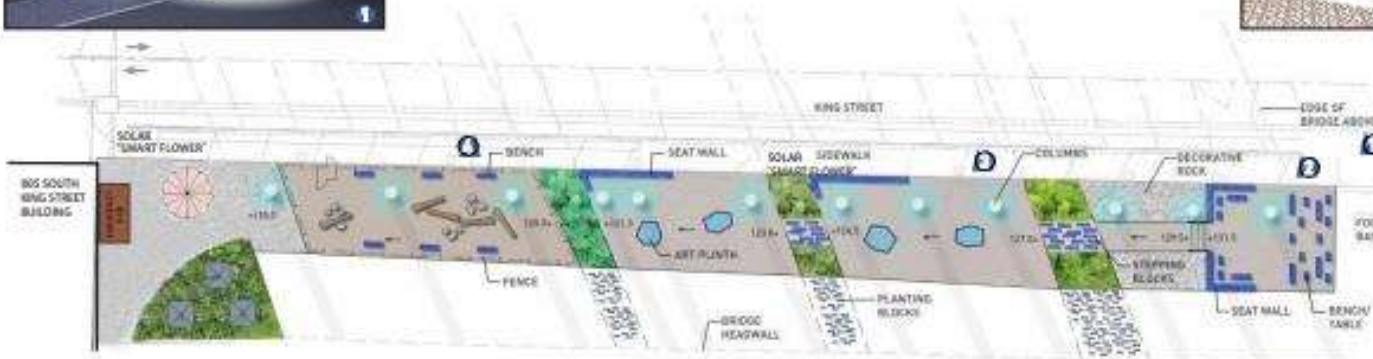


Smartflower & Emergency Hub ISRD Certificate of Appropriateness

WHERE WE ARE

KING STREET DESIGN - DECEMBER 2020



I-5 UNDERPASS | COMMUNITY MEETING | DECEMBER 16, 2020

SiteWorkshop
LANDSCAPE ARCHITECTURE

Project Description

The proposal is to install the Smartflower and Emergency HUB box, as shown in the images, on the vacant/open WSDOT right of way (along S. King Street) between 807 S. King Street and the I-5 Bridge.

The Smartflower, when open, is 17' high and wide. When closed, it is 8.7' tall. This application proposes installing this Smartflower on a concrete pedestal approximately 10' to 12'. The "leaves" on this Smartflower are not easily accessible from the ground elevation. The exact location shall be determined through a WSDOT review.

The Emergency HUB box is proposed to be a KNAACK piano-style job-site toolbox (48" high, 30" wide, 49" deep), as shown in the images, placed against the wall of the building. The photos are of the Meadowbrook Community Council Emergency Hub.

The Emergency Community Resilience Hub feeds into and will be registered with the city of Seattle's Emergency disaster system.

This program will have 3 major components:

A) Solar power from the Smartflower that stands alone in an emergency with a backup power battery that can power a starlink if communication is needed, a wireless system, a way to charge our phones and electric emergency essential vehicles, along with general power under the bridge daily.

Electrification has been found to positively impact our community in three areas.

1) Lowering crime - The CID is known to have the worst air quality in the city and is the number one heat dome area near the freeway. As for public safety, the area has one of the highest crime rates with a crime grade of an F (https://crimegrade.org/violent-crime-international-district-seattle-wa/#google_vignette) It has been found that areas that have electrified and decarbonized have dropped at least 10% then before they did the decarbonization work.

2) Healthier environments - <https://www.cnn.com/2024/02/21/health/electric-vehicles-air-pollution-kids/index.html> - through increase electrical vehicle uses in a community.

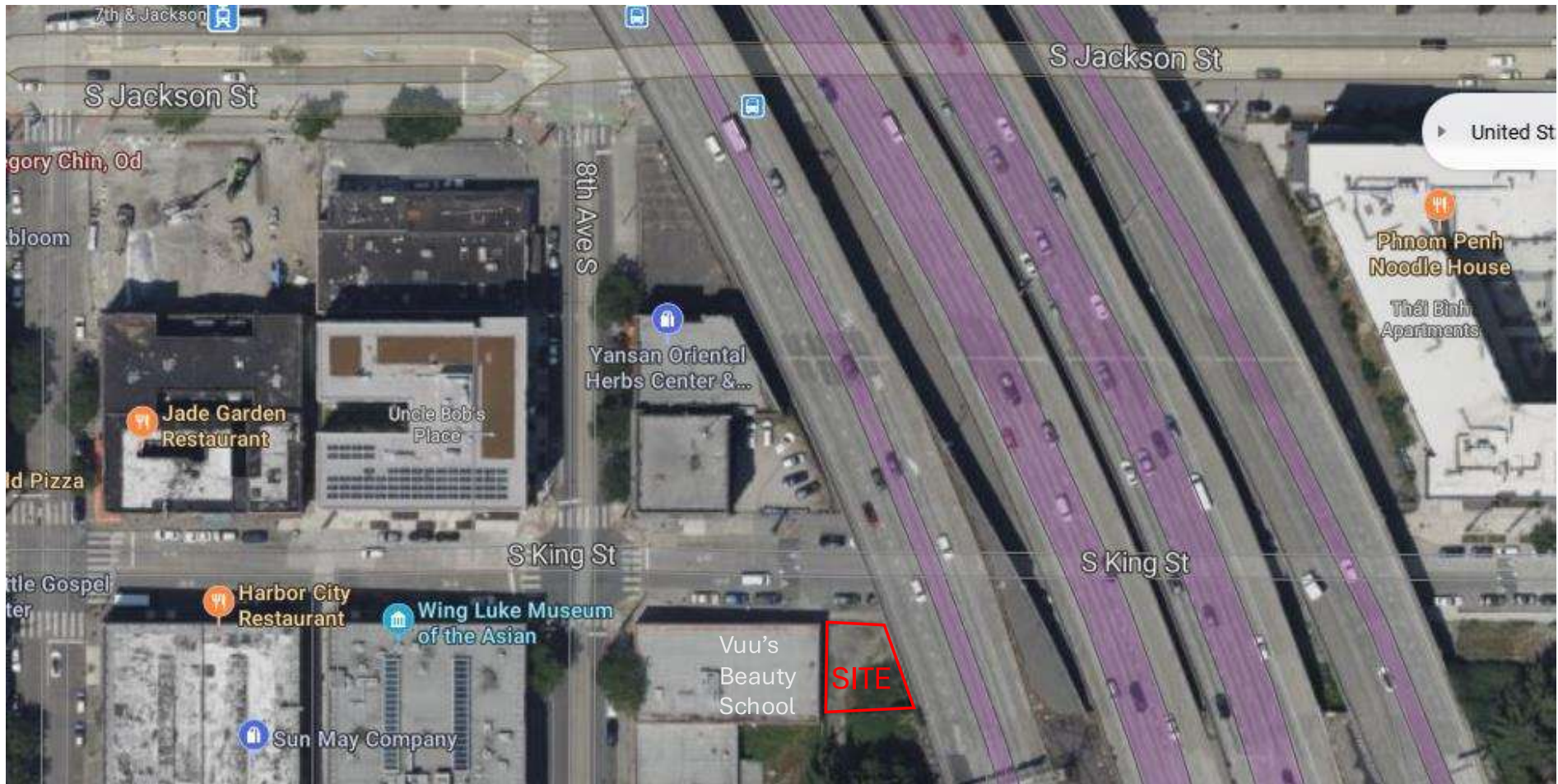
3) Community collaboration and a thriving community by creating the systems through mutual aid, co-creation, and co-power through community norms and agreements.

