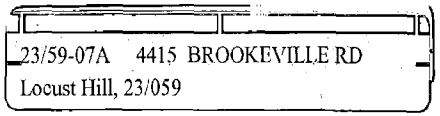

23/59-07A 4415 BROOKEVILLE RD
Locust Hill, 23/059

STANDARD SOLAR

Standard Solar, Inc.
202 Perry Parkway #7
Gaithersburg, MD 20877

Keith Leu PV Design/Permitting Specialist
keithleu@standardsolar.com
t 301.944.1200 x1010 f 301.944.1202
c 301.768.6707
www.standardsolar.com

RETURN TO: DEPARTMENT OF PERMITTING SERVICES
255 ROCKVILLE PIKE, 2nd FLOOR, ROCKVILLE, MD 20850
240-777-6370

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: Jef Fuller

Daytime Phone No.: 301-840-1100

Tax Account No.: 02645563

Name of Property Owner: John E Fuller Daytime Phone No.: 301-840-1100

Address: 4415 Brookeville Rd (Street Number) Brookeville (City) MD (State) 20833 (Zip Code)

Contractor: TBD Phone No.:

Contractor Registration No.:

Agent for Owner: Self Daytime Phone No.: Same

LOCATION OF BUILDING/PREMISE

House Number: 4415 Street: Brookeville Rd

Town/City: Brookeville Nearest Cross Street: Zion Rd

Lot: Block: Subdivision: Brooke Grove 502, Parcel P060

Liber: 2186 Folio: 534 Parcel:

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

☑ Construct ☐ Extend ☐ Alter/Renovate

☐ Move ☑ Install ☐ Wreck/Raze

☐ Revision ☐ Repair ☐ Revocable

CHECK ALL APPLICABLE:

☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed

☑ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family

☐ Fence/Wall (complete Section 4) ☑ Other:

1B. Construction cost estimate: $ ~25K/Array

1C. If this is a revision of a previously approved active permit, see Permit #

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other:

2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other:

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height feet inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent — Date: 1/23/07

Approved: For Chairperson, Historic Preservation Commission

Disapproved: Signature: Julia O'Malley Date: 2/28/07

Application/Permit No.: Date Filed: Date Issued:

Edit 6/21/99

SEE REVERSE SIDE FOR INSTRUCTIONS

FILE

HISTORIC PRESERVATION COMMISSION

Isiah Leggett
County Executive

Julia O'Malley
Chairperson

Date: 3/2/07

MEMORANDUM

TO: Reggie Jetter, Acting Director
Department of Permitting Services

FROM: Tania Tully, Senior Planner TGT
Historic Preservation Section
Maryland-National Capital Park & Planning Commission

SUBJECT: Historic Area Work Permit #444288, solar array installation

---

The Montgomery County Historic Preservation Commission (HPC) has reviewed the attached application for a Historic Area Work Permit (HAWP). This application was **Approved** at the February 28, 2007 meeting.

The HPC staff has reviewed and stamped the attached construction drawings.

THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE ABOVE APPROVED HAWP CONDITIONS AND MAY REQUIRE APPROVAL BY DPS OR ANOTHER LOCAL OFFICE BEFORE WORK CAN BEGIN.

Applicant: John Fuller

Address: 4415 Brookeville Rd

This HAWP approval is subject to the general condition that the applicant will obtain all other applicable Montgomery County or local government agency permits. After the issuance of these permits, the applicant must contact this Historic Preservation Office if any changes to the approved plan are made.

THE FOLLOWING ITEMS MUST BE COMPLETED AND THE REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.

1. **WRITTEN DESCRIPTION OF PROJECT**

   a. Description of existing structure(s) and environmental setting, including their historical features and significance:

   Locust Hill was built by the Riggs family in 1868. It is a 2 story with basement stone house that sits prominently on a hill, surrounded by a relatively mature forest to the north & west. East of the house are a new garage/barn beyond is a corn field. Adjoining me to the east is Pleasant Valley Farm, with the major grain processing operation.

   The other remaining historical feature of the property is a spring house located at the SW corner of the yard area.

   The arrays are proposed to be located over 175' from the house & 400' from the road.

   b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

   The project involves the phased construction of two solar arrays. Each array will be 13' long and 15' wide, and consist of 15 175 W panels. The top of the array will be 11' above the field, the bottom will be 3' above the field. Each array will be mounted on a single 8" steel pole. To provide adequate sun, one existing ~14" gum tree will need to be removed east of the barns. Based on the topography and existing trees, the arrays will only be marginally visible from the road (when crops are up they will be invisible) and will be small in comparison the the farm equipment frequently left in the the same field.

2. **SITE PLAN**

   Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

   a. the scale, north arrow, and date;

   b. dimensions of all existing and proposed structures; and

   c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

   You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

   a. ***Schematic construction plans***, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.

   b. Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

4. **MATERIALS SPECIFICATIONS**

   General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

5. **PHOTOGRAPHS**

   a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.

   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

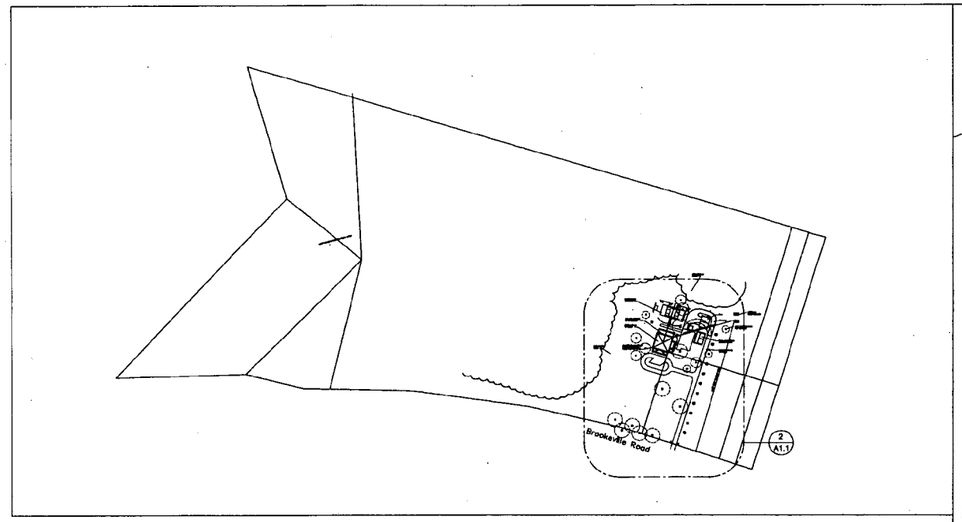
6. **TREE SURVEY**

   If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

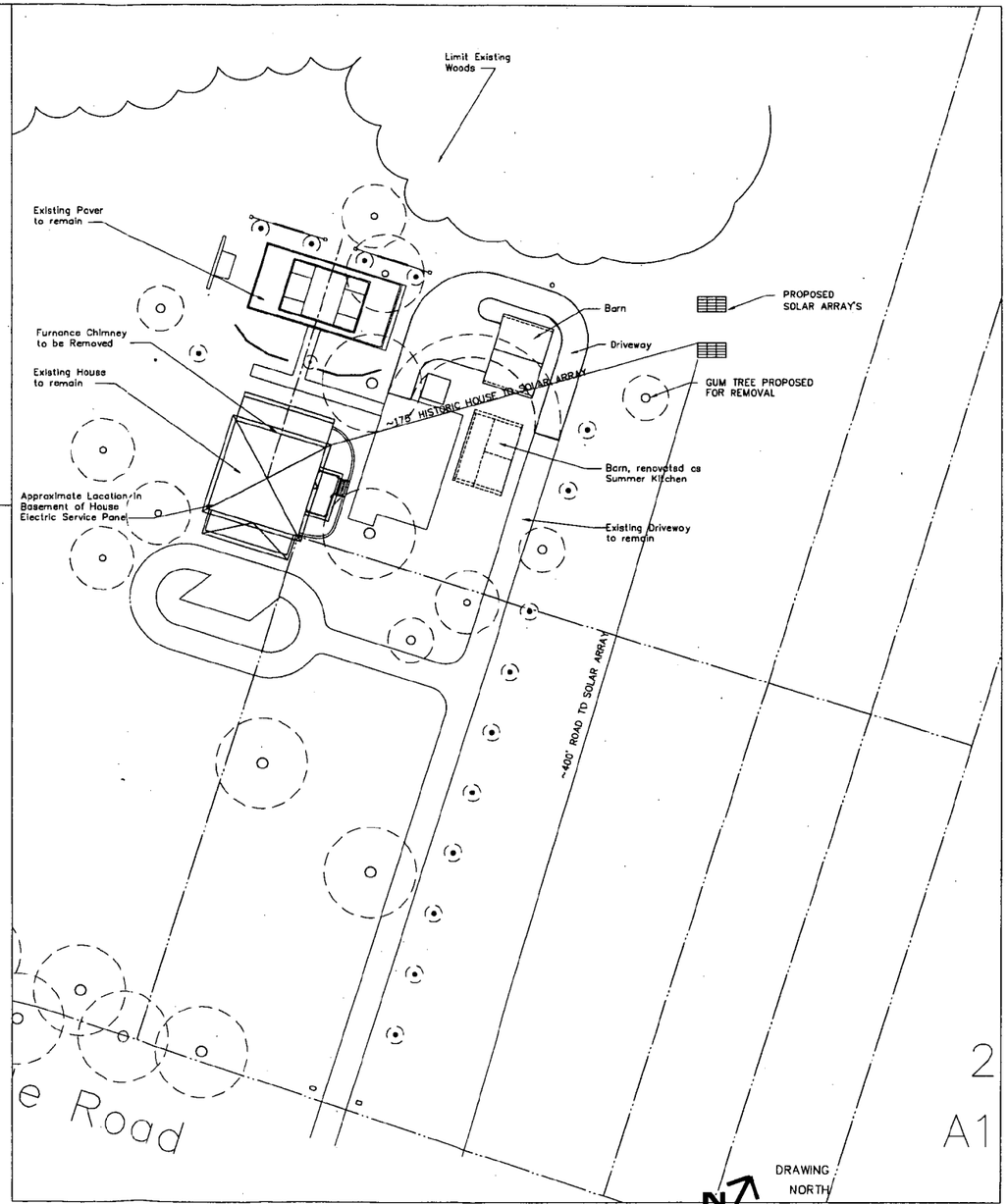
   For **ALL** projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question. You can obtain this information from the Department of Assessments and Taxation, 51 Monroe Street, Rockville, (301/279-1355).

PLEASE PRINT (IN BLUE OR BLACK INK) OR TYPE THIS INFORMATION ON THE FOLLOWING PAGE.
PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.



