UTICA™

Photovoltaic PV Structures

Assembly Works Description

Technical Department

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Website: www.utica.sg Email : info@utica.sg

Registration Number: 200806645 W

1 ASSEMBLY WORKS DECRIPTION

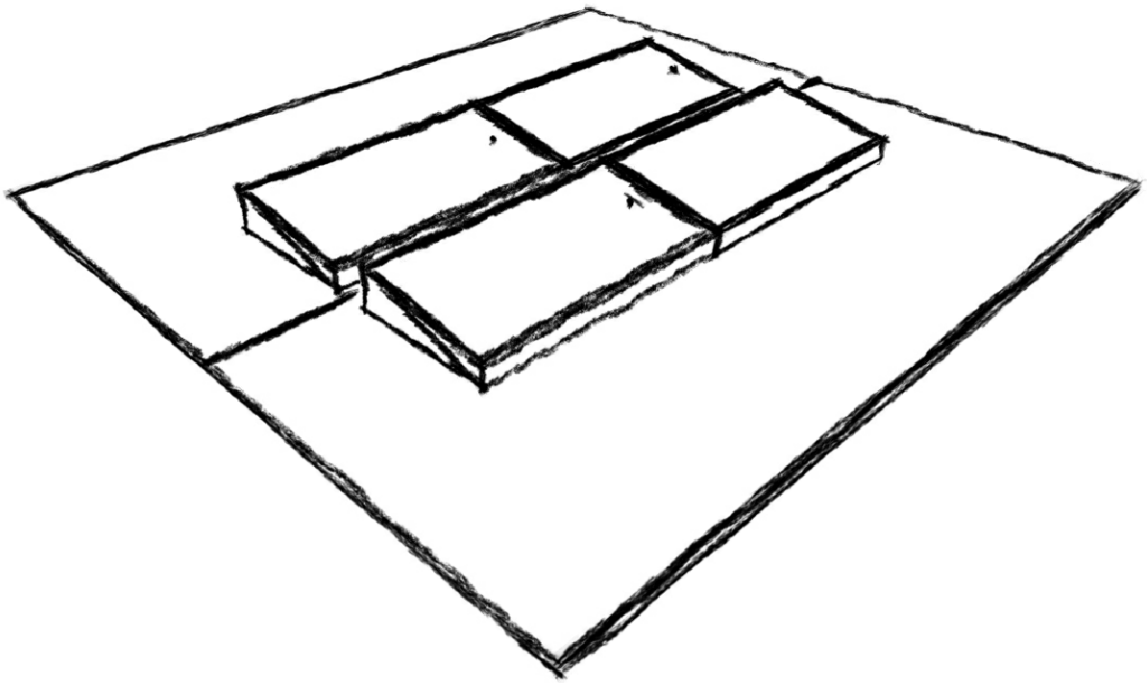
- Structure design has been developed by UTICA™ to withstand very strong winds and snow loads. UTICA™ PV frames and our high strength solar panels ensure robust and reliabilty of Utica Renewable Energy Systems at extreme conditions.
- The distribution of the photovoltaic array on the rooftop allows access to all PV panels without need of disassembling.
- In industrial buildings with plain rooftop made by corrugated steel sheet, solar panels are mounted on hot galvanized steel, with stainless steel fasteners, screws and bolts. All parts of this structure are completely corrosion resistant and assure neither corrosion nor wasting in outdoor exposure.
- We are specialist into installations located on a metal standing seam roof using non aggressive solutions to assure the waterproofing (you can see some of them on the details attached)
- The design of the support and bracket guarantees no accumulation of water below the panels, preventing insects or epidemic spreading. Additionally, it allows proper ventilation to the photovoltaic module, and it causes no overheating of the system.
- Fastening works to the roof should be done preferably by the roof constructor, so as not to violate the roof warranty

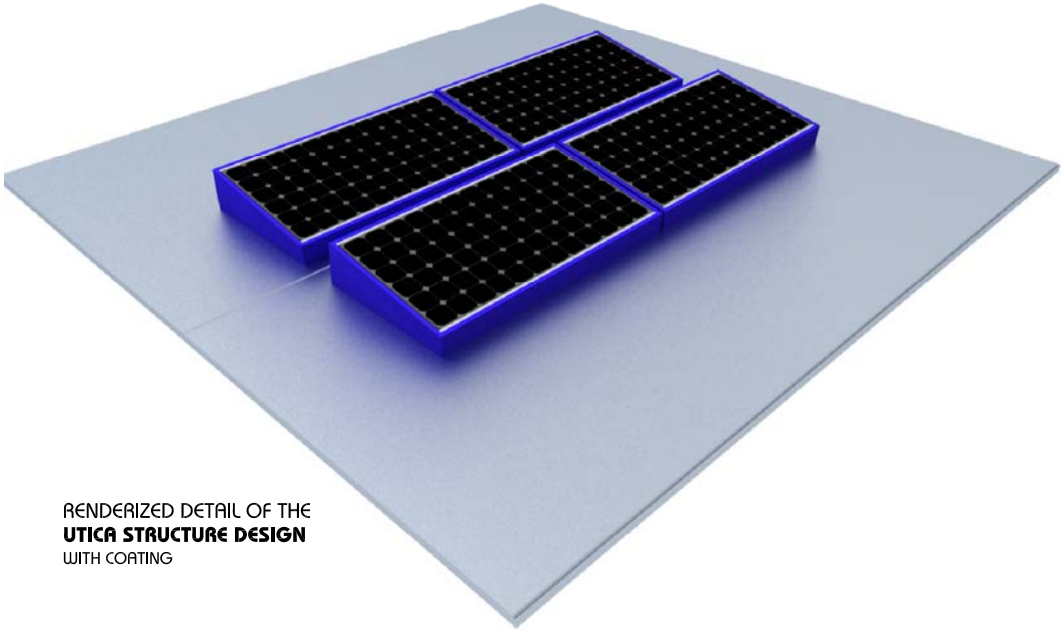
All the roof installation works will be done by roof installation experts whom core business are construction and roof building solutions.

We always propose to the client to contract the previous contractors that were appointed for the installation of their original metallic building roof. In the case that it is not possible to have the same people working on the new installation, we will then appoint professional local roof experts for these projects.

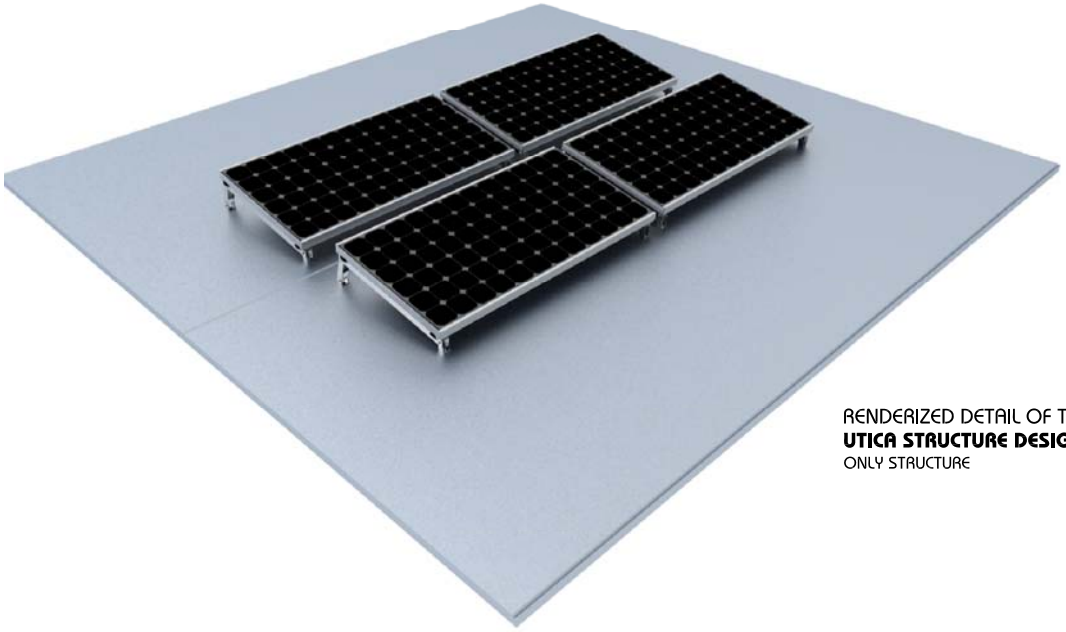
2 DRAWINGS & PHOTOS

Drawings and photos of the Photovoltaic installation made by Utica Solar are shown on the following pages





RENDERIZED DETAIL OF THE
UTICA STRUCTURE DESIGN
WITH COATING



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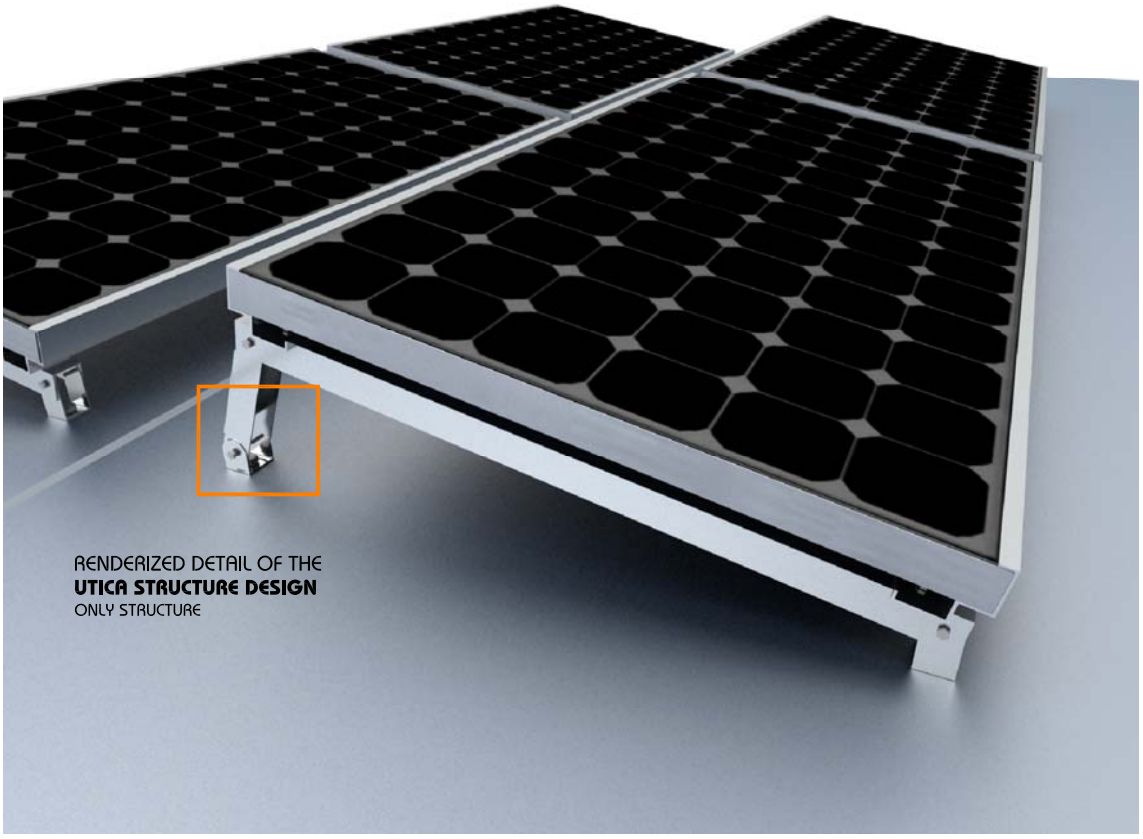
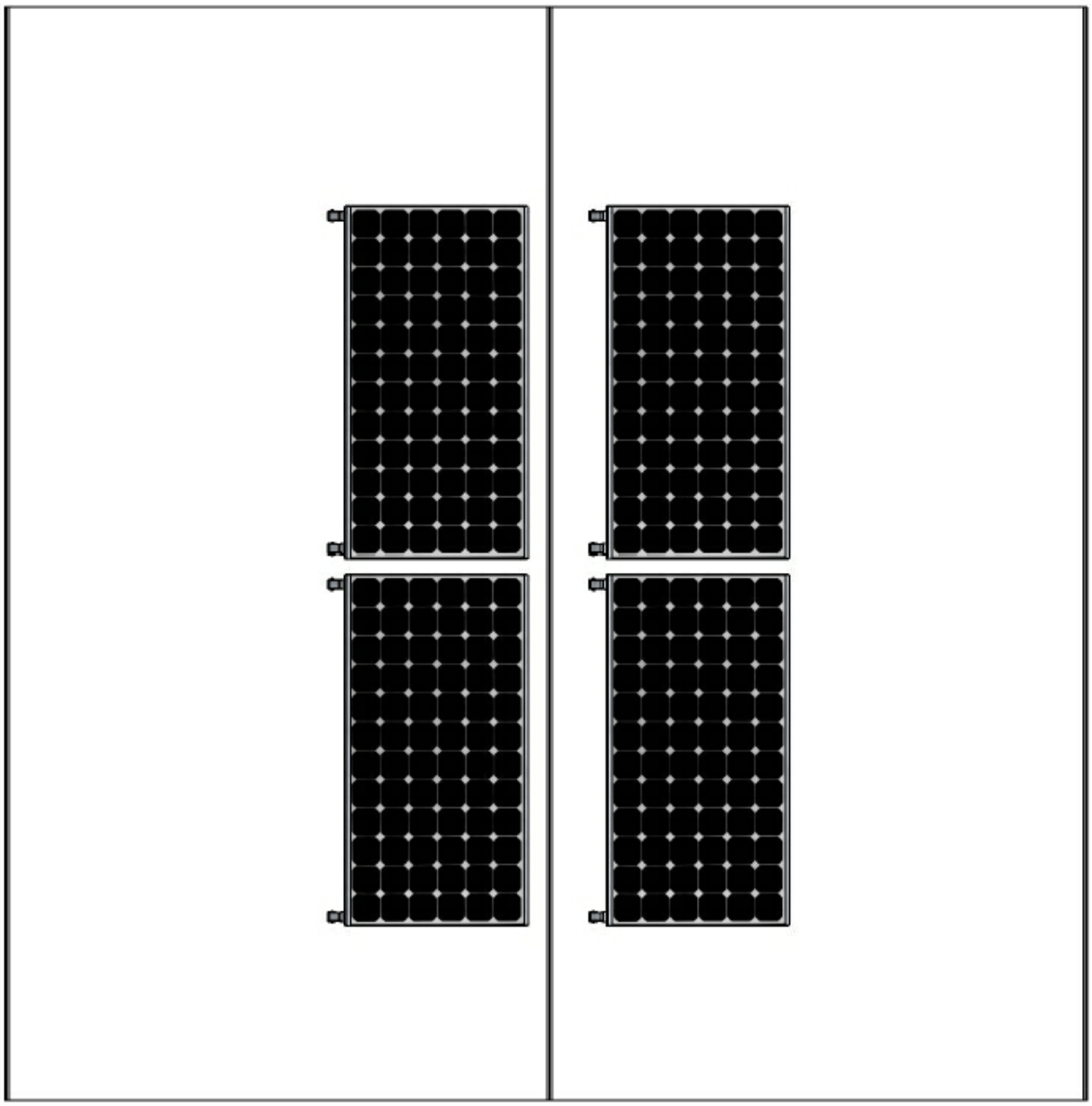
UTICA STRUCTURE DESIGN
ONLY STRUCTURE

