°	1.14 m
11:00	36.1°	163°	1.05 m
12:00	38.1°	180°	1.02 m
13:00	36.1°	197°	1.05 m
14:00	30.6°	212°	1.14 m

Obstacle shadows

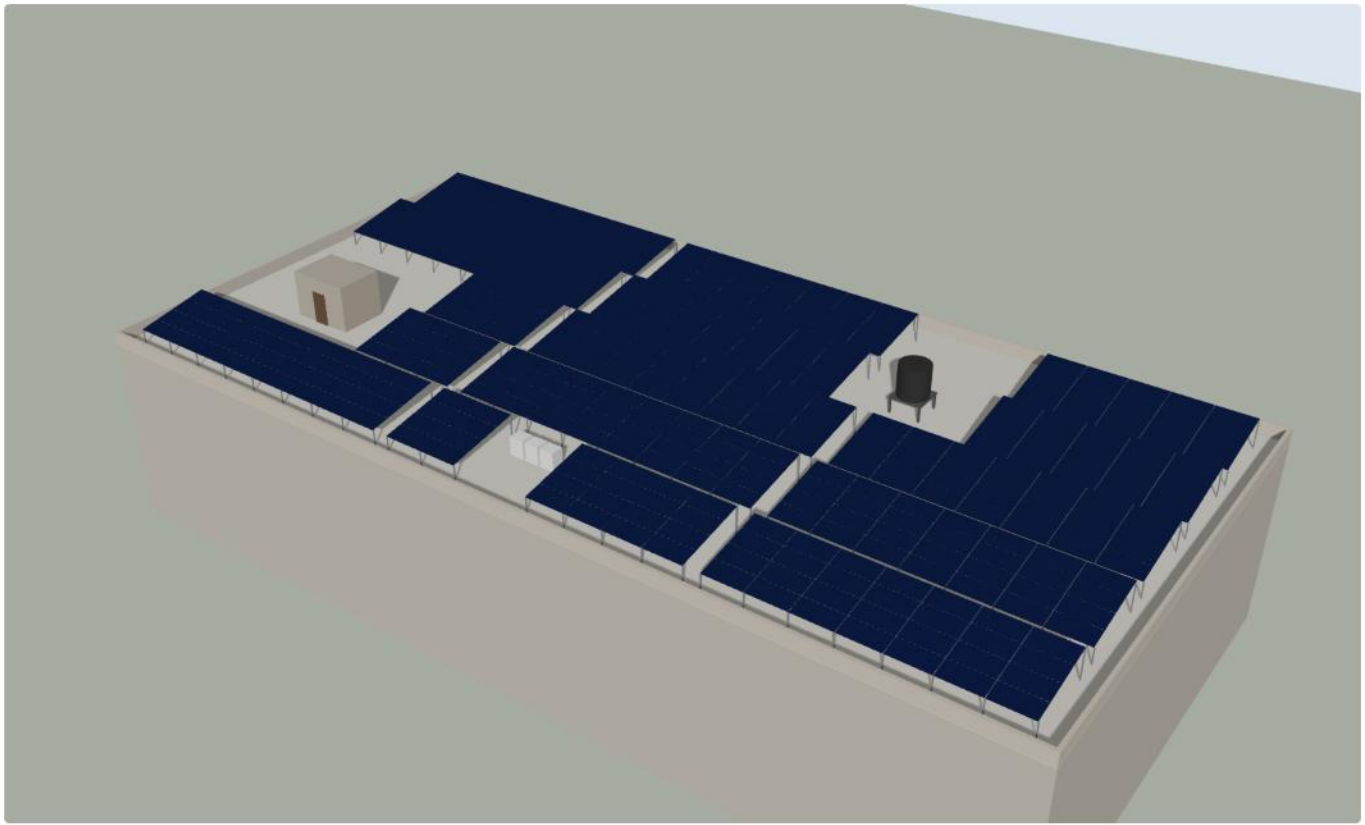
Stair room and tank shadows (above the 1.0 m panel edge) are checked for the same window; **24 module positions** left out. Date and time window can be set to the customer's requirement.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-3 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

3D model

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp



From 2D layout to 3D model

Tables raised on structure at 10° tilt, front leg 1.0 m, rear leg 1.80 m, with real obstacle heights:

- Stair room (mumty) · 3.0 m
- Water tank on stand · 3.0 m
- AC outdoor units · 1.2 m
- Parapet · 0.9 m

Sun shown: 21 Dec, 10:00 — the worst case for row shadows.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-4 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Table list (for structure supplier)

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp

Table	Row	Type	Mods	kWp	Front leg	Rear leg
T01	R1	4L×8	32	19.84	1.00 m	1.80 m
T02	R1	4L×7	28	17.36	1.00 m	1.80 m
T03	R1	4L×5	20	12.40	1.00 m	1.80 m
T04	R2	4L×8	32	19.84	1.00 m	1.80 m
T05	R2	4L×7	28	17.36	1.00 m	1.80 m
T06	R2	4L×5	20	12.40	1.00 m	1.80 m
T07	R3	4L×3	12	7.44	1.00 m	1.80 m
T08	R3	4L×8	32	19.84	1.00 m	1.80 m
T09	R3	4L×7	28	17.36	1.00 m	1.80 m
T10	R4	4L×3	12	7.44	1.00 m	1.80 m
T11	R4	4L×8	32	19.84	1.00 m	1.80 m
T12	R4	4L×7	28	17.36	1.00 m	1.80 m
T13	R5	4L×8	32	19.84	1.00 m	1.80 m
T14	R5	4L×2	8	4.96	1.00 m	1.80 m
T15	R5	4L×4	16	9.92	1.00 m	1.80 m
T16	R5	4L×7	28	17.36	1.00 m	1.80 m
Total (16 tables)			**388**	**240.56**		

Table types

4L×8	5 nos
4L×7	5 nos
4L×5	2 nos
4L×4	1 nos
4L×3	2 nos
4L×2	1 nos

4L = 4 modules up the slope; ×n = modules across. Front and rear leg heights per table, as structure suppliers ask.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-5 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

DC string design

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp



Inverter 1 · 110 kW · 11 strings · 122.8 kWp DC

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11

Inverter 2 · 110 kW · 11 strings · 117.8 kWp DC

S12 S13 S14 S15 S16 S17 S18 S19 S20 S21 S22

21 strings × 18 + 1 × 10. Landscape: strings run up and down the columns of each table (serpentine), keeping module leads short.

Electrical check (per string)

Modules per string	18 (S22: 10, on its own MPPT)
Voc at 3 °C (cold morning)	1,056 V < 1,100 V max ✓
Vmp at STC	828 V, inside MPPT range ✓
Vmp of short string S22	460 V, inside MPPT range ✓
DC/AC ratio (2 × 110 kW)	1.09

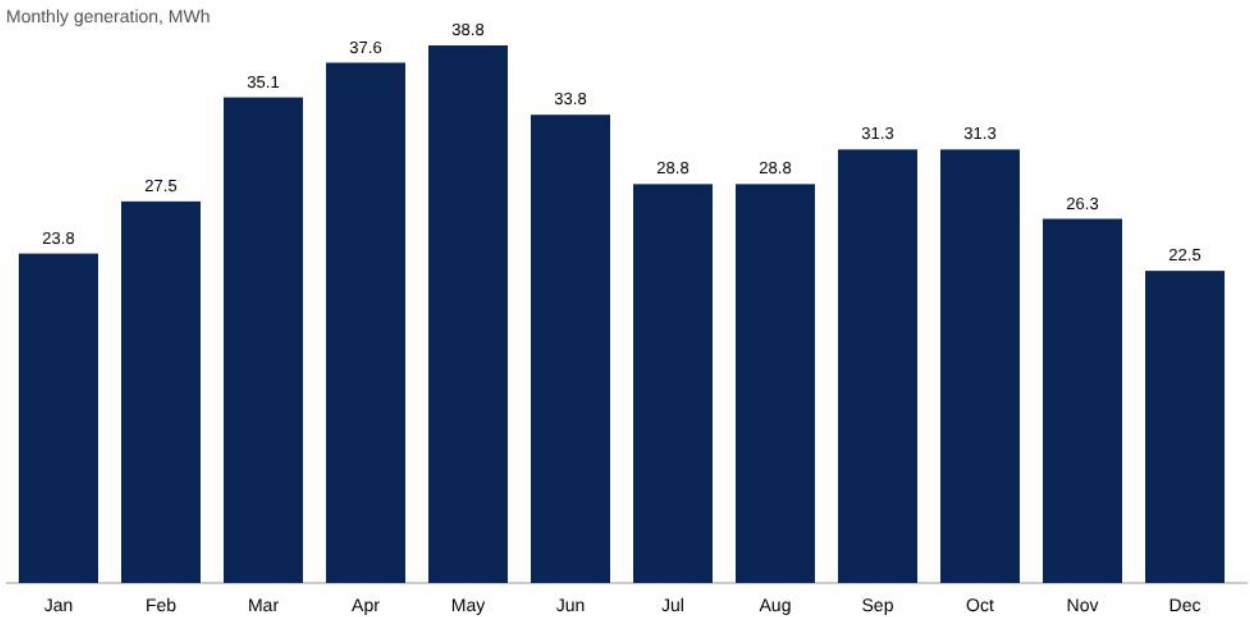
Typical 620 Wp TOPCon values: Voc 55.6 V, Vmp 46.0 V, Isc 14.2 A, Voc coefficient −0.25 %/°C.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-6 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Generation estimate