1 A1.1 **Site Plan - Locust Hill** (ENTIRE PROPERTY)
NOT TO SCALE

DRAWING NORTH



2 A1.1 **Site Plan - Locust Hill** (4415 Brookeville Rd)
Scale: 1"=30'-0"

DRAWING NORTH

APPROVED
Montgomery County
Historic Preservation Commission
3/2/07

DNC ARCHITECTS, INC.
1370 Piccard Drive, Rockville, Maryland 20850
(301) 840-1100 fax (301) 977-9193
DNC@DNCARCH.COM

CONSULTANT

KEY PLAN

PROFESSIONAL CERTIFICATION
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AM A DULY LICENSED ARCHITECT UNDER THE STATE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 7384-R, EXPIRATION DATE 12/10/2002

PROGRESS PRINTING

ISSUED FOR	DATE
HP SUBMIT	JANUARY

ISSUED FOR CONSTRUCTION

REVISIONS

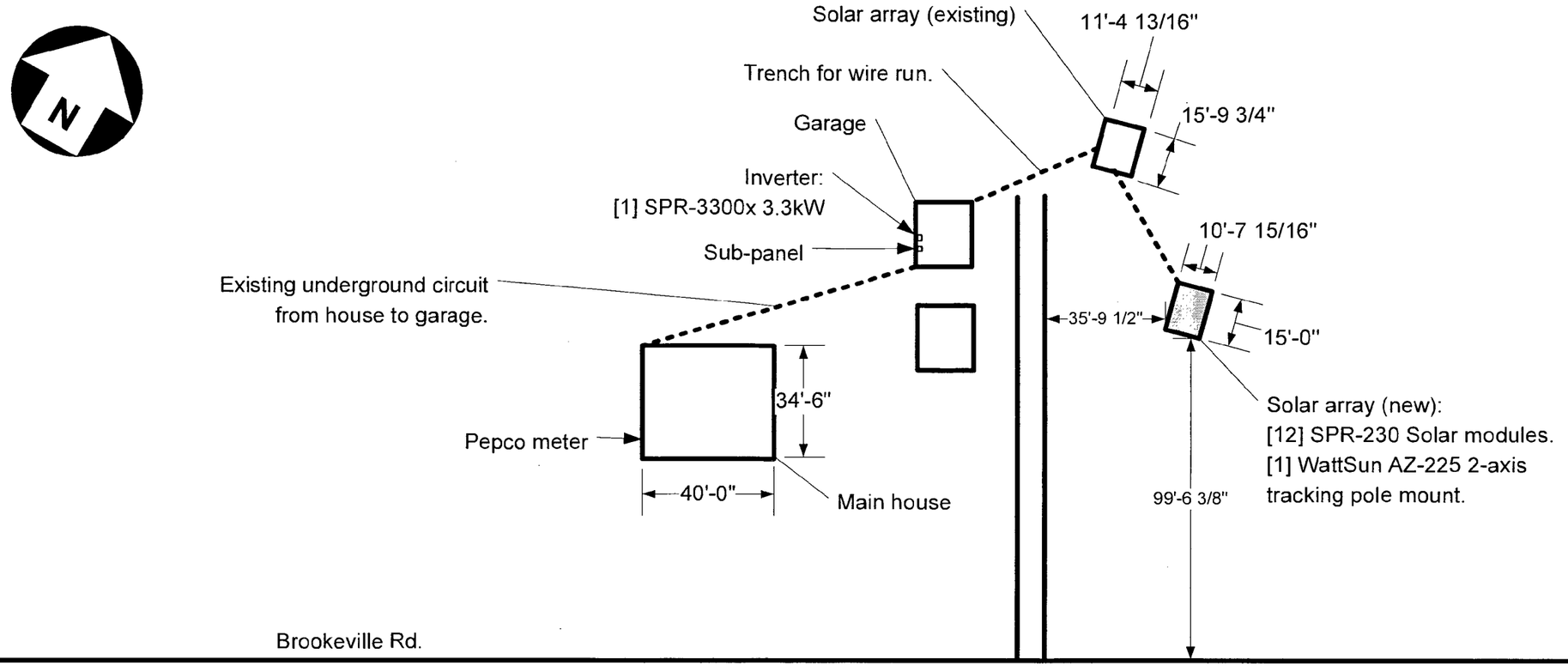
NO	REVISION	DATE

LOCUST HILL SOLAR ARRAY

SITE PLAN

DNC PROJECT NUMBER 9703

A1.1



0.0 ft. 27.0 ft. 45.0 ft. 90.0 ft.

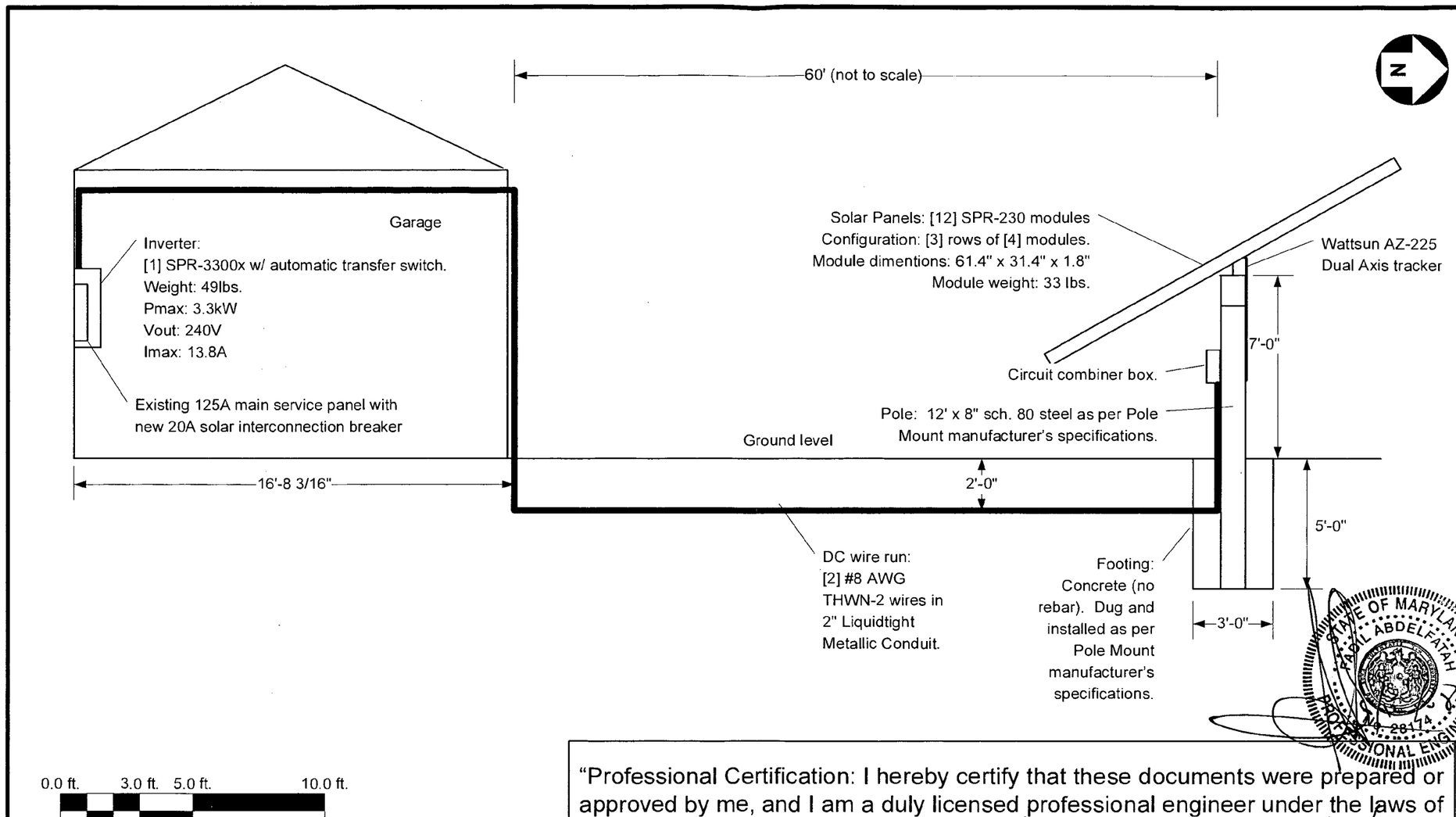
STATE OF MARYLAND
FAOUL ABDELFATAH
No. 28174
PROFESSIONAL ENGINEER
6/12/08

Location:

4415 Brookeville Rd.,
Brookeville, MD 20833

Standard Solar Inc.	202 Perry pkwy #7 Gaithersburg, MD 20877 (301) 944 - 1200
Drawn by: Andrew Truitt	Title: Plot Plan
Date: 6/10/08	File: Fuller 2 site plan.vsd
Revised: 6/11/08	Page: 1 of 3

APPROVED
Montgomery County
Historic Preservation Commission
AP
6-18-08



0.0 ft. 3.0 ft. 5.0 ft. 10.0 ft.

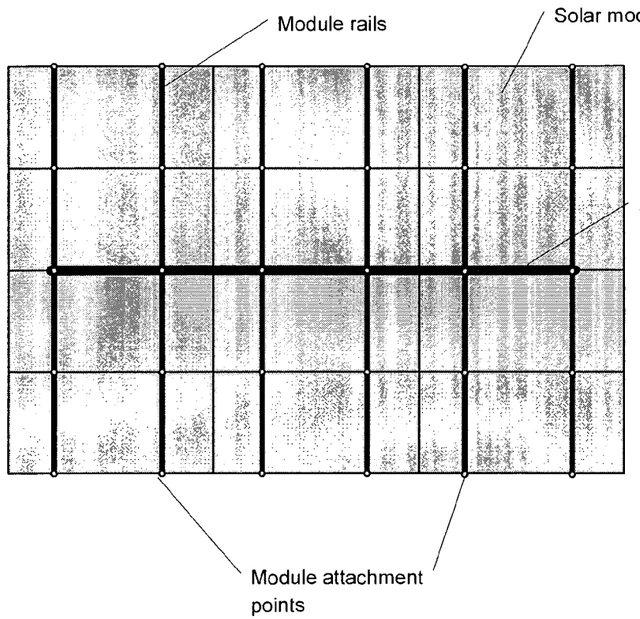
"Professional Certification: I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland, license no. 28174, expiration date: 01/23/09"

Location:

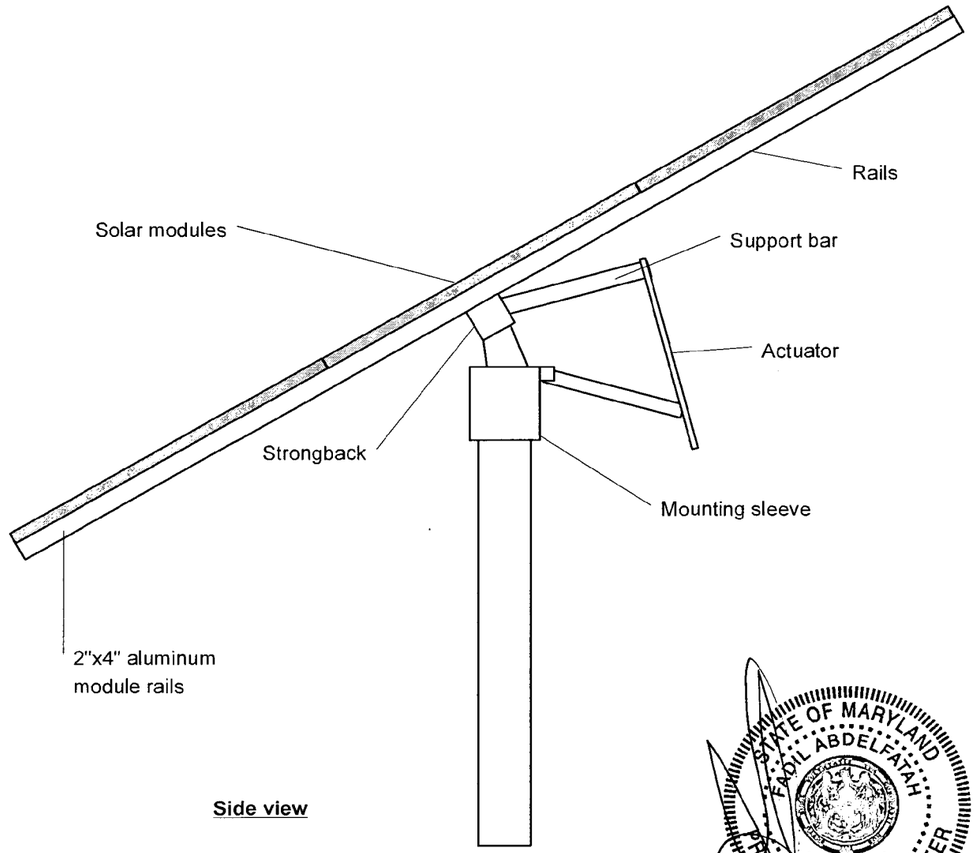
4415 Brookeville Rd.,
Brookville, MD 20833

Standard Solar Inc.	202 Perry pkwy #7 Gaithersburg, MD 20877 (301) 944 - 1200
Drawn by: Andrew Truitt	Title: Elevation view
Date: 6/10/08	File: Fuller 2 site plan.vsd
Revised: 6/11/08	Page: 2 of 3

APPROVED
Montgomery County
Historic Preservation Commission

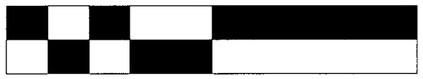


Front view



Side view

0 ft. 1 ft. 9.6 in. 3 ft. 6 ft.