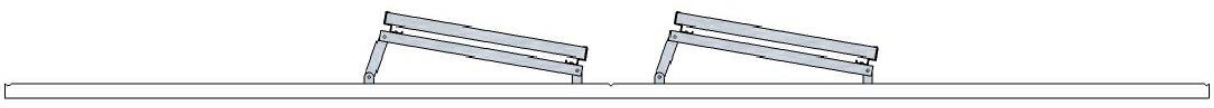


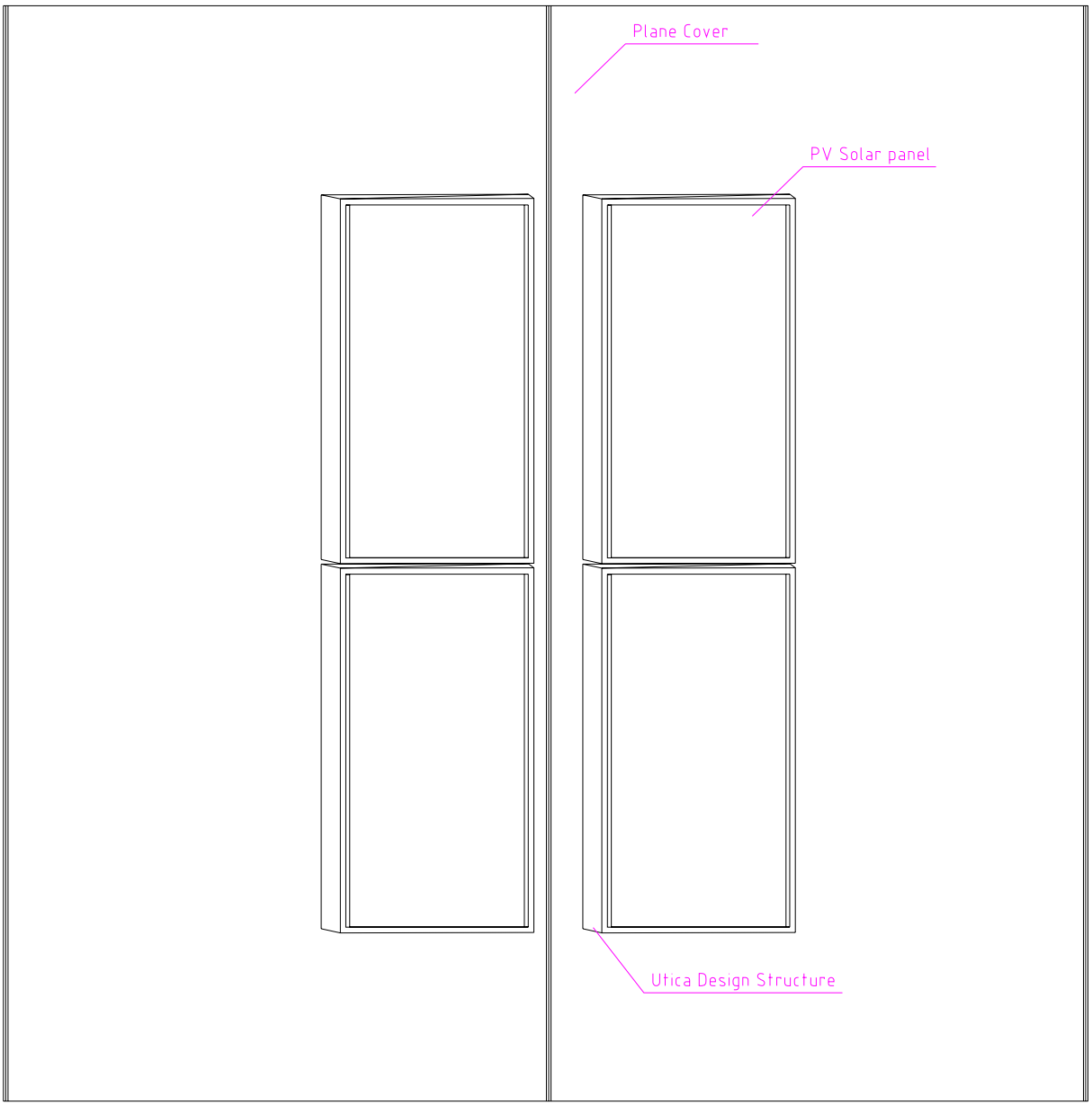
RENDERIZED DETAIL OF THE
UTICA STRUCTURE DESIGN
ONLY STRUCTURE

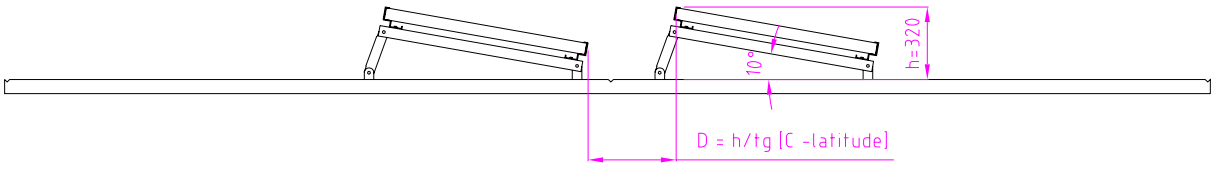
RENDERIZED DETAIL OF THE
UTICA STRUCTURE DESIGN
ONLY STRUCTURE

UTICA™









1. As the latitude is very close to the equator, so the inclination is significant, we will be guided by the meridian nearest. In this case latitude 10 º
2. The constant "c" is 61, this is fixed irrespective of the latitude

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FIXING ROOF SYSTEM FROM METAL STRUCTURE (TYPE 1)

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FIXING ROOF SYSTEM FROM METAL STRUCTURE (TYPE 2)

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FIXING ROOF SYSTEM FROM METAL STRUCTURE (DETAILS)

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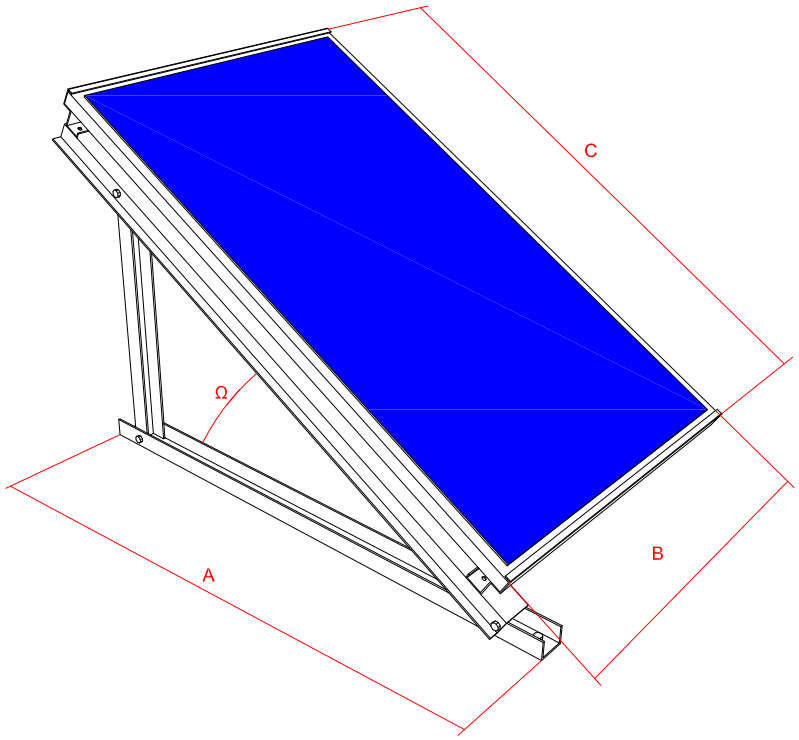

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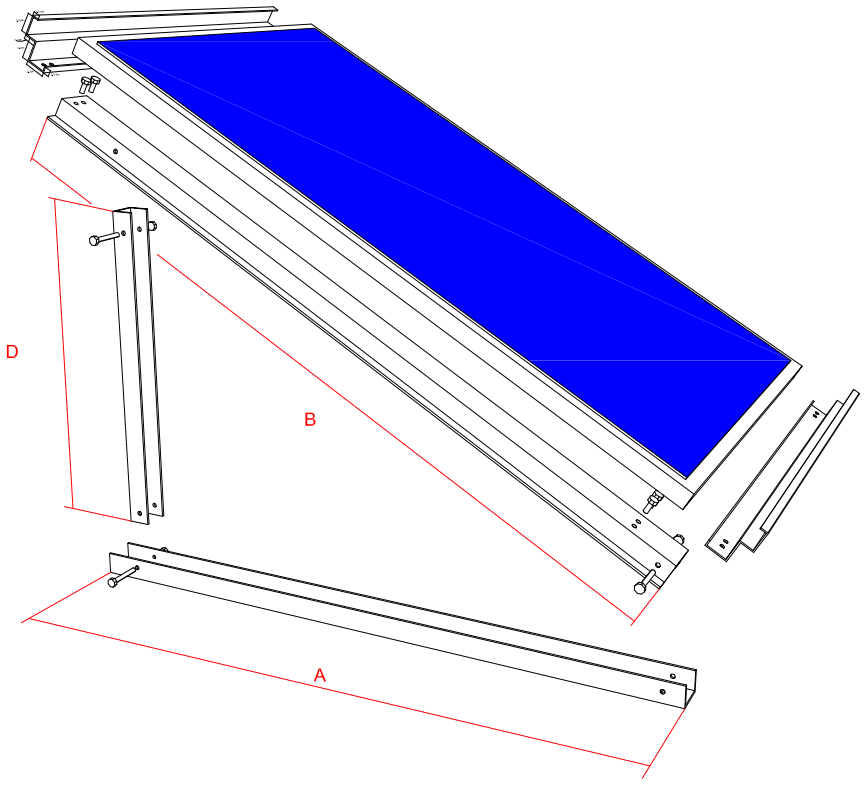

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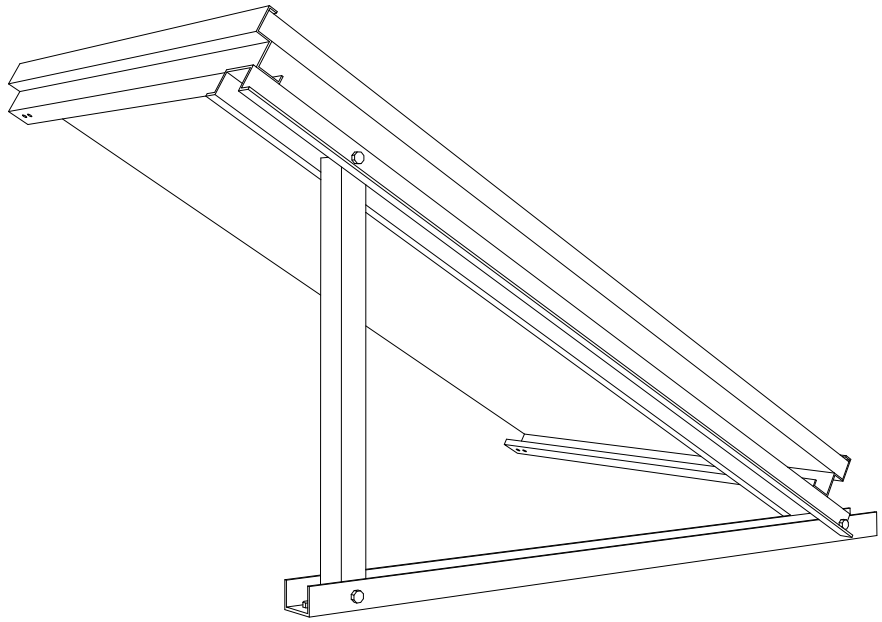

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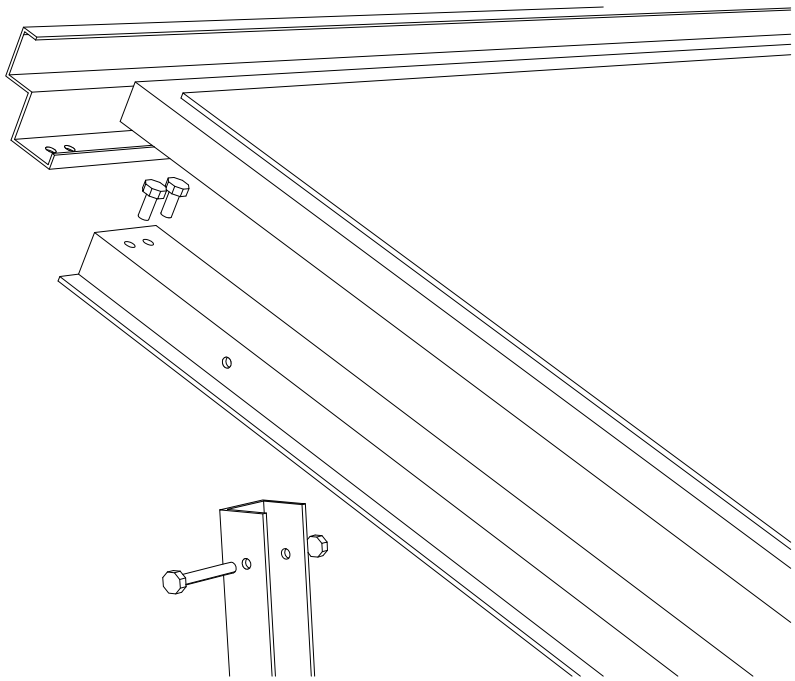

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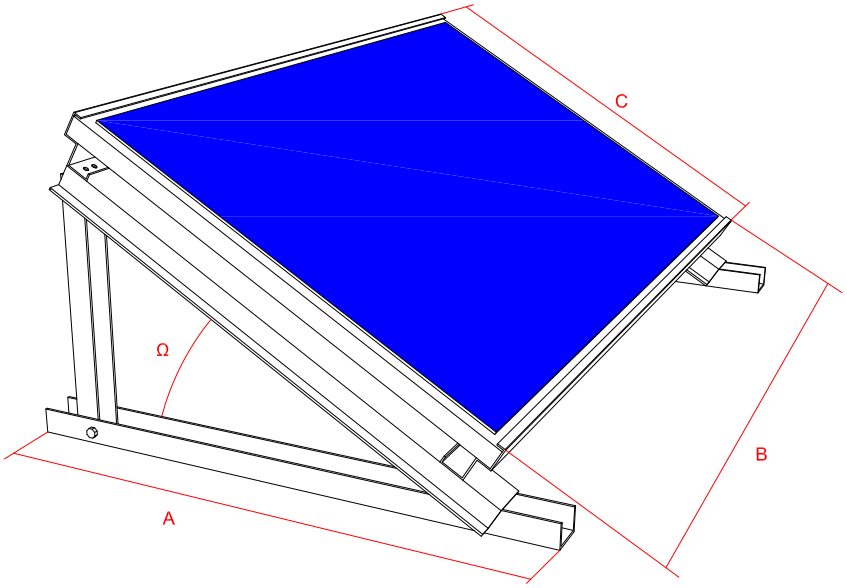