Sample BL10 · 60 m × 30 m RCC roof · Landscape · 10° tilt · front leg 1.0 m · 388 modules × 620 Wp · 240.6 kWp



YEAR-1 GENERATION

366 MWh

≈ 1,520 kWh per kWp per year (typical, illustrative)

Assumptions

Location: Gurugram, Haryana

South-facing, 10° tilt

Performance ratio 0.78

No row-to-row or obstacle shading 10:00–14:00, 21 Dec

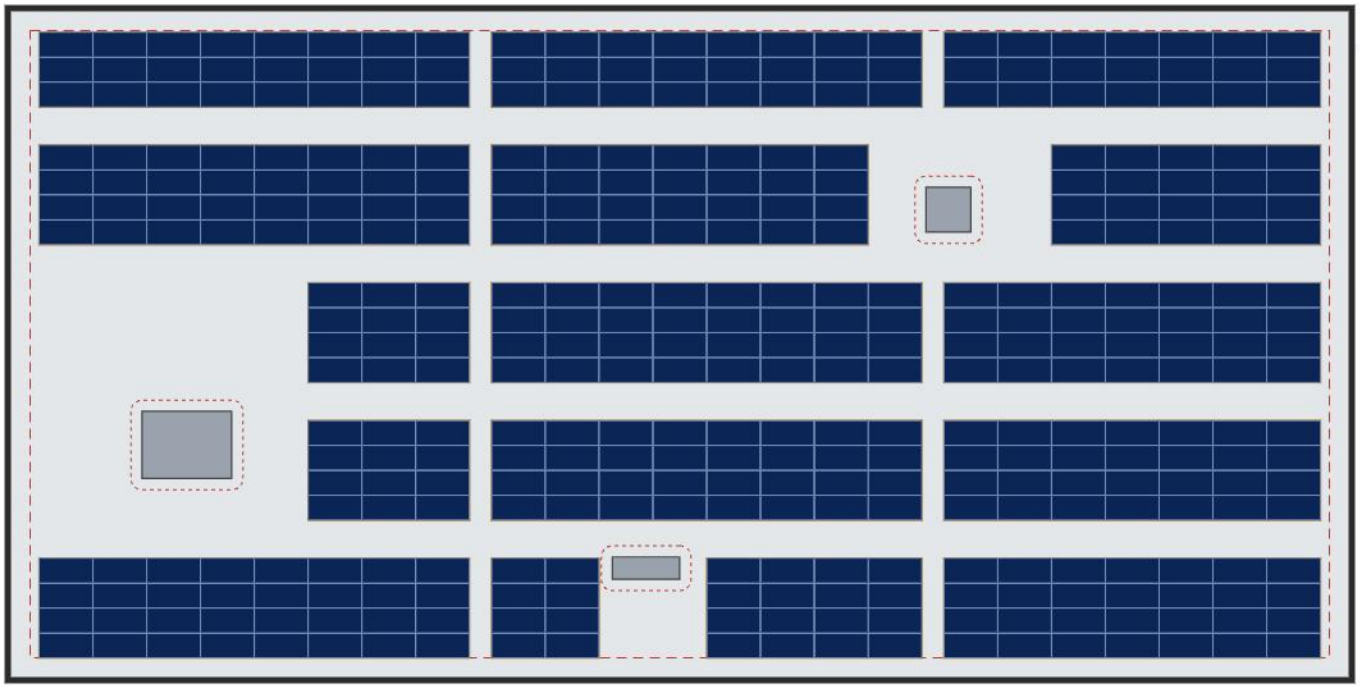
Year-1 value; degradation not applied

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL10-7 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Rooftop panel layout

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



DESIGNED CAPACITY

233.7 kWp

377 modules · rows 4×4L + 1×3L · 16 tables

Spacing set by the sun

Row gap 1.71 m (clear, back to front) so no row shades the next on 21 Dec, 10:00–14:00. Lane gap 1.0 m between tables. The back strip uses a smaller table of the same orientation.

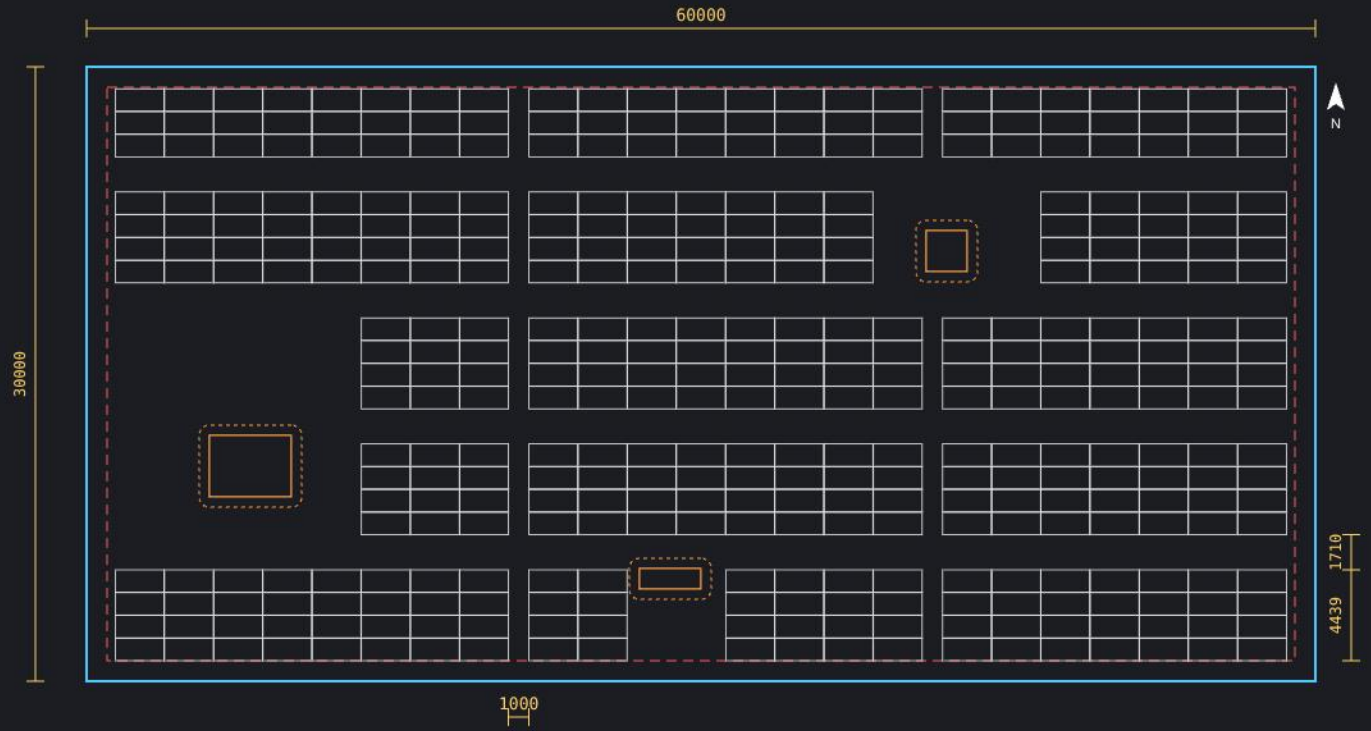
- Module 2382 × 1134 mm, tilted
- Table outline
- Edge setback 1.0 m
- Stair room / tank / AC units
- Safe clearance 0.5 m around obstacles

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-1 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Layout drawing (DWG)

