PUBLIC WORKS CONTRACT
for the Supply and Installation of Roof-Top Solar Photovoltaic Systems on Sebastia Municipality

Reference No.: PZA1303311-10043

Funded by:

Enabel - Belgian Development Agency

Designed By:

Premium Engineering & Planning
No. PV Modules: 29 Modules

AC Type/Capacity: 3 phase/20 KW

DC Capacity: 16.24 - 16.97 KWP

Tilt/Azimuth: 20/19 Deg
No. PV Modules: 54 Modules

AC Type/Capacity: 3 phase/30 KW

DC Capacity: 30.24 - 31.59 KWP

Tilt/Azimuth: 20/34 Deg
No. PV Modules: 18 Modules

AC Type/Capacity: 3 phase/10 KW

DC Capacity: 10.08 - 10.53 Kw

Tilt/Azimuth: 20/14 Deg
**Project Title:**
PUBLIC WORKS CONTRACT for the Supply and Installation of Roof-Top Solar Photovoltaic Systems on Sebastia Municipality

**Reference No.:** PZA1303311-1004

**Date:** 2/10/2023

**Designed by:** Mustafa S. Switi

**Funded By:** Enabel - Belgian Development Agency

**Contracting Authority:** Enabel - Belgian Development Agency

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**Notes:**
1. All Dimensions Are in meters.
2. All components made of steel should be Hot-Dip Galvanized.
3. PVC End-Cap should be used with all H-Beam Ends.

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**Item** | **Min. Specs**
---|---
A-Beam/V-Beam | 80x80x3 mm
H-Beam | 40x60x3 mm
Plate | 200x200x8mm

<table>
<thead>
<tr>
<th>From: To</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Module: PV Module</td>
<td>MIN 2 cm</td>
</tr>
<tr>
<td>PV Module: H-Beam End</td>
<td>4-6 cm</td>
</tr>
<tr>
<td>A-Beam: A-Beam</td>
<td>MAX 275 cm</td>
</tr>
</tbody>
</table>

---

**Legend:**
- PV Module
- PV Module (Top-View)
- PV Module (Side-View)
- H-Beam
- A-Beam
- V-Beam
- Plate

---

**IVM-Support** 3 Units

**3VM-Support** 4 Units
**Notes**

1. All dimensions are in meters.
2. All components made of steel should be Hot-Dip Galvanized.
3. PVC End-Cap should be used with all H-Beam Ends.

### Item Min. Specs

<table>
<thead>
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<th>Min. Specs</th>
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<tbody>
<tr>
<td>A-Beam/V-Beam</td>
<td>80x80x3 mm</td>
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<tr>
<td>H-Beam</td>
<td>40x60x3 mm</td>
</tr>
<tr>
<td>Plate</td>
<td>200x200x8mm</td>
</tr>
</tbody>
</table>

### From: To Distance

<table>
<thead>
<tr>
<th>Module Edge: H-Beam End</th>
<th>4-6 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Beam: A-Beam</td>
<td>MAX 275 cm</td>
</tr>
<tr>
<td>PV Module: PV Module</td>
<td>MIN 2 cm</td>
</tr>
</tbody>
</table>

**Legend:**
- PV Module (Top-View)
- PV Module (Side-View)
- H-Beam
- A-Beam
- V-Beam
- Plate

**Project Title:**
PUBLIC WORKS CONTRACT for the Supply and Installation of Rooftop Solar Photovoltaic Systems on Sebastia Municipality

**Reference No.:** PZA1303311-1004

**Designed by:**
Mustafa S. Switi

**Funded By:**
Enabel - Belgian Development Agency

**Contracting Authority:**
Enabel - Belgian Development Agency

**Address:**
Mohammed A. Khalil
Project Title: PUBLIC SERVICE CONTRACT for the Supply and Installation of Rooftop Solar Photovoltaic Systems on Sebastia Municipality
Reference No.: PZA1303311-1004
3/2/2023

**Drawing Title:**
PUBLIC SERVICE SUPPORT STRUCTURE 1-100

**Drawing No.:** 202-02
(1) All Dimensions Are in meters.
(2) All components made of steel should be Hot-Dip Galvanized.
(3) PVC End-Cap should be used with all H-Beam Ends.

### Notes

- **A-Beam/V-Beam**
  - Min. Specs: 80x80x3 mm
- **H-Beam**
  - Min. Specs: 40x60x3 mm
- **Plate**
  - Min. Specs: 200x200x8 mm

### Minimum Mass

- Each concrete base is 240 Kg.