STATE OF MARYLAND
FADIL ABDELFATAH
No. 28174
PROFESSIONAL ENGINEER
1/12/08

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland, license no. 28174, expiration date: 01/23/09"

Location:

4415 Brookeville Rd.,
Brookville, MD 20833

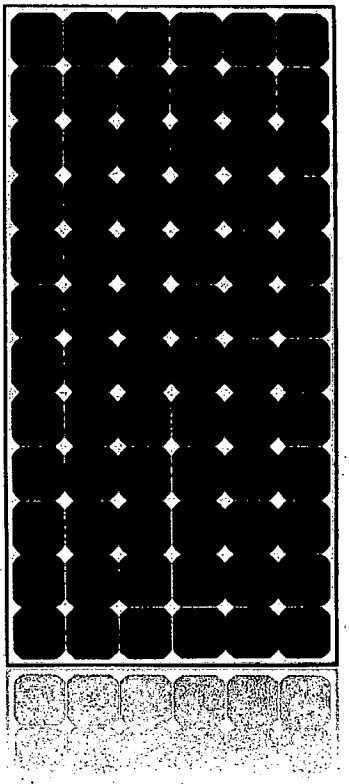
Standard Solar Inc.	202 Perry pkwy #7 Gaithersburg, MD 20877 (301) 944 - 1200
Drawn by: Andrew Truitt	Title: Array attachments / Elevation detail
Date: 6/10/08	File: Fuller 2 site plan.vsd
Revised: 6/11/08	Page: 3 of 3

APPROVED
Montgomery County
Historic Preservation Commission

SUNPOWER

230 SOLAR PANEL

EXCEPTIONAL EFFICIENCY AND PERFORMANCE



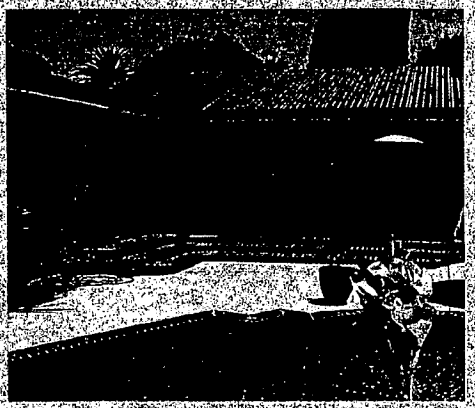
BENEFITS

Highest Efficiency
Panel efficiency of 18.5% is the highest commercially available for residential applications.

More Power
Delivers up to 50% more power per unit area than conventional solar panels.

Attractive Design
Unique all-back contact solar cells and optimized panel design eliminate harsh reflection from front-side metal contacts.

Reliable and Robust Design
Proven materials, tempered front glass, and a sturdy anodized frame allow panel to operate reliably in multiple mounting configurations.



The SunPower 230 Solar Panel provides today's highest efficiency and performance for residential use. Utilizing 72 next generation SunPower all-back contact solar cells and an optimized panel design, the SunPower 230 elegantly delivers an unprecedented total panel conversion efficiency of 18.5%. The panel's reduced voltage-temperature coefficient and exceptional low-light performance attributes provide far higher energy delivery per peak power than conventional panels.

SunPower's High Efficiency Advantage - up to 50% More Power

Comparable systems covering 25 m² / 270 ft²		
	Conventional	SunPower
Watts / Panel	165	230
Efficiency	12.0%	18.5%
kWs	3.0	4.6

SPR-230-WHT

SUNPOWER

230 SOLAR PANEL

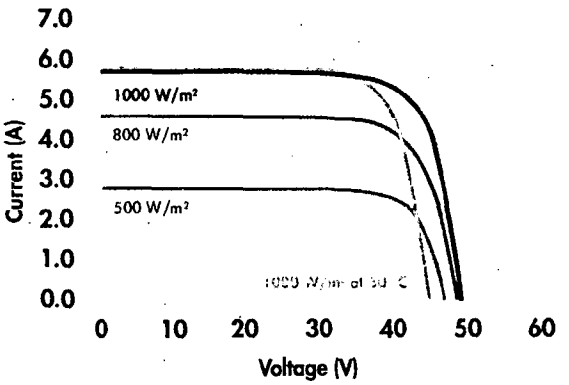
EXCEPTIONAL EFFICIENCY AND PERFORMANCE

Electrical Data

Measured at Standard Test Conditions (STC): irradiance of 1000/m², air mass 1.5g, and cell temperature 25° C

Peak Power (+/-5%)	Pmax	230 W
Rated Voltage	Vmp	41.0 V
Rated Current	Imp	5.61 A
Open Circuit Voltage	Voc	48.7 V
Short Circuit Current	Isc	5.99 A
Maximum System Voltage	IEC, UL	1000 V, 600 V
Temperature Coefficients		
	Power	-0.38% /°C
	Voltage (Voc)	-132.5 mV/°C
	Current (Isc)	3.5 mA/°C
Series Fuse Rating		20 A
Peak Power per Unit Area		185 W/m², 17.2 W/ft²
CEC PTC Rating (listing pending)		213.5 W

IV Curve



Current/voltage characteristics with dependence on irradiance and module-temperature.

Tested Operating Conditions

Temperature	-40° C to +90° C (-40°F to +194°F)
Max load	50 psf (2400 pascals) front and back
Impact Resistance	Hail -25mm (1 in) at 23 m/s (52 mph)

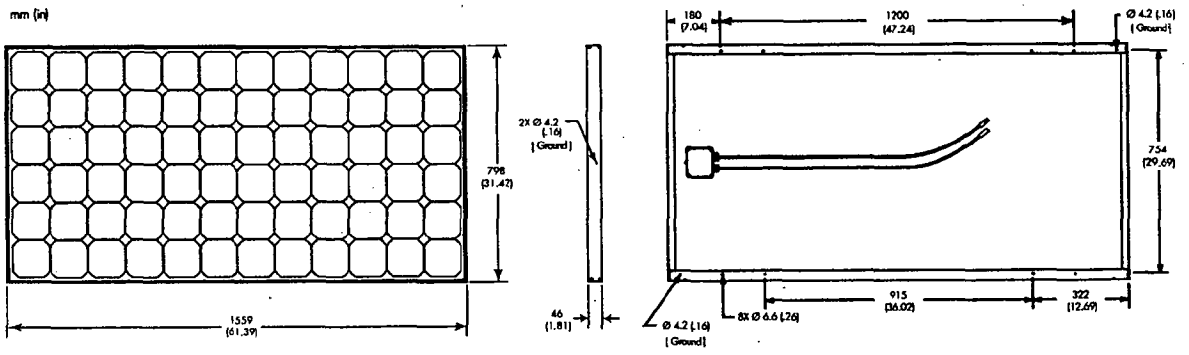
Mechanical Data

Solar Cells	72 SunPower all-back contact monocrystalline
Front Glass	3.2 mm (1/8 in) tempered
Junction Box	IP-65 rated with 3 bypass diodes
Output Cables	900 mm length cable / MultiContact connectors
Frame	Anodized aluminum alloy type 6063
Weight	15 kg, 33 lbs

Warranty and Certifications

Warranty	25 year limited power warranty
	10 year limited product warranty
Certifications	IEC 61215 , Safety tested IEC 61730
	UL listed (UL 1703), Class C Fire Rating

Dimensions



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT. Go to www.sunpowercorp.com/panels for details

About SunPower

SunPower designs, manufactures and delivers high-performance solar electric technology worldwide. Our high-efficiency solar cells generate up to 50 percent more power than conventional solar cells. Our high-performance solar panels, roof tiles and trackers deliver significantly more energy than competing systems.

Document #001-42190 Rev **

Printed on recycled paper

www.sunpowercorp.com

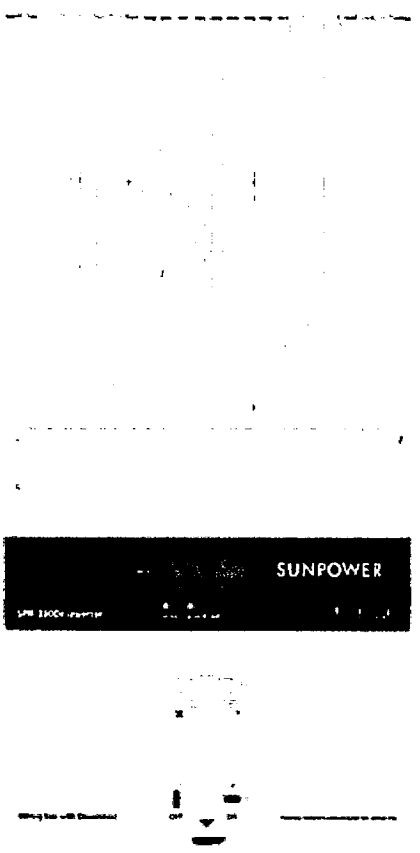
SUNPOWER

SPRx
HIGH EFFICIENCY INVERTERS

SunPower high performance photovoltaic (PV) string inverters offer high efficiency, low installed cost, clean design and high reliability.

