PROPOSED SOLAR POWER MINI GRID

CDEL PROJECT

SAFAN CHARANCHI, KATSINA LGA

KATSINA STATE

DETAILED DESIGN DRAWING

COOPI-Cooperazionale Internazionale

EFAB ESTATE NO 19 LONDON STREET
KARSANA, GWARIMPA, ABUJA

COOPI
COOPERAZIONE INTERNAZIONALE

UK International Development
Partnership | Progress | Prosperity

KATSINA STATE DEVELOPMENT MANAGEMENT BOARD

OCTOBER, 2026

For Tender



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A00

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

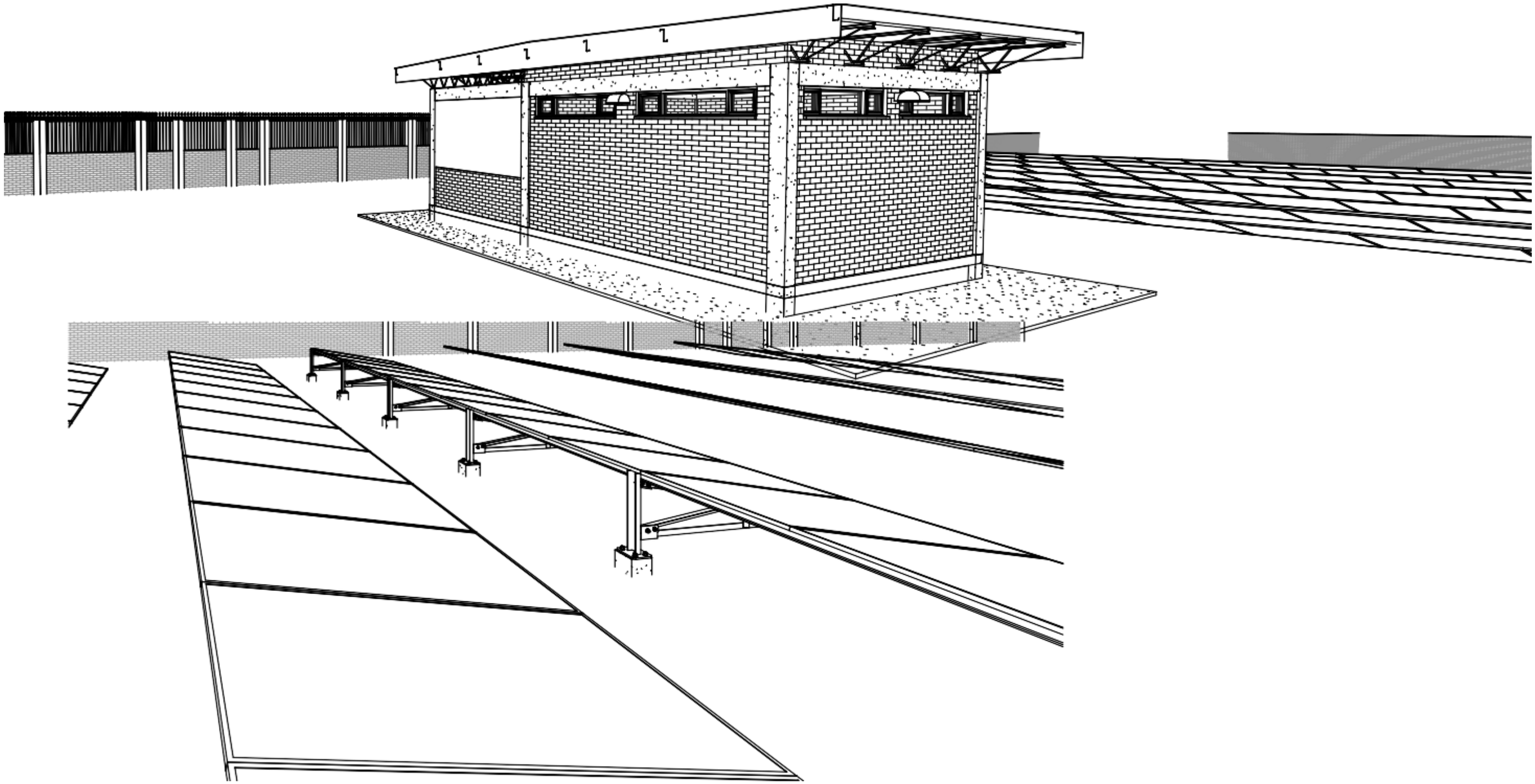
Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID 3D-1

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Prof. Jamil Usman
Scale	A00

For Tender

10/22/2025 12:07:51 PM



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A01

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID **3D-2**

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Prof. Jamil Usman
Scale	A01

For Tender

10/22/2025 12:07:53 PM



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI
COOPERAZIONE INTERNAZIONALE