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



DRAWING NOTES

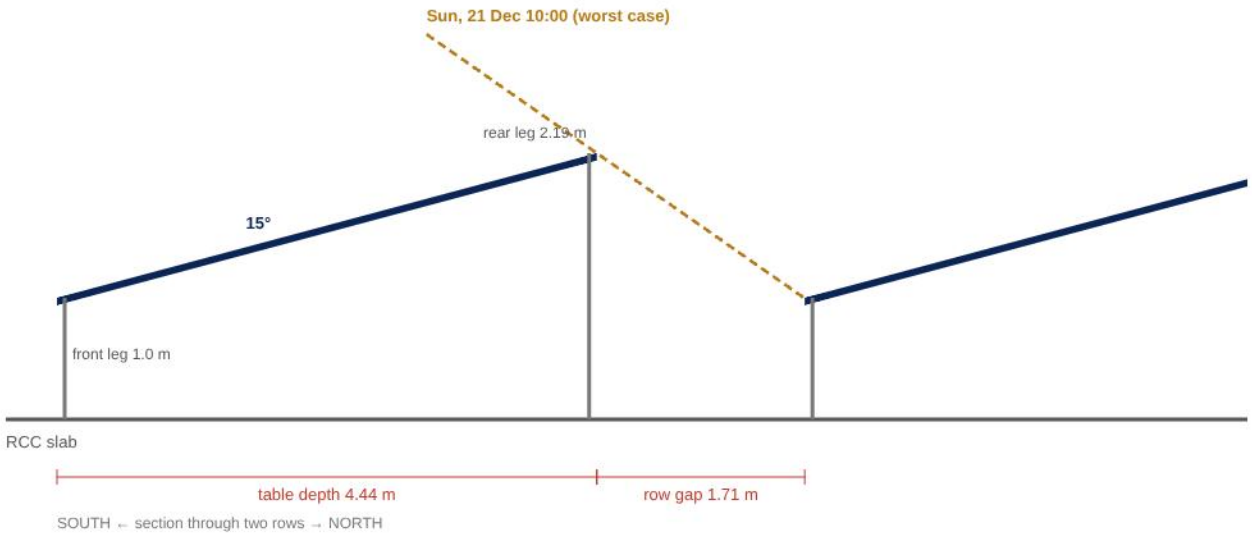
1. RCC roof 60.0 × 30.0 m, south-facing rows.
2. Tables 4L, tilt 15°.
3. Front leg 1000 mm, rear leg 2190 mm.
4. Row gap 1710 mm (clear, from 21 Dec 10:00–14:00 shadow).
5. Lane gap 1000 mm between tables.
6. Edge setback 1000 mm.
7. Delivered as DWG; opens in AutoCAD.

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-2 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Row spacing & shadow check

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



ROW-TO-ROW SHADING · 21 DEC · 10:00–14:00

Table rises **1.19 m** from front to back edge. The longest shadow of the top edge falls at 10:00: **1.70 m**. Row gap used: **1.71 m**, so no row shades the next in the window.

Solar time	Sun alt.	Azimuth	Gap needed
10:00	30.6°	148°	1.70 m
11:00	36.1°	163°	1.56 m
12:00	38.1°	180°	1.52 m
13:00	36.1°	197°	1.56 m
14:00	30.6°	212°	1.70 m

Obstacle shadows

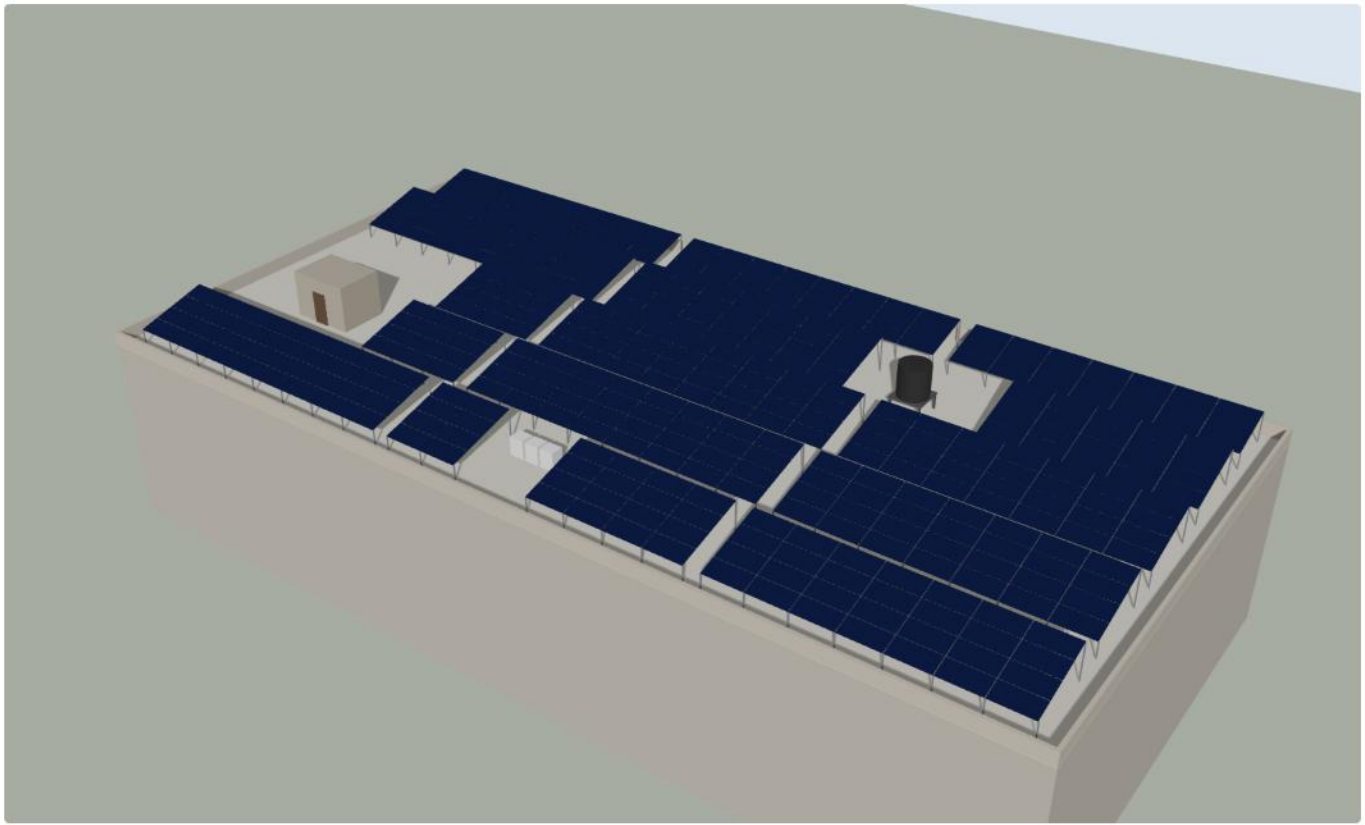
Stair room and tank shadows (above the 1.0 m panel edge) are checked for the same window; **24 module positions** left out. Date and time window can be set to the customer's requirement.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-3 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

3D model

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



From 2D layout to 3D model

Tables raised on structure at 15° tilt, front leg 1.0 m, rear leg 2.19 m, with real obstacle heights:

- Stair room (mumty) · 3.0 m
- Water tank on stand · 3.0 m
- AC outdoor units · 1.2 m
- Parapet · 0.9 m

Sun shown: 21 Dec, 10:00 — the worst case for row shadows.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-4 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Table list (for structure supplier)

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp

Table	Row	Type	Mods	kWp	Front leg	Rear leg
T01	R1	3L×8	24	14.88	1.00 m	1.89 m
T02	R1	3L×8	24	14.88	1.00 m	1.89 m
T03	R1	3L×7	21	13.02	1.00 m	1.89 m
T04	R2	4L×8	32	19.84	1.00 m	2.19 m
T05	R2	4L×7	28	17.36	1.00 m	2.19 m
T06	R2	4L×5	20	12.40	1.00 m	2.19 m
T07	R3	4L×3	12	7.44	1.00 m	2.19 m
T08	R3	4L×8	32	19.84	1.00 m	2.19 m
T09	R3	4L×7	28	17.36	1.00 m	2.19 m
T10	R4	4L×3	12	7.44	1.00 m	2.19 m
T11	R4	4L×8	32	19.84	1.00 m	2.19 m
T12	R4	4L×7	28	17.36	1.00 m	2.19 m
T13	R5	4L×8	32	19.84	1.00 m	2.19 m
T14	R5	4L×2	8	4.96	1.00 m	2.19 m
T15	R5	4L×4	16	9.92	1.00 m	2.19 m
T16	R5	4L×7	28	17.36	1.00 m	2.19 m
Total (16 tables)			**377**	**233.74**		

Table types

3L×8	2 nos
4L×8	4 nos
3L×7	1 nos
4L×7	4 nos
4L×5	1 nos
4L×4	1 nos
4L×3	2 nos
4L×2	1 nos

4L = 4 modules up the slope; ×n = modules across. Front and rear leg heights per table, as structure suppliers ask.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-5 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

DC string design

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



Inverter 1 · 110 kW · 11 strings · 122.8 kWp DC

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11

Inverter 2 · 110 kW · 10 strings · 111.0 kWp DC

S12 S13 S14 S15 S16 S17 S18 S19 S20 S21

20 strings × 18 + 1 × 17. Landscape: strings run up and down the columns of each table (serpentine), keeping module leads short.