B) By integrating the emergency HUB box, the box will hold critical community supplies and materials per the listing from Seattle Emergency Services, including the training and reporting systems. This would be activated for emergencies such as an earthquake or other natural disasters. In addition, air quality would be compromised from the environment or smoke fire to supplies needed for residents during extreme heat.

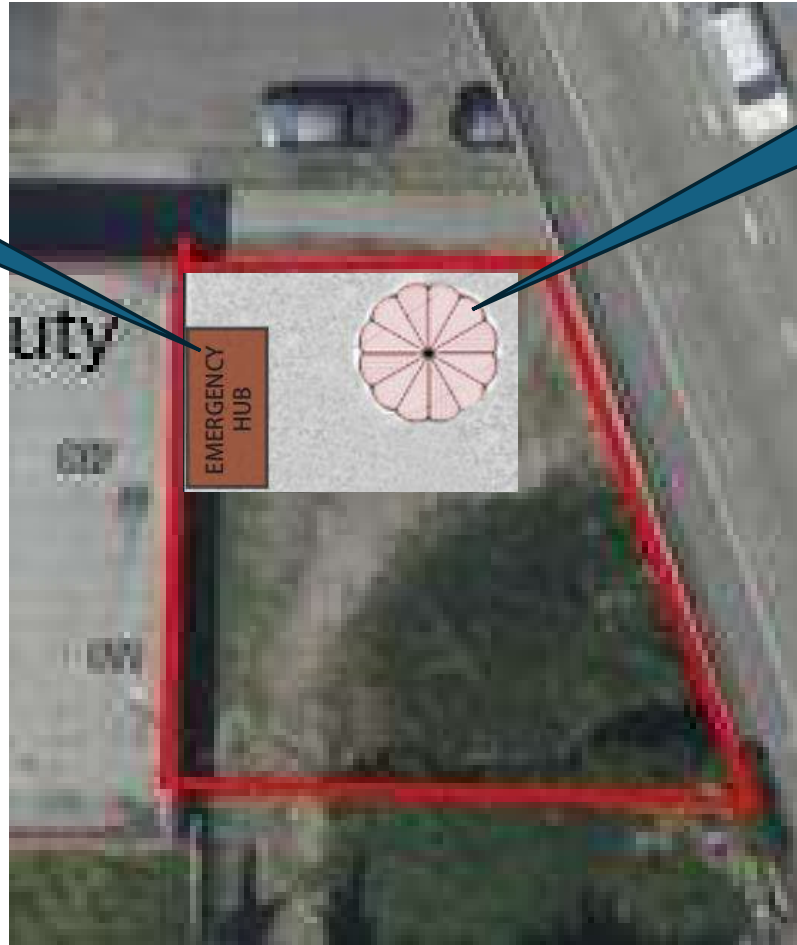
C) Collaborating with the community ensures that ongoing collaboration is intact and the CBO is sustained. Keeping those in the loop of continuing contact such as city, state, and local municipalities and community systems such as IDEC, Fire Department, SPD, Emergency Services and community residents, retailers, organizations and like-minded individuals.

One Smartflower can change a community one panel at a time.

Vicinity Map



Install Emergency
Hub



Install Solar Flower

Solar Flower – Fully Open

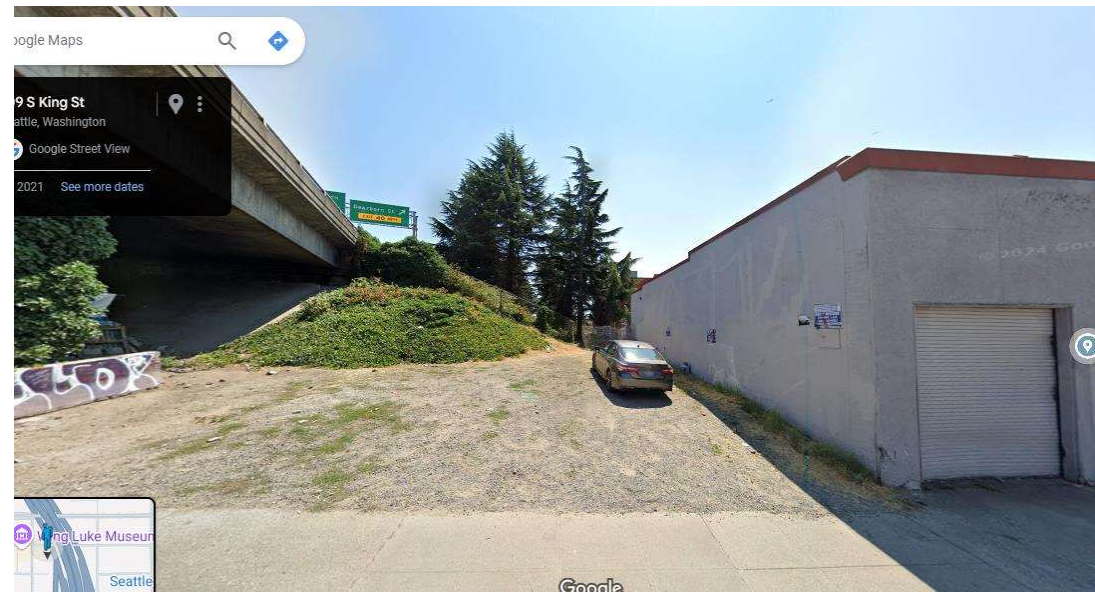
Thank you!



