

CERTIFICATE OF APPROPRIATENESS APPLICATION FORM



PLANNING &
DEVELOPMENT
DEPARTMENT

PROPERTY

Address 1330 Cortlandt St.
Historic District / Landmark Houston Heights HCAD # 02016400000022
Subdivision Houston Heights Lot 22 Block 168

DESIGNATION TYPE

- ☐ Landmark ☐ Contributing
☐ Protected Landmark ☒ Noncontributing
☐ Archaeological Site ☐ Vacant

PROPOSED ACTION

- ☒ Alteration or Addition ☐ Relocation
☐ Restoration ☐ Demolition
☐ New Construction ☐ Excavation

DOCUMENTS

- ☒ Application checklist for each proposed action and all applicable documentation listed within are attached

OWNER

Name Michael C Emerson
Company _____
Mailing Address PO BOX 4910
Phone _____
Email _____
Signature Michael C Emerson
Date March 23, 2015

APPLICANT (if other than owner)

Name Amanda Simons
Company TEXAS SOLAR OUTFITTERS
Mailing Address 705 SHEPHERD DR
HOUSTON TX 77007
Phone 713-802-0223
Email _____
Signature Amanda Simons
Date 4-24-15

ACKNOWLEDGEMENT OF RESPONSIBILITY

Requirements: A complete application includes all applicable information requested on checklists to provide a complete and accurate description of existing and proposed conditions. Preliminary review meeting or site visit with staff may be necessary to process the application. Owner contact information and signature is required. Late or incomplete applications will not be considered.

Deed Restrictions: You have verified that the work does not violate applicable deed restrictions.

Public Records: If attached materials are protected by copyright law, you grant the City of Houston, its officers, agencies, departments, and employees, non-exclusive rights to reproduce, distribute and publish copyrighted materials before the Houston Archaeological and Historical Commission, the Planning Commission, City Council, and other City of Houston commissions, agencies, and departments, on a City of Houston website, or other public forum for the purposes of application for a Certificate of Appropriateness or building permit, and other educational and not for profit purposes. You hereby represent that you possess the requisite permission or rights being conveyed here to the City.

Compliance: If granted, you agree to comply with all conditions of the COA. Revisions to approved work require staff review and may require a new application and HAHC approval. Failure to comply with the COA may result in project delays, fines or other penalties.

Planner: _____

Application received: ____/____/____ Application complete: ____/____/____

CERTIFICATE OF APPROPRIATENESS

ALTERATION & ADDITION CHECKLIST

Well in advance of the COA application deadline contact staff to discuss your project and, if necessary, to make an appointment to meet with staff for a project consultation.

Complete all applicable items and submit with the COA application form. Staff can assist you in determining what items are required for your scope of work. An incomplete application may cause delays in processing or may be deferred to the next agenda. Application materials must clearly represent current and proposed conditions. Refer to Houston Code of Ordinances, Ch. 33 VII, Sec. 33-241 for approval criteria for alteration, rehabilitation, restoration and additions.

PROPERTY ADDRESS:

BUILDING TYPE

- | | |
|---|--|
| <input checked="" type="checkbox"/> single-family residence | <input type="checkbox"/> garage |
| <input type="checkbox"/> multi-family residence | <input type="checkbox"/> carport |
| <input type="checkbox"/> commercial building | <input type="checkbox"/> accessory structure |
| <input type="checkbox"/> mixed use building | <input type="checkbox"/> other |
| <input type="checkbox"/> institutional building | |

ALTERATION TYPE

- | | |
|--|---|
| <input checked="" type="checkbox"/> addition | <input checked="" type="checkbox"/> roof |
| <input type="checkbox"/> foundation | <input type="checkbox"/> awning or canopy |
| <input type="checkbox"/> wall siding or cladding | <input type="checkbox"/> commercial sign |
| <input type="checkbox"/> windows or doors | <input type="checkbox"/> ramp or lift |
| <input type="checkbox"/> porch or balcony | <input type="checkbox"/> other |

WRITTEN DESCRIPTION

- ☒ property description, current conditions and any prior alterations or additions
- ☒ proposed work; plans to change any exterior features, and/or addition description
- ☒ current building material conditions and originality of any materials proposed to be repaired or replaced
- ☒ proposed new materials description; attach specification sheets if necessary

PHOTOGRAPHS label photos with description and location

- ☐ elevations of all sides
- ☐ detail photos of exterior elements subject to proposed work
- ☐ historical photos as evidence for restoration work

DRAWINGS scale like drawings the same; include all dimensions and drawing scale; label with cardinal directions

- | | |
|--|---|
| <input type="checkbox"/> current site plan | <input type="checkbox"/> demolition plan |
| <input checked="" type="checkbox"/> proposed site plan | <input type="checkbox"/> current roof plan |
| <input type="checkbox"/> current floor plans | <input checked="" type="checkbox"/> proposed roof plan |
| <input type="checkbox"/> proposed floor plans | <input type="checkbox"/> current elevations (all sides) |
| <input type="checkbox"/> current window and door schedule | <input type="checkbox"/> proposed elevations (all sides) |
| <input type="checkbox"/> proposed window and door schedule | <input type="checkbox"/> perspective and/or line of sight |

Written Description:

Property description: The property, 1330 Cortlandt St, TX 77008, is owned by Michael and Julia Emerson. HCAD: 02016400000022.

We request approval of a Certificate of Appropriateness to allow the addition of a south-facing roof-mount solar system. The surface area of the system faces away from the street and public view. We feel that the system proposed will not hinder the historical integrity of the neighborhood as it is not visible from the roofline.

As the contractors we would like to install 33 Sunedison 270W modules. The system size will be 8.91kW and offset the owner's electric expenses with a generous amount of renewable energy.

I am submitting for your consideration proposed plans from the designer which have been approved by a structural engineer, Gary Beck of Eco-Holdings LLC and a master electrician, Tim Coats license number: 290268.