FEATURES & BENEFITS

- Peak and average efficiency greater than 94% maximizes your PV investment
- Fast MPPT algorithm ensures maximum energy harvest from your array under any conditions
- Includes integrated lockable AC/DC disconnect that is NEC compliant as a DC disconnect
- Includes a lightweight and versatile mounting bracket that simplifies installation
- Modular design allows SunPower SPRx inverters with the same or different power levels to be mounted side-by-side using the wiring box as a wiring raceway
- Sealed inverter can be separated from the wiring box enclosure allowing DC/AC connections to remain intact
- Bright LED indicators provide system status at a glance
- LCD providing instantaneous feedback on power, energy production, PV array voltage and current and much more
- Works with all SunPower modules



SPRx HIGH EFFICENCY INVERTER

C SP US UL 1741 CSA 107.1-01 PHOTOVOLTAIC POWER INVERTER

Document# 001 08227 Rev **

SunPower Corporation®
1.877.786.0123 Email: sales@sunpowercorp.com www.sunpowercorp.com

SUNPOWER

SPRx
HIGH EFFICIENCY INVERTERS

ELECTRICAL SPECIFICATIONS

Model	SPR-3300x	SPR-3300x-208	SPR-4000x
Maximum AC Power Output	3300 W	3300 W	4000 W
AC Output Voltage (nominal)	240 VAC	208 VAC	240 VAC
AC Voltage Range	211-264 VAC	183-228 VAC	211-264 VAC
AC Frequency (nominal)	60 Hz	60 Hz	60 Hz
AC Frequency Range	59.3-60.5 Hz	59.3-60.5 Hz	59.3-60.5 Hz
Maximum Continuous Output Current	13.8 A	15.9 A	16.7 A
Current THD	< 3%	< 3%	< 3%
Power Factor	> 0.9	> 0.9	> 0.9
DC Input Voltage Range	195-600 VDC	195-600 VDC	195-600 VDC
Max DC current	18.5 Adc	18.5 Adc	22.1 Adc
Peak Power Tracking Voltage Range	195-550 VDC	195-550 VDC	195-550 VDC
Peak Inverter Efficiency	95.3%	94.6%	95.7%
CEC Efficiency	94.5%	94.0%	95.0%
Night Time Power Consumption	< 1 W	< 1 W	< 1W
Output Overcurrent Protection	20 A	25 A	25 A
Grounding	Positive ground for SunPower modules		

MECHANICAL SPECIFICATIONS

Operating Temperature Range	-13F to 149F (-25°C to +65°C)
Enclosure Type	NEMA3R (outdoor rated)
Unit Weight	49.0 to 51 lbs
Shipping Weight	57 to 59 lbs
Shipping Dimensions (HxWxD)	34.1 x 20.4 x 10.3" (86.6 x 51.8 x 26.2 cm)
Inverter Dimensions (HxWxD)	28.5 x 15.9 x 5.7" (72.4 x 40.3 x 14.6 cm)
Mounting	Wall Mount (mounting bracket included)

FEATURES

PV/Utility Disconnect	Eliminates need for external PV (DC) disconnect. Complies with UL and NEC requirements
Cooling	Convection cooled, no fan required
Display	Backlit, 2-line, 16-character Liquid Crystal Display provides instantaneous power, daily and lifetime energy production, PV array voltage and frequency, time online "selling" today and fault messages
Communications	RS 232 and Two Canbus RJ45 ports
Wiring Box	PV, utility, ground, and communications connections. Inverter can be separated from the wiring box
Warranty	10 years

Document# 001 08227 Rev **

SunPower Corporation®
1.877.786.0123 Email: sales@sunpowercorp.com www.sunpowercorp.com

WATTSUN SOLAR TRACKER RETAIL PRICE SHEET: EFFECTIVE MARCH 21, 2007

(Array Technologies has discontinued the small Tilt & Roll Tracker products.
The T&R P[redacted]ne will continue to be supported for Warranty and Repair Issues.)

SOLAR TRACK[redacted]OR RESIDENTIAL GRID-TIE AND OFF-GRID APPLICATIONS

(Please call Array Technologies for Utility Scale AZ & HZ Series Applications)

AZ-125 Azimuth	
SQ FT SIZING	*TYPICAL PRICE*
Up to 90	$ 2,295.00
91 to 110	$ 2,495.00
111 to 125	$ 2,895.00

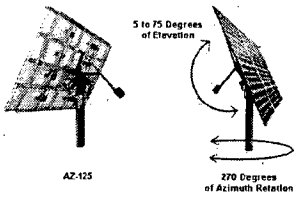
Dual-Axis is an $395.00 option.

AZ-225 Azimuth	
SQ FT SIZING	*TYPICAL PRICE*
Up to 170	$ 4,695.00
171 to 190	$ 4,995.00
191 to 225	$ 5,495.00

Dual-Axis is included.

NOTE: There are many smaller wattage modules not listed on our price sheet. We can rack nearly any size and quantity of PV modules. The industry trend is toward larger modules and fewer electrical connections. Please call us if we can be of assistance regarding your module of choice and application.

AZ-125 Azimuth



AZ-225 Azimuth

AZ-125 Applications:
Grid-Tie
Remote Home

AZ-125 Notes:
Max capacity about 1800 W
Mounts on a 6" ID SCH40 Steel Pipe

AZ-225 Applications:
Grid-Tie
Remote Home

AZ-225 Notes:
Max capacity about 3000 W
Mounts on a 8" ID SCH40 Steel Pipe

Ordering: Typical Part Numbers for Wattsun Trackers:
We manufacture two standard tracker models for residential sized systems.

Model	Capacity	Tracking Method	Dual-Axis Option
AZ-125	Up to 125 Sq Ft	Single-Axis	Yes
AZ-225	From 125 to 225 Sq. Ft.	Dual-Axis	Included

(Dual-Axis is an "automatic tilt feature" to track the sun up and down in the sky.)

SAMPLE ORDER PROCEDURE

(Start with a "W", then add the "Manufacturer / Model", next the "Quantity", and finally an "S" or "D" for Single-Axis or Dual-Axis)

ITEM	DESCRIPTION
WSharp 175-08 S	Single-Axis AZ-125 Gear Drive Tracker for 8 Sharp 175's.
WDA Option	Dual-Axis Option for AZ-125 Series Trackers.
W48-42 LVC	48 V to 24 V DC Converter to power tracker controller

ITEM	DESCRIPTION
WSanyo 200-16 D	Dual-Axis AZ-225 Gear Drive Tracker for 16 Sanyo 200's
WMancon	Manual Control Option. Override automatic tracking.
WPSFR-SF24	230/115 VAC to 24 VDC power supply for Grid-Tie.

Important!
The racking capacity is strictly governed by your choice of solar module. Tracker wattage capacity depends on the module efficiency and physical dimensions.
Please see the discussion at the end of the document regarding tracker mounting pipe sizes and options. You are responsible for the proper mounting pipe and foundation.
Array Technologies reserves the right to void your tracker warranty if you mount your trackers on mounting poles taller than our recommendations.
Trackers on taller poles are subject to higher wind loading forces and can exceed our design criteria.

Array Technologies, Inc
3312 Sranford NE
Albuquerque, NM 87107 USA

PH: 505-881-7567
FX: 505-881-7572
www.wattsun.com

IMPORTANT GUIDELINES: SCHEDULE 40 STEEL MOUNTING PIPE SIZE AND HEIGHT

OVERVIEW:

The mounting pipe is not included in the cost of the Wattsun Solar Tracker. Generally, it is purchased locally and cut to your required length. A concrete foundation provides strength and stability to the pipe mast. Each tracker model requires a different pipe diameter to mount on. The table below gives the standard sizing:

	Schedule 40 Steel Mounting Pipe		
	Inner Diameter	Outer Diameter	General Maximum Height Limit
AZ-125 DRIVE:	6"	6-5/8"	6.75 ft
AZ-225 DRIVE:	8"	8-5/8"	6.75 ft

WHY YOUR PIPE HEIGHT AND SIZE WILL VARY IN SIZE AND HEIGHT:

(1) **ARRAY HEIGHT** - The physical height of the rectangular array determines the mounting pole height. In addition, a "buffer space" needs to be added beneath the array to clear the ground. If you expect snow cover on the ground in the Winter, or the ground slopes, then the pipe height increases even more.

(2) **ARRAY AREA** - The surface area of the array is subject to wind forces and dictates the pipe size, strength and diameter.

(3) **LOCATION** - The foundation size is a factor of wind forces and soil type and stability. Local code might require a Professional Engineer "stamp" on the foundation design.

SOLUTIONS FOR TALLER THAN NORMAL POLES OR VERY LARGE ARRAYS:

A good example is a street light pole. It is wide at the base and tapers down to a smaller size at the top. Your mounting pole might be similar in function. Sometimes a "jump up" in pipe diameter is required to provide protection against strong wind forces.

Question?

How does an AZ-225 drive that normally fits over an 8" pipe mast mate to a 10" pipe.?

Answer:

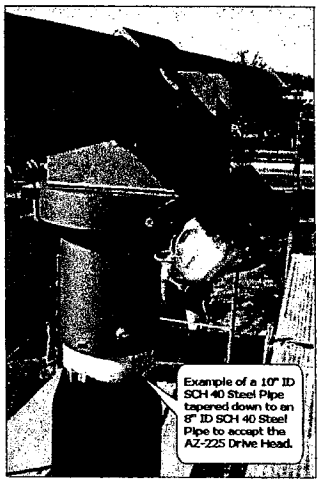
A reducer. A plate is welded to the top of the 10" pipe and forms a base for a short piece of 8" pipe. The pipe "stub" extension above the plate needs to be tall enough to slip completely inside the tracker drive sleeve.

The minimum extension is shown in the table below:

	Schedule 40 Steel Pipe Stub		
	Inner Diameter	Outer Diameter	Pipe Stub Height above Plate
AZ-125 DRIVE:	6"	6-5/8"	10"
AZ-225 DRIVE:	8"	8-5/8"	12"

The picture shows a 10" ID pipe that has been reduced to an 8" ID pipe. This particular tapered solution was elegant and expensive. The base plate and pipe stub approach is much cheaper.

There are other solutions available too. If square steel tubing is used as a mounting pipe then there is the possibility removing the "bottom can" of the AZ-225 drive from the manufacturing process and allowing for a direct weld that NOVEMBERries the mounting tube to the bottom plate of the AZ-225 Drive. Array Technologies will provide you with the proper material and technical assistance. **SEE THE LAST PAGE FOR MORE DETAILS**



Example of a 10" ID SCH 40 Steel Pipe tapered down to an 8" ID SCH 40 Steel Pipe to accept the AZ-225 Drive Head.

IMPORTANT GUIDELINES: THE CONCRETE FOUNDATION

OVERVIEW:

Array Technologies accepts no responsibility for your foundation. Local building code will likely require that the foundation be approved by an inspector and that it be designed by a professional engineer or "stamped."

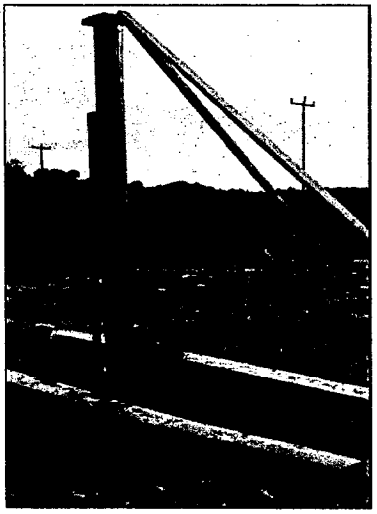
Array Technologies can give you some general sizing recommendations regarding foundation sizing and will "point you in the right direction."

We will supply the array dimensions, tracker weights and appropriate drawings to assist your foundation designer get through the process.

SAMPLES OF SECURING THE PIPE TO THE FOUNDATION:

EMBEDDED PIPE

This pipe runs the full distance down into the hole and is embedded in the concrete foundation.