### Support Structure

- **PV Module**: MIN 2 cm, MAX 275 cm
- **Module Edge**: H-Beam End: 4-6 cm
- **A-Beam**: A-Beam
- **PV Module**: PV Module

---

**Contracting Authority:**

Enabel - Belgian Development Agency

**Funded By:**

Belgium

**Project Title:**

PUBLIC WORKS CONTRACT for the Supply and Installation of Roof-Top Solar Photovoltaic Systems on Sebastia Municipality

**Reference No.:** PZA1303311-1004

**Date:** 2/10/2023

---

**Designed by:**

Mustafa S. Switi

**Address:** Dura - Hebron

**Tel.:** +972 56 894 6657

**Email:** m.sweiti@palsec.net

**Fax:** +972 (2) 2281 494
List of Main Material

<table>
<thead>
<tr>
<th>Item</th>
<th>Specs</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Module</td>
<td>560-585 Wp</td>
<td>29</td>
</tr>
<tr>
<td>DC Wire</td>
<td>&gt;= 1KV, &gt;= 6mm2</td>
<td></td>
</tr>
<tr>
<td>DC Panel</td>
<td>IP&gt;= 65 Galvanized</td>
<td>1</td>
</tr>
<tr>
<td>DC Breaker</td>
<td>&gt;=800 V, 20 A, 2P</td>
<td>2</td>
</tr>
<tr>
<td>DC SPD</td>
<td>Class 2</td>
<td>2</td>
</tr>
<tr>
<td>Grid Tie Inverter</td>
<td>17-20 KW, &gt;= 2 MPPT</td>
<td>1</td>
</tr>
<tr>
<td>AC Cable</td>
<td>5x10mm, Cu, XLPE</td>
<td></td>
</tr>
<tr>
<td>AC Panel</td>
<td>IP&gt;= 65 Galvanized</td>
<td>1</td>
</tr>
<tr>
<td>AC Breaker</td>
<td>&gt;=400 V, 40 A, 3P</td>
<td>2</td>
</tr>
<tr>
<td>AC SPD</td>
<td>Class 2</td>
<td>1</td>
</tr>
<tr>
<td>EL Breaker</td>
<td>&gt;=400 V, 40 A, 4P, &gt;=0.3A</td>
<td></td>
</tr>
<tr>
<td>Production Meter</td>
<td>400 V, Class &lt;= 1</td>
<td>1</td>
</tr>
<tr>
<td>Bi-Dir. Meter</td>
<td>400 V, Class &lt;= 0.5</td>
<td>1</td>
</tr>
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<td>560-585 Wp</td>
<td>54</td>
</tr>
<tr>
<td>DC Wire</td>
<td>&gt;= 1KV, &gt;= 6mm² L.S.</td>
<td></td>
</tr>
<tr>
<td>DC Panel</td>
<td>IP &gt;= 65, Galvanized</td>
<td>1</td>
</tr>
<tr>
<td>DC Breaker</td>
<td>&gt;=800 V, 20 A, 2P</td>
<td>4</td>
</tr>
<tr>
<td>DC SPD</td>
<td>Class 2</td>
<td>4</td>
</tr>
<tr>
<td>Grid Tie Inverter</td>
<td>30-36 KW, &gt;= 2 MPPT</td>
<td>1</td>
</tr>
<tr>
<td>AC Cable</td>
<td>5x16mm, Cu, XLPE</td>
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<tr>
<td>AC Panel</td>
<td>IP &gt;= 65, Galvanized</td>
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</tr>
<tr>
<td>AC Breaker</td>
<td>&gt;=400 V, 63 A, 3P</td>
<td>2</td>
</tr>
<tr>
<td>AC SPD</td>
<td>Class 2</td>
<td>1</td>
</tr>
<tr>
<td>EL Breaker</td>
<td>&gt;=400 V, 63 A, 4P</td>
<td>1</td>
</tr>
<tr>
<td>Production Meter</td>
<td>400 V, Class &lt;= 1</td>
<td>1</td>
</tr>
<tr>
<td>Bi-Dir. Meter</td>
<td>400 V, Class &lt;= 0.5</td>
<td>1</td>
</tr>
</tbody>
</table>

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#### Diagram

- **Legend:**
  - PV Module
  - DC Wires
  - AC Cable
  - DC Breaker
  - SPD
  - AC Breaker
  - EL Breaker