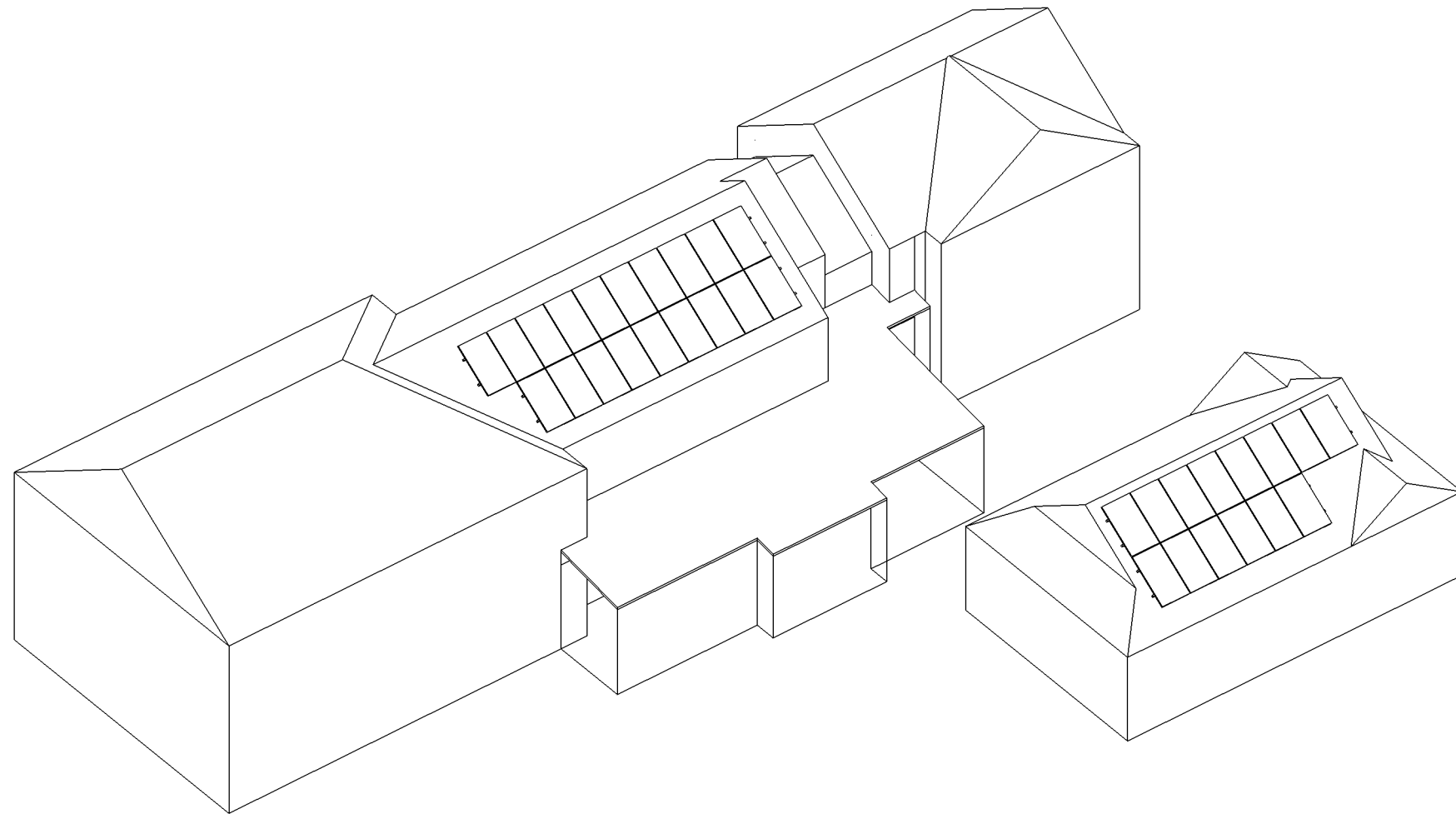
Emerson

Residence

1330 Cortlandt St
Houston TX 77008

8.91kW ROOF

MOUNT



DRAWING INDEX	NOTES
C.S Coversheet A.1 Site Plan E.1 One Line Diagram E.2 Three Line Diagram E.3 Stringing Layout S.1 Rails Layout S.2 Wind Calcs	1. IN COMPLIANCE WITH NEC ARTICLE 110.2 FOR EQUIPMENT TO BE APPROVED, IDENTIFIED LABELED AND LISTED



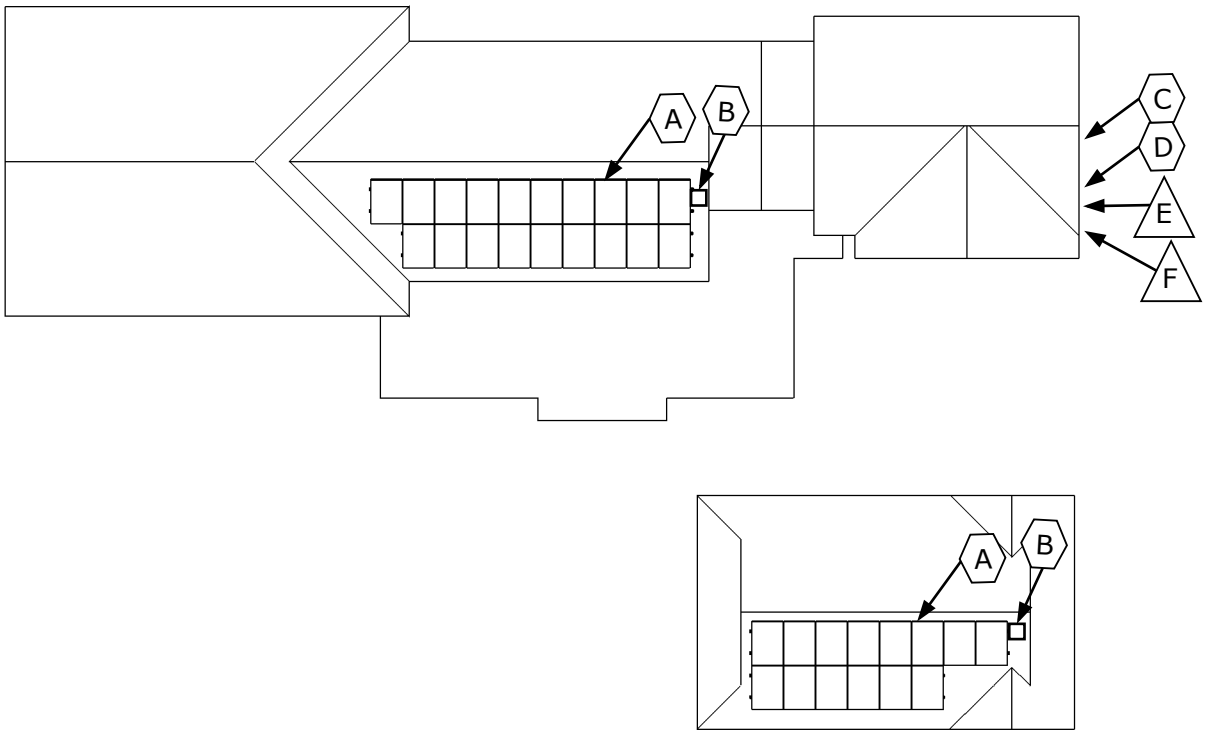
COVER SHEET					SCALE
					NTS
REVISIONS	MM/DD/YY	DESIGN:	CHECK:	COMMENTS:	PROJECT NO.
	4/16/2015	DG		ISSUE FOR REVIEW	15020
	4/17/2015	DG		ISSUE FOR CONSTRUCTION	
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1330 Cortlandt St Houston TX 77008