Electrical check (per string)

Modules per string	18 (S21: 17, on its own MPPT)
Voc at 3 °C (cold morning)	1,056 V < 1,100 V max ✓
Vmp at STC	828 V, inside MPPT range ✓
Vmp of short string S21	782 V, inside MPPT range ✓
DC/AC ratio (2 × 110 kW)	1.06

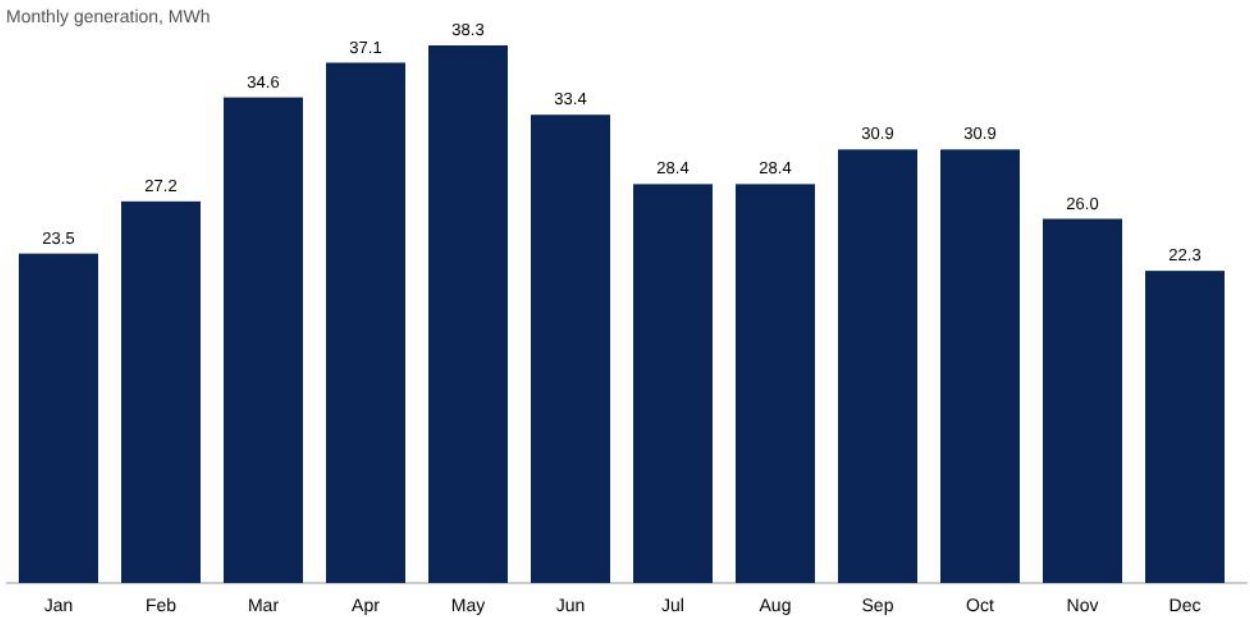
Typical 620 Wp TOPCon values: Voc 55.6 V, Vmp 46.0 V, Isc 14.2 A, Voc coefficient −0.25 %/°C.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-6 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Generation estimate

Sample BL15 · 60 m × 30 m RCC roof · Landscape · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



YEAR-1 GENERATION

361 MWh

≈ 1,545 kWh per kWp per year (typical, illustrative)

Assumptions

Location: Gurugram, Haryana

South-facing, 15° tilt

Performance ratio 0.78

No row-to-row or obstacle shading 10:00–14:00, 21 Dec

Year-1 value; degradation not applied

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BL15-7 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Sample B · Portrait: 10° vs 15° tilt

60 m × 30 m RCC roof · south-facing tilted tables · front leg 1.0 m · shadow-free 21 Dec, 10:00–14:00

TITAN SOLAR

Portrait 2P · 10°



Portrait 2P · 15°



	Portrait 2P · 10°	Portrait 2P · 15°
Tilt	10°	15°
Table rise (front → back)	0.83 m	1.24 m
Rear leg (front leg 1.0 m)	1.83 m	2.24 m
Row gap needed · 21 Dec 10:00–14:00	1.19 m	1.77 m
Row gap used	1.19 m	1.78 m
Row pitch	5.90 m	6.40 m
Rows	4×2P + 1×1P	4×2P + 1×1P
Tables	22	22
Modules (620 Wp)	372	377
Capacity	**230.6 kWp**	**233.7 kWp**
Specific yield (typical)	1,520 kWh/kWp	1,545 kWh/kWp
Year-1 generation	**351 MWh**	**361 MWh**
Positions kept out of obstacle shadow	27	22

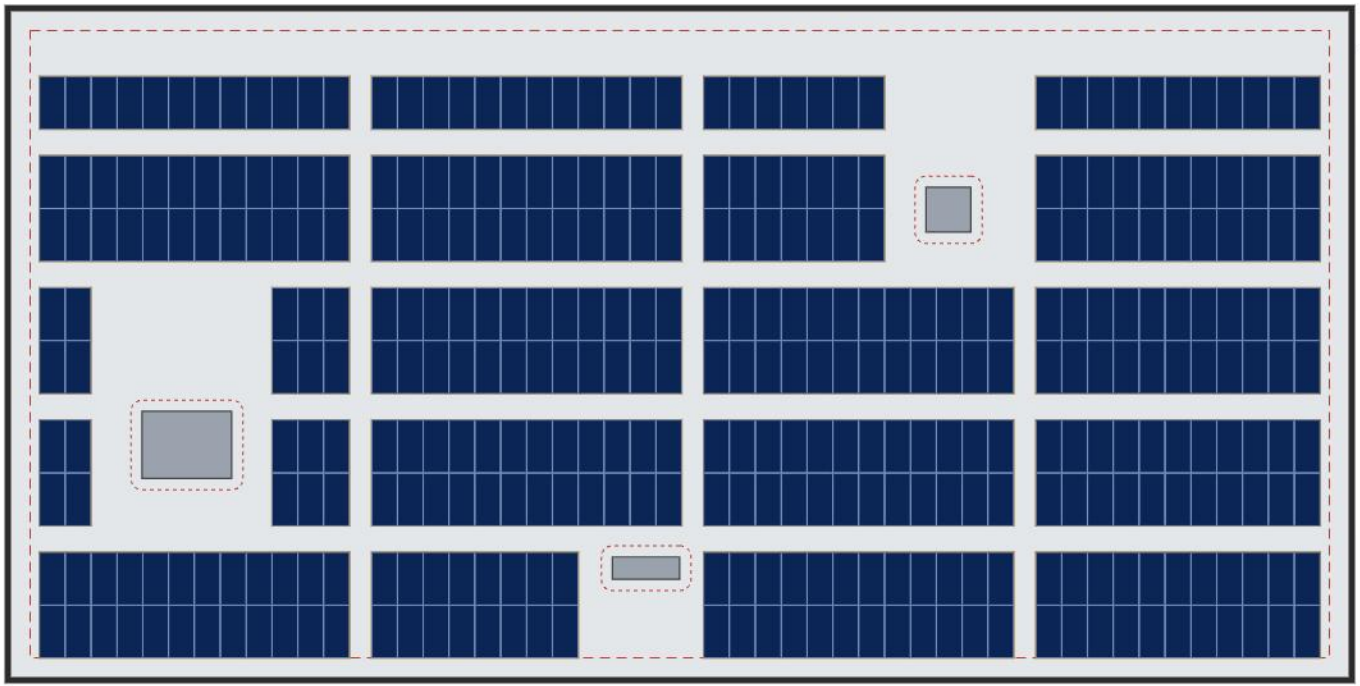
What this shows

Raising tilt from 10° to 15° lifts the back edge 0.41 m higher, so the row gap must grow from 1.19 m to 1.78 m. On this roof that changes capacity by +3.1 kWp, while each kWp yields about 25 kWh more per year. Net year-1 generation: +10.6 MWh. Here both tilts fit the same rows, so 15° wins on yield; module count differs only where obstacle shadows fall.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Rooftop panel layout

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp



DESIGNED CAPACITY

230.6 kWp

372 modules · rows 4×2P + 1×1P · 22 tables

Spacing set by the sun

Row gap 1.19 m (clear, back to front) so no row shades the next on 21 Dec, 10:00–14:00. Lane gap 1.0 m between tables. The back strip uses a smaller table of the same orientation.