Emergency Hub Box



Project Site
Open WSDOT ROW





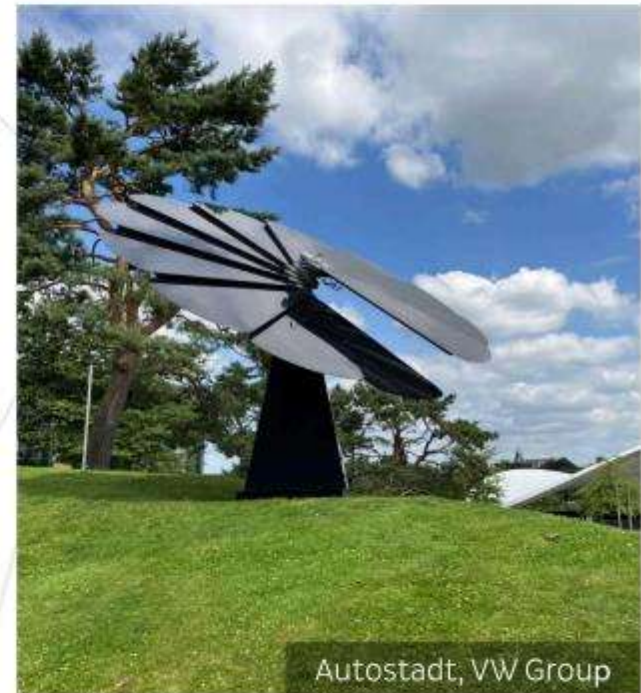
Solar Flower, not to exceed height of bridge, per WSDOT, on concrete base, 10'-12' tall.

Install Emergency Hub

smartflower product family

○ smartflower +Plus

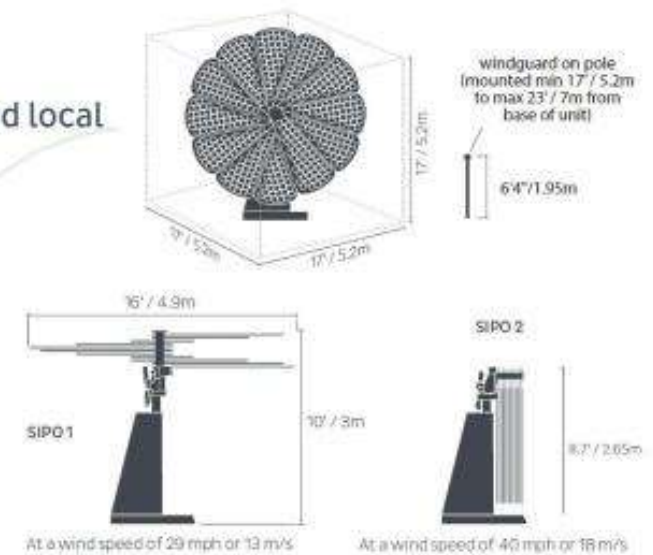
- On-grid or off-grid applications
- Built-in lithium ion energy storage options, with self contained inverter and battery charging capability
- Off-grid or emergency relief applications
- Generator provision for off-grid solutions



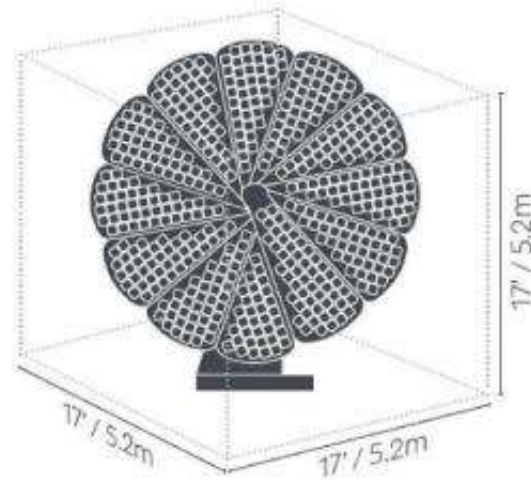
smartflower technical overview

○ General Specifications for Global Grid-Tied Version

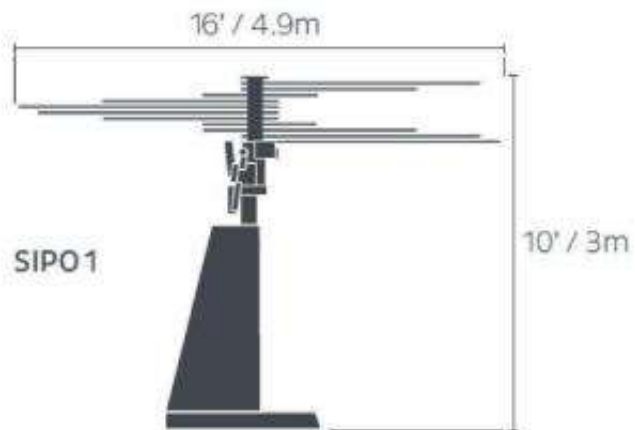
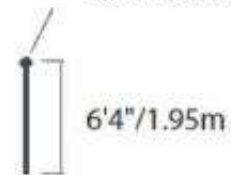
- Nameplate output is 2.5kW
- Dual-axis tracking outputs up to 6,400 kWh depending on region and local shading (reference: PV Watts)
- Operating envelope: 17' x 17' x 17' (5.2m x 5.2m x 5.2m)
- Operating temperature range: -4F (-20C) to 131F (55C)
- Unit Weight: 1,500 lbs (680kg) (without batteries)
- Unit goes into Safety Position 1 (SIPO1) at a wind speed of 13m/s, and goes into Safety Position 2 (SIPO2) at a wind speed of 18m/s.



local



windguard on pole
(mounted min 17' / 5.2m
to max 23' / 7m from
base of unit)



At a wind speed of 29 mph or 13 m/s



At a wind speed of 40 mph or 18 m/s

ESCALA 1:50

From: [Eco8 CB](#)
To: [Frestedt, Rebecca](#)
Cc: [Tom Im](#); [Ali Lee](#)
Subject: I-5 CID dimensions from Spanish to English and also the 2FT set back for the unit
Date: Wednesday, November 20, 2024 3:13:41 PM
Attachments: [pedastal 13112018-DAV-SMART FLOWER- BARRANQUILLA-DIS-ARQ002.pdf](#)

CAUTION: External Email

Hi Rebecca,

I hope this is what you need. Smarflower translated it to English but because they are on the east coast the planner wasn't there but was able to add the dimensions here.