CORTLANDT



SCHEDULE OF COMPONENTS

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NEW



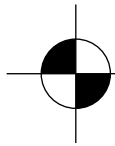
EXISTING



705 SHEPHERD DR.
HOUSTON, TEXAS 77007
713-802-0223

SITE PLAN

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	4/16/2015	DG	DG	ISSUE FOR REVIEW	15020
	4/17/2015	DG		ISSUE FOR CONSTRUCTION	
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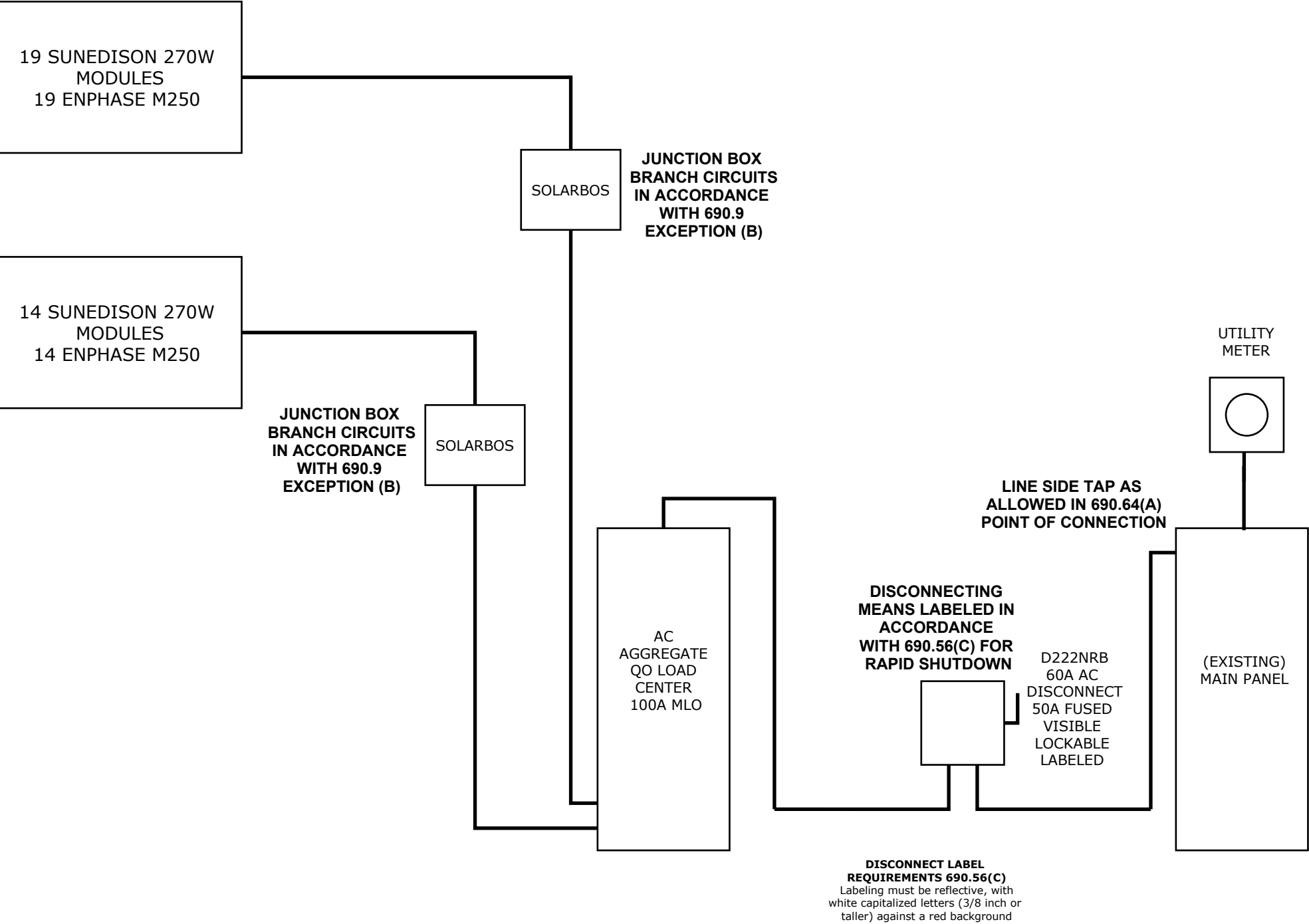


TEXAS SOLAR OUTFITTERS
ELECTRICAL ONE LINE

1330 Cortlandt St Houston TX 77008

INSTALLATION TO BE IN COMPLIANCE WITH
NEC 2014 AND ARTICLE 690

Timothy Coats
Master Electrician # 290268



TEXAS
SOLAR
OUTFITTERS

705 SHEPHERD DR.
HOUSTON, TEXAS 77007
713-802-0223

ELECTRICAL ONE LINE

SCALE

NTS

PROJECT NO.

15020

SHEET NO.

E.1

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	4/17/2015	DG		ISSUE FOR CONSTRUCTION

IN COMPLIANCE WITH
NEC ARTICLE 100
FOR EQUIPMENT
TO BE APPROVED,
IDENTIFIED AND LISTED

INSTALLATION TO BE IN COMPLIANCE WITH
NEC 2014 AND ARTICLE 690

Timothy Coats

Master Electrician # 290268

System Information
(16) SUNEDISON 265W Modules
Enphase M250 Inverters

For Each Module:
Maximum PP voltage: 31.6 V (Vmpp)
Maximum PP current: 9.09 A (Impp)
Short Circuit Current: 9.68 A (Isc)
Open Cuircuit Voltage: 39.0 V (Voc)
Outer Dimensions: 64.57" x 39.37" x 1.38"
Weight: 36.96 lbs

Equipment Label Information
AC Disconnect:
Operating Voltage: 240VAC
Max Current: 13.5A AC

Service Panel:
Must include notification that there are two sources of power.
Interactive Photovoltaic System
Do not relocate or remove.

Utility Meter:
Must include notification that there is a Solar PV System and the location of the AC Disconnect per NEC 705 .

DISCONNECT LABEL REQUIREMENTS 690.56(C)
Labeling must be reflective, with white capitalized letters (3/8 inch or taller) against a red background

PV System AC/Utility Disconnect

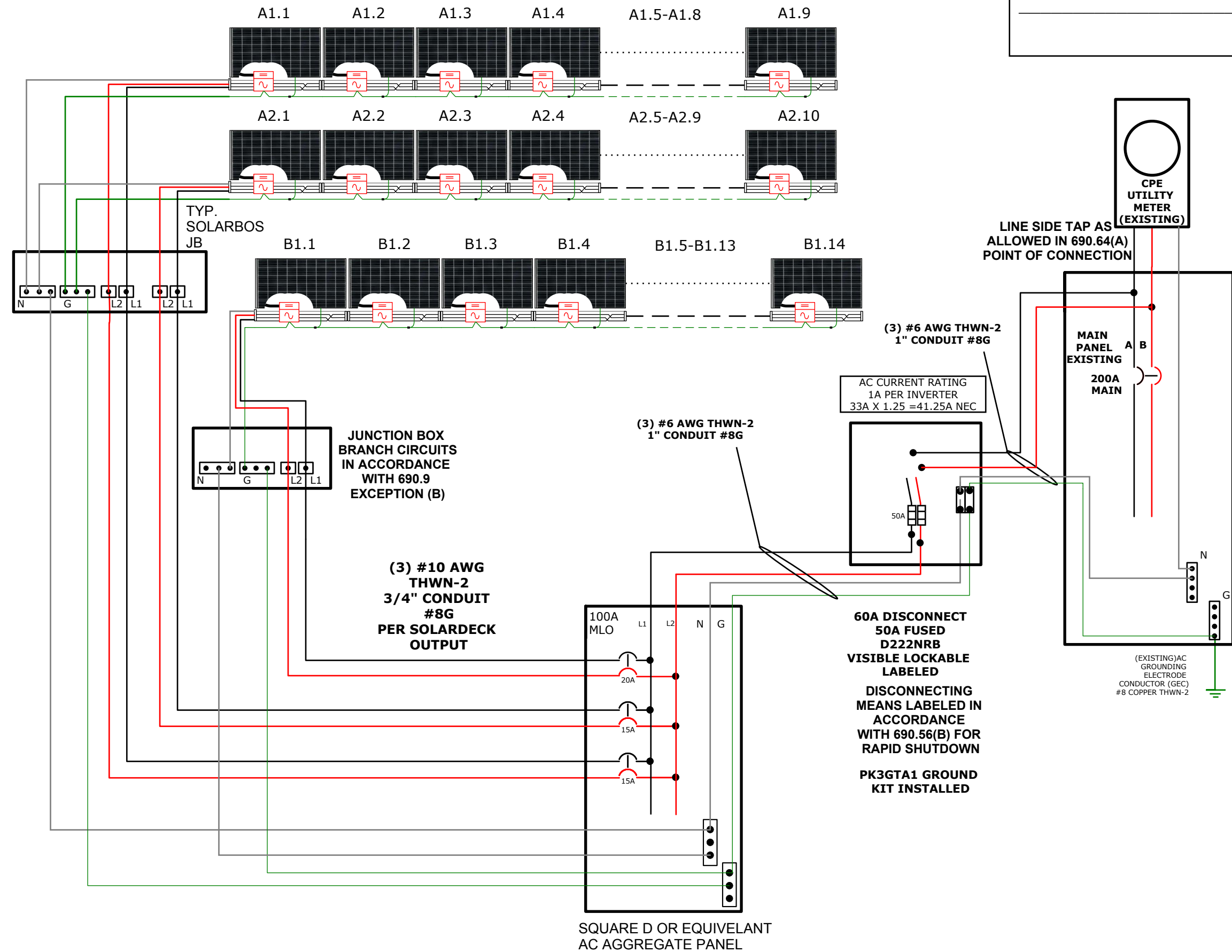
- Located within 10' and clearly visible of Utility Meter
- Accessible, Lockable, Visible Break
- Lever type Disconnect with NEMA 3R rating
- Labeled "Photovoltaic Disconnect"
- Square D model or equivalent
- In accordance with 650.56(B) Rapid Shutdown