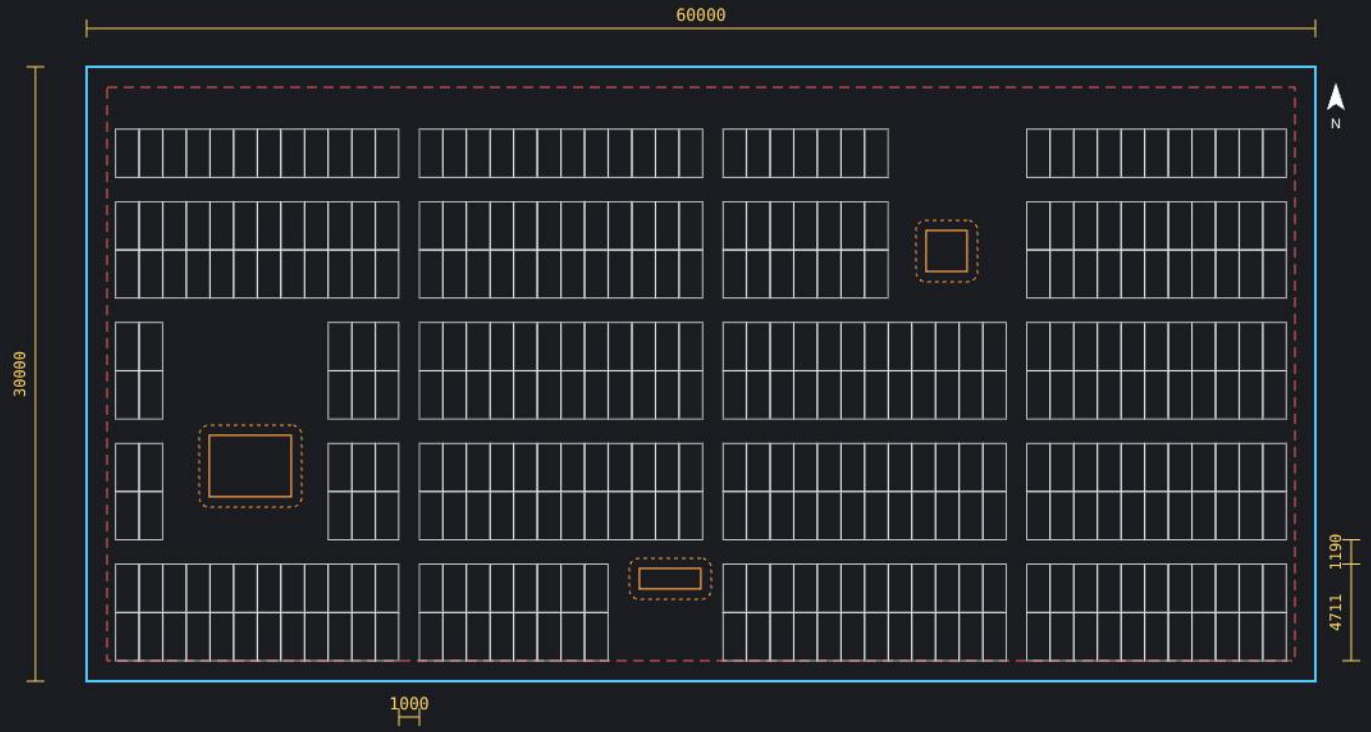
- Module 2382 × 1134 mm, tilted
- Table outline
- Edge setback 1.0 m
- Stair room / tank / AC units
- Safe clearance 0.5 m around obstacles

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-1 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Layout drawing (DWG)

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp



DRAWING NOTES

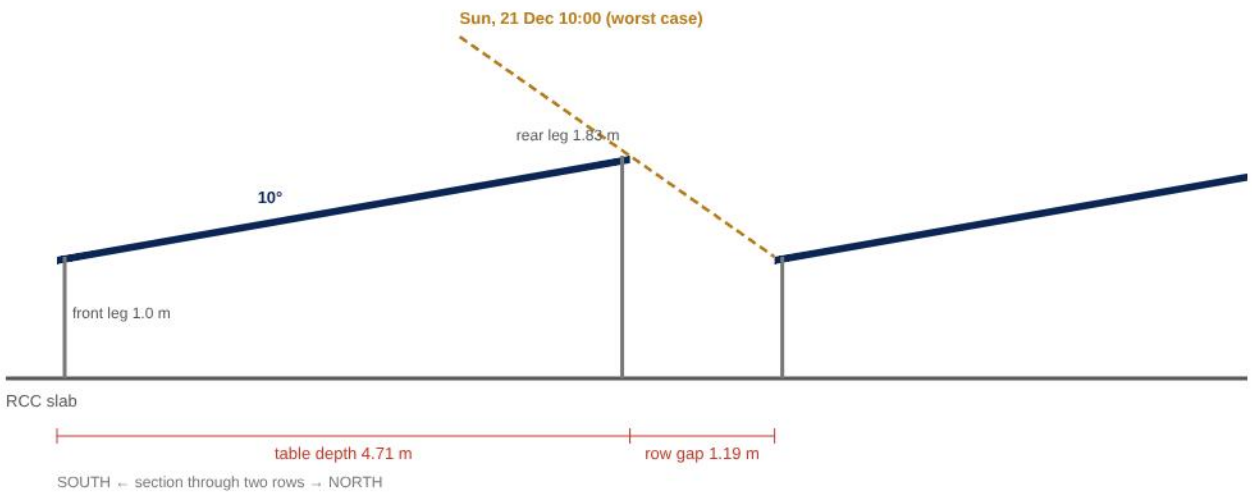
1. RCC roof 60.0 × 30.0 m, south-facing rows.
2. Tables 2P, tilt 10°.
3. Front leg 1000 mm, rear leg 1831 mm.
4. Row gap 1190 mm (clear, from 21 Dec 10:00–14:00 shadow).
5. Lane gap 1000 mm between tables.
6. Edge setback 1000 mm.
7. Delivered as DWG; opens in AutoCAD.

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-2 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Row spacing & shadow check

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp



ROW-TO-ROW SHADING · 21 DEC · 10:00–14:00

Table rises **0.83 m** from front to back edge. The longest shadow of the top edge falls at 10:00: **1.19 m**. Row gap used: **1.19 m**, so no row shades the next in the window.

Solar time	Sun alt.	Azimuth	Gap needed
10:00	30.6°	148°	1.19 m
11:00	36.1°	163°	1.09 m
12:00	38.1°	180°	1.06 m
13:00	36.1°	197°	1.09 m
14:00	30.6°	212°	1.19 m

Obstacle shadows

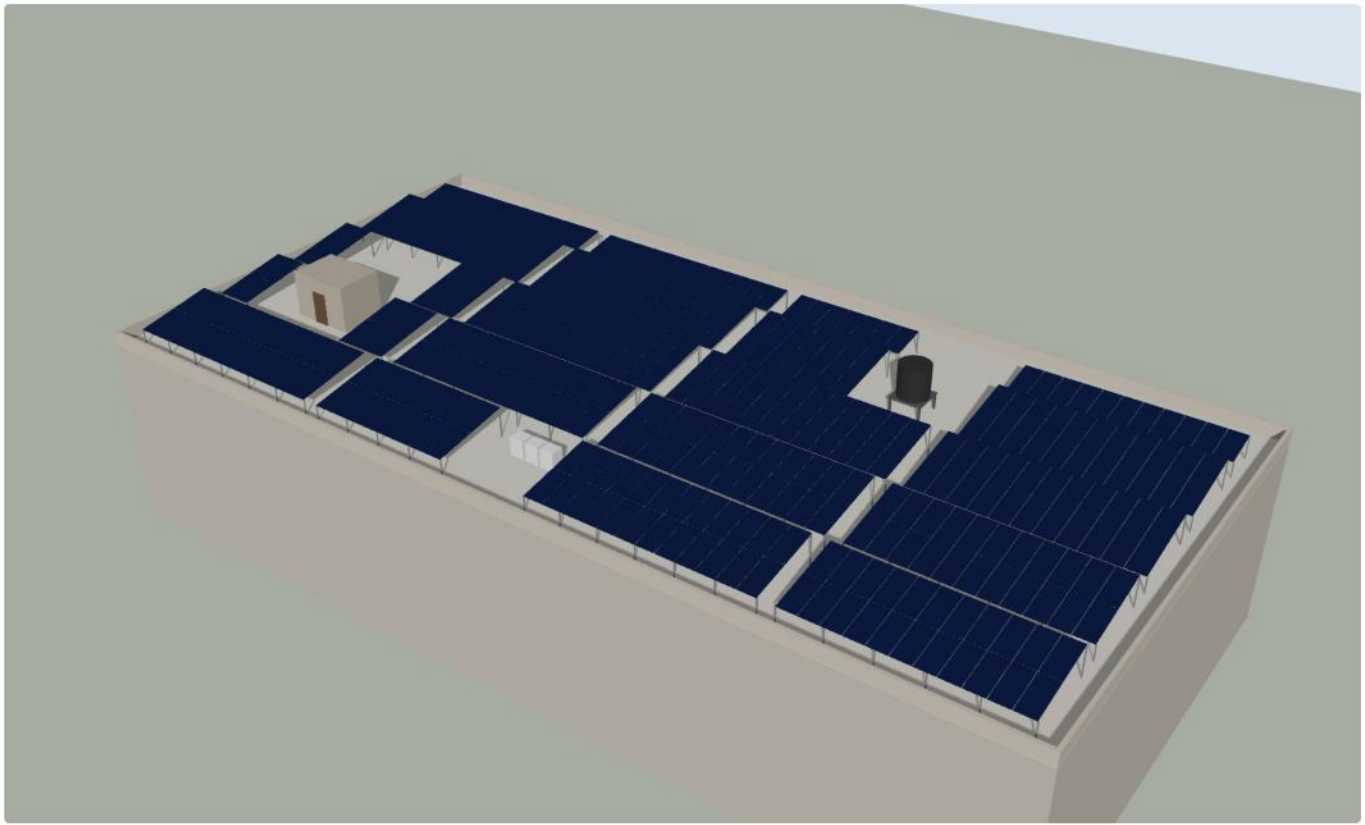
Stair room and tank shadows (above the 1.0 m panel edge) are checked for the same window; **27 module positions** left out. Date and time window can be set to the customer's requirement.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-3 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