#### Notes
1. All Cables & Wires should be Protected by UV Conduit and/or Covered Steel Cable Tray
2. DC Connectors (MC4) Should have IP68 Class
### List of Main Material

<table>
<thead>
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<tr>
<td>PV Module</td>
<td>560-585 Wp</td>
<td>18</td>
</tr>
<tr>
<td>DC Wire</td>
<td>&gt;= 1KV, &gt;= 6mm2 L.S.</td>
<td></td>
</tr>
<tr>
<td>DC Panel</td>
<td>IP &gt;= 65 Galvanized</td>
<td>1</td>
</tr>
<tr>
<td>DC Breaker</td>
<td>&gt;=800 V, 20 A, 2P</td>
<td>2</td>
</tr>
<tr>
<td>DC SPD</td>
<td>Class 2</td>
<td>2</td>
</tr>
<tr>
<td>Grid Tie Inverter</td>
<td>10 KW, &gt;= 2 MPPT</td>
<td>1</td>
</tr>
<tr>
<td>AC Cable</td>
<td>5x10mm Cu, XLPE L.S.</td>
<td></td>
</tr>
<tr>
<td>AC Panel</td>
<td>IP &gt;= 65 Galvanized</td>
<td>1</td>
</tr>
<tr>
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<td>2</td>
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<td>1</td>
</tr>
<tr>
<td>EL Breaker</td>
<td>&gt;=400 V, 32 A, 4P, &gt;=0.3A</td>
<td>1</td>
</tr>
<tr>
<td>Production Meter</td>
<td>400 V, Class &lt;= 1</td>
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</table>

### DC Circuit Diagram

```
+---------------------------------+    +-------------------------------------------+    +---------------------------------+
|                                 +----|                                          +----|                                 |
|                                 |    |                                          |    |                                 |
|                                 |    |                                          |    |                                 |
|                                 |    |                                          |    |                                 |
|                                 +----|                                          +----|                                 |
|                                 +----|                                          +----|                                 |
|                                 +----|                                          +----|                                 |
|                                 +----|                                          +----|                                 |
|                                 +----|                                          +----|                                 |
|                                 +----|                                          +----|                                 |
|                                 +----|                                          +----|                                 |
```

### Notes

1. All Cables & Wires should be Protected by UV Conduit and/or Covered Steel Cable Tray
2. DC Connectors (MC4) Should have IP68 Class
Notes

1. System Grounding Resistance Should Be Less Than 3 Ohm
2. Minimum Grounding Wire Between PV Modules is 6 mm²
3. Minimum Grounding Wire Between Other Component is 10 mm²

Legend:
- PV Module
- Grounding Wire
- Grounding Busbar
- Grounding Rod
- SPD
- H-Beam
- V-Beam

Drawing
Title
Designed by:
Checked by:
Approved by:
Date:
Scale:
Drawing No:

Contracting Authority:
Enabel - Belgian Development Agency

Funded By:

Project Title:
PUBLIC WORKS CONTRACT for the Supply and Installation of Roof-Top Solar Photovoltaic Systems on Sebastia Municipality

Reference No.:
PZA1303311-1004

3/4 Inches 1.5 METER GROUNDING ROD

Municipality AC Panel
Notes:

1. System Grounding Resistance Should Be Less Than 3 Ohm
2. Minimum Grounding Wire Between PV Modules is 6 mm²
3. Minimum Grounding Wire Between Other Component is 10 mm²

Legend:
- PV Module
- Grounding Wire
- SPD
- Grounding Busbar
- Grounding Rod
- H-Beam
- V-Beam

Contracting Authority:
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Belgium

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Address: Dura - Hebron
Tel.: +972 56 894 6657
email: m.sweiti@palsec.net
Fax: +972 (2) 2281 494

Drawing Title: PUBLIC SERVICE GROUNDING LAYOUT
Notes:

1. System Grounding Resistance Should Be Less Than 3 Ohm
2. Minimum Grounding Wire Between PV Modules is 6 mm²
3. Minimum Grounding Wire Between Other Component is 10 mm²

Legend:
- PV Module
- Grounding Wire
- Grounding Busbar
- Grounding Rod
- SPD
- H-Beam
- V-Beam

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email: m.sweiti@palsec.net
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Drawing Title:
POST OFFICE GROUNDING LAYOUT

Scale: 1:100

Date: 3/2/2023

Drawing No:
B3-04

Page No:
1-100