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A02-B

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID SITE IMAGERY

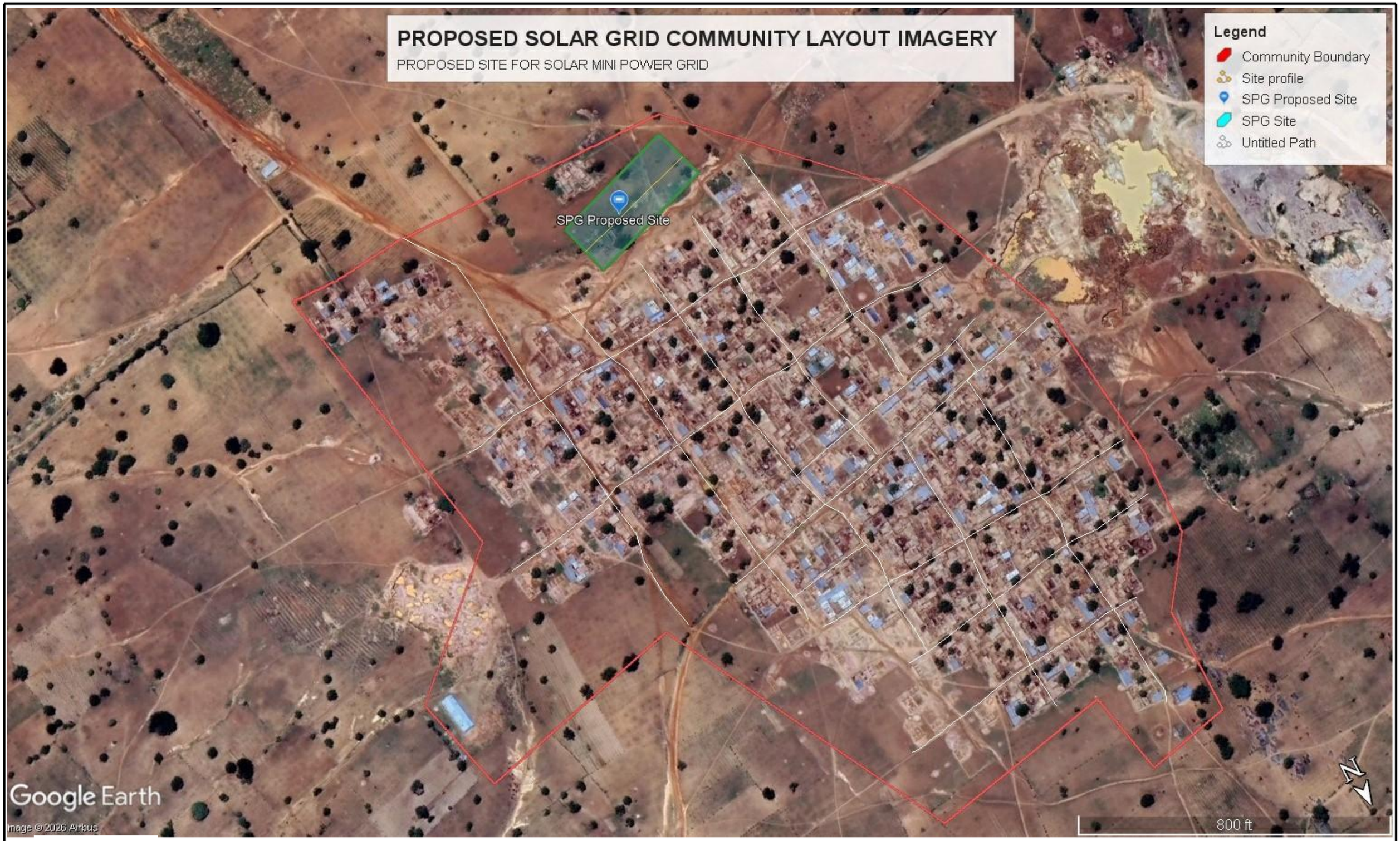
Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	JA
Scale	A02-B

For Tender

10/22/2025 12:07:54 PM

PROPOSED SOLAR GRID COMMUNITY LAYOUT IMAGERY

PROPOSED SITE FOR SOLAR MINI POWER GRID



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A02-C

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

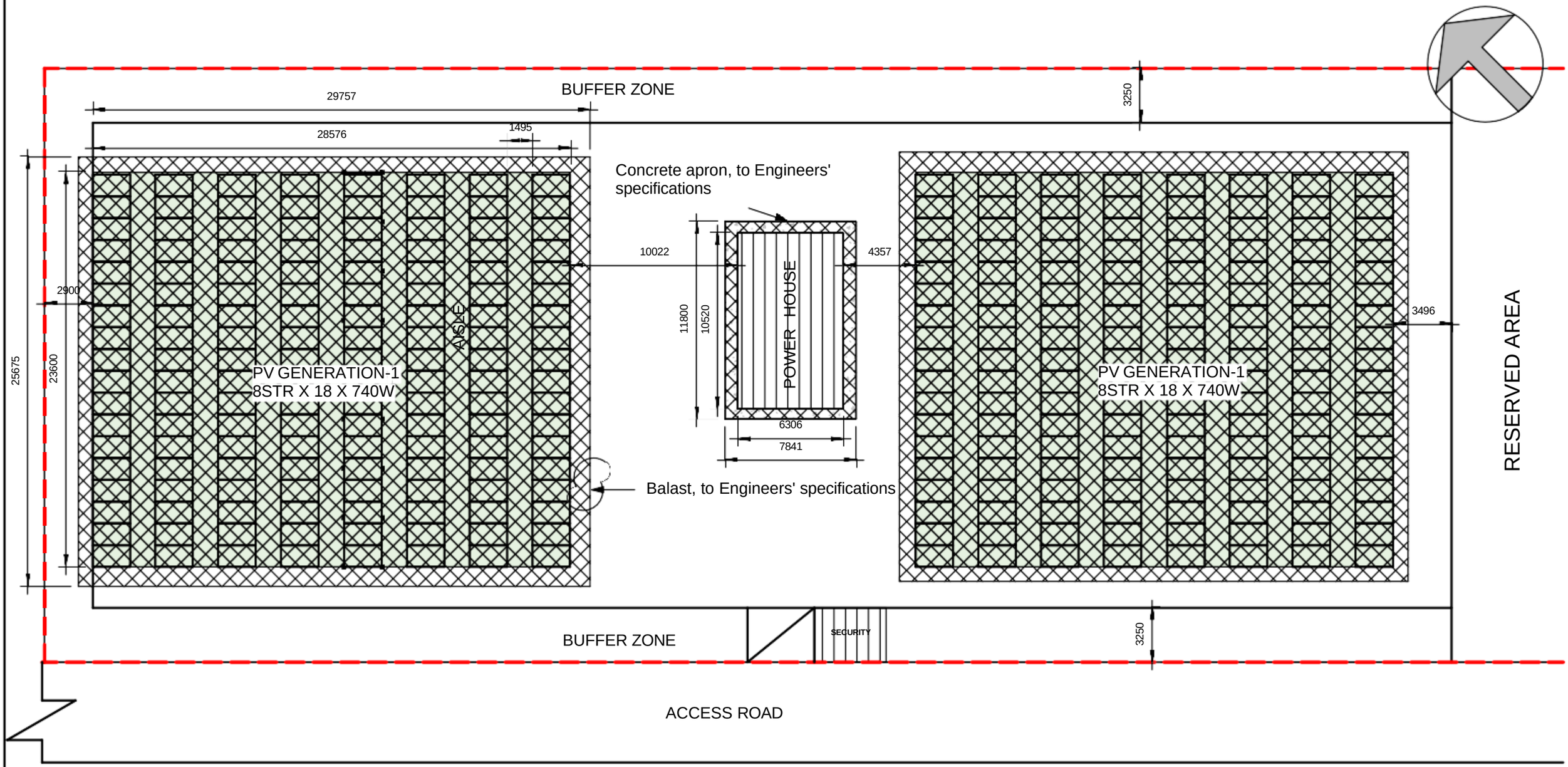
Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID LAYOUT