3D model

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp



From 2D layout to 3D model

Tables raised on structure at 10° tilt, front leg 1.0 m, rear leg 1.83 m, with real obstacle heights:

- Stair room (mumty) · 3.0 m
- Water tank on stand · 3.0 m
- AC outdoor units · 1.2 m
- Parapet · 0.9 m

Sun shown: 21 Dec, 10:00 — the worst case for row shadows.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-4 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Table list (for structure supplier)

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp

Table	Row	Type	Mods	kWp	Front leg	Rear leg
T01	R1	1P×12	12	7.44	1.00 m	1.41 m
T02	R1	1P×12	12	7.44	1.00 m	1.41 m
T03	R1	1P×7	7	4.34	1.00 m	1.41 m
T04	R1	1P×11	11	6.82	1.00 m	1.41 m
T05	R2	2P×12	24	14.88	1.00 m	1.83 m
T06	R2	2P×12	24	14.88	1.00 m	1.83 m
T07	R2	2P×7	14	8.68	1.00 m	1.83 m
T08	R2	2P×11	22	13.64	1.00 m	1.83 m
T09	R3	2P×2	4	2.48	1.00 m	1.83 m
T10	R3	2P×3	6	3.72	1.00 m	1.83 m
T11	R3	2P×12	24	14.88	1.00 m	1.83 m
T12	R3	2P×12	24	14.88	1.00 m	1.83 m
T13	R3	2P×11	22	13.64	1.00 m	1.83 m
T14	R4	2P×2	4	2.48	1.00 m	1.83 m
T15	R4	2P×3	6	3.72	1.00 m	1.83 m
T16	R4	2P×12	24	14.88	1.00 m	1.83 m
T17	R4	2P×12	24	14.88	1.00 m	1.83 m
T18	R4	2P×11	22	13.64	1.00 m	1.83 m
T19	R5	2P×12	24	14.88	1.00 m	1.83 m
T20	R5	2P×8	16	9.92	1.00 m	1.83 m
T21	R5	2P×12	24	14.88	1.00 m	1.83 m
T22	R5	2P×11	22	13.64	1.00 m	1.83 m
Total (22 tables)			**372**	**230.64**		

Table types

1P×12	2 nos
2P×12	8 nos
1P×11	1 nos
2P×11	4 nos
2P×8	1 nos
1P×7	1 nos
2P×7	1 nos
2P×3	2 nos
2P×2	2 nos

2P = 2 modules up the slope; ×n = modules across. Front and rear leg heights per table, as structure suppliers ask.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-5 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

DC string design

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp



Inverter 1 · 110 kW · 11 strings · 122.8 kWp DC

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11

Inverter 2 · 110 kW · 10 strings · 107.9 kWp DC

S12 S13 S14 S15 S16 S17 S18 S19 S20 S21

20 strings × 18 + 1 × 12. Portrait: strings run along the rows of each table, keeping module leads short.

Electrical check (per string)

Modules per string	18 (S21: 12, on its own MPPT)
Voc at 3 °C (cold morning)	1,056 V < 1,100 V max ✓
Vmp at STC	828 V, inside MPPT range ✓
Vmp of short string S21	552 V, inside MPPT range ✓
DC/AC ratio (2 × 110 kW)	1.05

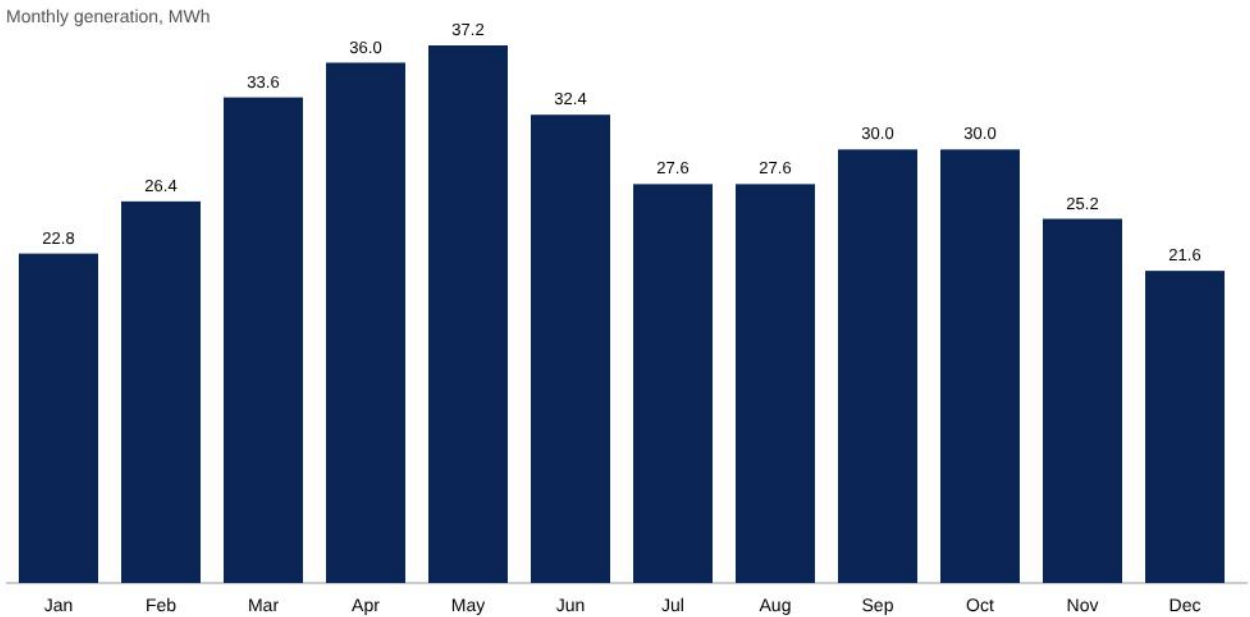
Typical 620 Wp TOPCon values: Voc 55.6 V, Vmp 46.0 V, Isc 14.2 A, Voc coefficient −0.25 %/°C.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-6 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Generation estimate

Sample BP10 · 60 m × 30 m RCC roof · Portrait · 10° tilt · front leg 1.0 m · 372 modules × 620 Wp · 230.6 kWp



YEAR-1 GENERATION

351 MWh

≈ 1,520 kWh per kWp per year (typical, illustrative)

Assumptions

Location: Gurugram, Haryana

South-facing, 10° tilt

Performance ratio 0.78

No row-to-row or obstacle shading 10:00–14:00, 21 Dec

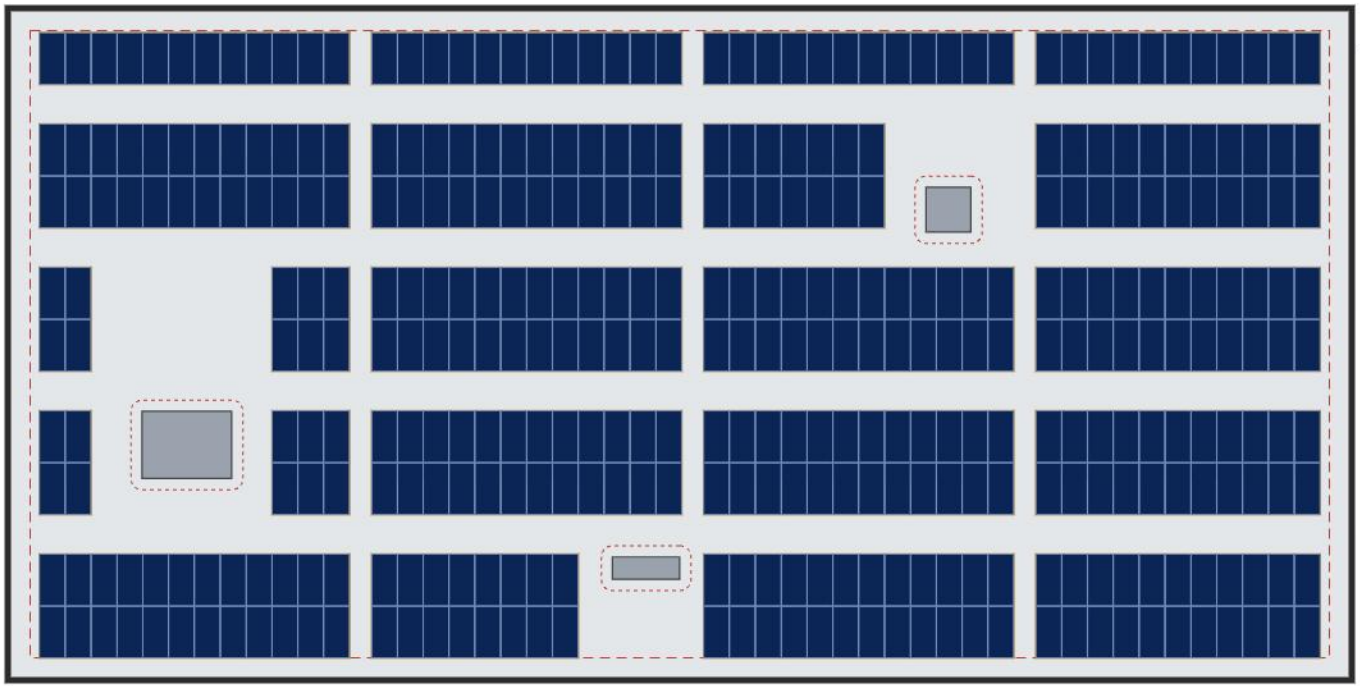
Year-1 value; degradation not applied

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP10-7 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Rooftop panel layout

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



DESIGNED CAPACITY

233.7 kWp

377 modules · rows 4×2P + 1×1P · 22 tables

Spacing set by the sun

Row gap 1.78 m (clear, back to front) so no row shades the next on 21 Dec, 10:00–14:00. Lane gap 1.0 m between tables. The back strip uses a smaller table of the same orientation.