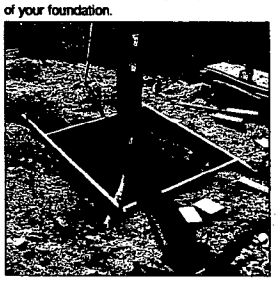


BOLT ON

This pipe has a baseplate welded onto the bottom. Notice the gussets that project radially out from the pipe.

REBAR TIES IT TOGETHER

Your engineer will specify a grid of rebar. Numbers of pieces and shape depends on the size of your foundation.



CONDUIT

A carefully "thought out" foundation will allow for the conduit to be preplaced and encased by the foundation. Typically, the electrical conduit will be buried in the soil and keeping the conduit from being stepped on or driven over can be a genuine concern.

J-BOX

The picture on the left shows the location of the junction box. It is well down the pole and will not interfere with the placement of the drive on top of the pole.

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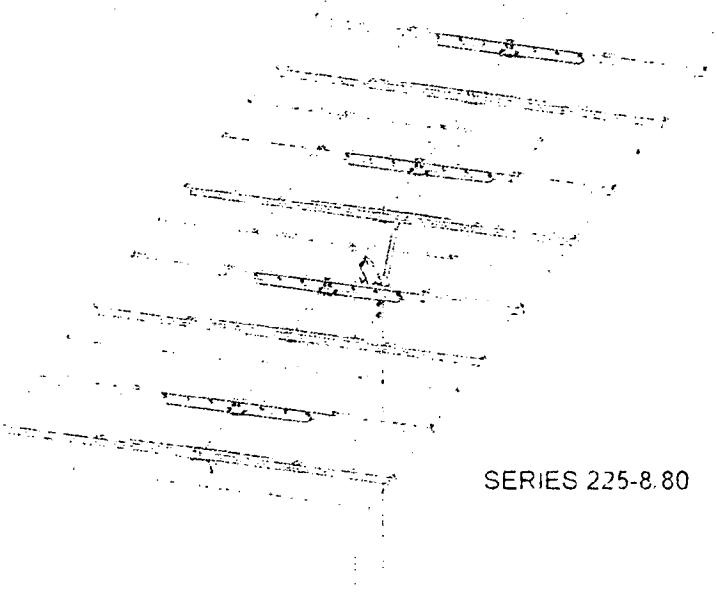
POWER-FAB

TOP-OF-POLE MOUNTS

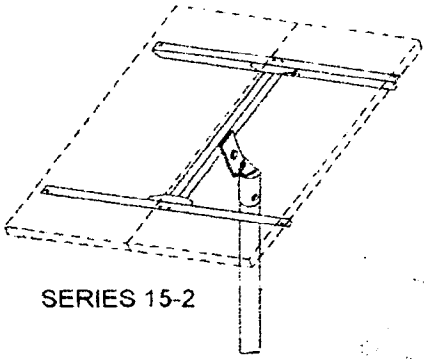
Photovoltaic Module Mounting Structures

chosen by professionals...

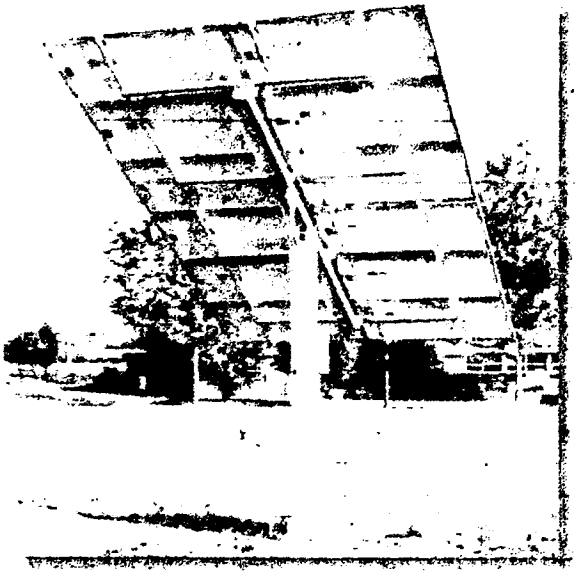


SERIES 225-8.80

....favored by experienced installers for over 12 years.



SERIES 15-2



SERIES 120-6

POWER-FAB products are manufactured by

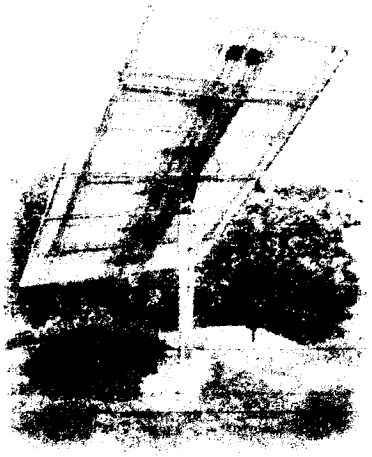
POWER-FAB

QUALITY HARDWARE FOR THE PV INDUSTRY

Features and Specifications

DESIGN

POWER-FAB Top-of-Pole Mounts, manufactured by Direct Power and Water Corporation, are available in several sizes ranging from 1-module through 24-modules -- up to 260 square feet. The rack design is determined by the area of the module(s) to be mounted, not necessarily the number of modules.

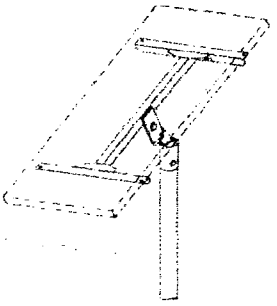


POWER-FAB Top-of-Pole mounts are designed for maximum strength and ease of installation. Our racks are module-specific and not universal, which helps to reduce the number of parts. This simplifies assembly and minimizes assembly errors.

No aluminum components are threaded to be attached to other components. All of our mounting sleeves are heavy gauge steel and have fully welded caps. Hardened bolts are used to lock the mounting sleeve to the pole.

MODULE-SPECIFIC DESIGN

Using a module-specific design allows us to build racks with the fewest number of parts. All racks are made to fit the specific module that the system is assembled in just the manner it is intended. No measuring or guesswork is required. All the



holes are located exactly where needed. Gaps between modules are minimal and uniform. There will never be excess rack material extending beyond the modules.

MATERIALS

Strongbacks, Elevation Pivots, and Mounting Sleeves are made of heavy gauge steel flat bar, square tubing, and pipe or mechanical tubing conforming to ASTM A36 and ASTM A500-Grade B. All parts are mig-welded, burrs are removed, corners are coped, and edges are sanded. All steel parts are coated with two coats of industrial urethane enamel paint.

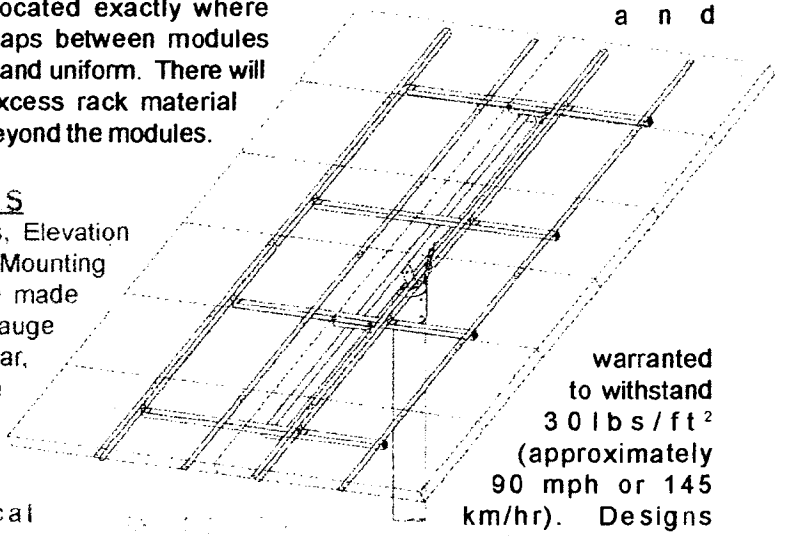
Solar module mounting rails are made of mill-finish 6061-T6 structural aluminum angle or channel. All holes are deburred, and edges are coped and sanded. Stainless steel module mounting hardware is provided with each rack. Standard rack assembly hardware is zinc-plated Grade 5. A stainless steel hardware upgrade is optional. (See back page.)

ELEVATION ADJUSTMENT

All standard Top-of-Pole Mounts have six tilt-angle settings from 15° to 65° in 10° increments. The elevation adjustment is positive locking in each position eliminating the possibility of slippage. The racks are balanced about the pivot bolt to make elevation adjustments easy. Other tilt combinations and racks welded at fixed angles are offered as options.

WINDLOADING CAPABILITY

Standard mounts are designed and



warranted to withstand 30 lbs/ft² (approximately 90 mph or 145 km/hr). Designs capable of withstanding greater loads are available.

POLE MOUNTING

All racks have sleeves sized to slip over readily available standard sizes of installer-supplied SCH40 (Schedule 40) steel pipe. The largest mounts (225 ft² and above) mount on SCH 80 steel pipe. The mounting sleeves have set-bolts spaced 90° apart to firmly secure the rack to the pole.

What our dealers say about our racks:

"They are far superior to what I was using. I will make sure to specify your racks from now on. My installer was very impressed