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Engr. Jamil Usman
Scale	A02-C

For Tender

10/22/2025 12:07:54 PM



SITE PLAN

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A03

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date
1	Revision 1	Date 1

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

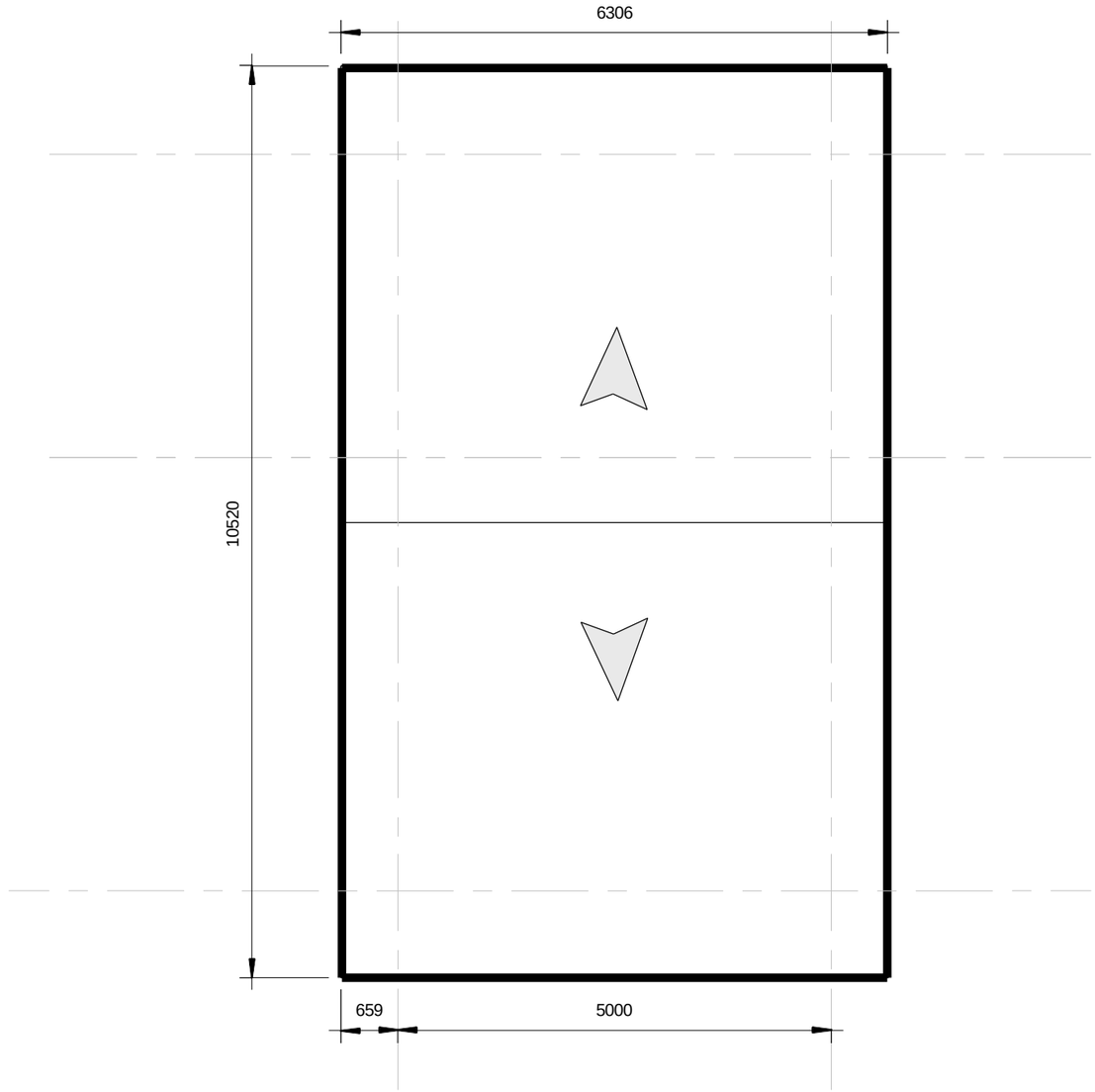
Sheet ID SITE PLAN

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Engr. Jamil Usman
Scale	1 : 230