NEC 2014: 690

The applied solar not to exceed 120% of the power panel bus bar rating. Solar breaker must be located at farthest distance from main breaker and labeled:
" Solar Breaker Do not move"

AC Wire Insulation Colors

Black	- AC L1
Red	- AC L2
White	- AC Neutral
Green	- Ground





TEXAS SOLAR OUTFITTERS

705 SHEPHERD DR.
HOUSTON, TEXAS 77007
713-802-0223

PV THREE-LINE DIAGRAM					SCALE
					NTS
REVISIONS	MM/DD/YY	DESIGN:	CHECK:	COMMENTS:	PROJECT NO.
	4/16/2015	DG		ISSUE FOR REVIEW	15020
	4/17/2015	DG		ISSUE FOR CONSTRUCTION	SHEET NO.
	2/25/2015	DG		LABELING NOTE ADDITION	E.2

Notes on Module Grounding:

1) Modules are grounded to each rail with a WEEB Clip

2) Rail Splices have a ground bridge lugged

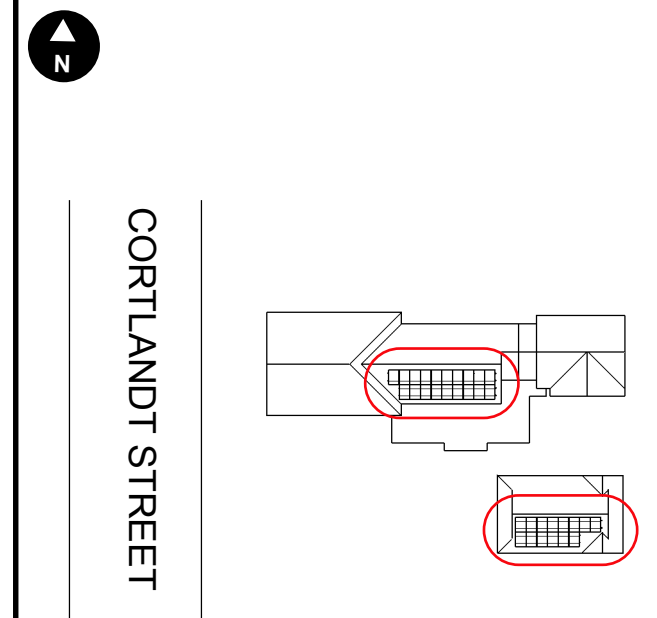
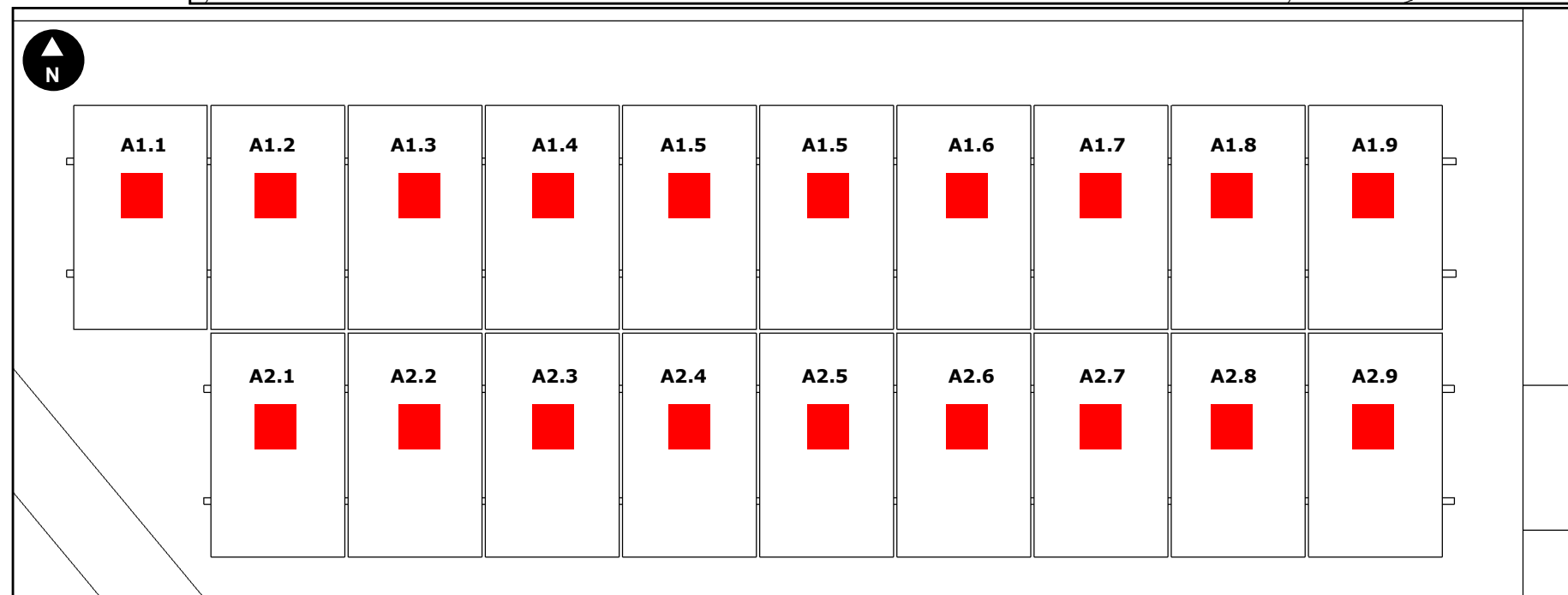
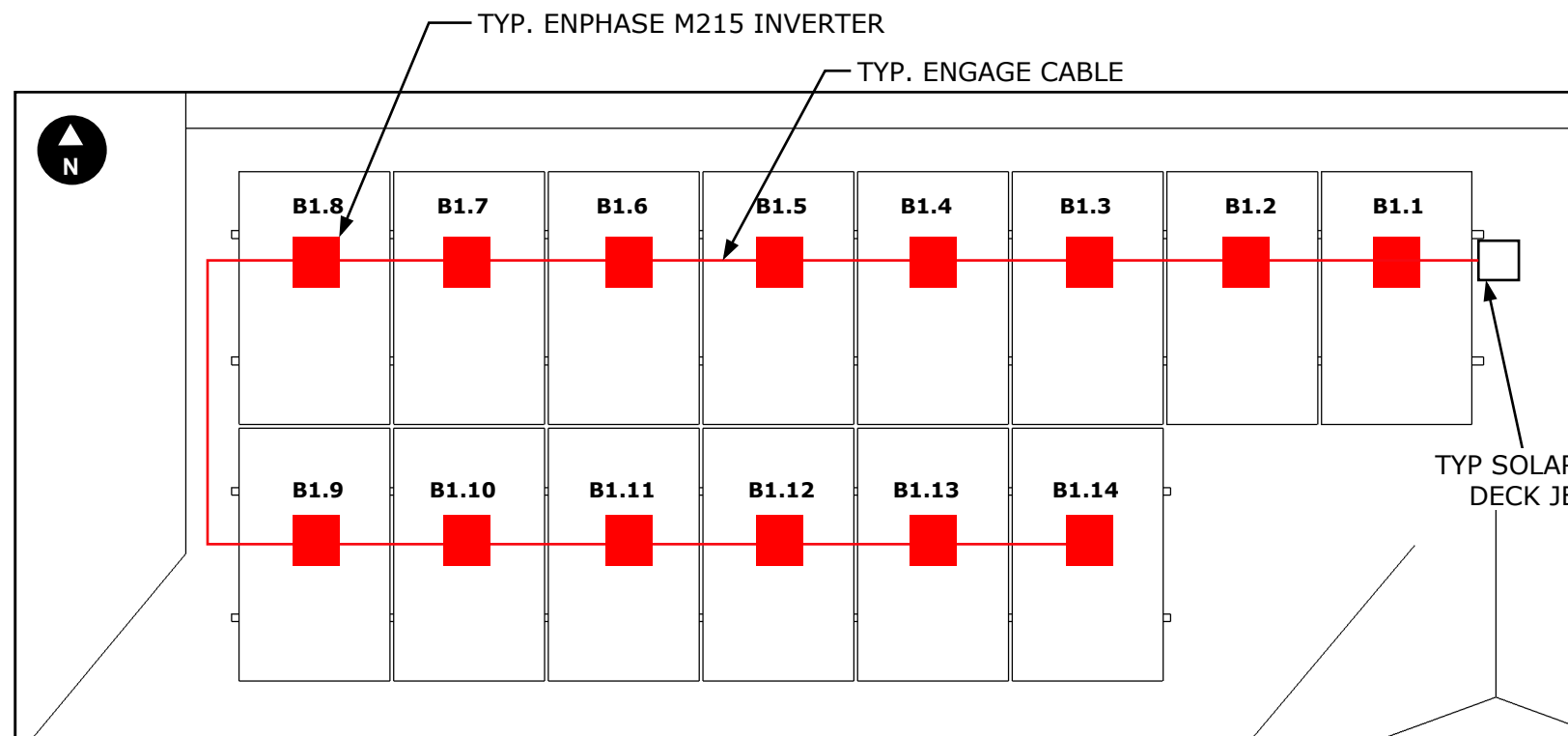
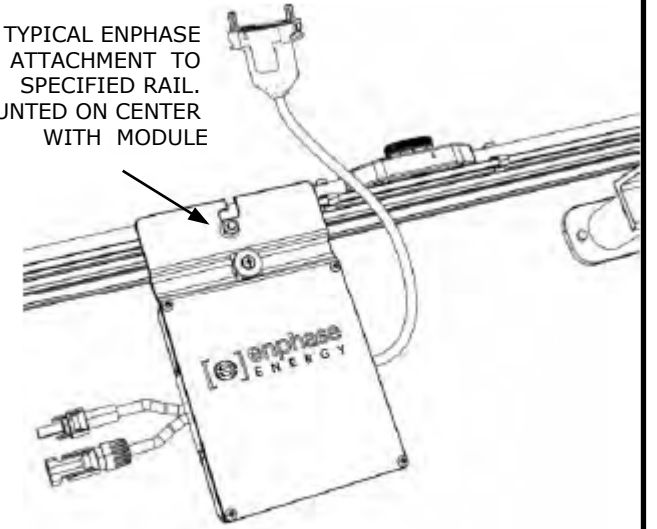
3) Ground wire is lugged to each rail end