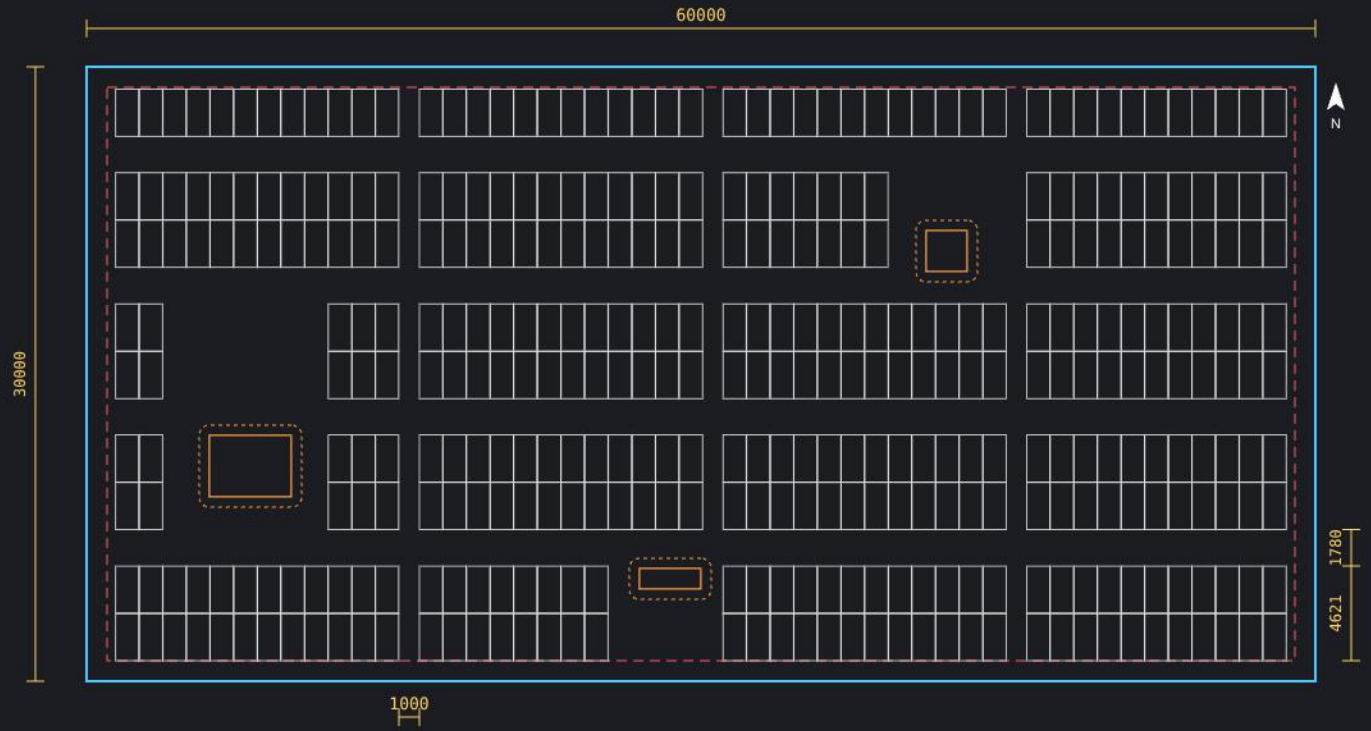
- Module 2382 × 1134 mm, tilted
- Table outline
- Edge setback 1.0 m
- Stair room / tank / AC units
- Safe clearance 0.5 m around obstacles

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-1 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Layout drawing (DWG)

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



DRAWING NOTES

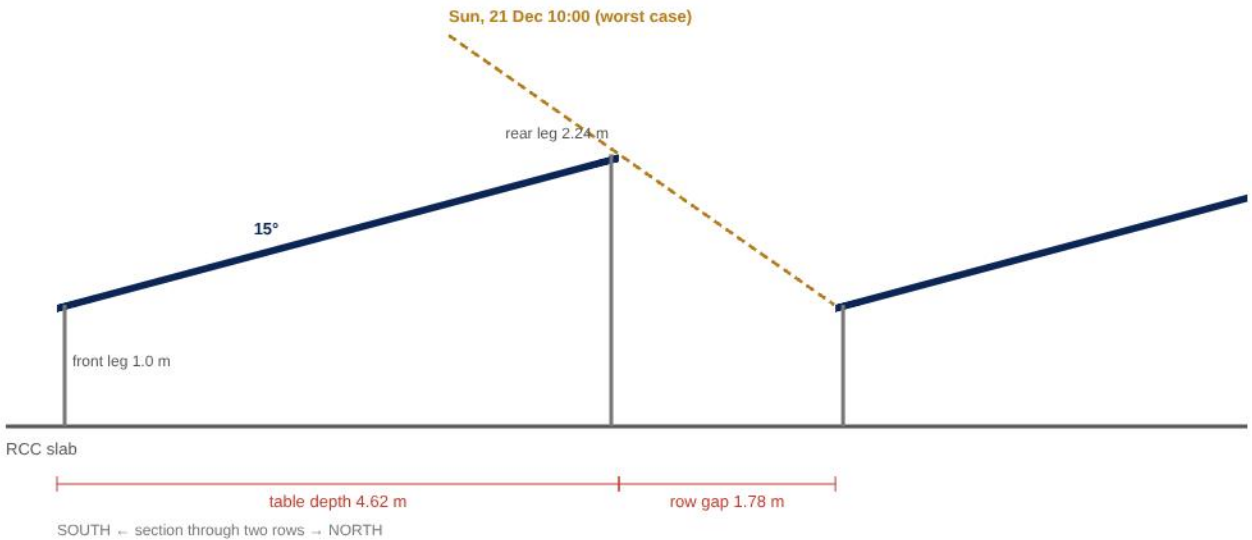
1. RCC roof 60.0 × 30.0 m, south-facing rows.
2. Tables 2P, tilt 15°.
3. Front leg 1000 mm, rear leg 2238 mm.
4. Row gap 1780 mm (clear, from 21 Dec 10:00–14:00 shadow).
5. Lane gap 1000 mm between tables.
6. Edge setback 1000 mm.
7. Delivered as DWG; opens in AutoCAD.

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-2 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

Row spacing & shadow check

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



ROW-TO-ROW SHADING · 21 DEC · 10:00–14:00

Table rises **1.24 m** from front to back edge. The longest shadow of the top edge falls at 10:00: **1.77 m**. Row gap used: **1.78 m**, so no row shades the next in the window.

Solar time	Sun alt.	Azimuth	Gap needed
10:00	30.6°	148°	1.77 m
11:00	36.1°	163°	1.62 m
12:00	38.1°	180°	1.58 m
13:00	36.1°	197°	1.62 m
14:00	30.6°	212°	1.77 m