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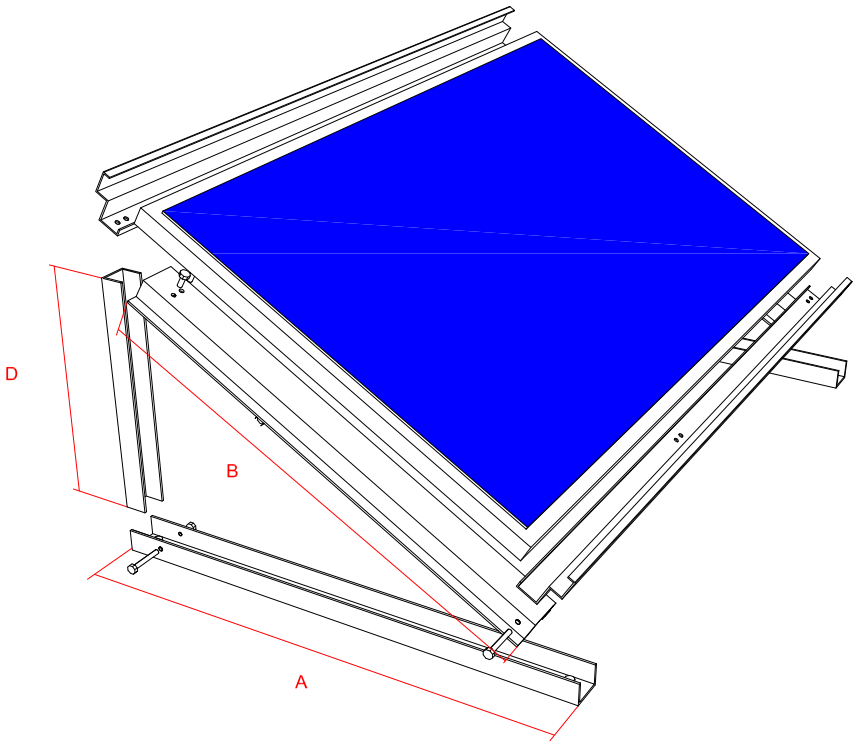

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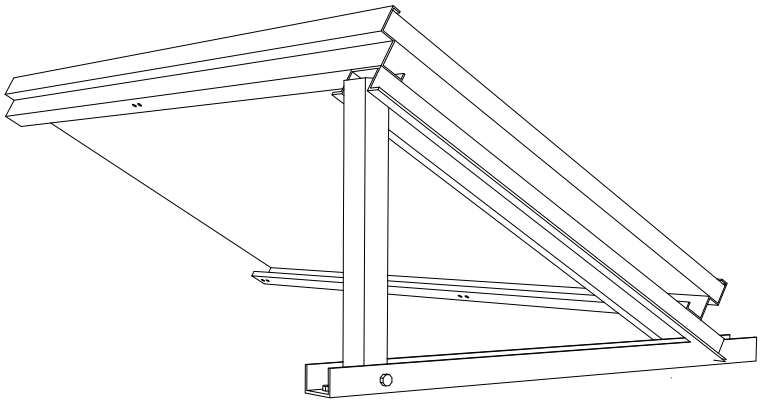

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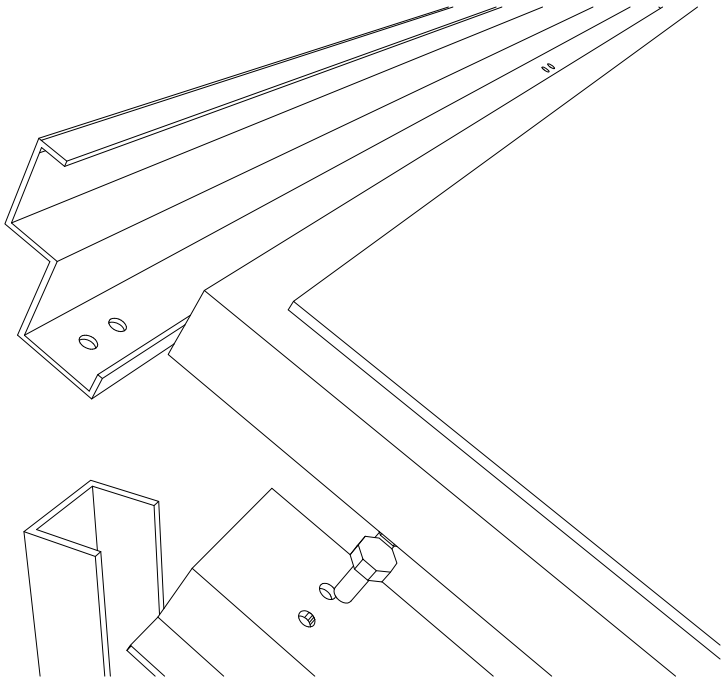
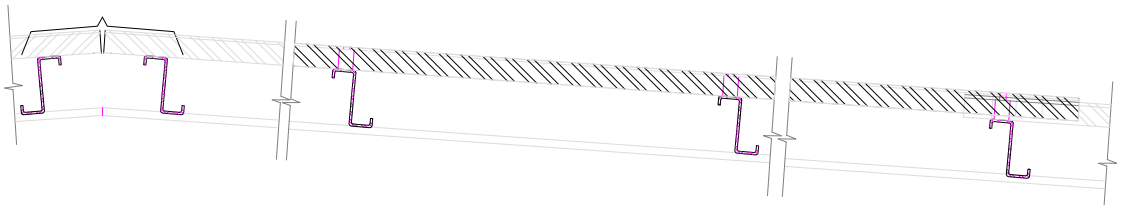
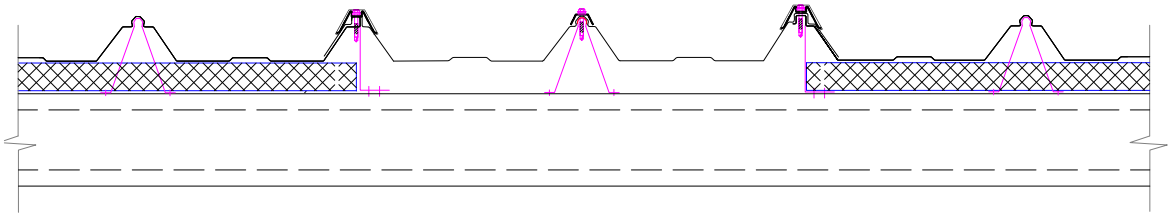


UTICA

FIXING COVER SISTEMS

HEMMING
COVER TYPE





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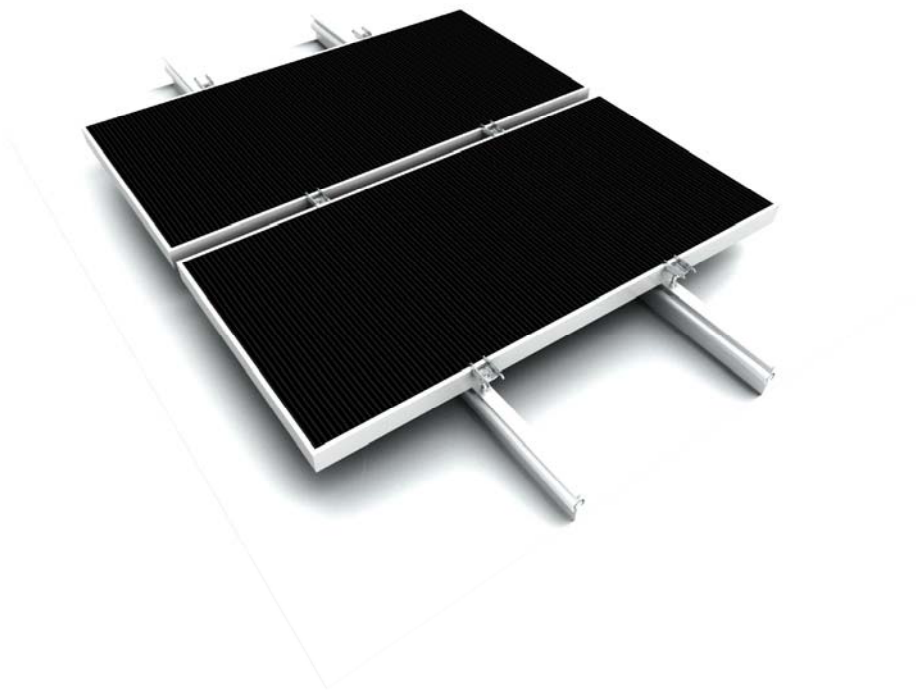
SIMULATION HEMMING COVER



SIMULATION HEMMING COVER

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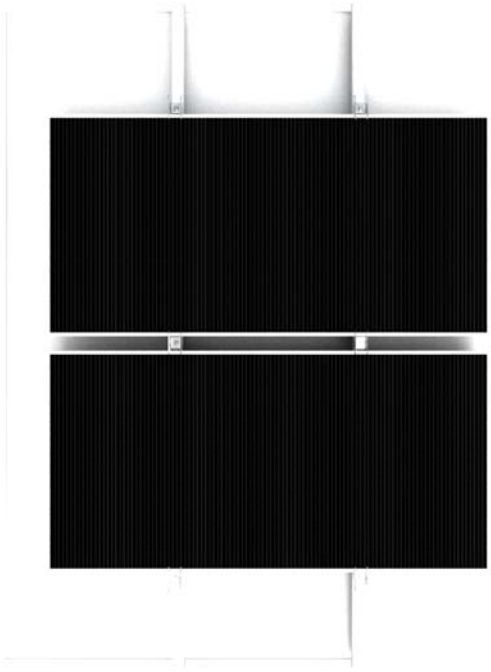

SIMULATION HEMMING COVER

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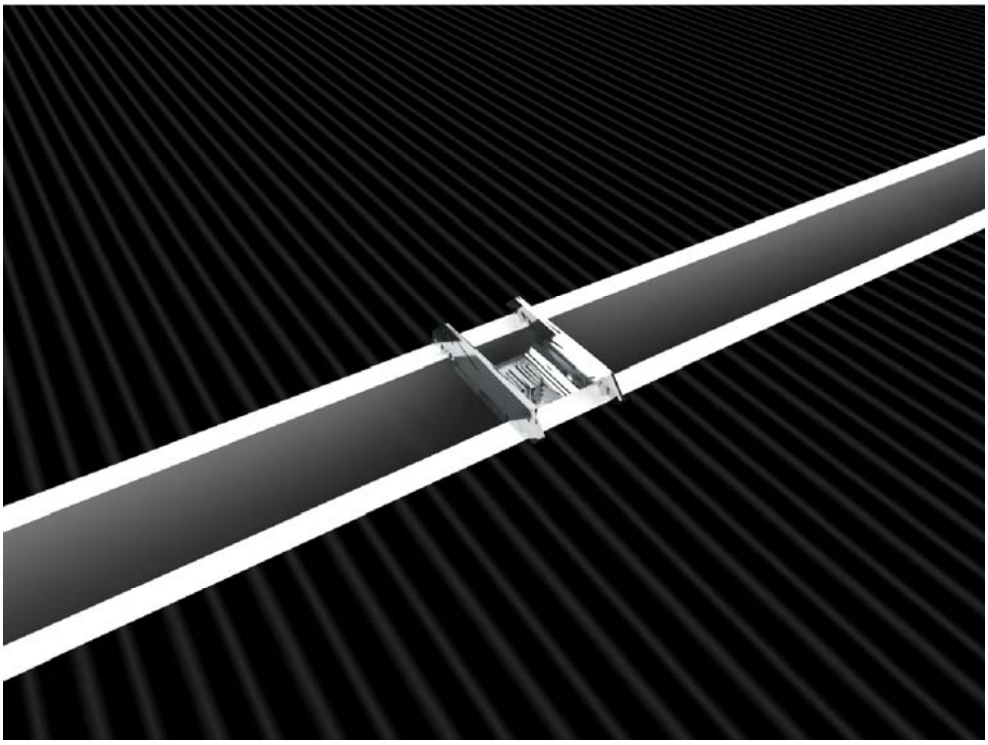

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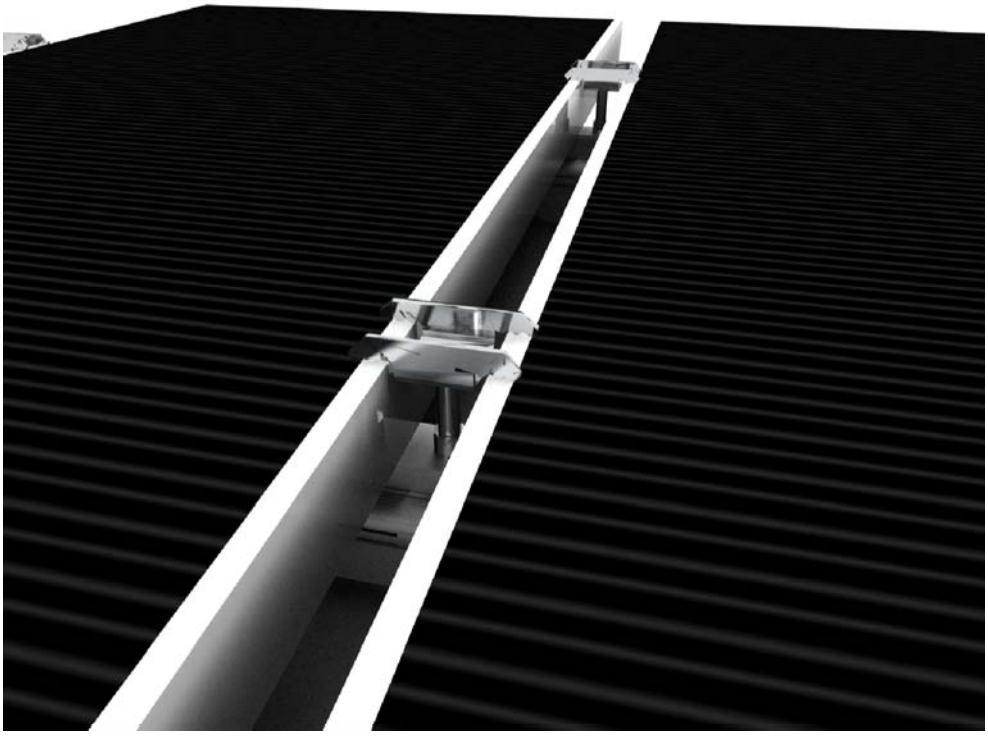
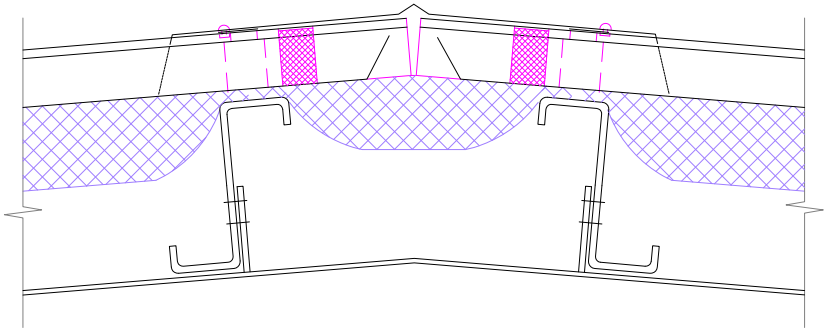
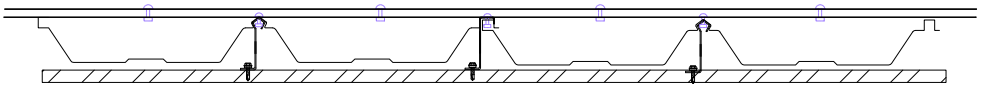