Schedule of Components

- ✕ Wiley WEEB Grounding Clip
- ▣ Mid-Clamps
- End-Clamps

Timothy Coats
Master Electrician # 290268

TYPICAL ENPHASE
ATTACHMENT TO
SPECIFIED RAIL.
MOUNTED ON CENTER
WITH MODULE



STRINGING LAYOUT

REVISIONS	MM/DD/YY	DESIGN:	CHECK:	COMMENTS:
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	4/17/2015	DG		ISSUE FOR CONSTRUCTION

SCALE
1/4"=1'0"
PROJECT NO.
15020
SHEET NO.
E.3








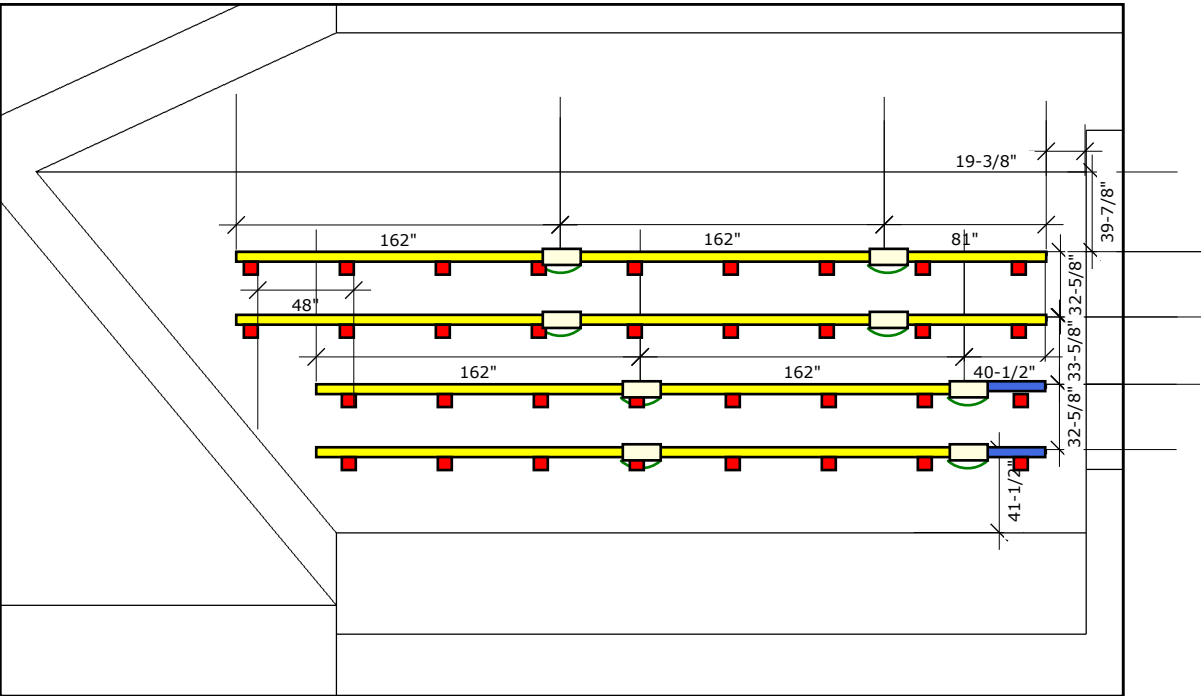
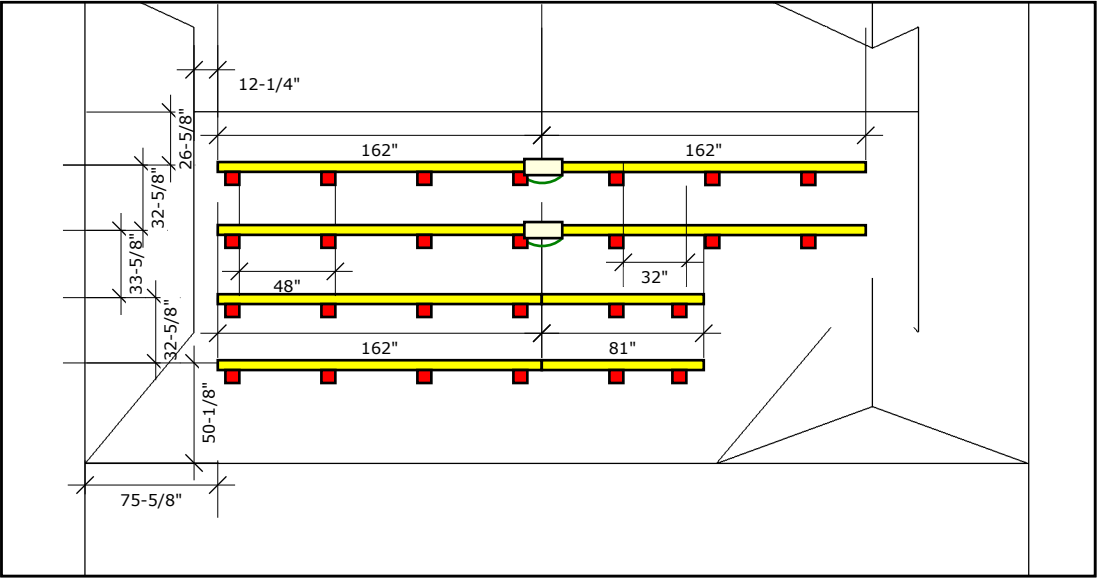
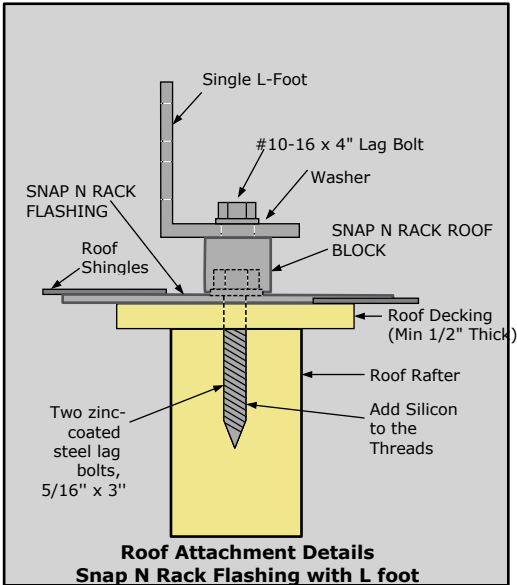
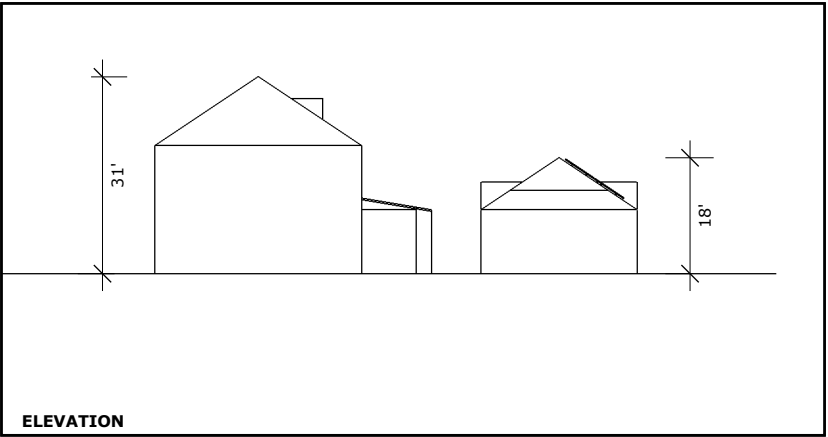
1330 Cortlandt St Houston TX 77008

Notes on Module Grounding:

- 1) Modules are grounded to each rail with a Wiley WEEB Clip.
- 2) Rail Splices have a Wiley ground bridge lugged.
- 3) Ground wire is lugged to each rail.

Schedule of Components

-  Splice
-  Splice Grounding Strap
-  Snap N Rack L Foot and Flashing
-  162" STD SnapNRack Rail
-  122" STD SnapNRack Rail



Non-Ballasted Solar Array On 0:12 To 6:12 Sloped Roof Supporting One Layer Of Composition Roofing (Apply following span limits between rafter supports (wall, ridge/hip members, properly braced purlins))

- For unknown SYP grades and for SYP#3 @24"
oc. The unbraced span limit is 7'-4"

- For unknown SYP grades and for SYP #3 @16" oc. The unbraced span limit is 9'- 2"

- For field verified grade SYP #2 @16" oc. The unbraced span limit is 12'-5"

- For field verified grade SYP #2 @24" oc. The unbraced span limit is 10'-0"

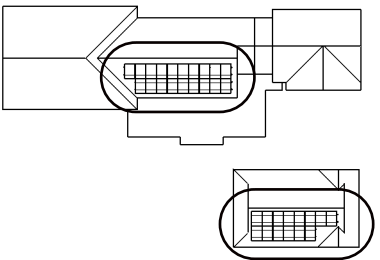
If the above rafter span is exceeded, properly braced purlins must be added in the attic.
If the roof is framed differently than the above, the engineer must provide written approval.

The engineer's stamp certifies the attachment of this solar array and it's frame to the roof structural members for all applicable added dead, live, and wind loads.

The array structural design certification does not certify or warrant any solar power output or any electrical performance, nor any other connected building, construction, or structural performance.



CORTLANDT STREET



**TEXAS
SOLAR
OUTFITTERS**

705 SHEPHERD DR.
HOUSTON, TEXAS 77007
713-802-0223

RAILS LAYOUT					SCALE
					1/4" = 1'0"
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					S.1



ASCE 7-05

Version 1

2009 ©

Solar Panel Wind Load Program

JOB INFORMATION

Job Number	15020
------------	-------

Client's Name	EMERSON
---------------	---------

Company	Texas Solar Outfitters
---------	------------------------

Address

Preparer	David
----------	-------

TOPOGRAPHIC FACTOR

Hill Shape

Flat - No Hill

H, (f

0.0

Lh, (f

0.0

 $x, \quad (t$

0.0

$$z_1 \quad (1)$$

0.0

WIND LOAD DESIGN INFORMATION

[illegible]