odel #	DP-TPM1-	DP-TPM2-	DP-TPM3-	DP-TPM4-	DP-TPM6-	DP-TPM8-	DP-TPM9-	DP-TPM10-	DP-TPM12-	DP-TPM14-	DP-TPM16-	DP-TPM18-
50/365"	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$500 60-4	$594 60-4	-	$915 90-6	$1033 120-6	$1140+ 120-6	$1327+ 120-6	-
380/585	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$500 60-4	$594 60-4	-	$915 90-6	$1033 120-6	$1140+ 120-6	$1327+ 120-6	-
P125	$142 15-2	$279 20-2.5	$325 28-3	$515 60-4	$670 60-4	$935 90-6	$1090 100-6	$1140+ 120-6	$1250+ 120-6	$1540+ 160-8	$2000+ 180-8	$2180+ 200-8/80
0170/175	$145 15-2	$310 28-3	$473 45-4	$572 60-4	$920 90-6	$1180 120-6	$1400+ 130-6	$1510+ 160-8	$1945+ 180-8	$2145+ 225-8/80	$2575+ 225-8/80	$2930+ 260-8/80
C/120	$150 15-2	$310 28-3	$380 35-3	$540 60-4	$845 60-4	$935 90-6	$1400+ 130-6	$1157+ 120-6	$1400+ 160-8	$1595+ 160-8	$2000+ 180-8	$2200+ 225-8/80
190-RL	$160 15-2	$369 35-3	$551 55-4	$663 70-4	$1050 110-6	$1430 140-6	$1585+ 155-6	$2030+ 180-8	$2220+ 225-8/80	$2915+ 245-8/80	--	--
GE	$139 15-2	$155 15-2	--	$318 25-2.5	$434 28-3	$574 60-4	--	$868 60-4	$960 120-6	--	--	--
GE72	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$500 60-4	$594 60-4	--	$915 90-6	$1030 120-6	$1140+ 120-6	$1326+ 120-6	--
E130	$139 15-2	$270 20-2.5	$310 28-3	$492 60-4	$637 60-4	$895 90-6	$1045 100-6	$1085+ 120-6	$1195+ 120-6	$1470+ 160-8	$1910+ 180-8	$2080+ 200-8/80
E185	$150 15-2	$330 28-3	$497 45-4	$605 60-4	$966 90-6	$1240 120-6	$1470+ 130-6	$1585+ 160-8	$2045+ 180-8	$2250+ 225-8/80	$2705+ 225-8/80	$3075 260-8/80
E200	$150 15-2	$330 28-3	$497 45-4	$605 60-4	$966 90-6	$1240 120-6	$1470+ 130-6	$1585+ 160-8	$2045+ 180-8	$2250+ 225-8/80	$2705+ 225-8/80	$3075+ 260-8/80
F150	$175 15-2	$340 28-3	$516 45-4	$622 60-4	$1020 90-6	$1280 120-6	$1515+ 130-6	$1670+ 160-8	$2060+ 180-8	$2360+ 225-8/80	$2840+ 225-8/80	$3280+ 260-8/80
5/40/45"	$135 15-2	$145 15-2	--	$300 20-2.5	$415 28-3	$539 28-3	--	$696 60-4	--	--	--	--
50/65	$139 15-2	$155 15-2	-	$318 28-3	$430 28-3	$597 60-4	--	$868 60-4	$960 120-6	--	--	--
KC85	$145 15-2	$170 15-2	$300 20-2.5	$328 28-3	$550 60-4	$628 60-4	--	$966 90-6	$1083 120-6	$1195+ 120-6	$1330+ 120-6	--
C130	$139 15-2	$265 20-2.5	$320 28-3	$492 60-4	$637 60-4	$893 90-6	$1045 100-6	$1085+ 120-6	$1190+ 120-6	$1470+ 160-8	$1910+ 180-8	$2080+ 200-8/80
C175	$150 15-2	$330 28-3	$497 45-4	$603 60-4	$965 90-6	$1243 120-6	$1470+ 130-6	$1585+ 160-8	$2055+ 180-8	$2255+ 225-8/80	$2700+ 225-8/80	$3075+ 260-8/80
C200	$150 15-2	$330 28-3	$497 45-4	$637 60-4	$1015 90-6	$1305 120-6	$1585+ 130-6	$1680 160-8	$2145+ 180-8	$2365+ 225-8/80	$2950+ 260-8/80	$3255+ 260-8/80
T110	$139 15-2	$268 20-2.5	$310 28-3	$492 60-4	$636 60-4	$893 90-6	$1043 100-6	$1085+ 120-6	$1190+ 120-6	$1470+ 160-8	$1910+ 180-8	$2079+ 200-8/80
T170	$144 15-2	$310 28-3	$473 45-4	$570 60-4	$920 90-6	$1180 120-6	$1400+ 130-6	$1510+ 160-8	$1945+ 180-8	$2145+ 225-8/80	$2575+ 225-8/80	$2930+ 260-8/80
190/195	$144 15-2	$310 28-3	$473 45-4	$572 60-4	$920 90-6	$1180 90-6	$1400+ 130-6	$1510+ 160-8	$1945+ 180-8	$2145+ 225-8/80	$2575+ 225-8/80	$2930+ 260-8/80
SH85	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$505 60-4	$594 60-4	-	$915 90-6	$1030 120-6	$1140+ 120-6	$1326+ 120-6	--
H123	$139 15-2	$268 20-2.5	$310 28-3	$492 60-4	$635 60-4	$890 90-6	$1043 100-6	$1085+ 120-6	$1190+ 120-6	$1470+ 160-8	$1910+ 180-8	$2080+ 200-8/80
H167	$150 15-2	$330 28-3	$496 45-4	$605 60-4	$965 90-6	$1240 120-6	$1470+ 130-6	$1585+ 160-8	$2045+ 180-8	$2256+ 225-8/80	$2700+ 225-8/80	$3075+ 260-8/80
170/175	$144 15-2	$310 28-3	$473 45-4	$570 60-4	$920 85-6	$1180 120-6	$1400+ 130-6	$1510+ 160-8	$1945+ 180-8	$2145+ 225-8/80	$2575+ 225-8/80	$2930+ 260-8/80
0/205205	$160 15-2	$368 35-3	$551 55-4	$663 70-4	$1050 110-6	$1430 140-6	$1585+ 155-6	$2030+ 180-8	$2220+ 225-8/80	$2515+ 245-8/80	--	--
0/SQ85	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$500 60-4	$594 60-4	--	$915 90-6	$1030 120-6	$1140+ 120-6	$1326+ 120-6	-
0-SQ175	$144 15-2	$310 28-3	$473 45-4	$570 60-4	$920 90-6	$1180 120-6	$1400+ 130-6	$1515+ 160-8	$1945+ 180-8	$2145+ 225-8/80	$2575+ 225-8/80	$2930+ 260-8/80
190/95	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$500 60-4	$594 60-4	-	$915 90-6	$1030 120-6	$1140+ 120-6	$1326+ 120-6	-
0/210/220	$144 15-2	$310 28-3	$473 45-4	$570 60-4	$920 90-6	$1180 120-6	$1400+ 130-6	$1510+ 160-8	$1945+ 180-8	$2145+ 225-8/80	$2575+ 225-8/80	$2930+ 260-8/80
50/55/60	$139 15-2	$150 15-2	$289 20-2.5	$310 28-3	$505 60-4	$597 60-4	--	$868 60-4	$1034 120-6	$1138+ 120-6	$1330+ 120-6	--
85/90/95	$145 15-2	$272 20-2.5	$312 28-3	$370 35-3	$540 60-4	$874 90-6	--	$940+ 90-6	$1034+ 120-6	$1185+ 160-8	$1465+ 160-8	$1670+ 180-8
115/120	$144 15-2	$273 20-2.5	$315 28-3	$470 60-4	$640+ 60-4	$835 90-6	$1097 120-6	$1085 120-6	$1195 120-6	$1465+ 160-8	$1660+ 160-8	$2130+ 180-8
155/160	$150 15-2	$326 28-3	$497 45-4	$600 60-4	$910 90-6	$1240 120-6	$1470+ 130-6	$1585+ 160-8	$2045+ 180-8	$2255+ 225-8/80	$2700+ 225-8/80	$3075+ 260-8/80
JS64	$145 15-2	$272 20-2.5	$312 28-3	$457 45-4	$665 75-6	$885 120-6	--	$1195+ 120-6	$1256+ 135-6	$1595+ 160-8	$2075+ 180-8	--
S-627	$150 15-2	$330 28-3	$497 45-4	$600 60-4	$965 90-6	$1245 120-6	$1470+ 130-6	$1585+ 160-8	$2045+ 180-8	$2250+ 225-8/80	$2700+ 225-8/80	$3075+ 260-8/80
1.85	$139 15-2	$149 15-2	$289 20-2.5	$310 28-3	$500 60-4	$594 60-4	--	$915 90-6	$1030 120-6	$1140+ 120-6	$1326+ 120-6	--

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

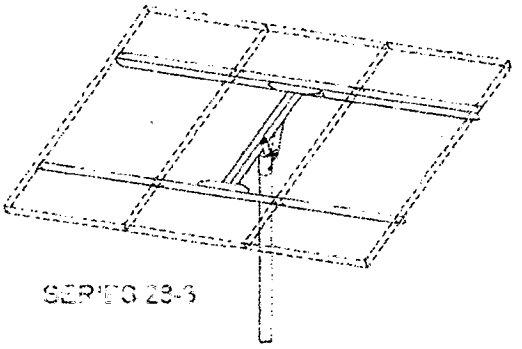
[illegible] CALL TO CONFIRM.

Model Number Example: **Top-of-Pole Mount for 8 Kyocera KC130 modules: DP-TPM8-KC130**

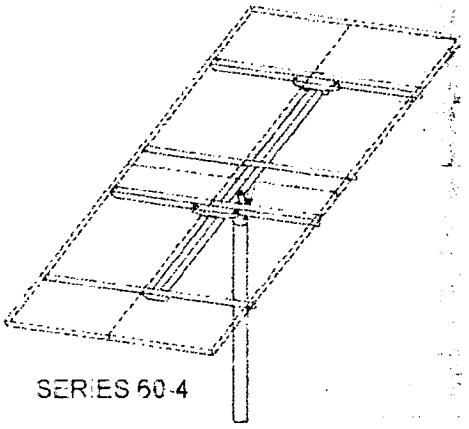
o the right of the Part # is the Series designation. For example, the TPM8-KC130 has a retail price of $893.00 and has "90-6" following the price. This is the ries number. The Series designates that the rack holds up to 90 square feet of modules and mounts on a 6" SCH40 pipe. Any given Series is a generic design used

Accessories and Options

STANDARD MOUNTING POLE	UPGRADE SLEEVE TO FIT ON:					
		2.5"	3"	4"	6"	8"
	2"	$17	$22	$28	$75	$102
	2.5"	--	$20	$24	$75	$102
	3"	--	--	$22	$70	$102
	4"	--	--	--	$65	$90
	6"	--	--	--	--	$80



FINISH UPGRADE	
Powder Coat w/ Mill Finish Module Mounting Rails	Add 35%
Hot-Dip Galvanized Steel w/ Anodized Module Rails	Add 80%
Stainless Steel Construction w/ Anodized Module Rails	CALL

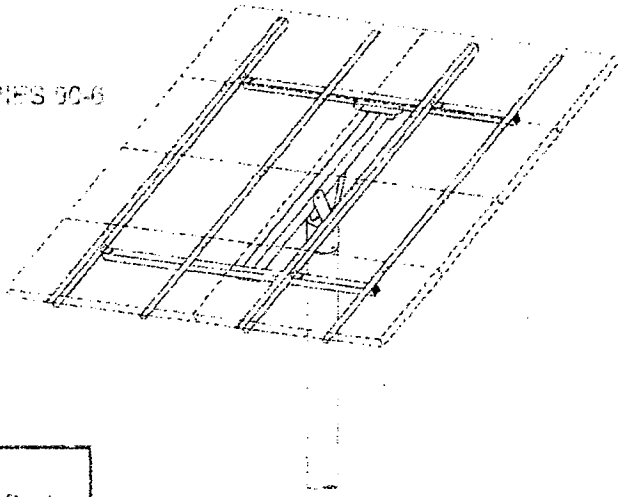


STAINLESS STEEL HARDWARE PACKAGE											
# Modules	1	2	4	6	8	9	10	12	14	16	18
Added Cost	$8	$17	$30	$46	$60	$68	$69	$98	$105	$125	$143

The Stainless Steel Hardware Package includes 100% stainless hardware for the structure.

TAMPER-RESISTANT HARDWARE PACKAGE											
# Modules	1	2	4	6	8	9	10	12	14	16	18
Added Cost	$19	$26	$39	$52	$64	$71	$77	$90	$103	$116	$129

The Tamper Resistant Hardware package includes stainless steel pin-in-hex machine screws with nylon-insert lock nuts. A matching hex-key is also provided with each package.