SHEET METAL
COVER TYPE





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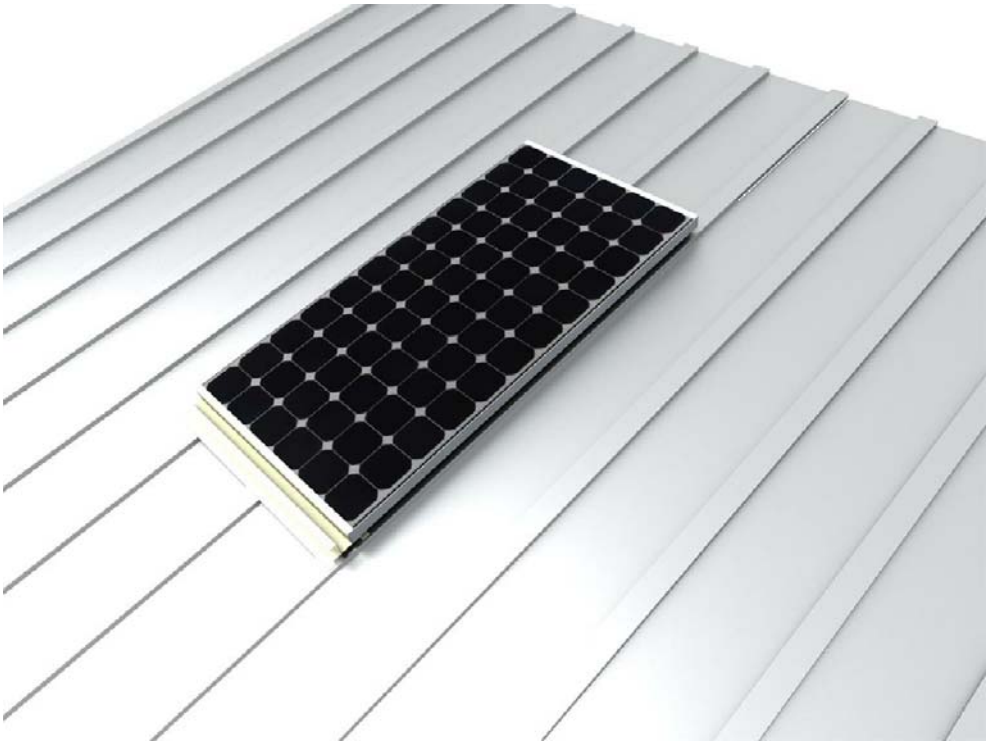
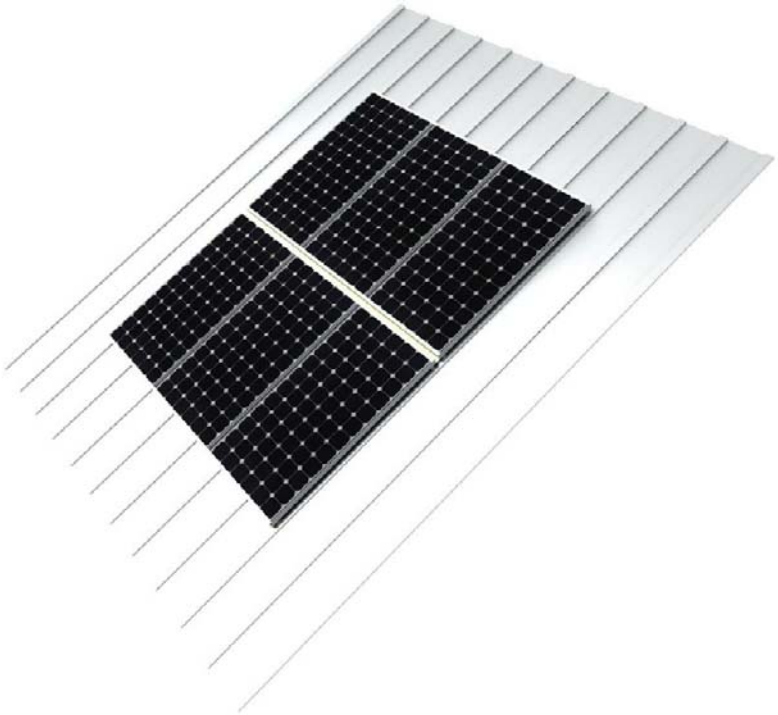
SIMULATION SHEET METAL COVER TYPE



SIMULATION SHEET METAL COVER TYPE



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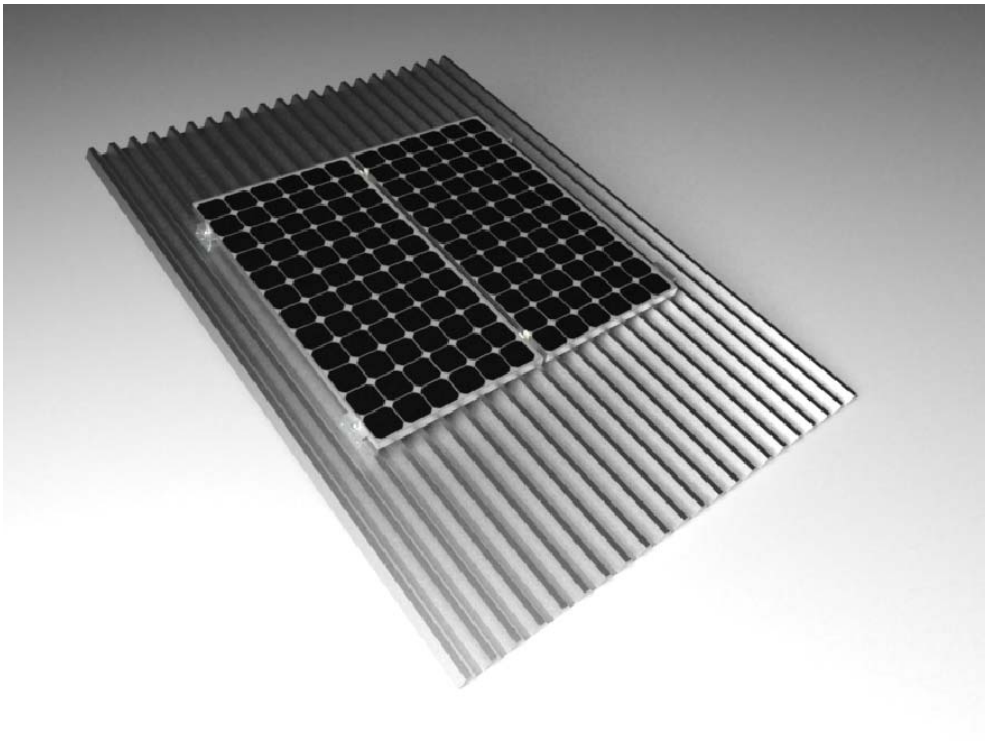
SIMULATION SHEET METAL COVER TYPE



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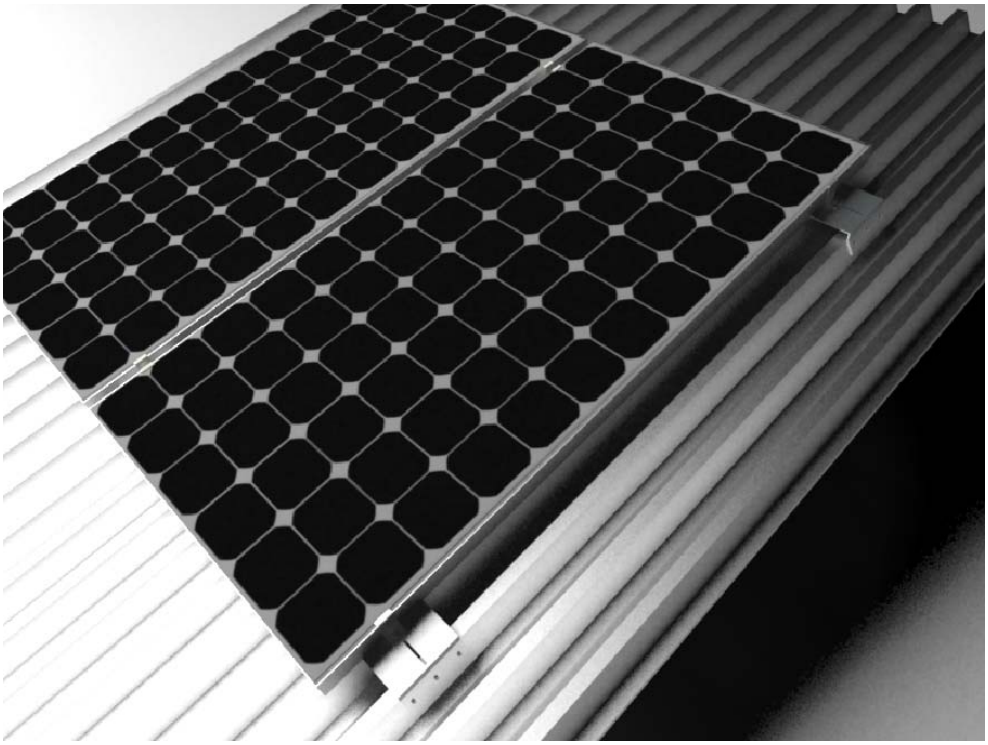

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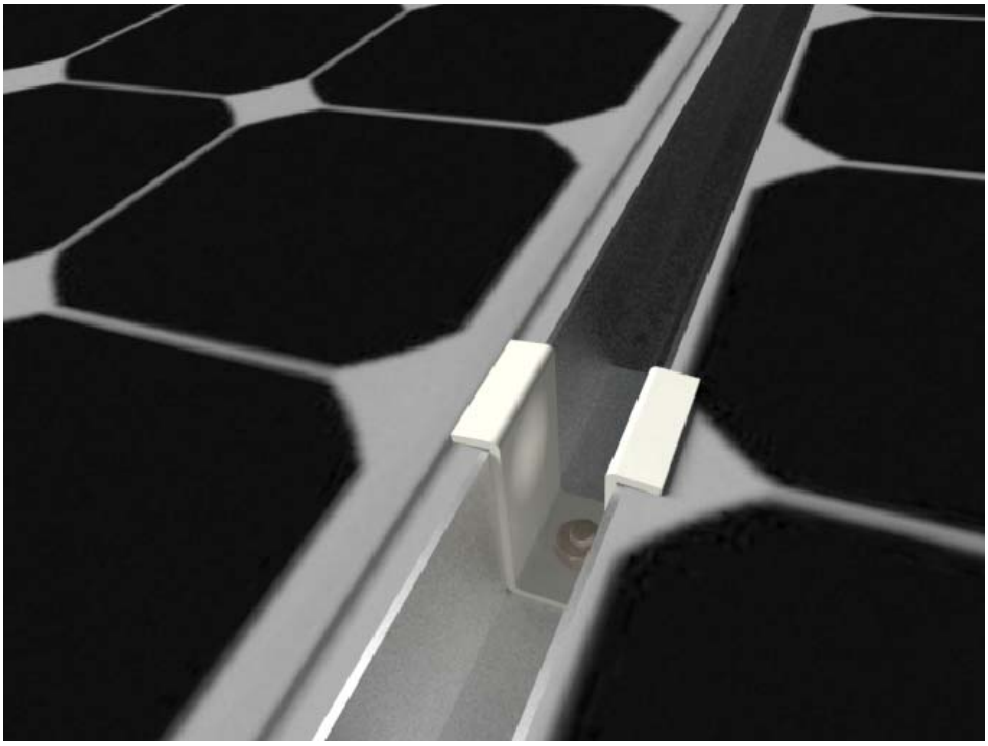

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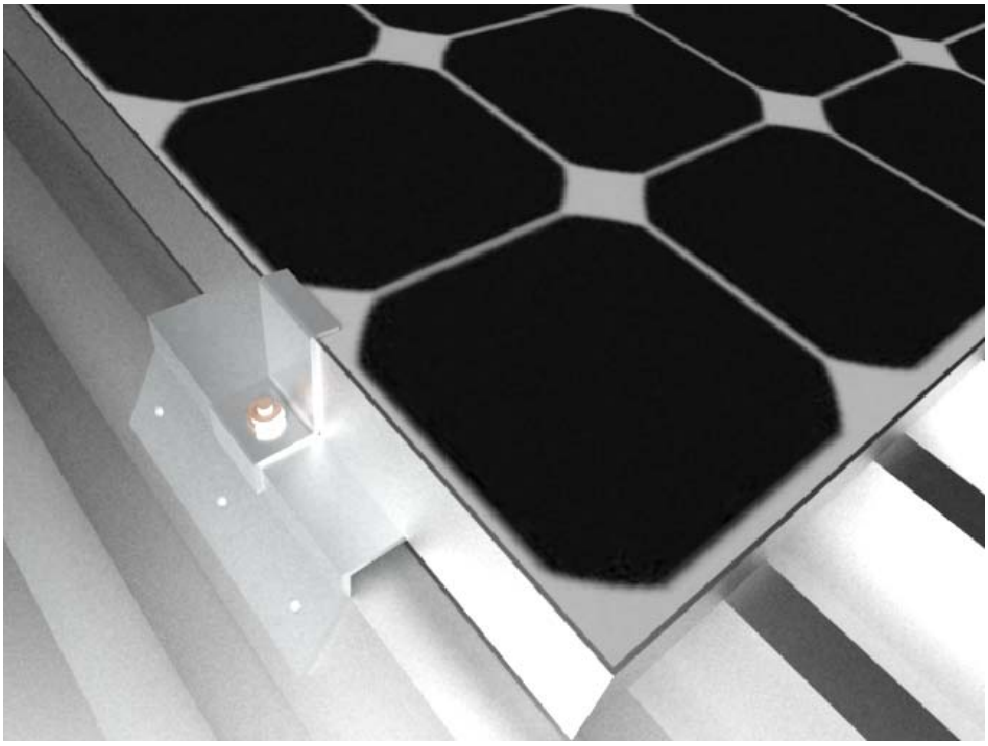
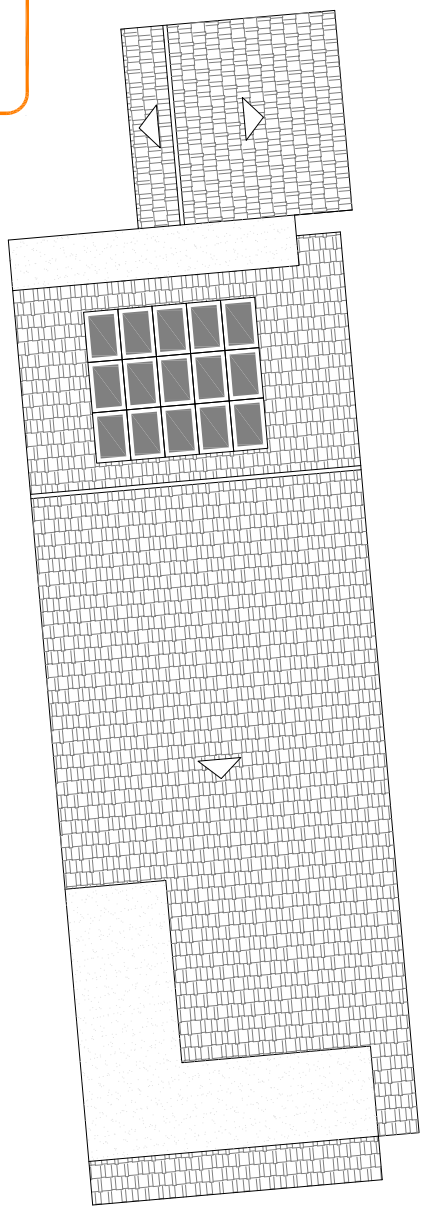
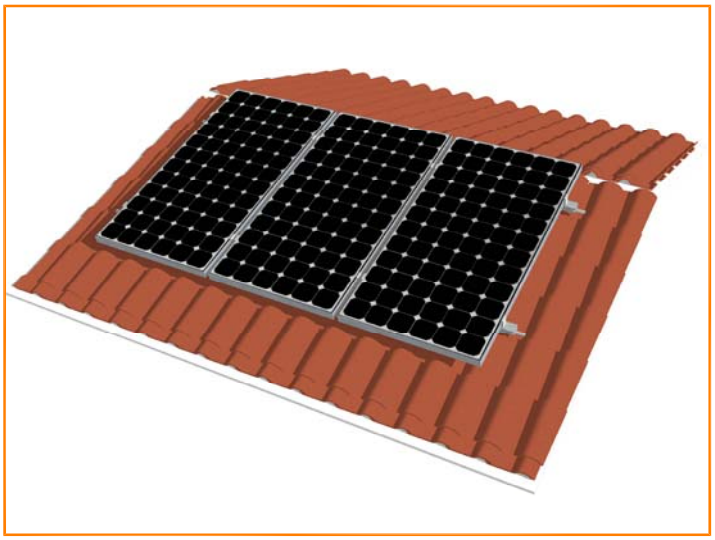