A03

For Tender

10/22/2025 12:07:55 PM



ROOF PLAN

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A04

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

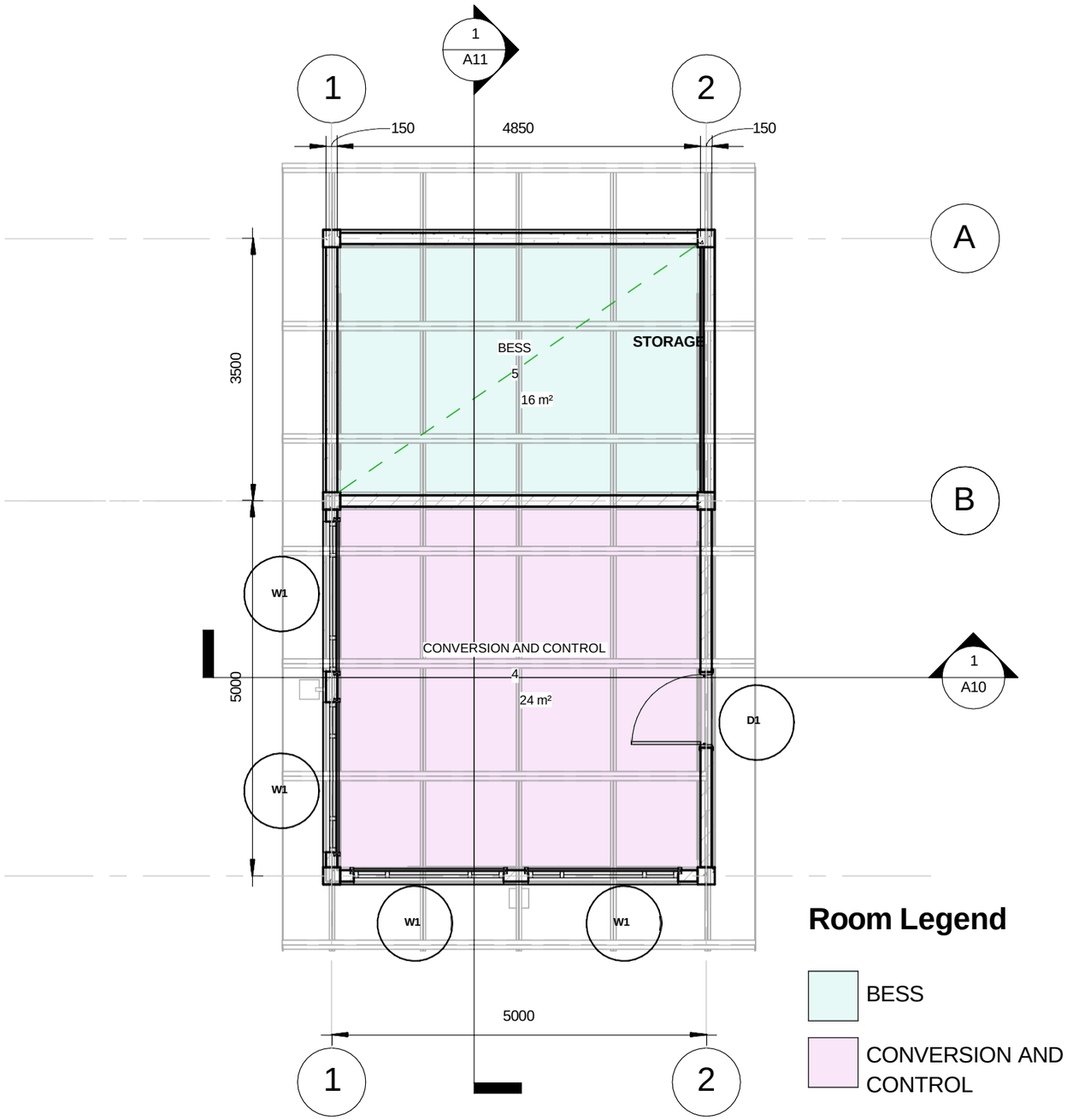
Sheet ID ROOF PLAN

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Arc. Derick E.
Scale	1 : 70

A04

For Tender

10/22/2025 12:07:55 PM



Room Legend

- BESS
- CONVERSION AND CONTROL

FLOOR PLAN

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A05

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID FLOOR PLAN

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Engr. Jamil Usman
Scale	1 : 70