POWER-FAB products include:	
Top-of-Pole Mounts	Power-Tube Commercial Racking System
Side-of-Pole Mounts	Power-Rail Top-Clamp Mounting System
Roof/Ground Mounts	SunStrut Top Clamping System
Battery Boxes, Racks and Cabinets	Custom Battery Enclosures

POWER-FAB

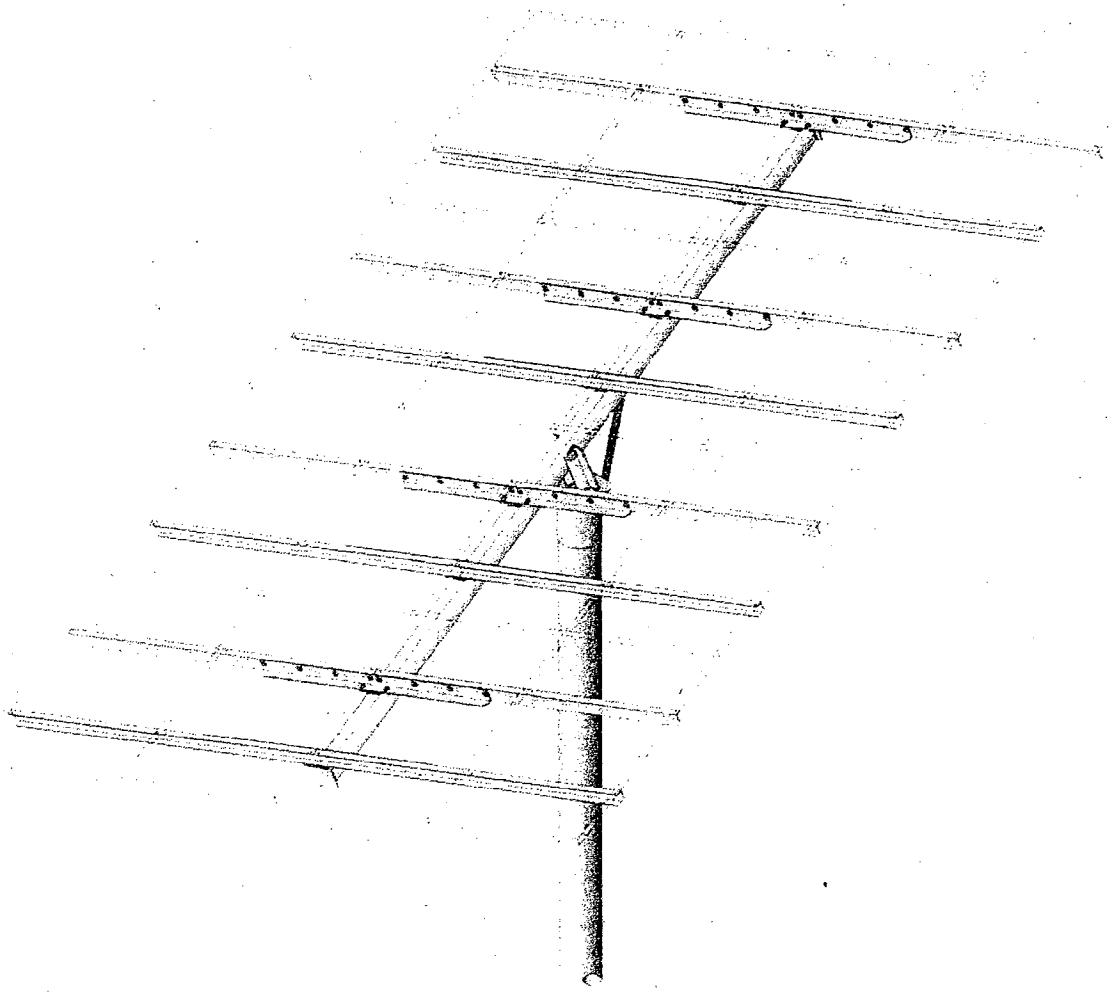
Direct Power and Water Corporation
4000-B Vassar Drive NE
Albuquerque, NM 87107
PH: 800-260-3792
Fax: 505-889-3548
info@power-fab.com

DP&W POWER-FAB
QUALITY HARDWARE FOR THE PV INDUSTRY

INSTALLATION INSTRUCTIONS SERIES 225-8/80

SERIES 225-8/80 TOP-OF-POLE MOUNT INSTALLATION INSTRUCTIONS

Designed to hold approximately 225 Sq. Ft. of solar modules and to mount on an 8" SCH 80 Pole



SERIES 225-8/80 Rack

INSTALLATION INSTRUCTIONS FOR SERIES 225-8/80 TOP-OF-POLE MOUNTS

(4X4 MODULE ARRANGEMENT)

Components:

- 1ea. Strongback with Support Bar
- 8 ea. Rail Brackets, 3"x2" angle 34.5" long
- 1ea. Mounting Sleeve with Pivot Bolt
- 8 ea. Module Rails – 3"x1.5" aluminum channel
- 1 lot rack assembly hardware
- 1 lot module mounting hardware
- 1 Support Bar

1. You will need a piece of 8" SCH80 steel pipe (8-5/8" OD) for a mounting pole. This piece of pipe should be 15-17 feet long. Dig a hole about 36" in diameter and 72"-84" deep. Put the pole into the hole and pour concrete around it, filling the hole to the top. Brace the pole so that it is straight and let the concrete harden. If you live in an area with deep snow build-up you may want a taller pole. For every extra foot above ground you need to have about 8" more in the ground in concrete. [These are just guidelines. The actual depth and diameter of the hole and the amount of concrete used is very dependent on soil type and local wind conditions. Installations in loose, sandy soil will require a larger, deeper hole with more concrete than in hard, rocky soil. If in doubt, we recommend that you consult a civil engineer in your area that is familiar with local soil conditions.] If you live in an area that can get winds in the 80mph-90mph range and your site is flat, open ground with no trees, buildings, etc to break up the wind you may need to go up to an 8" SCH80 pipe for your mounting pole. Please consult the factory if in doubt.

2. Bolt the Mounting Sleeve to the Strongback and attach the free end of the Support Bar to the Angle Adjustment Plate on the Strongback. Bolt it to the hole farthest away from the pivot bolt in the Strongback.

3. Place the Strongback/Mounting Sleeve Assembly on the mounting pole, aim it south and lock it in place by tightening the set bolts on the sleeve.

4. This rack has seven elevation angle set points. They are: 0, 15, 25, 35, 45, 55 and 65 degrees. For assembly and module mounting it is probably easiest to lock the rack in the flattest (0-degree) position.

5. Bolt the Rail Brackets to the ½" thick plates that are welded on top of the Strongback using the 1/2"x1-3/4" bolts and hardware and positioned as shown in the drawings (you must install the Rail Brackets as shown in the drawings or the rails will not be positioned properly).

6. Bolt the Module Rails to the Rail Brackets using the 3/8" x 1-1/4" bolts and hardware. The Module Rails must be positioned as shown in the drawings.

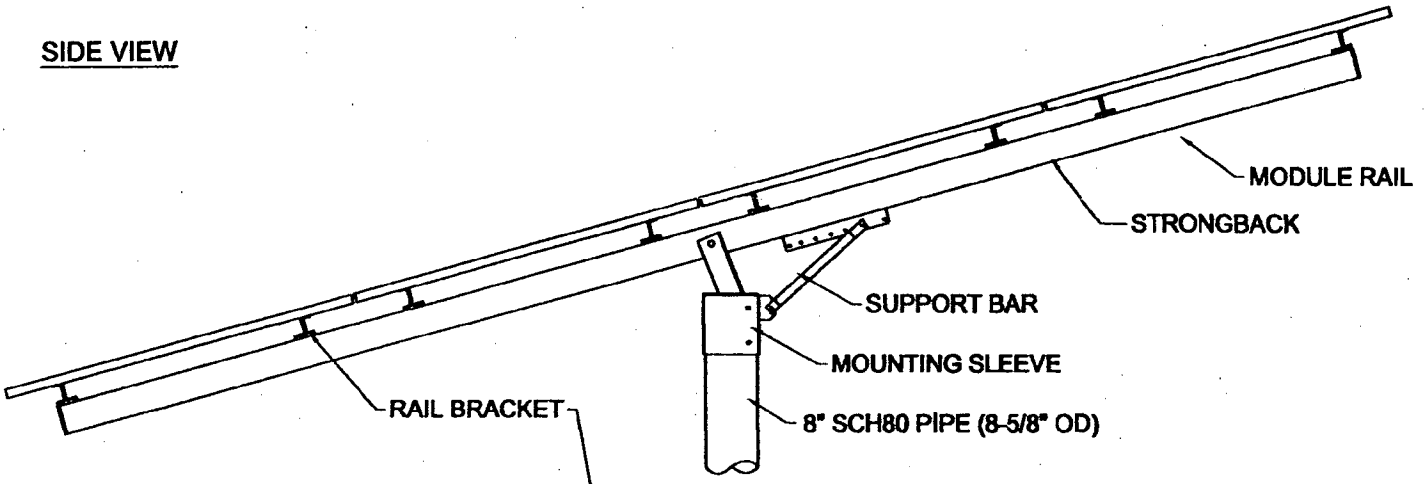
7. Attach your photovoltaic modules to the module rails as shown in the drawings using the ¼" or 5/16" stainless steel hardware provided.

8. Be sure all rack and module bolts are tight.

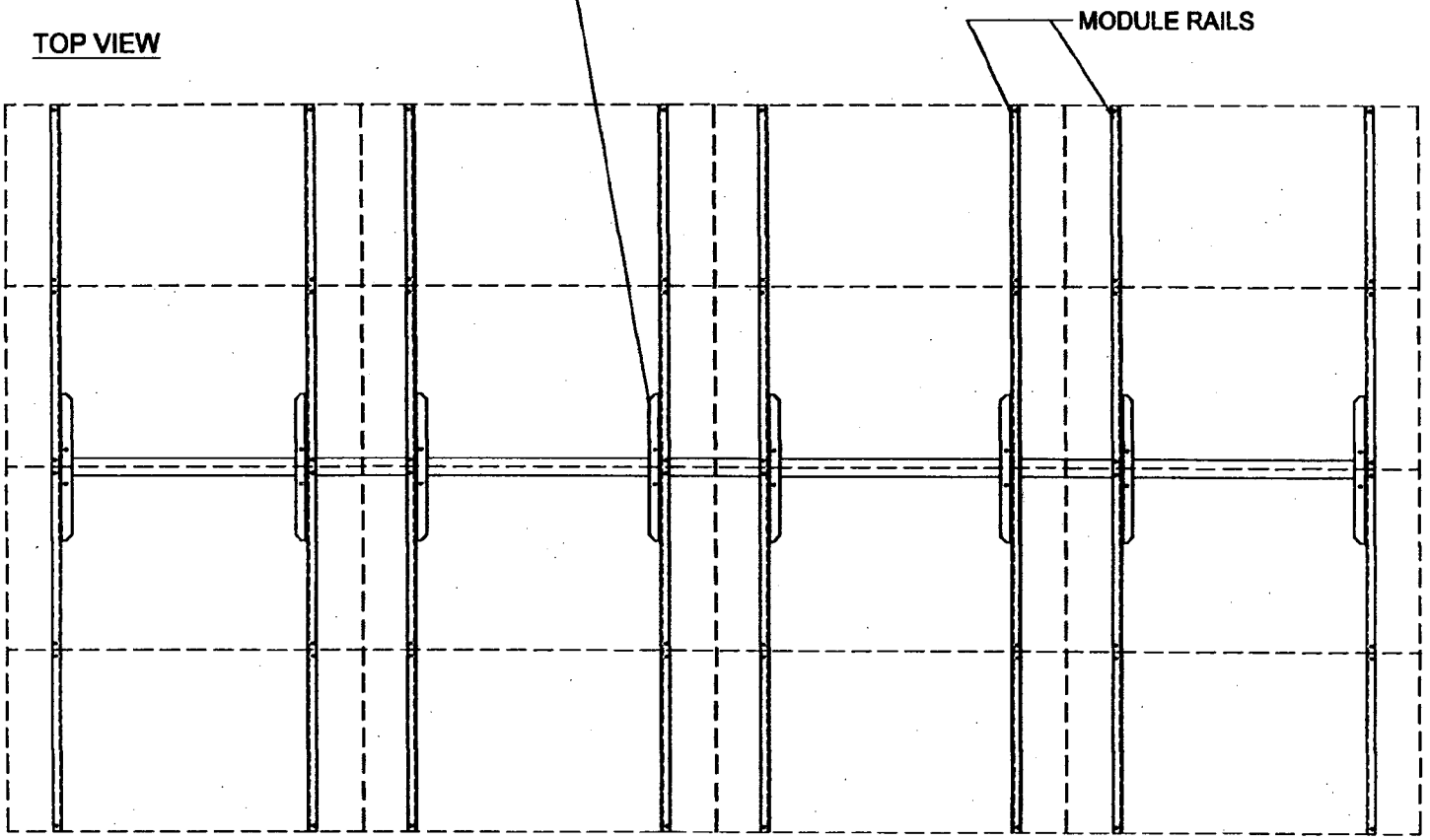
9. When changing the elevation setting, loosen the pivot bolt before adjusting the rack. After changing the position of the Support Arm and tightening the two 1/2" bolts be sure to tighten the pivot bolt.