705 SHEPHERD DR.
HOUSTON, TEXAS 77007
713-802-0223

WIND CALCULATIONS

SCALE

TS

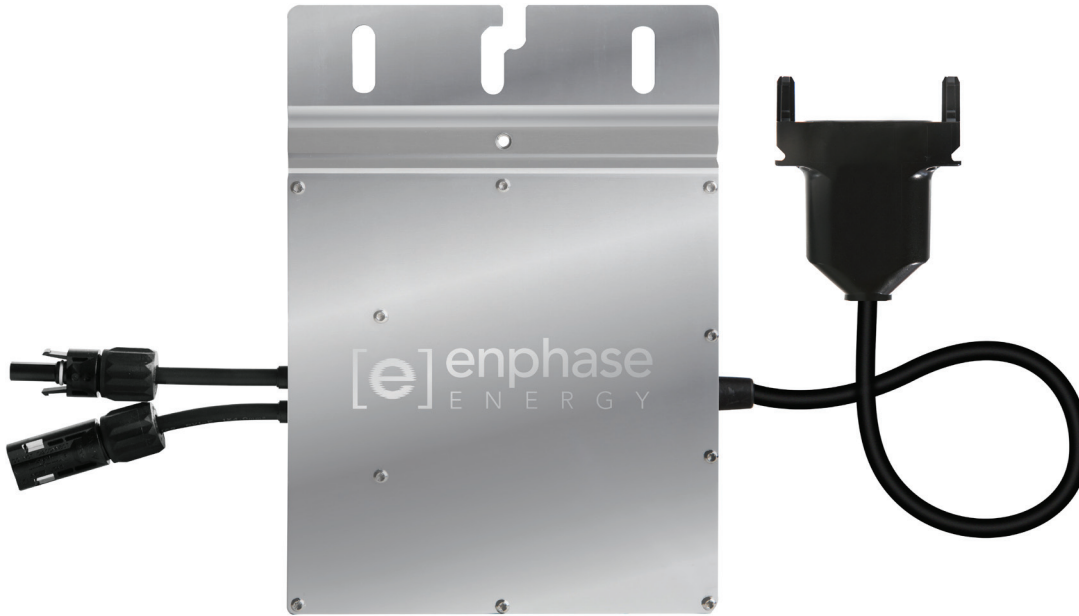
PROJECT NO.

15020

SHEET NO.

S.2

Enphase® M250



The **Enphase® M250 Microinverter** delivers increased energy harvest and reduces design and installation complexity with its all-AC approach. With the M250, the DC circuit is isolated and insulated from ground, so **no Ground Electrode Conductor (GEC) is required for the microinverter**. This further simplifies installation, enhances safety, and saves on labor and materials costs.

The Enphase M250 integrates seamlessly with the Engage® Cable, the Envoy® Communications Gateway™, and Enlighten®, Enphase's monitoring and analysis software.

PRODUCTIVE

- Optimized for higher-power modules
- Maximizes energy production
- Minimizes impact of shading, dust, and debris

SIMPLE

- No GEC needed for microinverter
- No DC design or string calculation required
- Easy installation with Engage Cable

RELIABLE

- 4th-generation product
- More than 1 million hours of testing and 3 million units shipped
- Industry-leading warranty, up to 25 years

INPUT DATA (DC)		M250-60-2LL-S22/S23/S24	
Recommended input power (STC)	210 - 300 W		
Maximum input DC voltage	48 V		
Peak power tracking voltage	27 V - 39 V		
Operating range	16 V - 48 V		
Min/Max start voltage	22 V / 48 V		
Max DC short circuit current	15 A		
Max input current	9.8 A		
OUTPUT DATA (AC)		@208 VAC	@240 VAC
Peak output power	250 W		250 W
Rated (continuous) output power	240 W		240 W
Nominal output current	1.15 A (A rms at nominal duration)		1.0 A (A rms at nominal duration)
Nominal voltage/range	208 V / 183-229 V		240 V / 211-264 V
Nominal frequency/range	60.0 / 57-61 Hz		60.0 / 57-61 Hz
Extended frequency range*	57-62.5 Hz		57-62.5 Hz
Power factor	>0.95		>0.95
Maximum units per 20 A branch circuit	24 (three phase)		16 (single phase)
Maximum output fault current	850 mA rms for 6 cycles		850 mA rms for 6 cycles
EFFICIENCY			
CEC weighted efficiency, 240 VAC	96.5%		
CEC weighted efficiency, 208 VAC	96.0%		
Peak inverter efficiency	96.5%		
Static MPPT efficiency (weighted, reference EN50530)	99.4 %		
Night time power consumption	65 mW max		
MECHANICAL DATA			
Ambient temperature range	-40°C to +65°C		
Operating temperature range (internal)	-40°C to +85°C		
Dimensions (WxHxD)	171 mm x 173 mm x 30 mm (without mounting bracket)		
Weight	2.0 kg		
Cooling	Natural convection - No fans		
Enclosure environmental rating	Outdoor - NEMA 6		
FEATURES			
Compatibility	Compatible with 60-cell PV modules.		
Communication	Power line		
Integrated ground	The DC circuit meets the requirements for ungrounded PV arrays in NEC 690.35. Equipment ground is provided in the Engage Cable. No additional GEC or ground is required.		
Monitoring	Free lifetime monitoring via Enlighten software		
Compliance	UL1741/IEEE1547, FCC Part 15 Class B, CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01		

* Frequency ranges can be extended beyond nominal if required by the utility

To learn more about Enphase Microinverter technology,
visit enphase.com

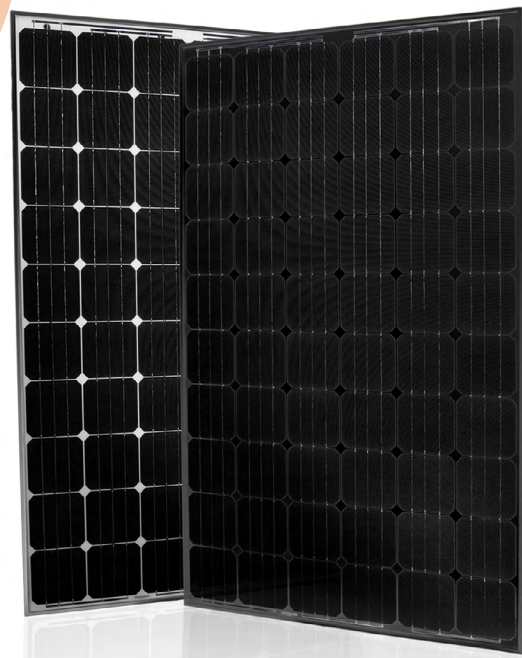


SILVANTIS® R-SERIES: 270 W TO 290 W

60-Cell High Wattage Modules

SunEdison introduces the next generation of high performance solar modules based on innovative Continuous Cz (CCz) monocrystalline cells with PERC technology. The Silvantis R-Series delivers the highest levels of efficiency and durability; providing homeowners with the same quality and performance SunEdison's utility customers enjoy, while optimizing roof fit, overall system size and installer productivity.

SunEdison is a leader in utility-scale solar systems with over two and a half-million Silvantis modules deployed in some of the world's harshest climates and most remote locations. This experience, coupled with over 50 years of expertise in silicon technology and innovation enables SunEdison to design and produce highly advanced residential solar solutions.