A05

For Tender

10/22/2025 10:42:18 AM



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A06

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

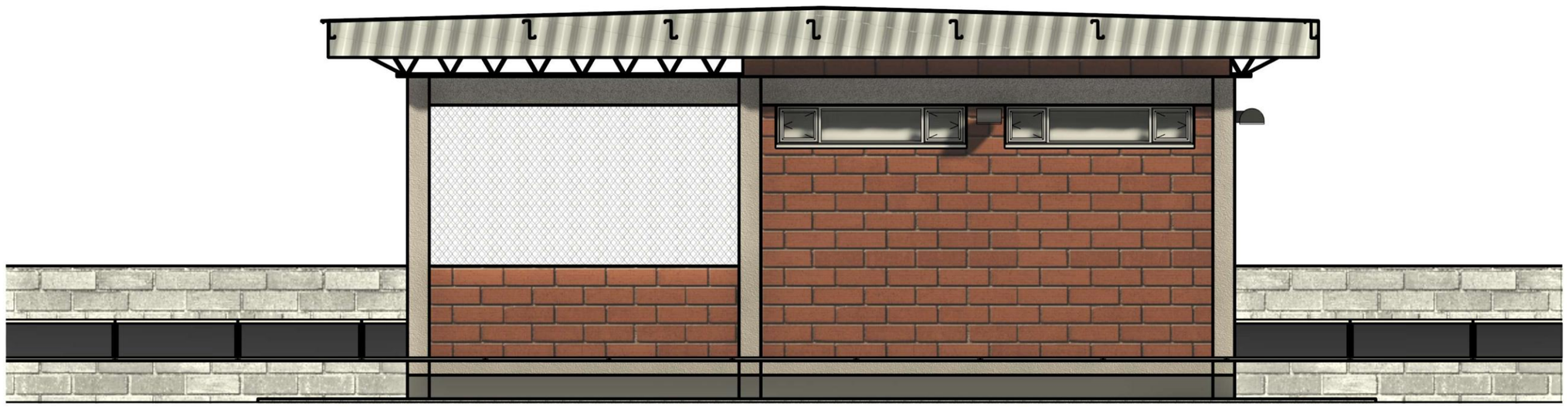
Sheet ID — EAST ELEVATION

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Arc. Derick E.
Scale	1 : 50

A06

For Tender

10/22/2025 12:07:58 PM



REAR ELEVATION

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A07

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

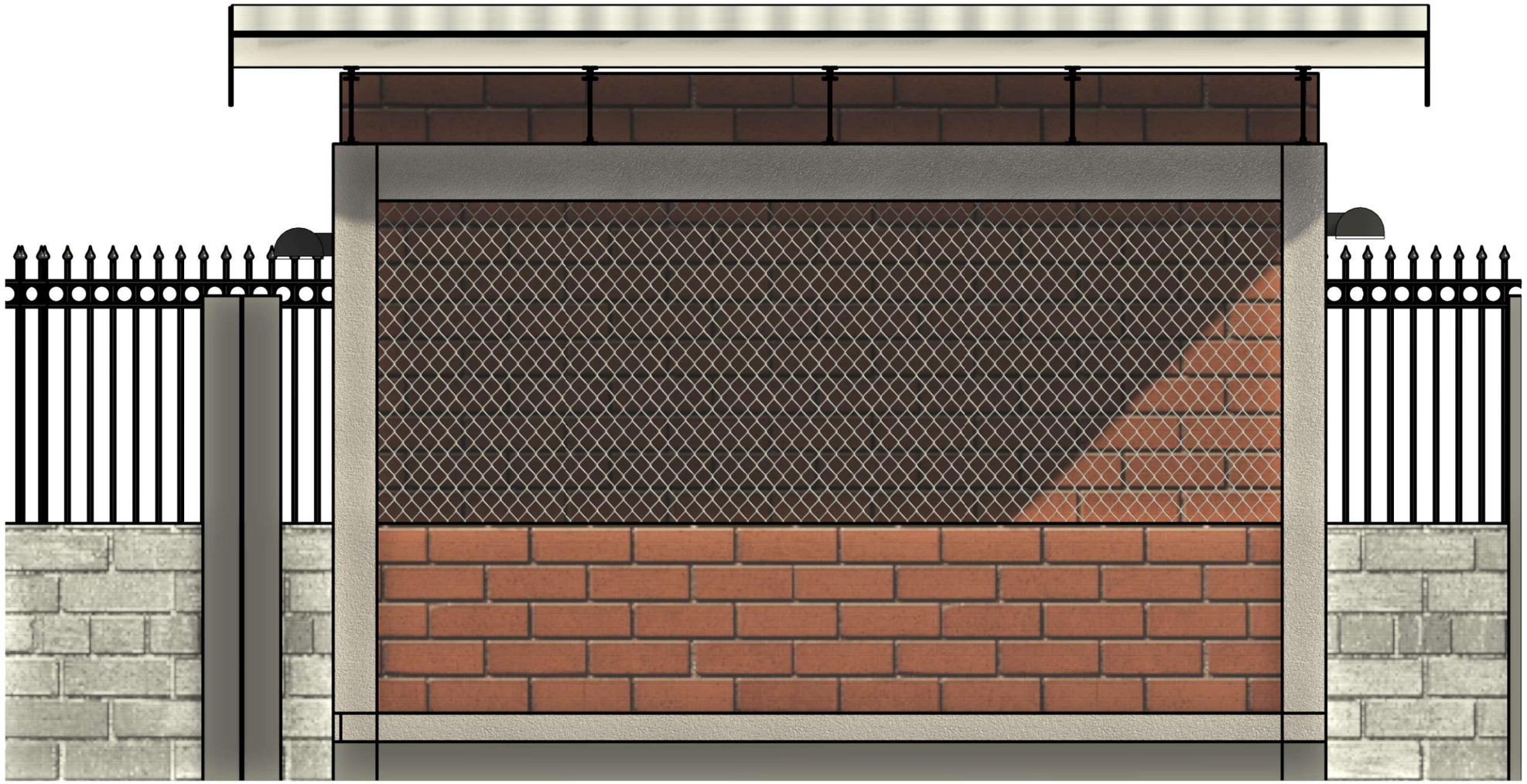
Sheet ID WEST ELEVATION

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Arc. Derick E.
Scale	1 : 50

A07

For Tender

10/22/2025 12:08:00 PM



LEFT ELEVATION

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A08

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

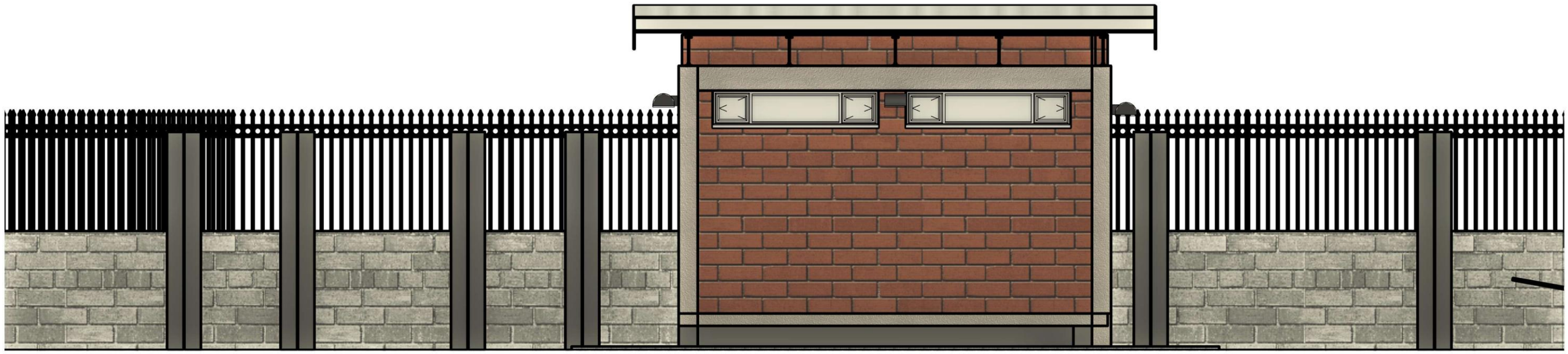
Sheet ID NORTH ELEVATION

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Engr. Jamil Usman
Scale	1 : 25