Obstacle shadows

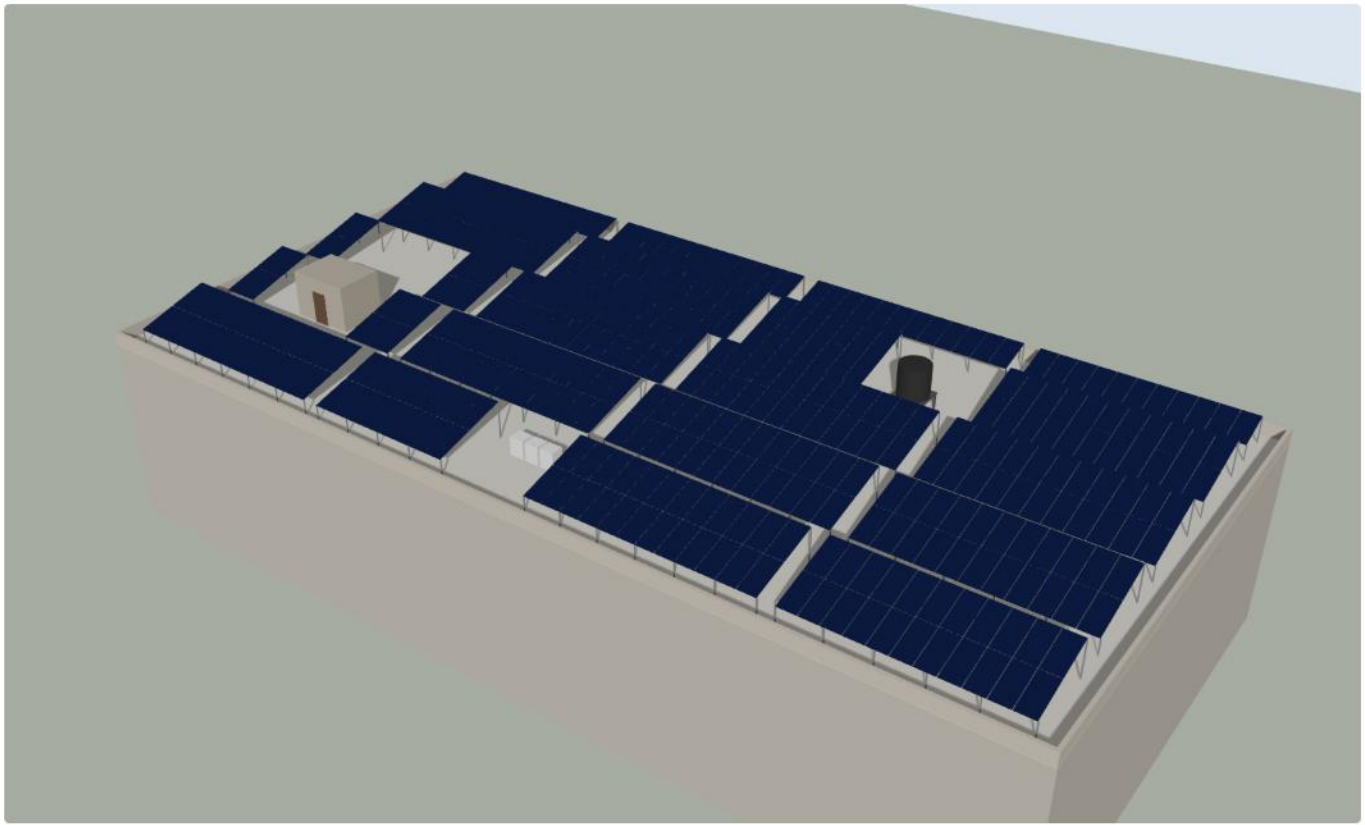
Stair room and tank shadows (above the 1.0 m panel edge) are checked for the same window; **22 module positions** left out. Date and time window can be set to the customer's requirement.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-3 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

3D model

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



From 2D layout to 3D model

Tables raised on structure at 15° tilt, front leg 1.0 m, rear leg 2.24 m, with real obstacle heights:

- Stair room (mumty) · 3.0 m
- Water tank on stand · 3.0 m
- AC outdoor units · 1.2 m
- Parapet · 0.9 m

Sun shown: 21 Dec, 10:00 — the worst case for row shadows.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-4 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Table list (for structure supplier)

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp

Table	Row	Type	Mods	kWp	Front leg	Rear leg
T01	R1	1P×12	12	7.44	1.00 m	1.62 m
T02	R1	1P×12	12	7.44	1.00 m	1.62 m
T03	R1	1P×12	12	7.44	1.00 m	1.62 m
T04	R1	1P×11	11	6.82	1.00 m	1.62 m
T05	R2	2P×12	24	14.88	1.00 m	2.24 m
T06	R2	2P×12	24	14.88	1.00 m	2.24 m
T07	R2	2P×7	14	8.68	1.00 m	2.24 m
T08	R2	2P×11	22	13.64	1.00 m	2.24 m
T09	R3	2P×2	4	2.48	1.00 m	2.24 m
T10	R3	2P×3	6	3.72	1.00 m	2.24 m
T11	R3	2P×12	24	14.88	1.00 m	2.24 m
T12	R3	2P×12	24	14.88	1.00 m	2.24 m
T13	R3	2P×11	22	13.64	1.00 m	2.24 m
T14	R4	2P×2	4	2.48	1.00 m	2.24 m
T15	R4	2P×3	6	3.72	1.00 m	2.24 m
T16	R4	2P×12	24	14.88	1.00 m	2.24 m
T17	R4	2P×12	24	14.88	1.00 m	2.24 m
T18	R4	2P×11	22	13.64	1.00 m	2.24 m
T19	R5	2P×12	24	14.88	1.00 m	2.24 m
T20	R5	2P×8	16	9.92	1.00 m	2.24 m
T21	R5	2P×12	24	14.88	1.00 m	2.24 m
T22	R5	2P×11	22	13.64	1.00 m	2.24 m
Total (22 tables)			**377**	**233.74**		

Table types

1P×12	3 nos
2P×12	8 nos
1P×11	1 nos
2P×11	4 nos
2P×8	1 nos
2P×7	1 nos
2P×3	2 nos
2P×2	2 nos

2P = 2 modules up the slope; ×n = modules across. Front and rear leg heights per table, as structure suppliers ask.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-5 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

DC string design

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



Inverter 1 · 110 kW · 11 strings · 122.8 kWp DC

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11

Inverter 2 · 110 kW · 10 strings · 111.0 kWp DC

S12 S13 S14 S15 S16 S17 S18 S19 S20 S21

20 strings × 18 + 1 × 17. Portrait: strings run along the rows of each table, keeping module leads short.

Electrical check (per string)

Modules per string	18 (S21: 17, on its own MPPT)
Voc at 3 °C (cold morning)	1,056 V < 1,100 V max ✓
Vmp at STC	828 V, inside MPPT range ✓
Vmp of short string S21	782 V, inside MPPT range ✓
DC/AC ratio (2 × 110 kW)	1.06

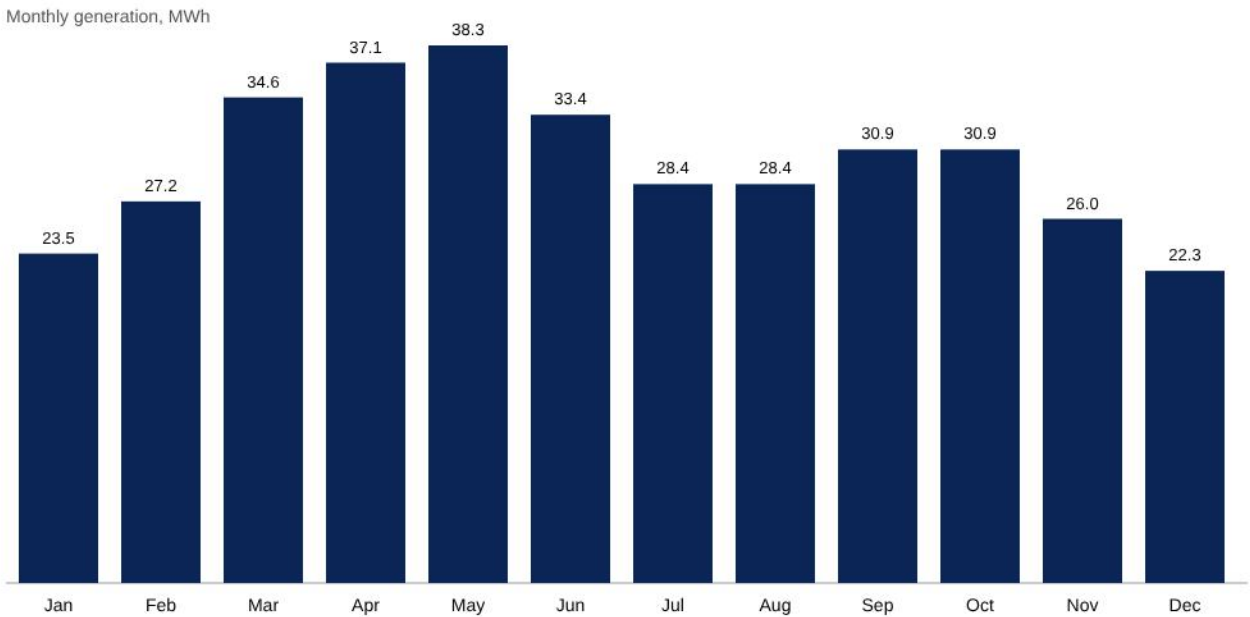
Typical 620 Wp TOPCon values: Voc 55.6 V, Vmp 46.0 V, Isc 14.2 A, Voc coefficient −0.25 %/°C.

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-6 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days

Generation estimate

Sample BP15 · 60 m × 30 m RCC roof · Portrait · 15° tilt · front leg 1.0 m · 377 modules × 620 Wp · 233.7 kWp



YEAR-1 GENERATION

361 MWh

≈ 1,545 kWh per kWp per year (typical, illustrative)

Assumptions

Location: Gurugram, Haryana

South-facing, 15° tilt

Performance ratio 0.78

No row-to-row or obstacle shading 10:00–14:00, 21 Dec

Year-1 value; degradation not applied

SAMPLE DESIGN PACK — FOR ILLUSTRATION ONLY

PROJECT Sample C&I rooftop (fictional)	SHEET BP15-7 / 7
DESIGNED BY Titan Solar Energy Providers	TURNAROUND 2 working days