Panel (u.)	Power (wp)
15	210
Total Power (kwp)	
3,15	



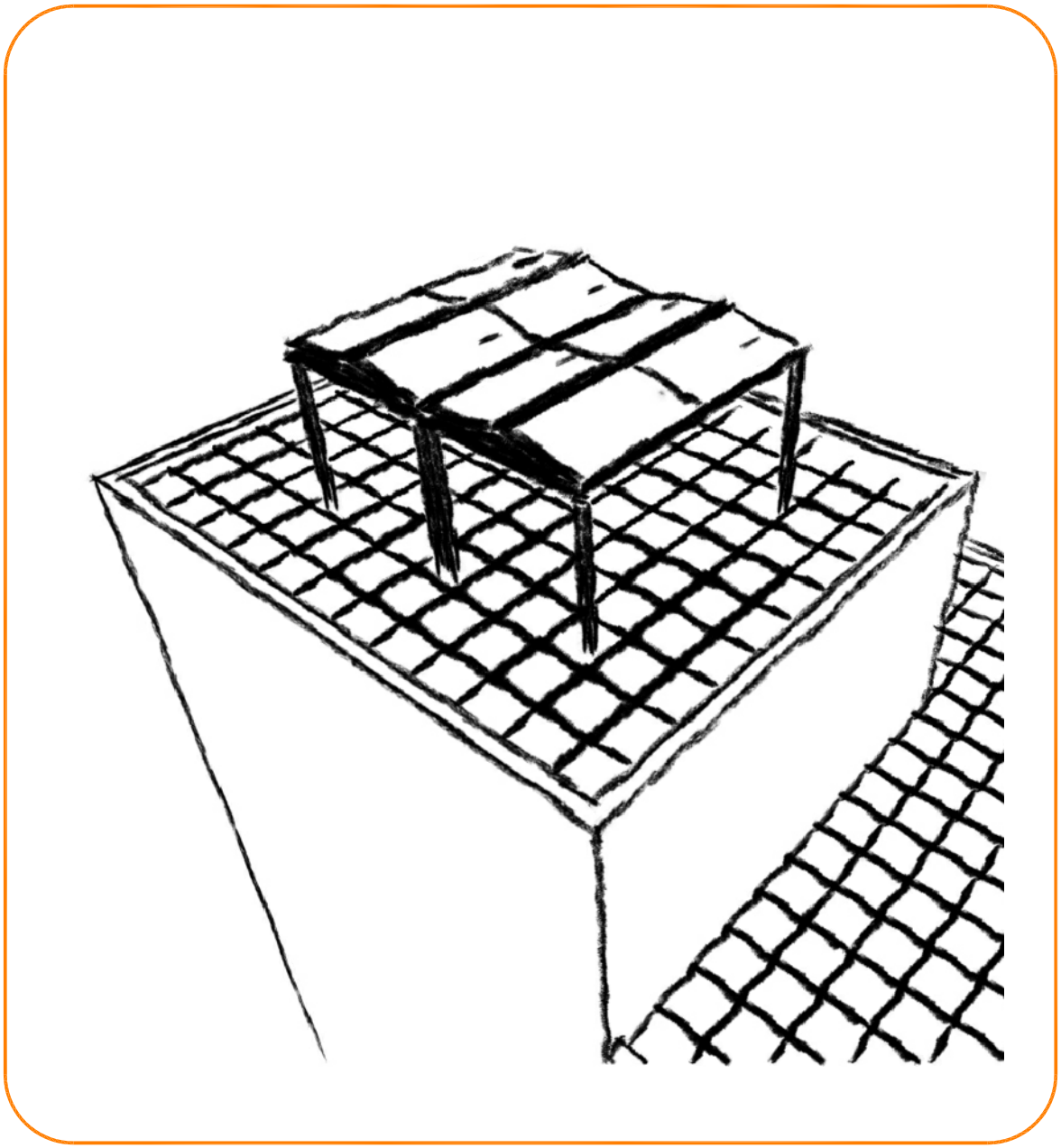


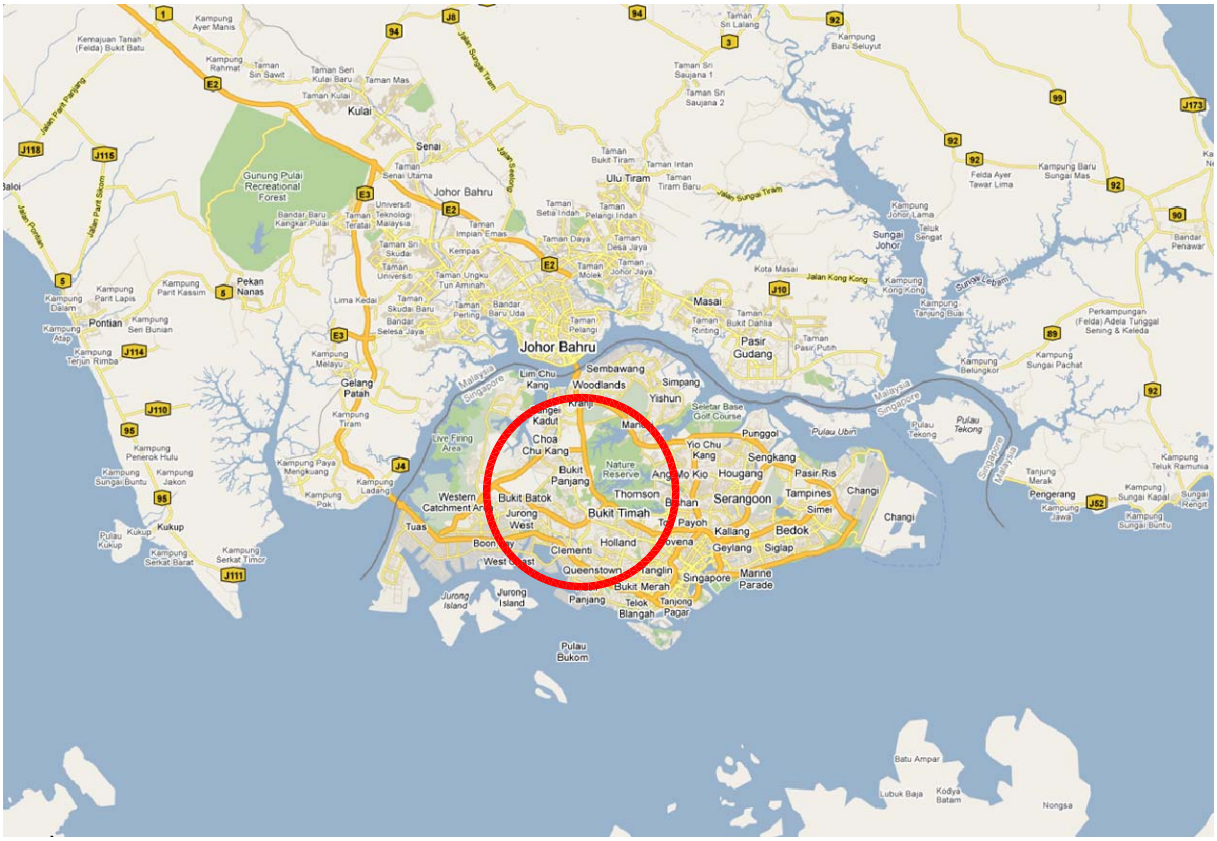
UTICA™

PROPERTY:

SOLAR PLANT

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: May 2010	PLAN N°:
Lot 708X MK 18AT28 Jalan Menarong (SINGAPORE)	PHOTOVOLTAIC SOLAR POWER STATION ON THE ROOF OF A HOUSING	100517 POWER: 3 kwp	SOLAR PLANT (Sunpower PV)	MODIFICADO: 17/05/2010 MODIFIED: es.dwg	1





SINGAPORE

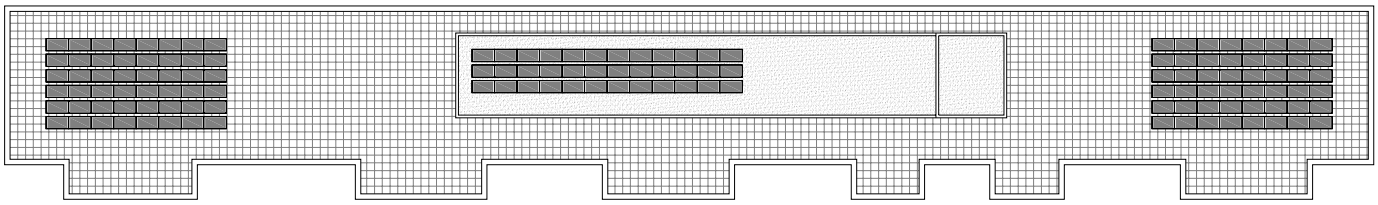
BUKIT PANJANG

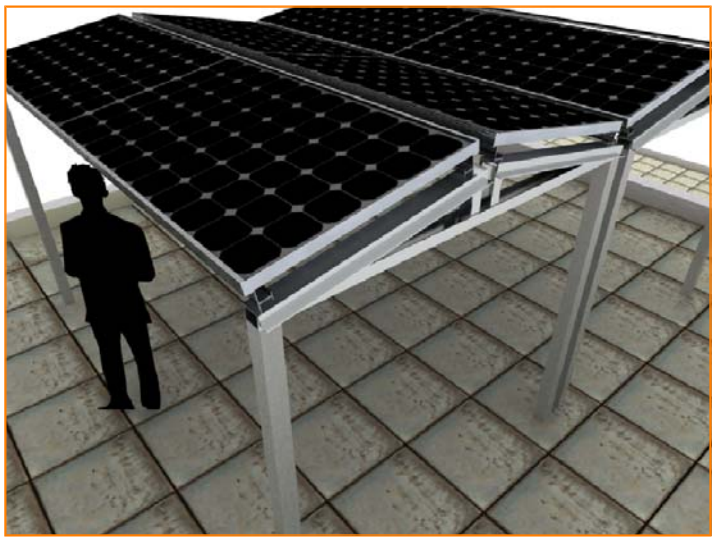
UTICA™

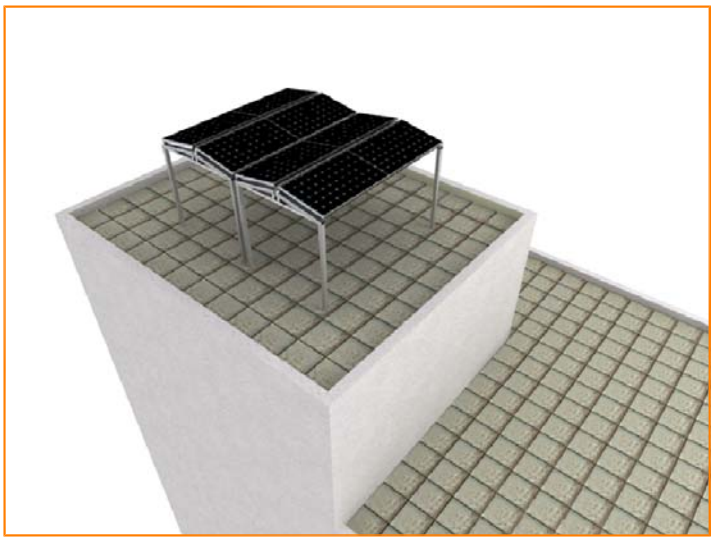
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION Nº:	PLAN NAME:	DATE: February 2010	PLAN Nº:
Panjang Road Bukit Panjang SINGAPORE	PHOTOVOLTAIC INSTALLATION FOR A RESIDENTIAL BUILDING	100212 POWER: – Kwp	LOCATION	MODIFICADO: 12/02/2010 MODIFIED: es.dwg	1