A08

For Tender

10/22/2025 12:08:02 PM



RIGHT ELEVATION

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A09

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

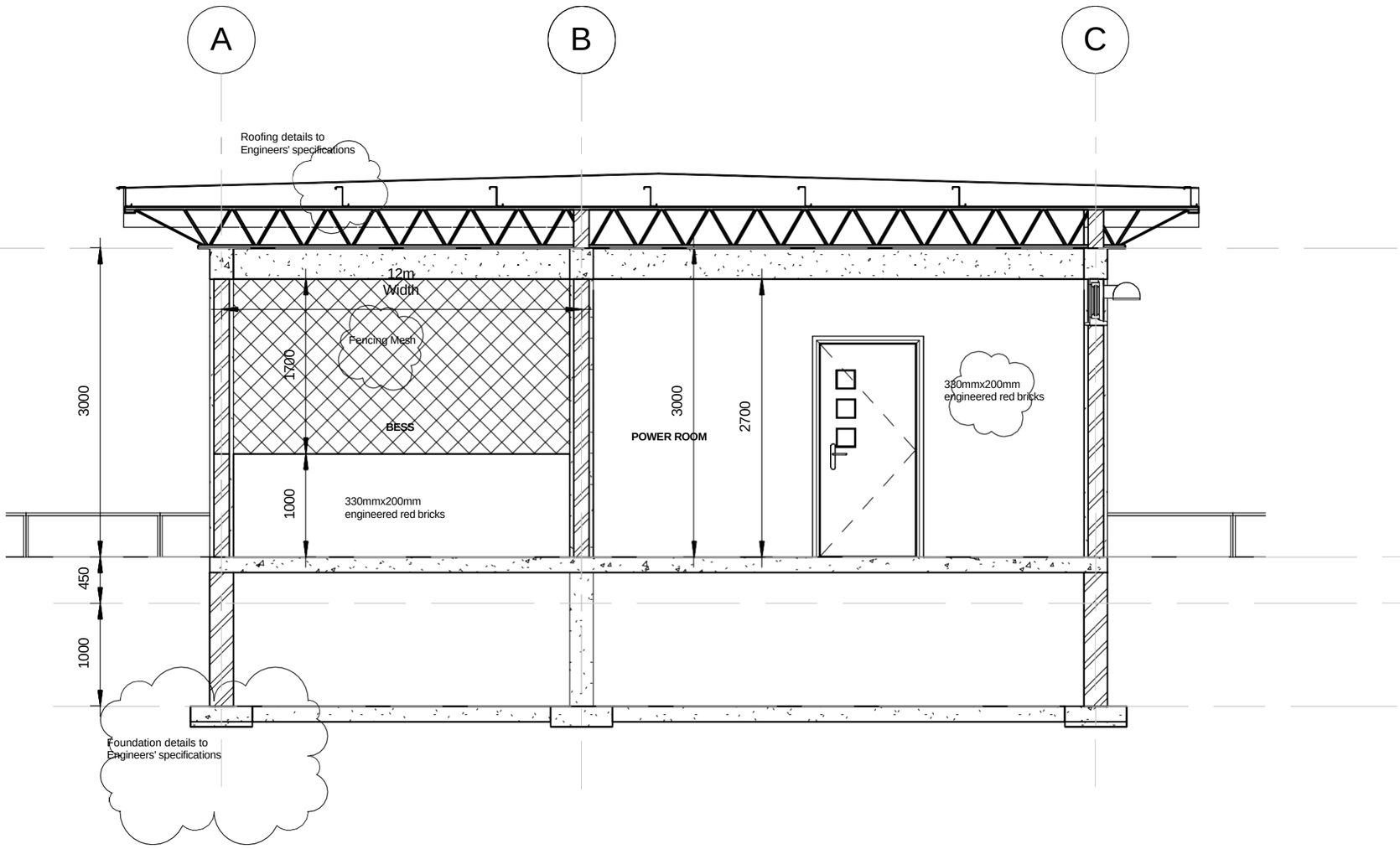
Sheet ID SOUTH ELEVATION

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Engr. Jamil Usman
Scale	1 : 50

A09

For Tender

10/22/2025 12:08:04 PM



SECTION X-X

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A11

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date
1	Revision 1	Date 1

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID SECTION X-X

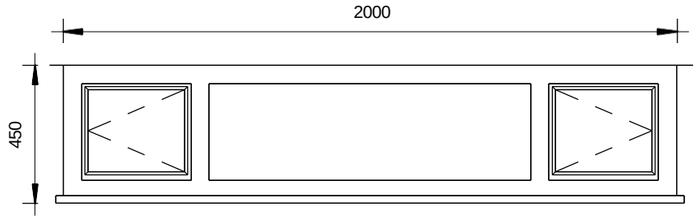
Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Arc. Derick E.
Scale	1 : 50

A11

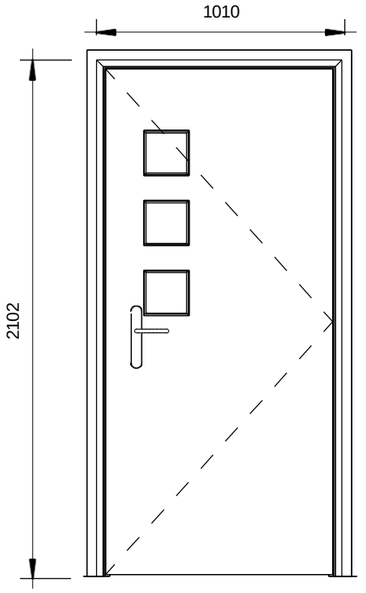
For Tender

10/22/2025 12:08:04 PM

Window Schedule					
Type	Height	Width	Count	Area	Total Area
Industrial casement 450mmx2000mm	0.5	2.0	4	0.9 m²	3.6 m²



Door Schedule					
Family and Type	Height	Width	Count	Area	Total Area
IntSgl (4): 1010 x 2110mm	2110	1010	1	2.1 m²	2.1 m²



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A12

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

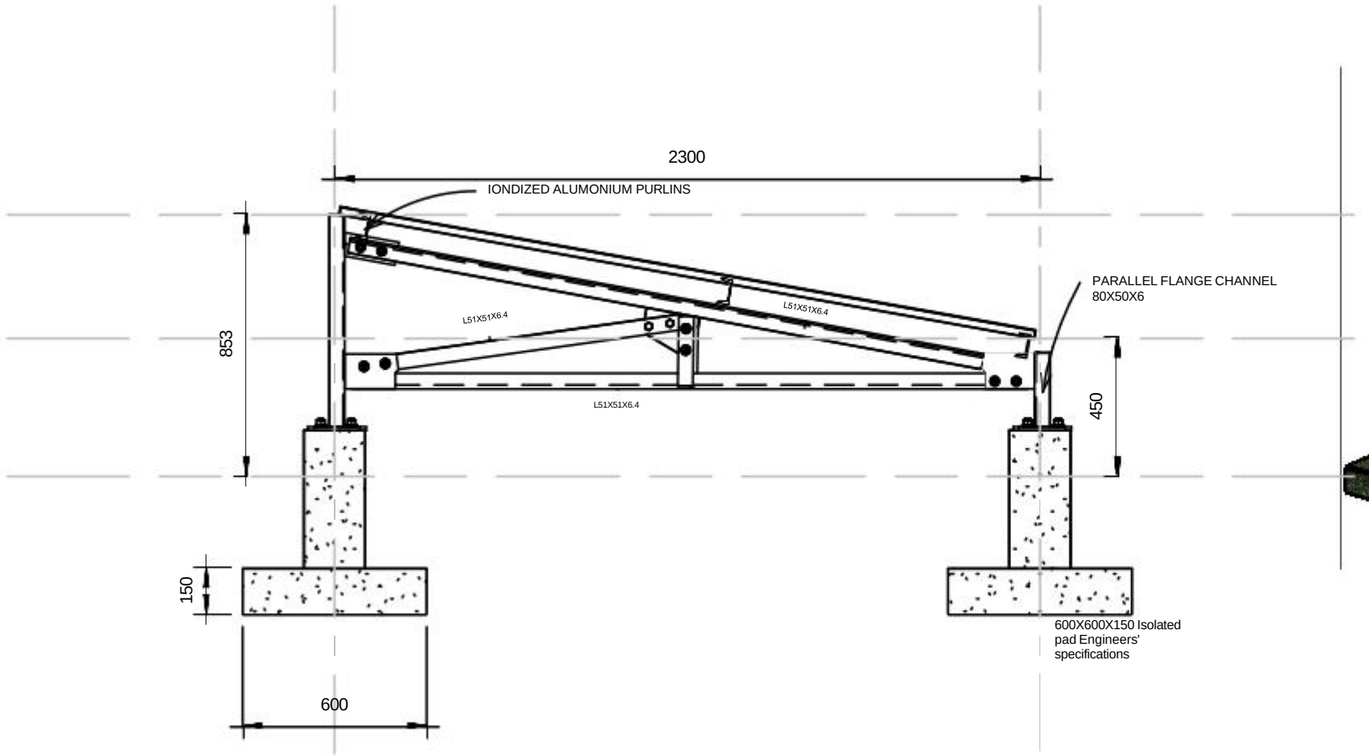
Sheet ID SCHEDULE

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Engr. Jamil Usman
Scale	As indicated