The original plans in Spanish are attached as well.

They also added the setback in item number 2 for the setback.

Let me know if there is anything else you need.

Thank you,

Ali Lee
206-518-2205

Overall Dimensions:

1. Overall Height:

- **2.65-3.65 meters** (approx. **8'8-10'**).
- **Location in PDF:** Found in the section titled "POSICIÓN DE SEGURIDAD 1."

2. Pedestal Base Dimensions:

- **1.5 meters wide** (approx. **4 feet 11 inches**).
- **Location in PDF:** Detailed in the "Pedestal Structure" diagram.
- Include 2'ft set back from Fence, Building, Bridge

3. Foundation Width:

- **5.30 meters** (approx. **17 feet 4 inches**).
- **Location in PDF:** Shown in the "Foundation Base Plan."

4. Foundation Depth:

- **4.25 meters** (approx. **13 feet 11 inches**).
- **Location in PDF:** Found in the "Base Plan View."

5. Slab Thickness:

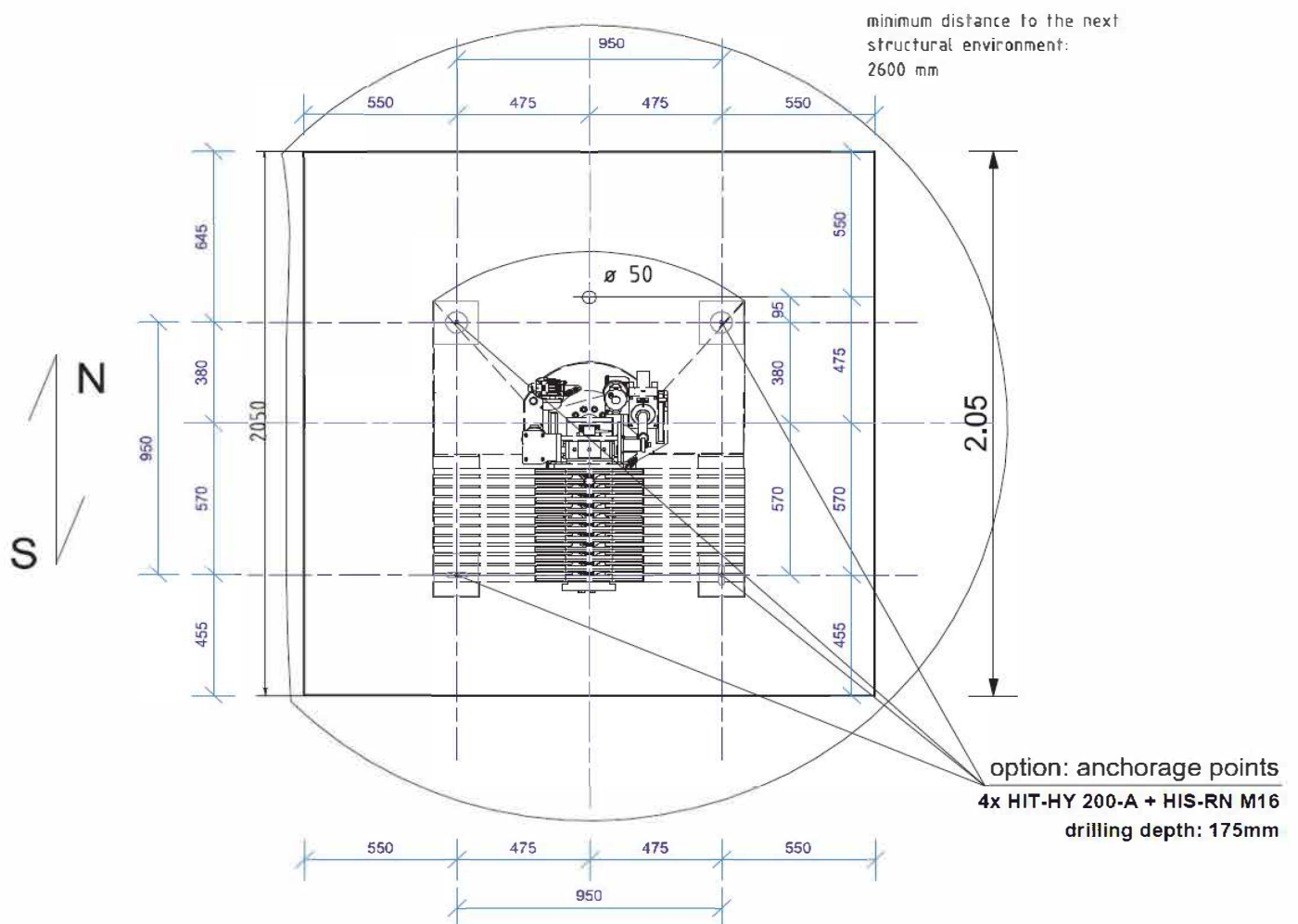
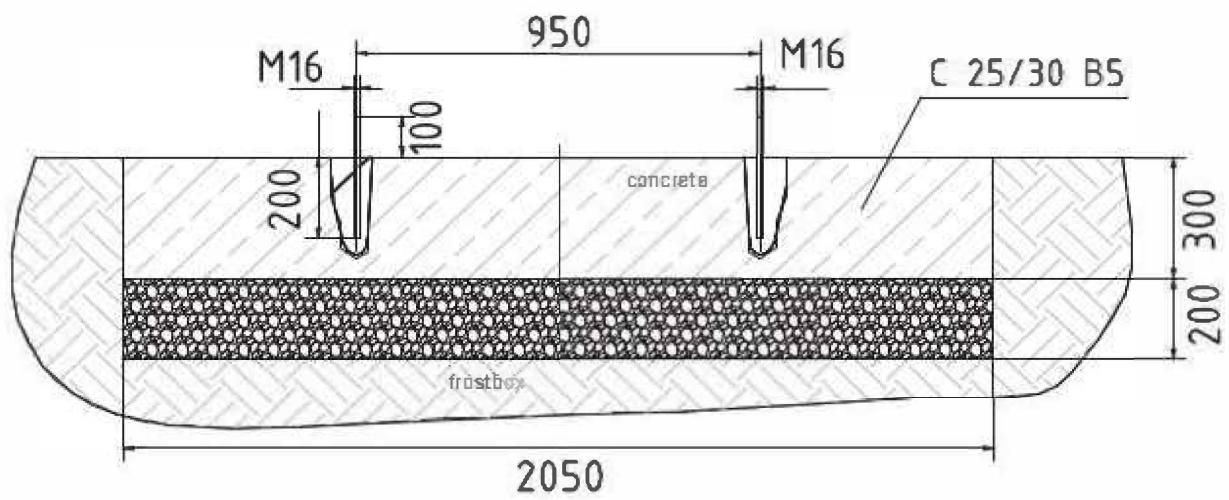
- **0.20 meters** (approx. **8 inches**).
- **Location in PDF:** Listed under "CIMENTACIÓN PLACA."