Panel (u.)	Power (wp)
132	**230**
Total Power (kwp)	Area (m²)
30	**380**







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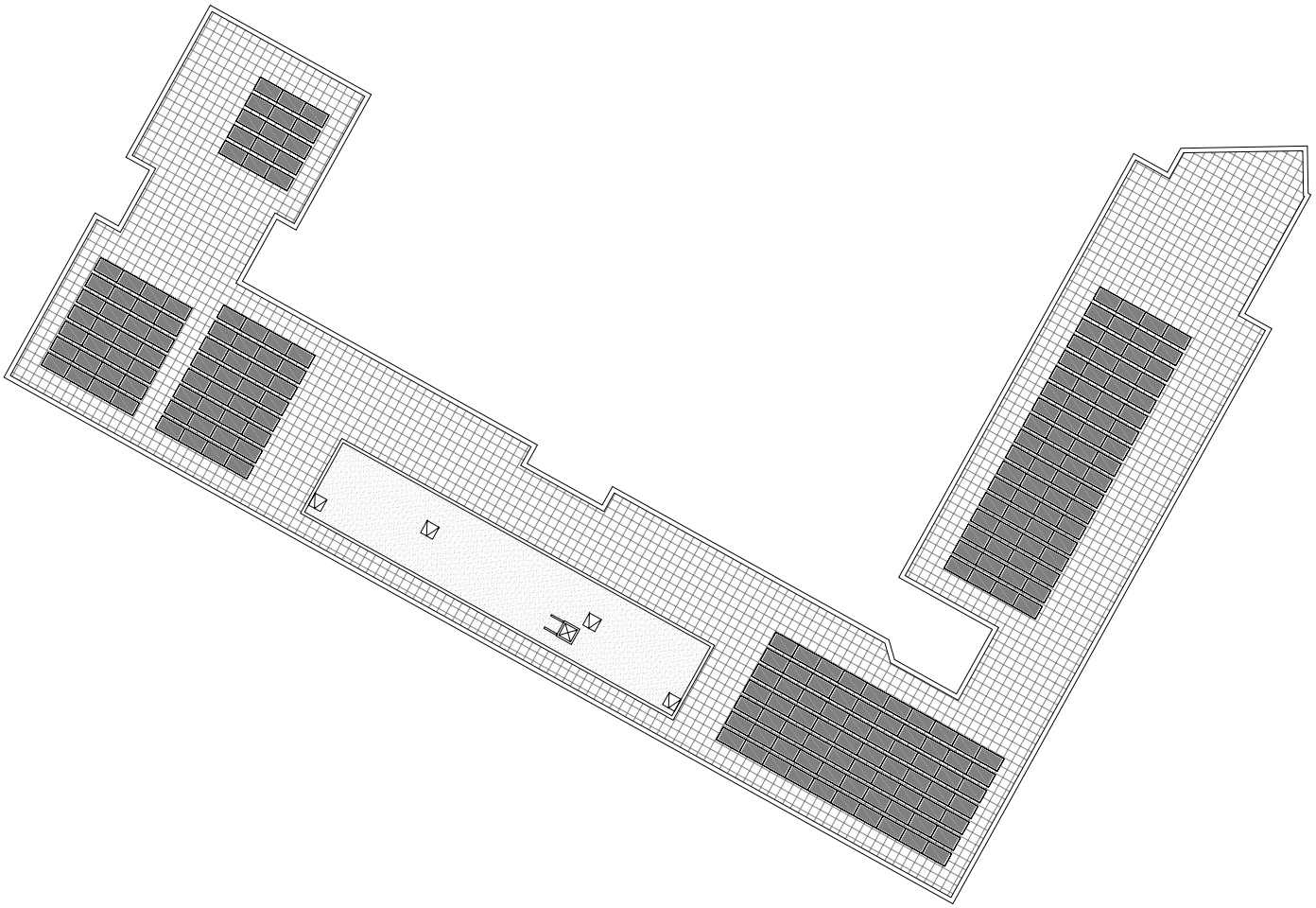
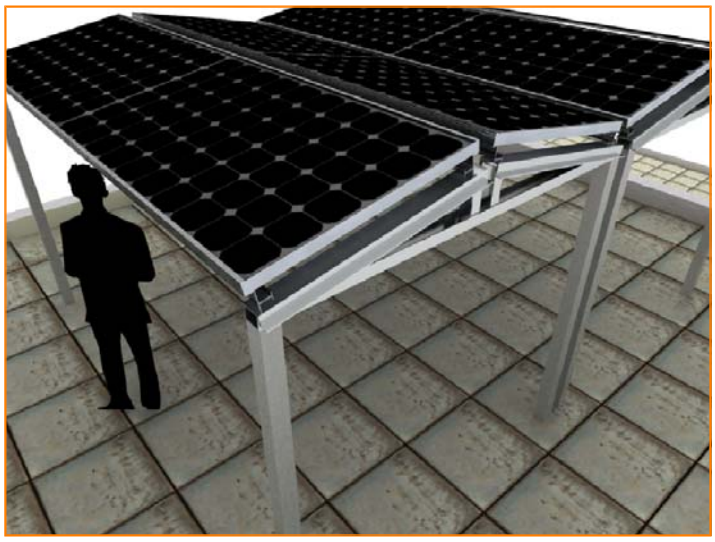
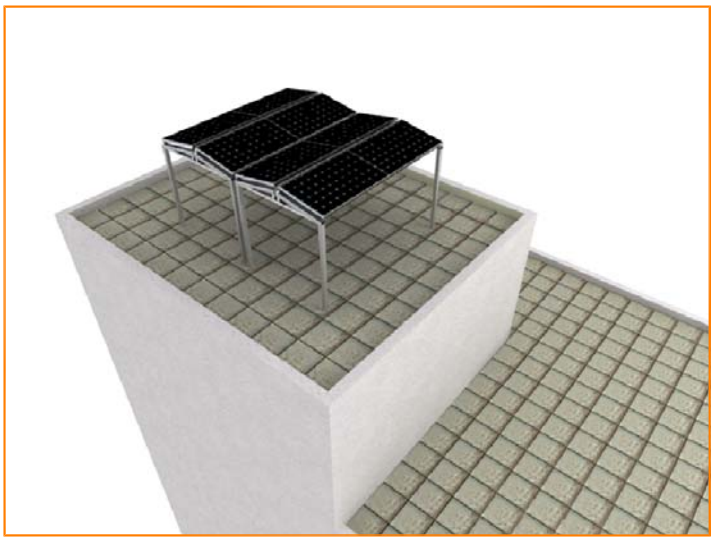
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: February 2010	PLAN N°:
Panjang Road Bukit Panjang SINGAPORE	PHOTOVOLTAIC INSTALLATION FOR A RESIDENTIAL BUILDING	100212 POWER: - Kwp	PROPOSAL ON BLK 236	MODIFICADO: 12/02/2010 MODIFIED: es.dwg	2

Panel (u.)	Power (wp)
218	**230**
Total Power (kwp)	Area (m²)
50	**627**







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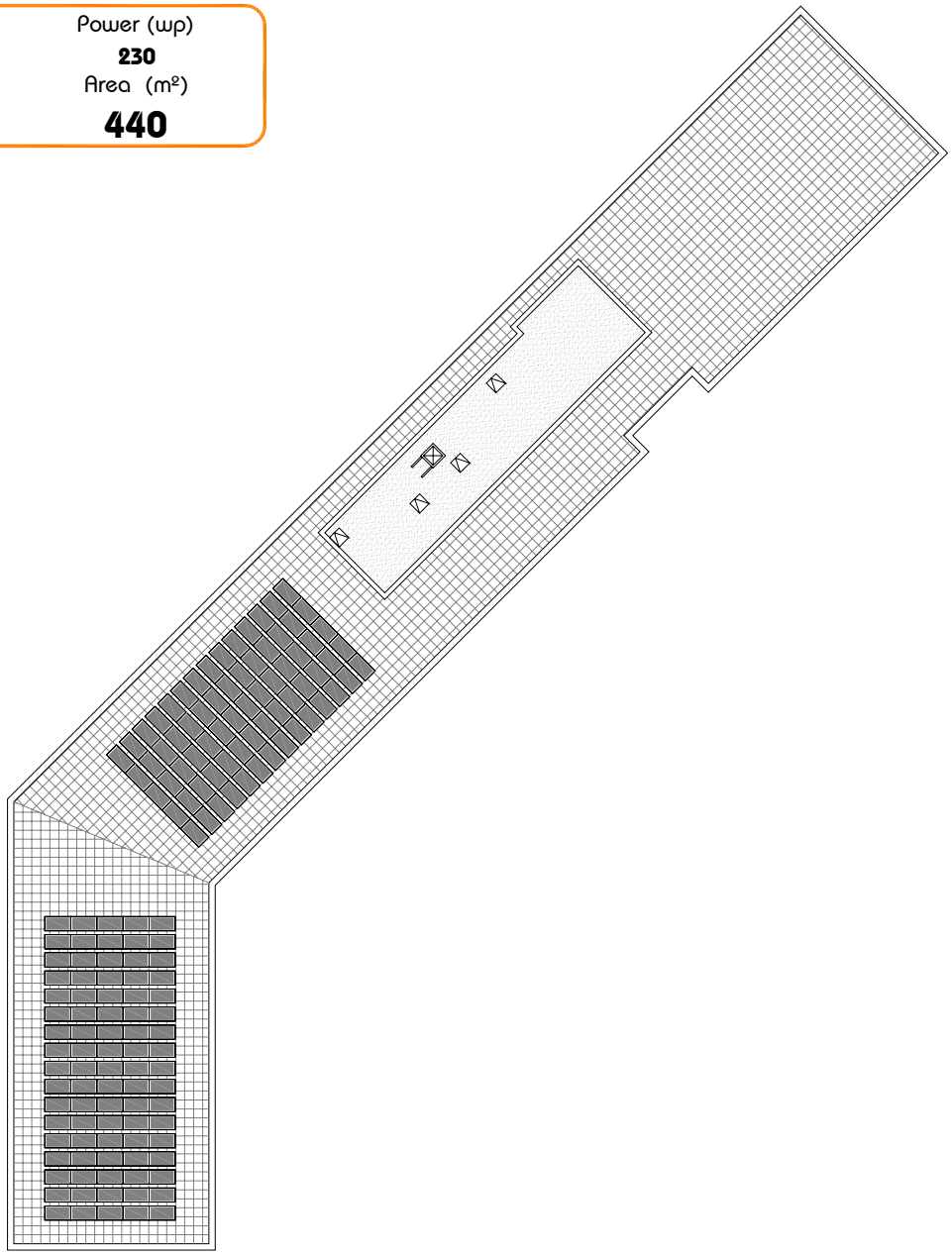
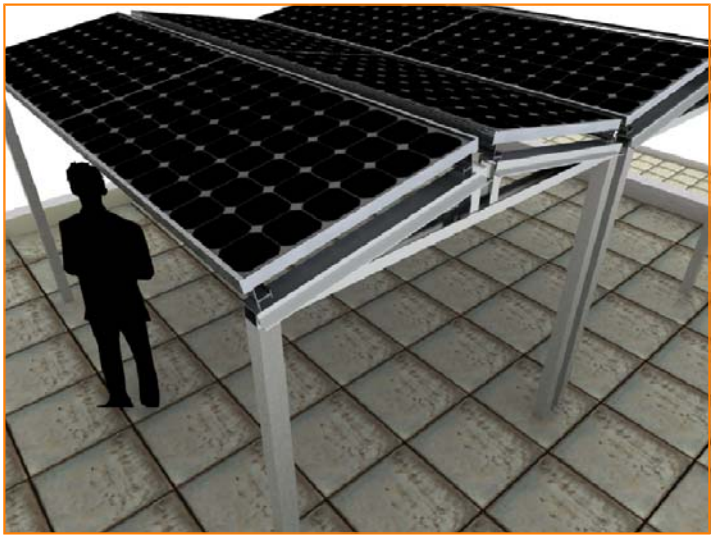
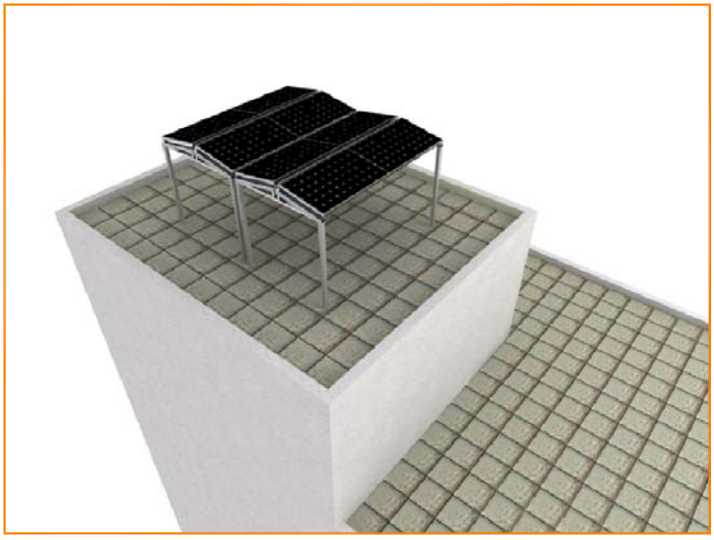
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION Nº:	PLAN NAME:	DATE: February 2010	PLAN Nº:
Panjang Road Bukit Panjang SINGAPORE	PHOTOVOLTAIC INSTALLATION FOR A RESIDENTIAL BUILDING	100212 POWER: - Kwp	PROPOSAL ON BLK 237	MODIFICADO: 12/02/2010 MODIFIED: es.dwg	3

Panel (u.)	Power (wp)
153	**230**
Total Power (kwp)	Area (m²)
35	**440**







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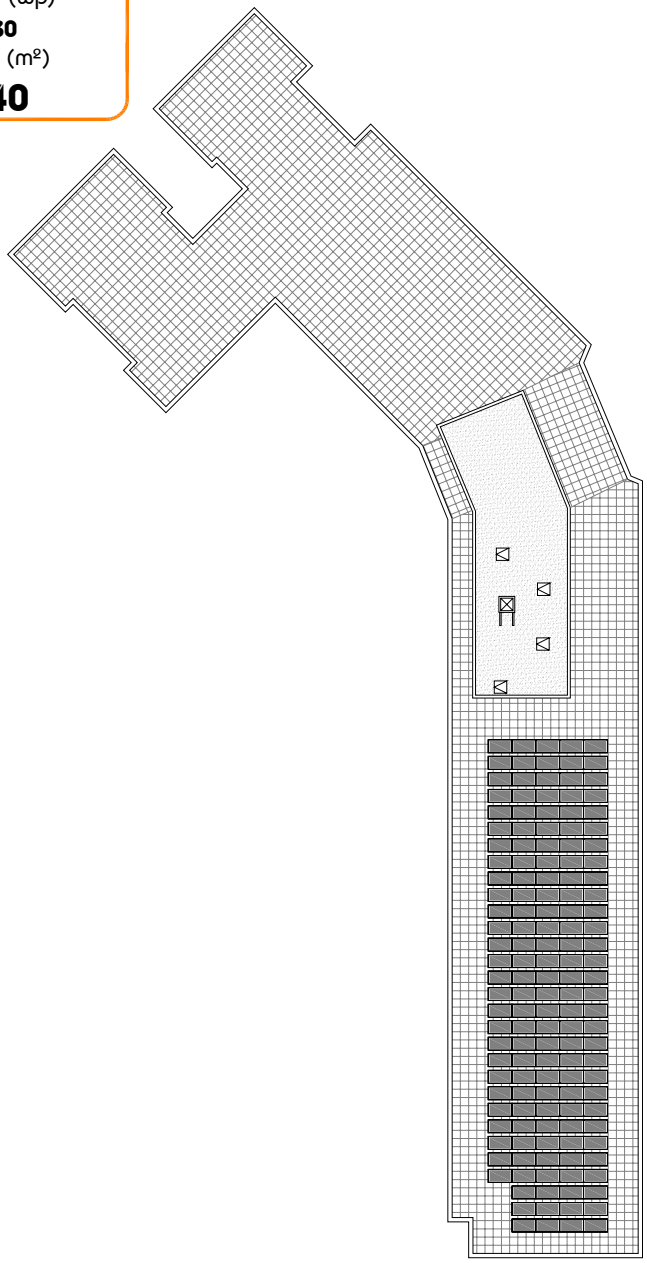
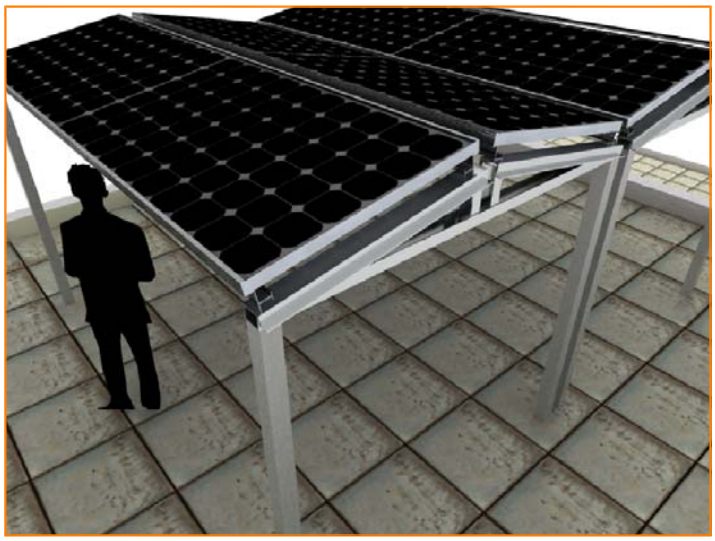
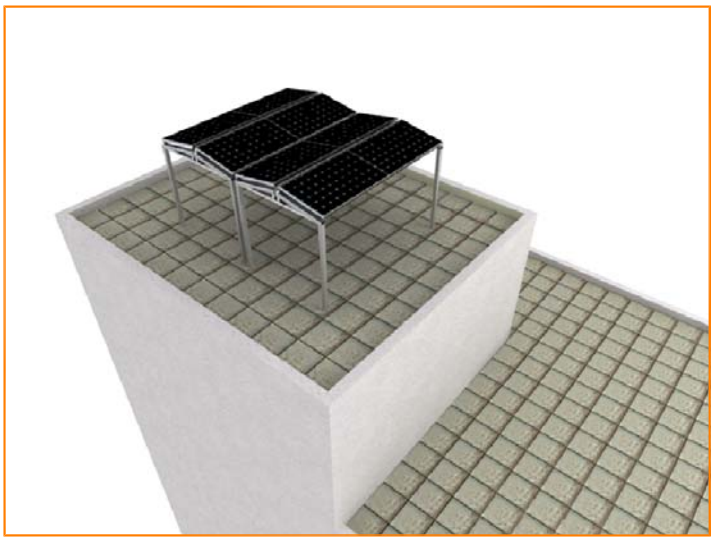
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: February 2010	PLAN N°:
Panjang Road Bukit Panjang SINGAPORE	PHOTOVOLTAIC INSTALLATION FOR A RESIDENTIAL BUILDING	100212 POWER: - Kwp	PROPOSAL ON BLK 238	MODIFICADO: 12/02/2010 MODIFIED: es.dwg	4