SILVANTIS ADVANTAGE

- 17.7% module efficiency with positive power tolerance
- PID-free: compatible with transformerless and multi-MPPT inverters
- Higher return on investment with more watts-per-module
- Reliability tested beyond international standards
- Utility-grade manufacturing: ISO 14001, ISO 9001 and 100% EL inspection

QUALITY & SAFETY

- Industry leading PID test conditions:
 - » 96 hours, 85 C, 85% relative humidity, -1kV
- IEC certified by TÜV SÜD:
 - » 61730 to ensure electrical safety
 - » 61215 long-term operation in a variety of climates including snow loading up to 5400 Pa and hail testing
 - » 61701 Level 1 salt mist corrosion resistant for marine regions
 - » 62716 ammonia testing for agricultural environments
- Manufactured to AQL 0.4 Level II quality and tested up to 3x beyond IEC standards
- CSA listed to UL 1703 for 1,000 V systems in the US and Canada
- MCS certified by BABT for the UK



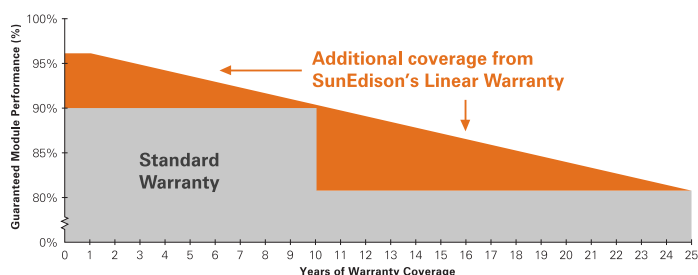
Application Class A
Safety Class II

ROBUST & AESTHETIC DESIGN

- Black anodized corrosion resistant aluminum frame
 - » White back sheet: SE-R2xxCzC-3y
 - » Black back sheet: SE-R2xxKzC-3y
- Low glare anti-reflective coated (ARC) tempered glass

SUNEDISON WARRANTY

- 25-year limited warranty for materials and workmanship for installations ≤ 250 kWDC
- 25-year linear power warranty at STC:
 - » Year 1: ≤ 3.5% of rated power
 - » After year 1: ≤ 0.7% rated power degradation per year



sunedison.com

SILVANTIS R-SERIES: 270 W TO 290 W

PHYSICAL PARAMETERS

Module Dimensions	1,658 mm x 990 mm x 50 mm
Module Weight	19 kg
Cell Type	PERC on CCz monocrystalline
Number of Cells	60
Frame Material	Black Anodized Aluminum
Tempered ARC Glass Thickness	3.2 mm

TEMPERATURE COEFFICIENTS AND PARAMETERS¹

Nominal Operating Cell Temperature (NOCT)	45 C ± 2 C
Temperature Coefficient of P _{max}	-0.44 %/C
Temperature Coefficient of Voc	-0.32 %/C
Temperature Coefficient of Isc	+0.05 %/C
Operating Temperature	-40 C to +85 C
Maximum System Voltage	1000 V (UL & IEC)
Limiting Reverse Current	9.20 A
Maximum Series Fuse Rating	15 A
P _{max} Production Tolerance	0 W to +5 W
Junction Box Rating	IP67
IEC 61730 Application	Class A
Module Fire Performance	Type 2
Fire Resistance Rating	Class C
Packaging Specifications	20 modules per pallet 520 modules per 40' high-cube container
Wind and Snow Front Load	Up to 5,400 Pa
Wind Back Load	2,400 Pa
Reduction of STC efficiency from 1000 W/m ² to 200 W/m ² (Relative)	< 4%

STC ELECTRICAL CHARACTERISTICS²

Model # (e.g. R2xxCzC-3y) ³	R270 CzC	R275 CzC	R280 CzC	R285 CzC	R290 CzC	R270 KzC	R275 KzC	R280 KzC	R285 KzC	R290 KzC
Rated Maximum Power P _{max} (W)	270	275	280	285	290	270	275	280	285	290
Open-Circuit Voltage Voc (V)	38.5	39.0	39.2	39.3	39.3	38.5	38.6	38.6	38.7	38.7
Short-Circuit Current Isc (A)	9.10	9.30	9.45	9.50	9.55	9.10	9.20	9.30	9.40	9.50
Module Efficiency (%)	16.4	16.8	17.1	17.4	17.7	16.4	16.8	17.1	17.4	17.7
Maximum Power Point Voltage V _{mpp} (V)	31.5	31.6	31.7	31.9	31.9	31.5	31.6	31.6	31.7	31.7
Maximum Power Point Current I _{mp} (A)	8.58	8.72	8.84	8.95	9.14	8.58	8.72	8.86	9.00	9.14

NOCT ELECTRICAL CHARACTERISTICS⁴

Model # (e.g. R2xxCzC-3y) ³	R270 CzC	R275 CzC	R280 CzC	R285 CzC	R290 CzC	R270 KzC	R275 KzC	R280 KzC	R285 KzC	R290 KzC
Rated Maximum Power P _{max} (W)	197.3	200.9	204.6	208.2	211.8	193.2	196.7	200.3	203.9	207.5
Open-Circuit Voltage Voc (V)	35.5	35.6	35.7	35.8	35.9	35.3	35.5	35.6	35.7	35.8
Short-Circuit Current Isc (A)	7.42	7.45	7.47	7.49	7.51	7.28	7.32	7.35	7.38	7.41
Maximum Power Point Voltage V _{mpp} (V)	28.4	28.8	29.1	29.4	29.6	28.2	28.6	28.9	29.2	29.5
Maximum Power Point Current I _{mp} (A)	6.94	6.97	7.03	7.09	7.15	6.84	6.88	6.93	6.99	7.05

Listed specifications are subject to change without prior notice.

¹Temperature coefficients may vary by ±10%

²All electrical data at standard test conditions (STC): 1000 W/m², AM 1.5, 25 C; electrical characteristics may vary by ±5% and power measurement tolerance by ±3%

P_{max} Production Tolerance: factory-measured module performance is warranted to meet or exceed the stated panel STC power rating by 0 W to +5 W

³y indicates connector type: -34 = Bizlink S418; -38 = Amphenol Helios H4

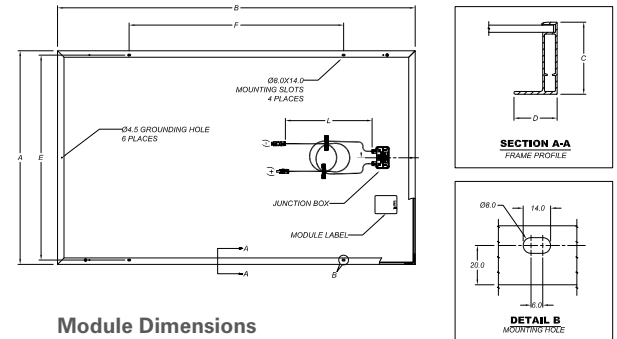
z indicates manufacturing location: M = Malaysia, X = Mexico, P = China, T = Taiwan

⁴NOCT electrical characteristics measured under normal operating conditions of cells: 800 W/m², 20 C, AM 1.5, wind 1 m/s

For more information about SunEdison's Silvantis modules, please visit www.sunedison.com

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R-SERIES SOLAR MODULE DIMENSIONS mm [inch]



Module Dimensions

A – 990 [39.0] B – 1,658 [65.3]

C – 50 [2.0] D – 30 [1.18]

Mounting Hole Spacing

E – 950 [37.4] F – 994 [39.1]

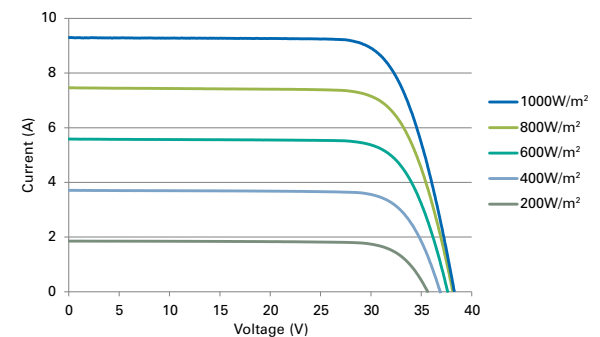
Cable Length

L – 1,000 [39.4]

Junction Box Dimensions

101.5 x 60.0 x 25.5 [3.99 x 2.36 x 1.0]

IV CURVES AT MULTIPLE IRRADIANCES [25 C]



IV CURVES AT MULTIPLE TEMPERATURES [1000 W/m²]