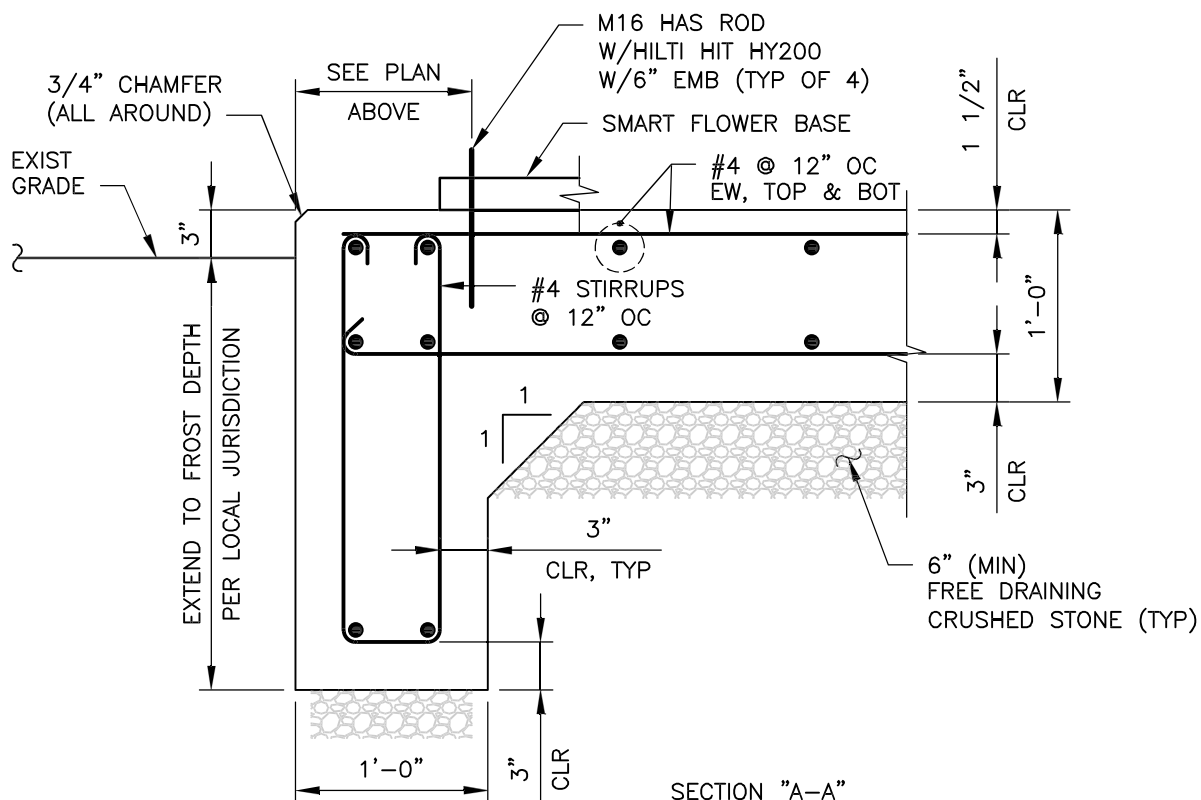
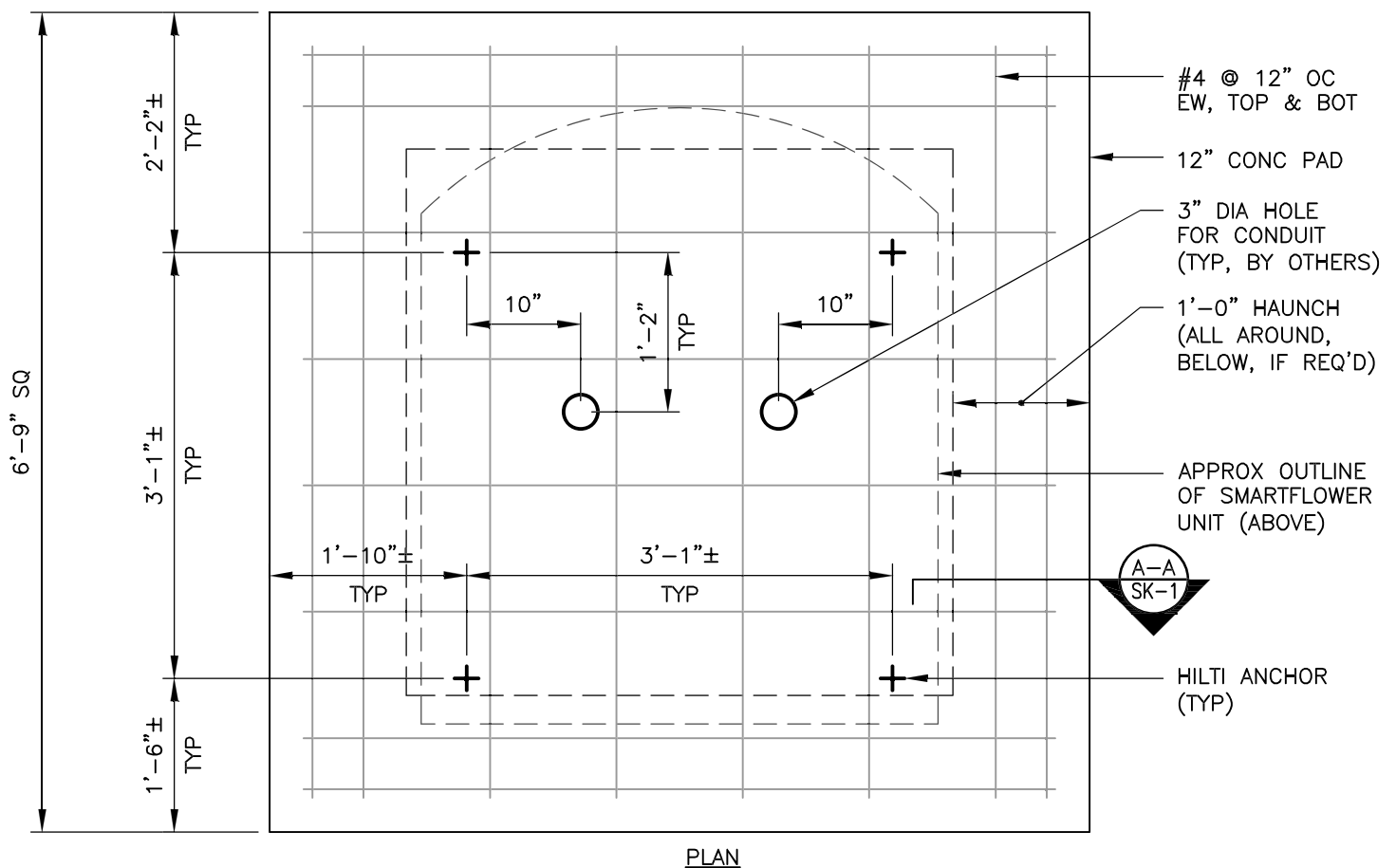
6. Curb Height:

- **0.15 meters** (approx. **6 inches**).
- **Location in PDF:** Marked in the landscaping and perimeter details.

7. White Stone Landscaping:

- **2"-3" diameter stones.**
- **Location in PDF:** Mentioned in the section describing landscaping materials.





SOLAR INSTALLATION
SMARTFLOWER SOLAR

FOUNDATION DESIGN
SLAB ON GRADE (OPTION 1)

PLAN & SECTION

TECTONIC

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 1279 Route 300 Phone: (845) 567-6656
 Newburgh, NY 12550 (800) 829-6531
www.tectonicengineering.com

REVISION: 1
DATE: 8/8/2017
TEC WO#: 8743.01



SMARTFLOWER FOUNDATION DESIGN - SLAB ON GRADE

SOLAR PANEL TILT 0° & 65°

CONSTANT SOIL PROPERTIES - (CLAY)

Cohesion (Cu) =	100	psf
Allowable Skin Friction (qs) =	18	psf
Unit Weight (γ) =	100	pcf

CONSTANT SOIL PROPERTIES - (SAND)

Angle of Internal Friction (φ) =	30	°
Soil Friction Coefficient (Ko) =	0.25	(at rest)
Unit Weight (γ) =	110	pcf

CONSTANT IBC 2015 DESIGN CRITERIA

Risk Category =	II	Table 1.5-1
Importance Factor (I) =	1.00	Table 1.5-2
Ground Snow load (Pg) =	30	psf
Exposure Category =	C	Section 26.7.3
Velocity pressure Coefficient (Kz) =	0.70	Table 30.3-1
Wind directionality factor (Kd) =	0.85	Table 26.6-1
Gust Effect Factor (G) =	0.85	Section 26.9.1
Topographic Factor (Kzt) =	1.00	Section 26.8.2

REQUIRED SLAB SIZE

50 mph (Ultimate Wind Speed)

Minimum Allowable Bearing Pressure
(750 psf)

6'-9" ft x 6'-9" ft

Notes/Limitations:

- Assumes all soils are drained/unsaturated and not located in flood zones.
- Assumes no organic, peat, highly compressible, or expansive soils.
- Assumes all soils are free of any and all deleterious material.
- A geotechnical investigation shall be performed at each project site by a qualified individual/firm to determine actual soil conditions.
- Skin friction should be ignored within the zone of frost which should be defined by the local governing ordinance.
- Slab thickness to be a minimum of 12" thick for all conditions. Refer to Sketch for Additional Details and Notes.
- Slab Haunch shall be provided for slabs in regions subject to ground frost.
- Topographic effects have been neglected, contact engineer for additional design requirements for areas subject to topographic effects.
- If site conditions are not in compliance with the design criteria/soil properties shown above, foundation design must be analyzed by a registered design professional.

MAXIMUM LOADS

DOWNWARD FORCE: 6200 LBS
LATERAL FORCE: 760 LBS
OVERTURNING MOMENT: 7200 LB-FT

NOTES:

- FORCES BASED ON 50 MPH ULTIMATE WIND SPEED (ASD LOAD COMBINATIONS).
- FORCES BASED ON DESIGN AND SOIL CRITERIA MENTIONED ABOVE.
- FORCES SHOWN ARE TAKEN FROM THE BASE OF THE STRUCTURE.
- IF DESIGN AND SOIL CRITERIA ARE NOT COMPARABLE TO SITE CONDITIONS, CONTACT PROFESSIONAL ENGINEER FOR FOUNDATION DESIGN REVIEW PRIOR TO THE START OF WORK.

MAXIMUM DESIGN WIND SPEEDS (AT FAILURE)

MAXIMUM WIND SPEED (AT 65 DEGREES): 58 MPH*
MAXIMUM WIND SPEED (CLOSED): 180 MPH*
*ULTIMATE WIND SPEED

SOLAR INSTALLATION
SMARTFLOWER SOLAR

FOUNDATION DESIGN
SLAB ON GRADE (OPTION 1)

NOTES

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REVISION: 1
DATE: 8/8/2017
TEC WO#: 8743.01


SmartFlower Solar™

CONCRETE

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318, LATEST EDITION.

2. CONCRETE REQUIREMENTS:

SLABS

COMPRESSIVE STRENGTH (f'c)	3000 PSI @ 28 DAYS (MINIMUM)
CEMENT (ASTM C150)	TYPE I/II
COARSE AGGREGATE (ASTM C33)	#67 STONE
FINE AGGREGATE	ASTM C33
CURING	LIQUID MEMBRANE (ASTM C309, TYPE II, CLASS A)
TEST CYLINDERS REQUIRED	3 PER 50 CY

CONCRETE FOR EXTERIOR SLABS SHALL HAVE AN AIR ENTRAINMENT OF 6%±.