Panel (u.)	Power (wp)
153	**230**
Total Power (kwp)	Area (m²)
35	**440**





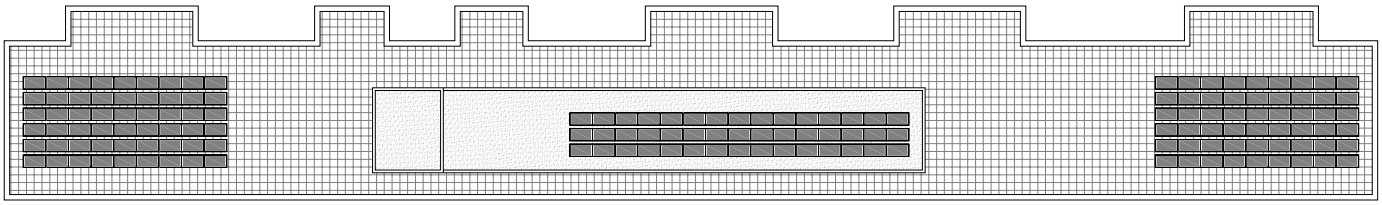


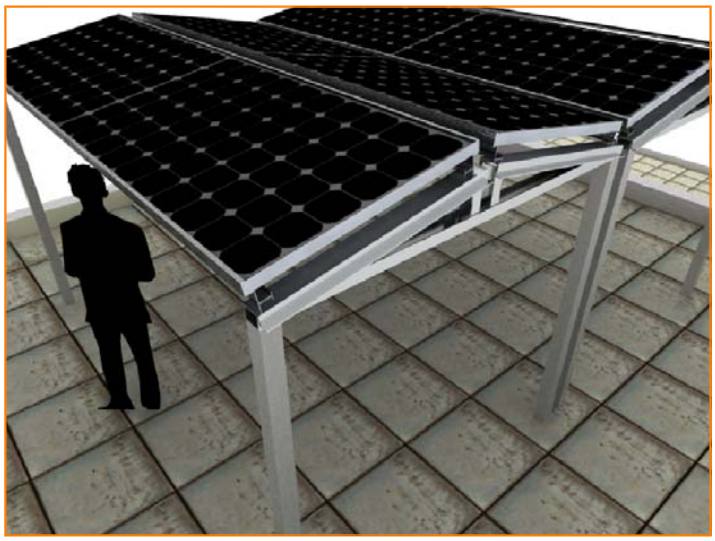
UTICA™

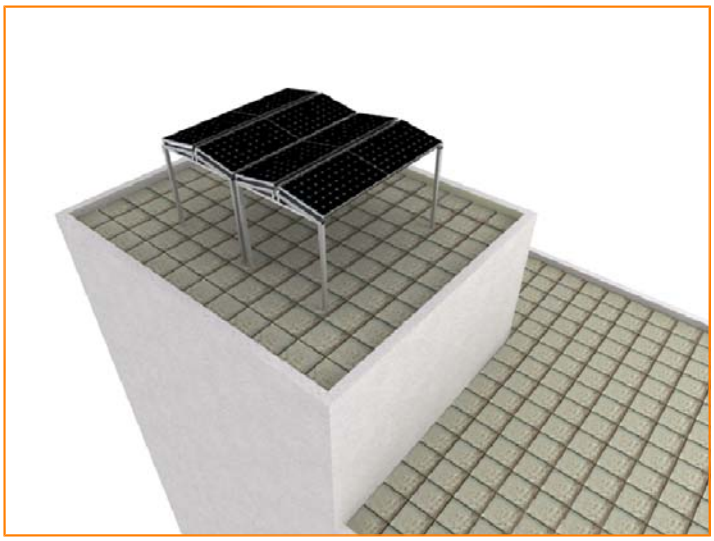
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: February 2010	PLAN N°:
Panjang Road Bukit Panjang SINGAPORE	PHOTOVOLTAIC INSTALLATION FOR A RESIDENTIAL BUILDING	100212 POWER: - Kwp	PROPOSAL ON BLK 239	MODIFICADO: 12/02/2010 MODIFIED: es.dwg	5

Panel (u.)	Power (wp)
153	**230**
Total Power (kwp)	Area (m²)
35	**440**





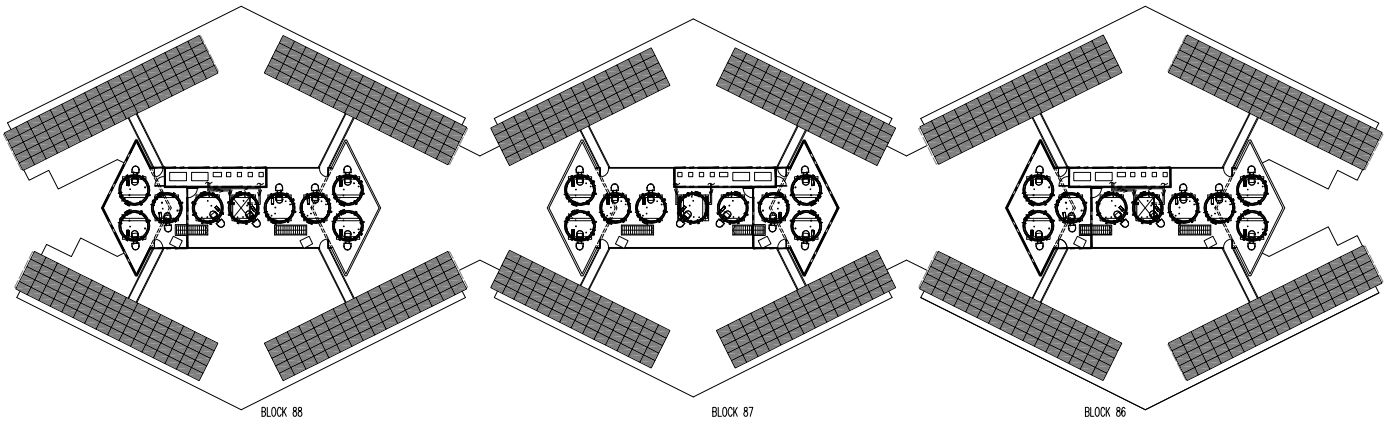


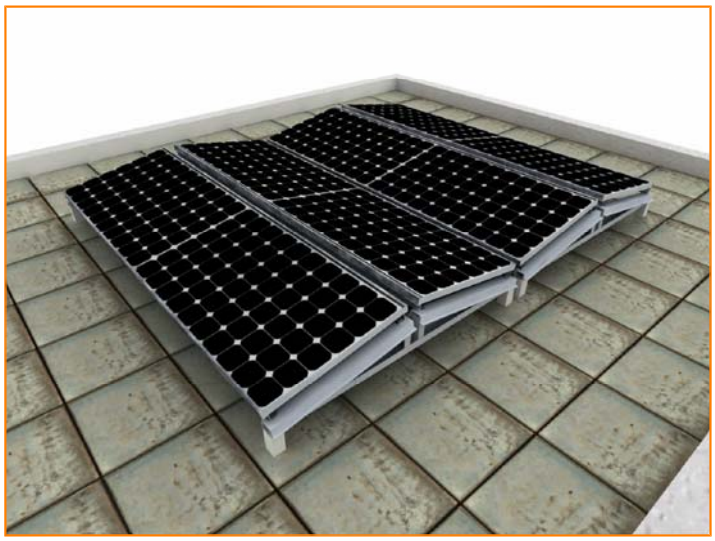
UTICA™

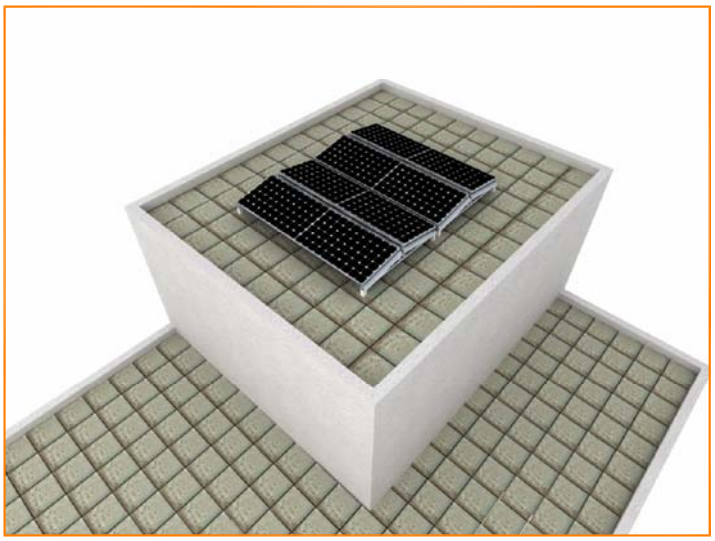
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: February 2010	PLAN N°:
Panjang Road Bukit Panjang SINGAPORE	PHOTOVOLTAIC INSTALLATION FOR A RESIDENTIAL BUILDING	100212 POWER: – Kwp	PROPOSAL ON BLK 240	MODIFICADO: 12/02/2010 MODIFIED: es.dwg	6

Panel (u.)	Power (wp)
935	230
Total Power (kwp)	Area (m²)
215,05	2688





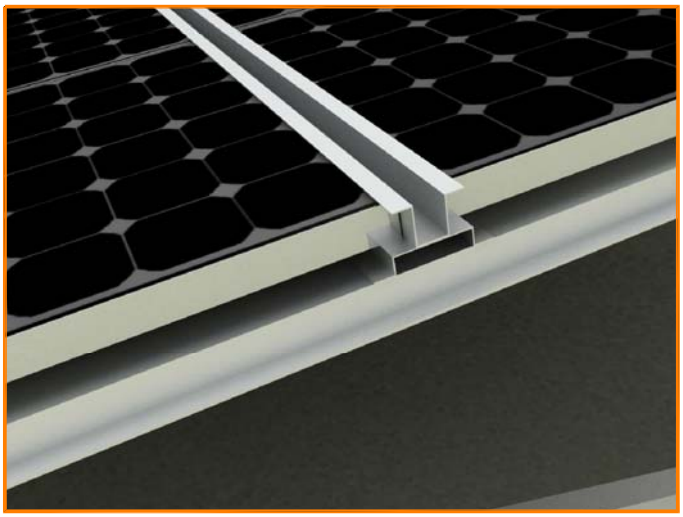


UTICA™

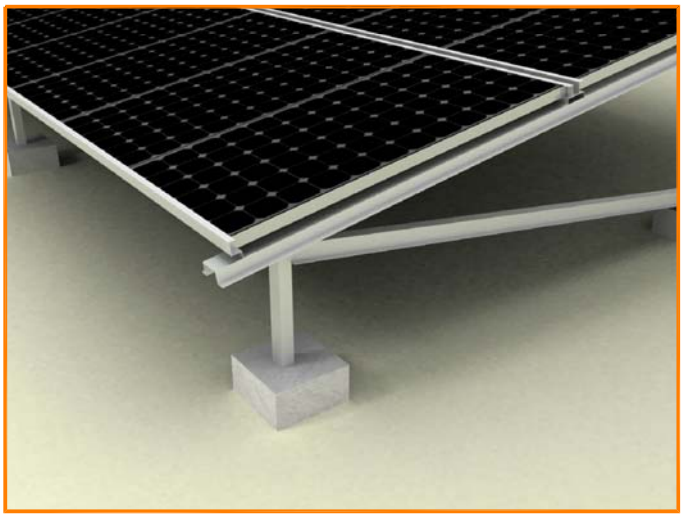
PROPERTY:

DAWSON CONTRACT

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	ORIENTATION:	PLAN NAME:	DATE: Noviembre 2010	PLAN NUMBER:
Dawson Road/ Margaret Drive (SINGAPORE)	INSTALLATION PHOTOVOLTAIC PROPOSAL IN THE ROOF OF A BUILDING	101101		PROPOSAL PV	MODIFICATED: 03/11/2010	1
		DEPARTMENT: A.A/C.A			DOCUMENT NAME: PRPFV – Dawson Contract.dwg	