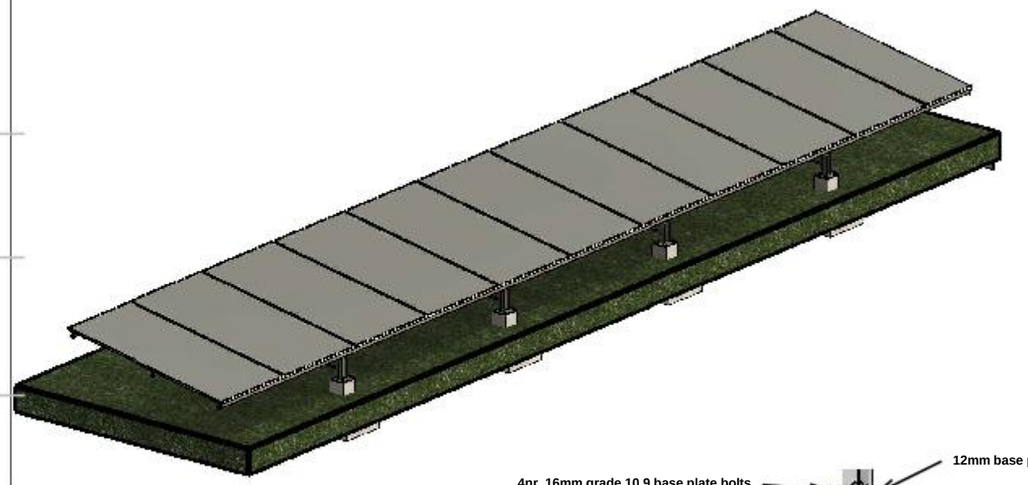
A12

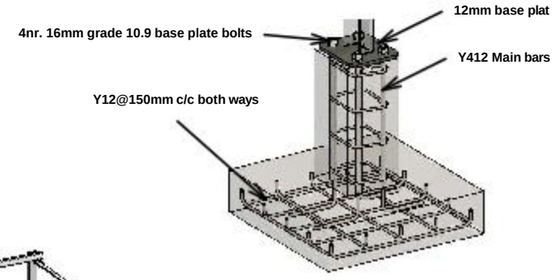
For Tender

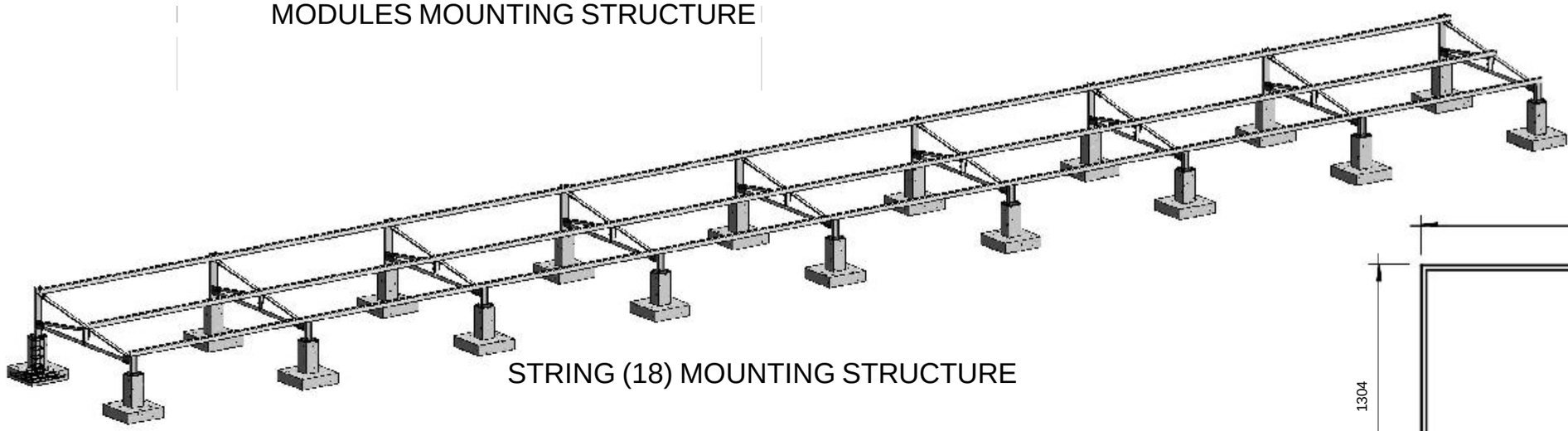
10/22/2025 12:08:05 PM



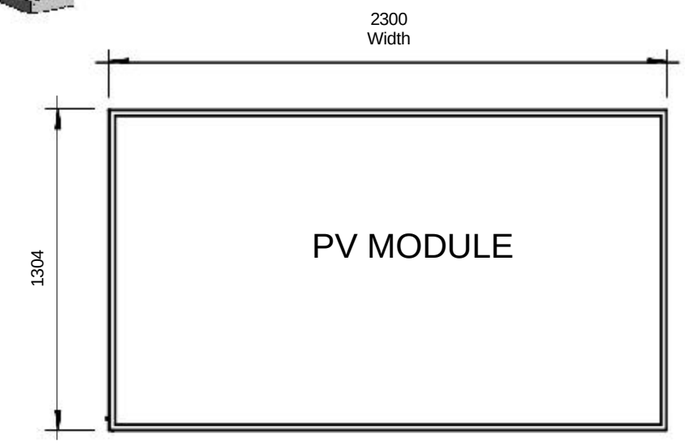
MODULES MOUNTING STRUCTURE







STRING (18) MOUNTING STRUCTURE



UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A13

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID MOUNTING STR

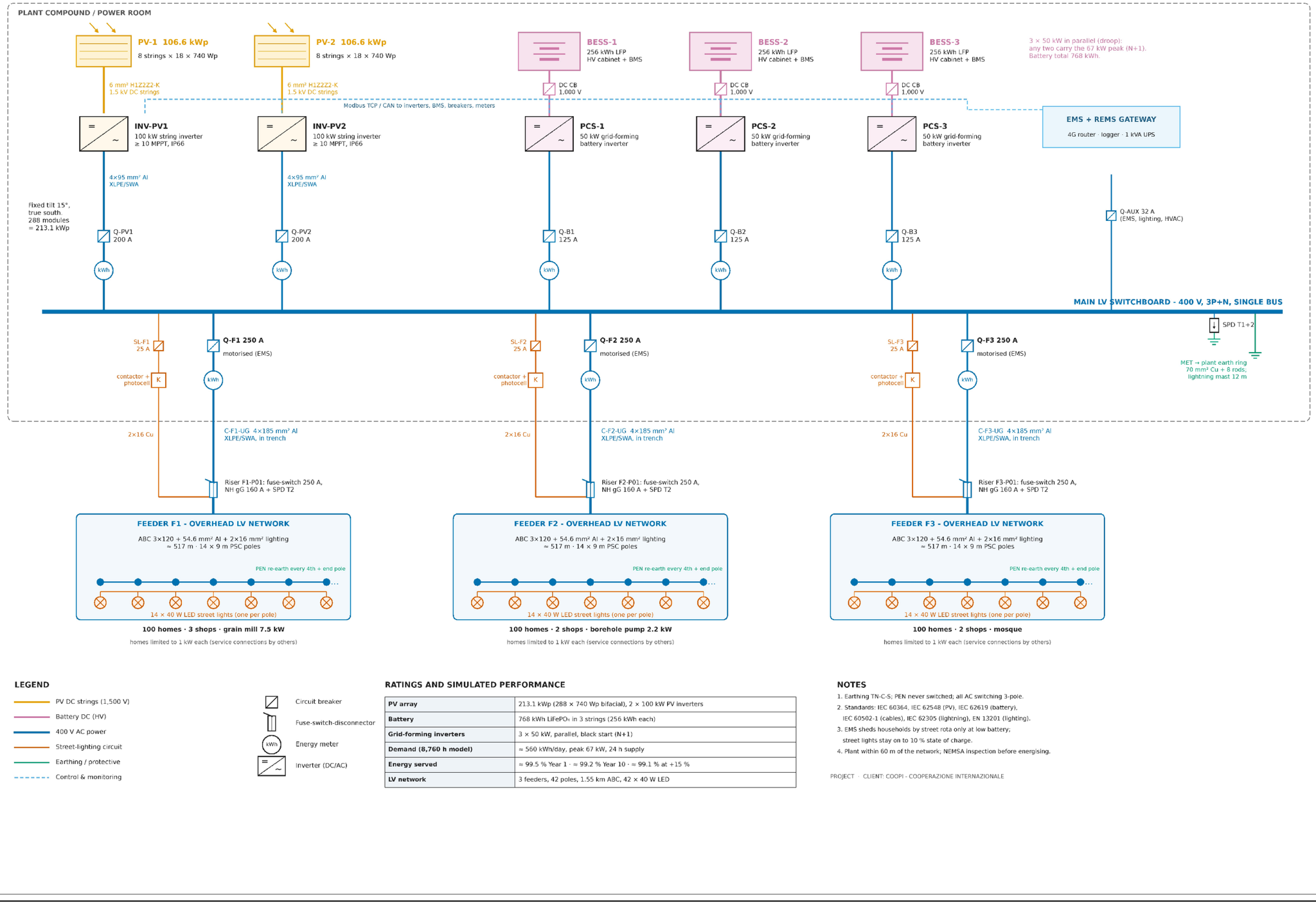
Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	A. A Kantoma
Checked by	Arc. Derick E.
Scale	As indicated

A13

For Tender

10/22/2025 12:08:07 PM

SINGLE-LINE DIAGRAM - SINGLE-LINE DIAGRAM - POWER SOURCE, POWER LINE AND STREET LIGHTING



LEGEND

- PV DC strings (1,500 V)
- Battery DC (HV)
- 400 V AC power
- Street-lighting circuit
- Earthing / protective
- Control & monitoring
- Circuit breaker
- Fuse-switch-disconnector
- Energy meter
- Inverter (DC/AC)

RATINGS AND SIMULATED PERFORMANCE

PV array	213.1 kWp (288 × 740 Wp bifacial), 2 × 100 kW PV inverters
Battery	768 kWh $LiFePO_4$ in 3 strings (256 kWh each)
Grid-forming inverters	3 × 50 kW, parallel, black start (N+1)
Demand (8,760 h model)	≈ 560 kWh/day, peak 67 kW, 24 h supply
Energy served	≈ 99.5 % Year 1 · ≈ 99.2 % Year 10 · ≈ 99.1 % at +15 %