3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, "DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
4. CONCRETE WORK AND MATERIALS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "SPECIFICATIONS FOR STRUCTURAL CONCRETE", ACI 301.
5. CONCRETE COVER FOR REINFORCING SHALL BE 3 INCHES FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH. AT ALL OTHER CONCRETE SURFACES, MINIMUM COVER SHALL BE 2 INCHES FOR #6 AND LARGER BARS, AND 1 1/2 INCHES FOR #5 AND SMALLER BARS, UNLESS OTHERWISE NOTED. CONCRETE COVER FOR REINFORCEMENT NOT EXPOSED TO EARTH OR WEATHER SHALL BE 3/4" FOR SLABS, WALLS, AND JOISTS, UNLESS OTHERWISE NOTED.
6. WELDING OF REINFORCING STEEL IS SPECIFICALLY PROHIBITED.
7. GROUT SHALL BE NON-METALLIC, NON-SHRINK PREPACKAGED GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS.
8. ALL REINFORCING, EMBEDDED STEEL, ANCHOR BOLTS, INSERTS AND ALL OTHER EMBEDDED ITEMS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT. PROVIDE TEMPLATES FOR SETTING OF ANCHOR BOLTS.
9. HOT WEATHER CONCRETING SHALL CONFORM TO ACI 305 "HOT WEATHER CONCRETING".
10. COLD WEATHER CONCRETING SHALL CONFORM TO ACI 306 "COLD WEATHER CONCRETING".
11. THE TOP OF ALL CONCRETE SURFACES SHALL BE TRUE AND LEVEL WITH A SMOOTH FLOAT FINISH, UNLESS OTHERWISE NOTED. FLOOR SLAB SHALL RECEIVE A STEEL TROWEL FINISH. ALL DIMENSIONS SHALL BE WITHIN + OR - 1/8 INCH.
12. REMOVE ALL LOOSE MATERIAL AND DEBRIS FROM EXISTING SURFACE PRIOR TO PLACING CONCRETE.
13. DO NOT REMOVE FORMS, SHORES AND BRACING UNTIL CONCRETE HAS GAINED SUFFICIENT STRENGTH TO CARRY ITS OWN WEIGHT, CONSTRUCTION LOADS, AND DESIGN LOADS WHICH ARE LIABLE TO BE IMPOSED UPON IT. VERIFY STRENGTH OF CONCRETE BY COMPRESSIVE TEST RESULTS.
14. THROUGHOUT CONSTRUCTION, THE CONCRETE WORK SHALL BE ADEQUATELY PROTECTED AGAINST DAMAGE DUE TO EXCESSIVE LOADING, CONSTRUCTION EQUIPMENT, MATERIALS OR METHODS, ICE, RAIN, SNOW, EXCESSIVE HEAT AND FREEZING.
15. DRYING OUT OF CONCRETE, ESPECIALLY DURING THE FIRST 24 HOURS, SHALL BE CAREFULLY GUARDED AGAINST. ALL SURFACES SHALL BE MOIST CURED.
16. FORMS SHALL BE BUILT TRUE. THEY SHALL BE STRONG, RIGID, MORTAR-TIGHT, AND ADEQUATELY BRACED OR TIED. FORMS SHALL BE DESIGNED AND CONSTRUCTED TO WITHSTAND ALL LOADS AND PRESSURES, INCLUDING THOSE IMPOSED BY PLASTIC CONCRETE TAKING FULL ACCOUNT OF THE STRESSES DUE TO THE RATE OF POUR, EFFECTIVE VIBRATION AND CONDITIONS BROUGHT ABOUT BY CONSTRUCTION METHODS.
17. PROVIDE 48 HOURS NOTICE TO THE ENGINEER PRIOR TO EACH PLACEMENT OF CONCRETE.
18. ALL CONCRETE WORK SHALL BE SUBJECT TO SPECIAL INSPECTIONS DURING CONSTRUCTION.

SOLAR INSTALLATION
SMARTFLOWER SOLAR

FOUNDATION DESIGN
SLAB ON GRADE (OPTION 1)

CONCRETE NOTES

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SmartFlower Solar™

Smartflower

The smart, simple
& stunning solar system

Smartflower is a revolutionary solar energy system that follows the sun from sunrise to sunset. Beneath its elegant design is a remarkably intelligent system; fully integrated with smart features that produces up to 40% more power. There's no better way to showcase your commitment to sustainability than with a **Smartflower**.



SMARTFLOWER TECHNICAL DATA



SYSTEM GENERAL DATA

Nominal power output	2.5 kWp
Annual output with 2-axis tracking	4,000–6,500 kWh *
System self-consumption per year	Approx. 400 kWh
System warranty	2 years parts and labor
System Certifications	UL 3703, CE

OPERATIONAL CONDITIONS

Operational temperature range	-20°C to 55°C -4°F to 131°F
Humidity	0–95% (non condensing)
Maximum altitude (Inverter Restricted)	13,123 ft 4000 m

SOLAR MODULE

Panel type	Glass / Backsheet
Cell type	166mm Half Cut Monocrystalline PERC
Panel power output warranty (80%)	25 years
Panel product warranty	2 years

SOLAR ARRAY DATA

Array configuration	12 module, single string
Array maximum power (Pmax)	2677 W
MPP voltage (Vmpp)	528 V
MPP current (Impp)	5.0 A
Open circuit voltage (Voc, ± 5%)	618 V
Short circuit current (Isc, ± 5%)	5.2 A

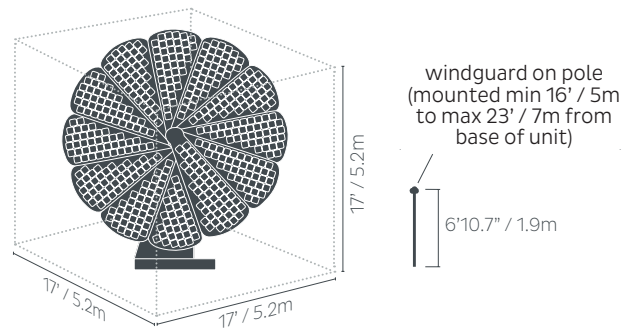
INVERTER DATA

Inverter	Integrated with Unit
Nominal frequency	50 Hz/60 Hz
Available Grid Settings	Single Phase, UL, 208V / 240V Single Phase, 220V / 230V Three Phase, 220V / 230V
Number of inputs / MPP trackers	2/2

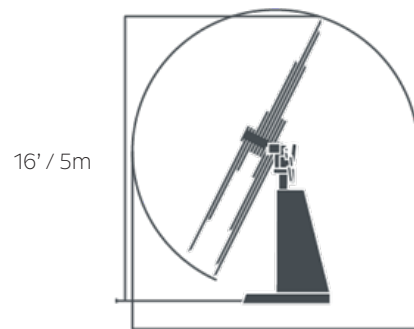
For additional inverter details, contact a Smartflower Sales Representative.