DETAIL 02



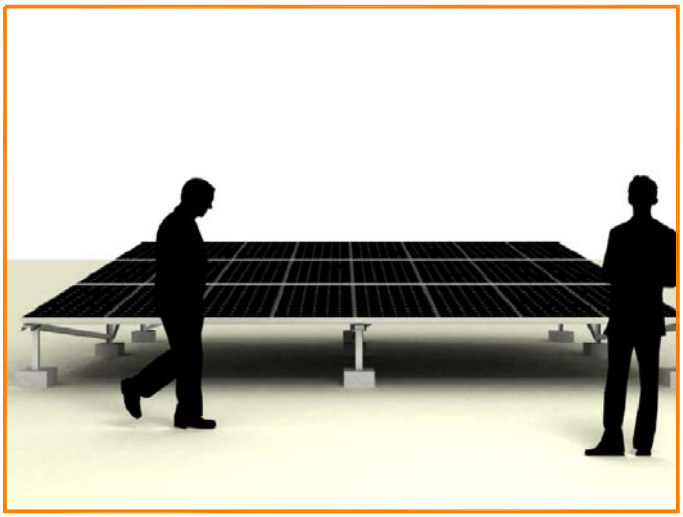
DETAIL 03

DETAIL 04

UTICA™

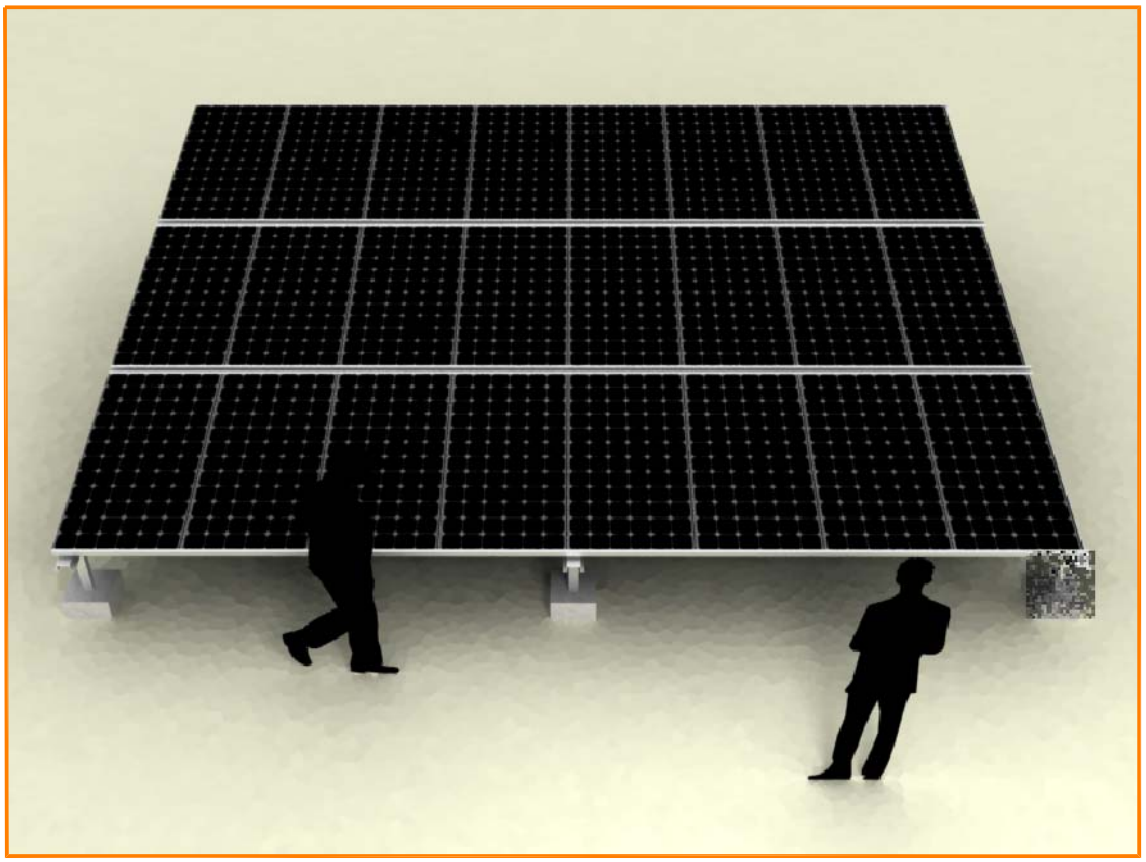
PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: January 2010	PLAN N°:
	PHOTOVOLTAIC SOLAR	0909SC10	INSTALLATION DETAILS	MODIFICADO: 11/01/2010	2
		POWER: 20 MW		MODIFIED: ES.dwg	



DETAIL 05

DETAIL 06



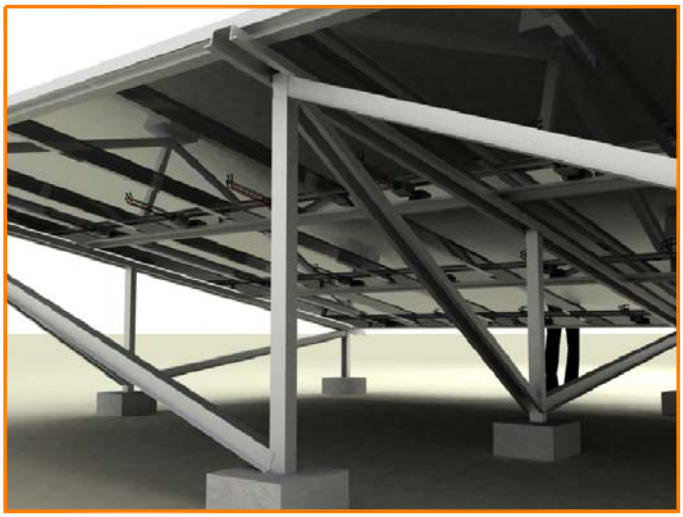
DETAIL 07

UTICA™

PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: January 2010	PLAN N°:
	PHOTOVOLTAIC SOLAR	0909SC10	INSTALLATION DETAILS	MODIFICADO: 11/01/2010	3
		POWER: 20 MW		MODIFIED: ES.dwg	

DETAIL 08



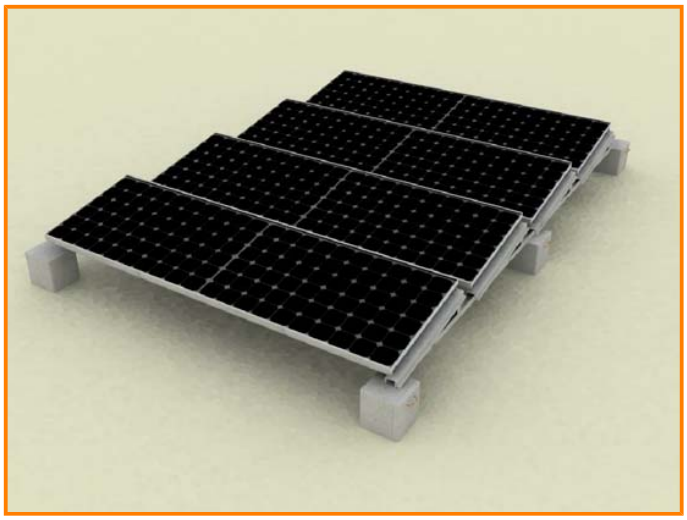
DETAIL 09

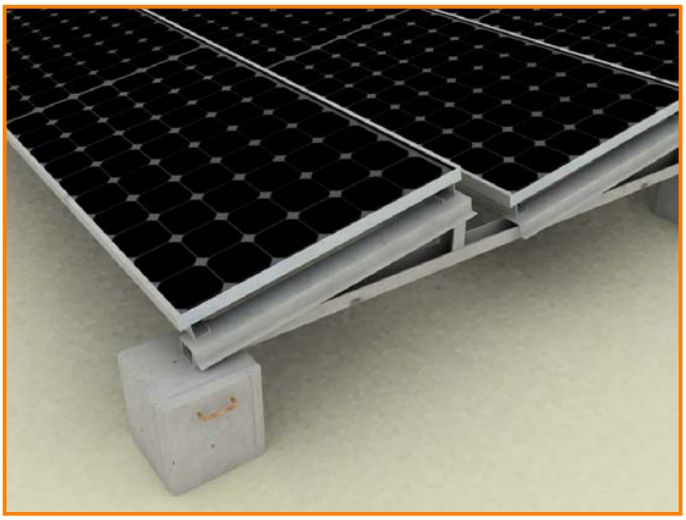
DETAIL 10

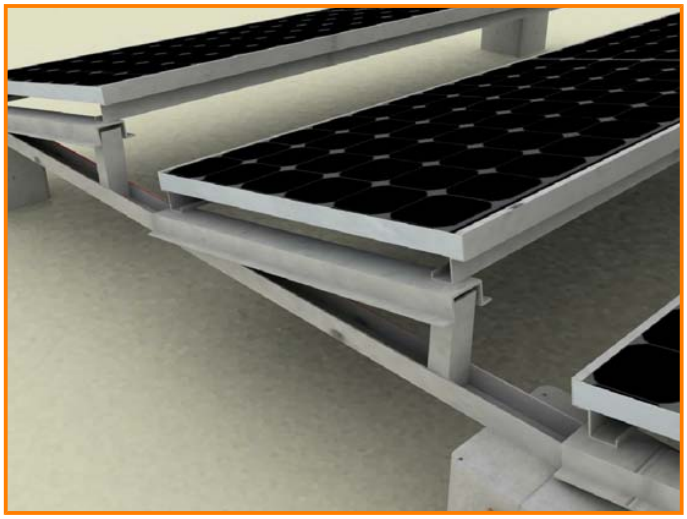
UTICA™

PROPERTY:

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: January 2010	PLAN N°:
	PHOTOVOLTAIC SOLAR	0909SC10	INSTALLATION DETAILS	MODIFICADO: 11/01/2010	4
		POWER: 20 MW		MODIFIED: ES.dwg	







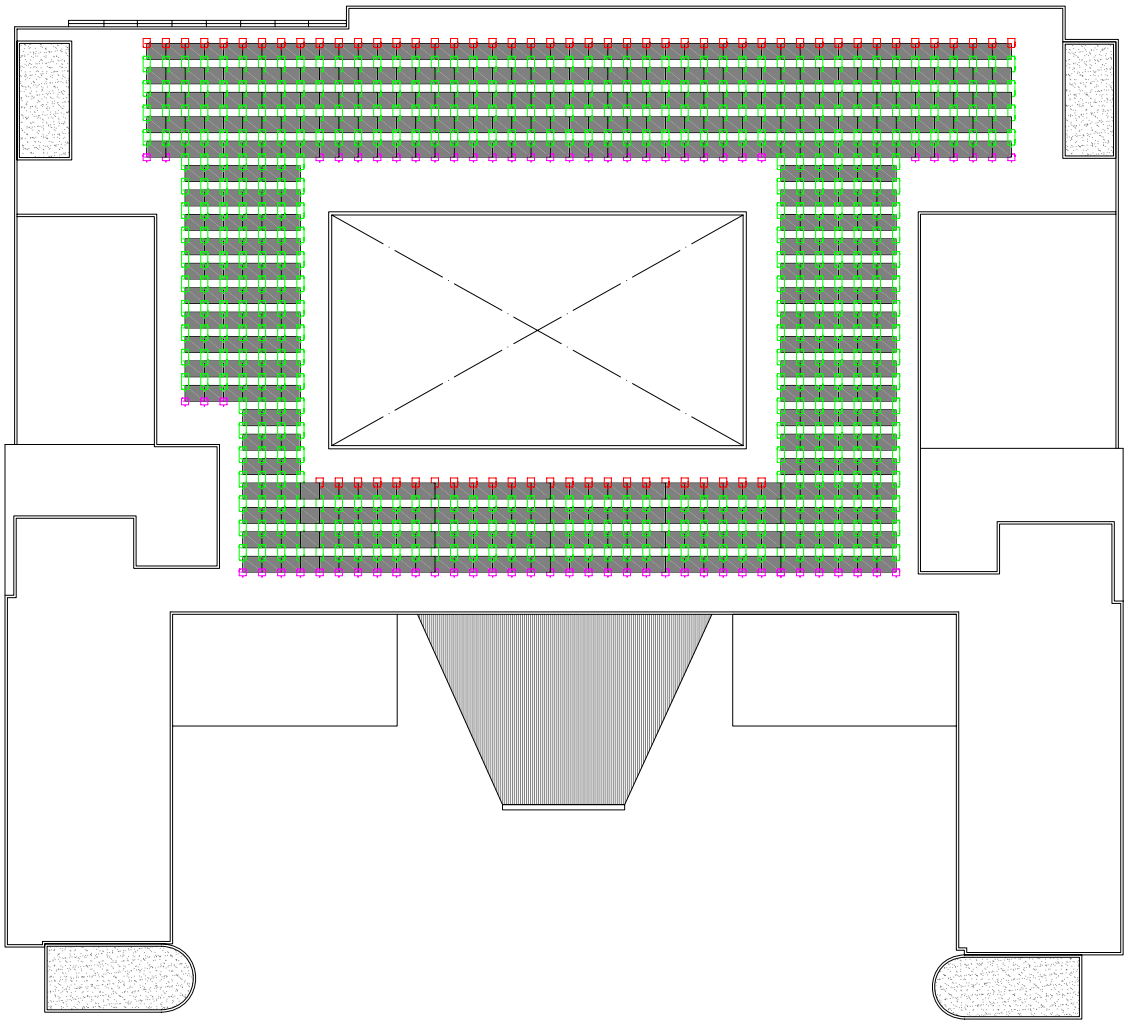
UTICA™

PROPERTY:

SOLAR PLANT

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	PLAN NAME:	DATE: March 2010	PLAN N°:
SINGPORE	PHOTOVOLTAIC SOLAR POWER	100412	DETAILS	MODIFICADO: 15/04/2010	2
		POWER: 11,7KWp		MODIFIED: es.dwg	

Panel (u.)	Power (wp)
508	**100**
Total Power (kwp)	Area (m²)
50,80	**635**



UTICA™

PROPERTY: Kranji Camp

ADDRESS:	PROJECT TITLE:	REGISTRATION N°:	ORIENTATION:	PLAN NAME:	DATE: July 2010	PLANO NÚM:
KRANJI CAMP	SOLAR PHOTOVOLTAIC POWER PLANT THIN FILM MODULE	100701		PHOTOVOLTAIC ARRAY OVERVIEW	MODIFICATED: 12/07/2010	1
		DEPARTMENT: A.P/C.A			DOCUMENT NAME: ES.dwg	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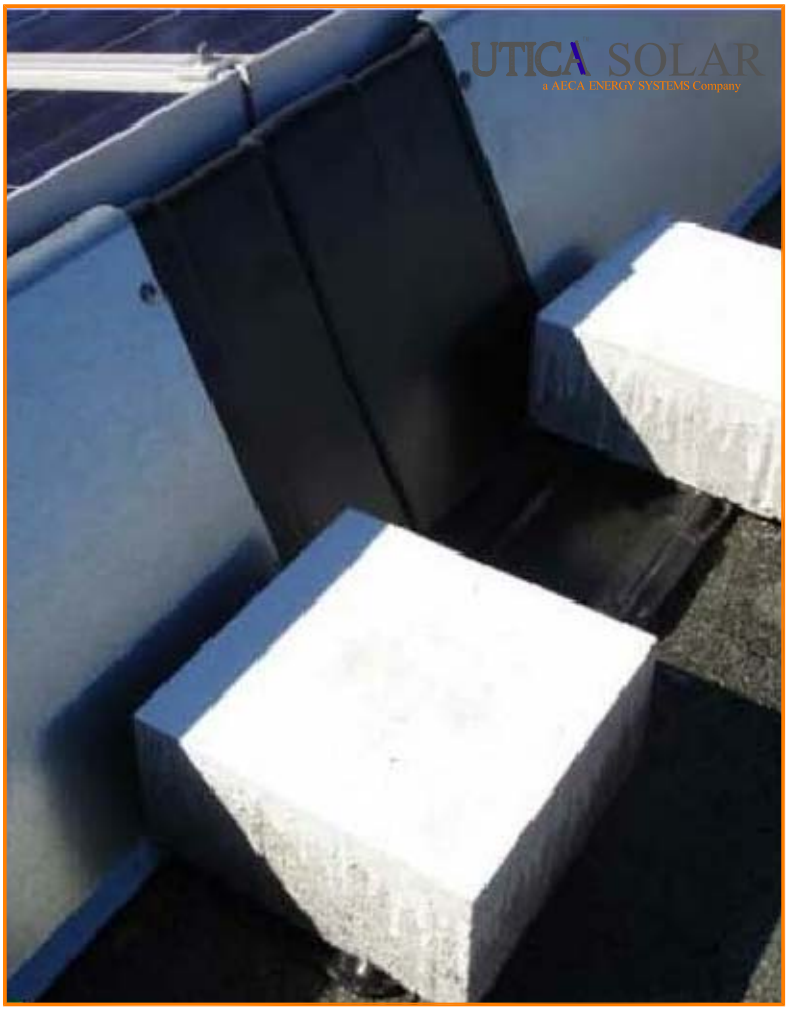
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