LV network	3 feeders, 42 poles, 1.55 km ABC, 42 × 40 W LED

NOTES

1. Earthing TN-C-S; PEN never switched; all AC switching 3-pole.
2. Standards: IEC 60364, IEC 62548 (PV), IEC 62619 (battery), IEC 60502-1 (cables), IEC 62305 (lightning), EN 13201 (lighting).
3. EMS sheds households by street rota only at low battery; street lights stay on to 10 % state of charge.
4. Plant within 60 m of the network; NEMSA inspection before energising.

PROJECT · CLIENT: COOPI - COOPERAZIONE INTERNAZIONALE

UK International Development
Partnership | Progress | Prosperity

KTDMB
Katsina State Development and Management Board

COOPI
COOPERAZIONE INTERNAZIONALE

COOPI-Cooperazionale Internazionale
EFAB Estate No. 19, Londo Street
Karsana, Gwarimpa, Abuja

Status	Review	Version
Discipline	Common	V1-A14

General Notes

All dimensions are in milimeters except specified.
All specifications to be used as provided.

No.	Description	Date

Beneficiaries:
Safana Community, Charanchi LGA, Katsina State

Project:
Proposed Solar Power Mini Grid, Safana Charanchi Katsina

Sheet ID SCHEMATIC

Project number	CDEL/KT/APP-01
Date	October, 2026
Drawn by	Odo Jideofor
Checked by	Engr. Jamil Usman
Scale	A14

For Tender

10/22/2025 12:08:10 PM