DIMENSIONS

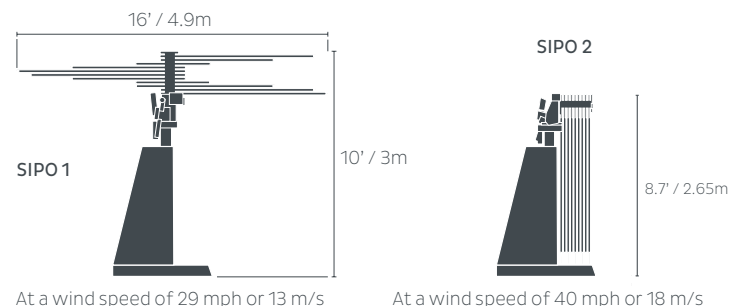
ACTIVE AREA



TRACKING, MAX. HEIGHT

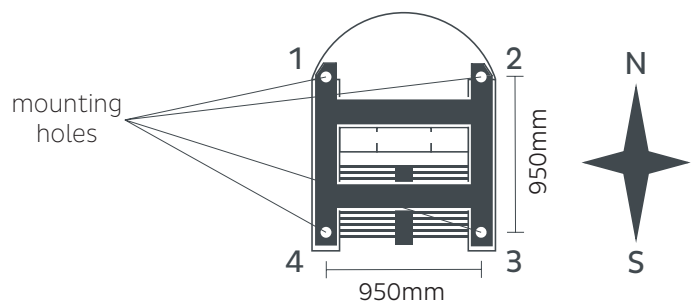


SAFETY POSITIONS



INSTALLATION DRAWINGS

BOTTOM VIEW



ELECTRICAL CONNECTIONS

Up to 100 ft	4 x 12 AWG (L1, L2, N, PE)
From 100 ft onwards	Accommodate for voltage drop
Grid connection (circuit breaker)	20 A **
Wind guard	32 ft 9.75 m cable included

INSTALLATION

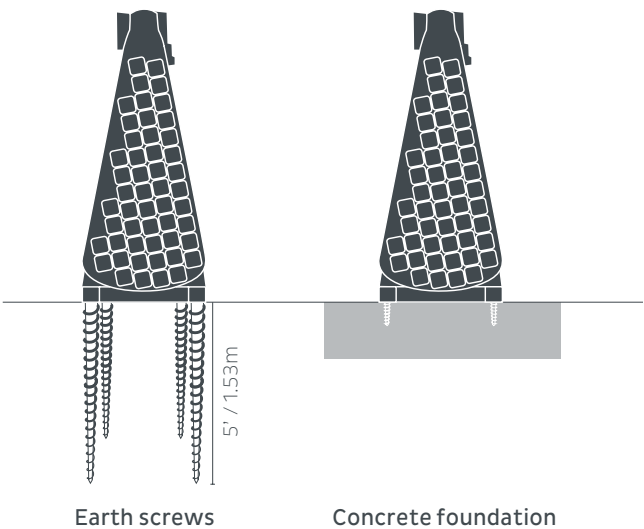
Mounting	4 fastening points to foundation
Assembly	Earth screws, concrete foundation, or a pre-cast concrete pad ***

REMOTE MONITORING

Network / LAN cable	CAT 5e or better with RJ45 Connector
Off-grid / remote location	Cell network enabled kit (optional)

- * Dependent on geographical location and weather
- ** Local standards must be followed
- *** Recommendations may vary based on local jurisdiction and soil conditions

FOUNDATION



SYSTEM WEIGHT AND DIMENSIONS

System weight	1,550 lb 703 kg
Shipping dimensions (in mm):	
Vertical packaging	65 x 47 x 106 1651 x 1194 x 2692
Horizontal packaging (special order)	111 x 46 x 73 2819 x 1168 x 1854
Total shipping weight	1,950 lbs 885 kg

SYSTEM ORIENTATION

Northern Hemisphere	Modules must be South facing
Southern Hemisphere	Modules must be North facing

For more information, contact info@smartflowersolar.com
The product images shown are for illustration purposes only and may not be an exact representation of the product.



The world's most intelligent solar system



Catch every last ray of sunlight.

The smart tracking system is the core of **Smartflower's** brilliance. Every morning at sunrise, **Smartflower** automatically unfolds. The dual-axis system allows **Smartflower's** solar panels to follow the sun across the sky throughout the day, always maintaining the optimal 90° angle. This makes **Smartflower** produce up to 40% more power than a conventional solar system and capable of producing up to 6,500 kWh/year, depending on your location.



Simple.

Control your Smartflower and monitor your energy production from the comfort of your phone with our remote monitoring app.



Efficient.

Our certified Smartflower technicians can set it up in just a few hours, providing you with immediate energy independence.



Independent.

Self-cleaning and convection cooling keep **Smartflower** running at maximum efficiency.



Elegant.

Unique and powerful features packaged in an award-winning design.



EV Compatible.

Smartflower can be used to charge electric vehicles thanks to easy integration with an external EV charging station. For organizations and companies, EV charging capacity is your “green business card” and is perfect for public spaces, shopping centers, hotels, restaurants, small businesses, and more.



Smartflower +Plus.

With an integrated battery storage system, **Smartflower +Plus** lets you store clean solar energy for when you need it most. That means that even during peak demand times, or when the power is out, your **Smartflower +Plus** will continue to provide you with clean and reliable energy whether you're on or off the grid.

Recipient of the Red Dot Design Award, the SEA Sustainable Entrepreneurship Award, the Green Good Design Award, the Verbund-E-Novations Award, and the Austria Born Global Champions Award