‚SERIES 225-8/80 4x4 ARRAY

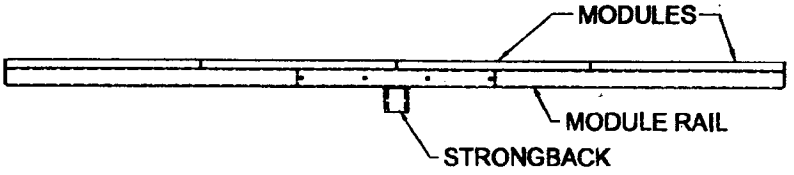
SIDE VIEW



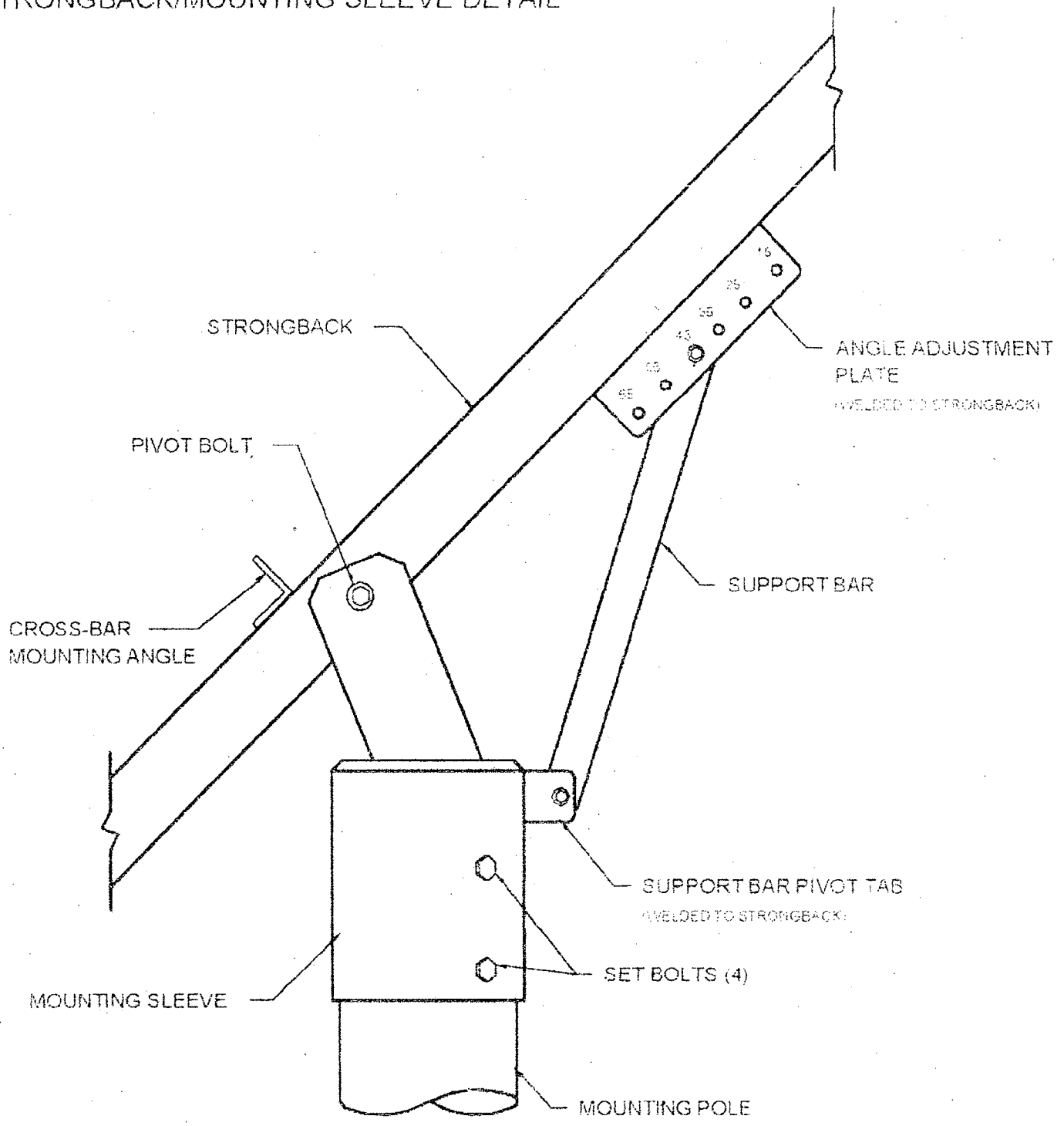
TOP VIEW



END VIEW



STRONGBACK/MOUNTING SLEEVE DETAIL



DP&W **POWER-FAB**
QUALITY HARDWARE FOR THE PV INDUSTRY

MOUNTING POLE GUIDE FOR TOP-OF-POLE MOUNTS

The following table provides "rule-of-thumb" guidelines for an average installation. Soil type varies widely from one region to another. The actual depth and diameter of the hole and the amount of concrete used is very dependent on soil type. Installations in loose, sandy soil will require a larger, deeper hole with more concrete than an installation in hard, rocky soil. The amount of pole sticking out of the ground and the wind speeds in your area also play an important role in determining the depth and diameter of the hole. If in doubt, we recommend that you consult a civil engineer in your area that is familiar with local soil conditions.

MODULE AREA	POLE SIZE (STEEL PIPE)	LENGTH IN GROUND	HEIGHT * ABOVE GROUND	HOLE DIAMETER
15 SQ. FT.	2" SCH40 (2-3/8" OD)	30"-36"	48"-72"	8"-12"
20 SQ. FT.	2.5" SCH40 (2-7/8" OD)	34"-40"	48"-72"	10"-14"
28 SQ. FT.	3" SCH40 (3-1/2" OD)	36"-42"	48"-72"	12"-16"
35 SQ. FT.	3" SCH40 (3-1/2" OD)	38"-44"	60"-72"	12"-16"
60 SQ. FT.	4" SCH40 (4-1/2" OD)	42"-48"	60"-72"	16"-24"
90 SQ. FT.	6" SCH40 (6-5/8" OD)	48"-60"	60"-84"	24"-30"
120 SQ. FT.	6" SCH40 (6-5/8" OD)	48"-72"	72"-84"	24"-30"
160 SQ. FT.	8" SCH40 (8-5/8" OD)	60"-78"	84"-102"	30"-36"
180 SQ. FT.	8" SCH40 (8-5/8" OD)	60"-78"	84"-102"	30"-36"
225 SQ. FT	8" SCH80 (8-5/8" OD)	72"-84"	96"-120"	36"
260 SQ. FT.	8" SCH40 (8-5/8" OD)	72"-84"	96"-120"	36"

* If you need a taller pole for snow clearance or to clear nearby obstructions you will need to have more pole in the ground. For each extra foot that you add above ground you will need approximately 6" in the ground in concrete.

If you have to go more than 2ft-3ft higher than what is shown in the table you may need a larger diameter pole. Please consult the factory.

General Procedure: When your hole is ready place the piece of pipe in it so that it is resting on the bottom of the hole - it is a good idea to fill the bottom 2"-4" of the hole with rocks. Brace the pole plumb and pour concrete around it. Fill the hole to ground level, add a little extra concrete and use a trowel to form a mound around the pole so that the concrete slopes down away from the pole. Allow the concrete to set up for at least 24 hours before installing your rack.

DIRECT POWER AND WATER CORPORATION
4000-B Vassar Drive NE
Albuquerque, NM 87107
Ph: 800-260-3792 Fax: 505-889-3548

POWER-FAB PV HARDWARE
DIRECT POWER AND WATER CORPORATION LIMITED WARRANTY

Direct Power & Water Corporation (DP&WC) warrants to the original customer that its products shall be free from defects in materials and workmanship for a period of five (5) years.

At its option, DP&WC will repair or replace at no charge any DP&WC product that proves to be defective within such warranty period. This warranty shall not apply if the DP&WC product has been damaged by unreasonable use, accident, negligence, service or modification by anyone other than Direct Power & Water Corporation, or by any other causes unrelated to materials and workmanship.

The original consumer purchaser must retain original purchase receipt for proof of purchase as a condition precedent to warranty coverage. To receive in-warranty service, the defective product must be received no later than one (1) week after the end of the warranty period. The product must be accompanied by proof of purchase and Return Authorization (RA) number issued by DP&WC. For an RA number contact Direct Power & Water Corporation, 4000-B Vassar Dr NE, Albuquerque, New Mexico 87107 (505) 889-3585. Purchasers must prepay all delivery costs or shipping charges to return any defective DP&WC product under this warranty policy.

Except for the warranty that the products are made in accordance with the specifications therefore supplied or agreed to by customer, DP&WC MAKES NO WARRANTY EXPRESSED OR IMPLIED, AND ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE FOREGOING WARRANTY IS HEREBY DISCLAIMED BY DP&WC AND EXCLUDED FROM ANY AGREEMENT MADE BY ACCEPTANCE OF ANY ORDER PURSUANT TO THIS QUOTATION. DP&WC WILL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES, LOSS OR EXPENSE ARISING IN CONNECTION WITH THE USE OF OR THE INABILITY TO USE ITS GOODS FOR ANY PURPOSE WHATSOEVER. DP&WC'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE CONTRACT PRICE FOR THE GOODS CLAIMED TO BE DEFECTIVE OR UNSUITABLE.

Products will be considered accepted by customer unless written notice to the contrary is given to DP&WC within ten (10) days of such delivery to customer. DP&WC shall not in any case be liable for any event occurring or defect discovered with regard to said product unless written notice thereof is given to DP&WC within ninety (90) days of such product delivery to customer.

DP&WC is not responsible for loss or damage to products owned by customer and located on DP&WC's premises caused by fire or other casualties beyond DP&WC's control. This warranty is in lieu of all other warranties expressed or implied.

POWER-FAB PV HARDWARE
DIRECT POWER AND WATER CORPORATION
4000-B Vassar Drive NE, Albuquerque, NM 87107
Ph: 505-889-3585 Fax: 505-889-3548
Email: info@power-fab.com

bp solar

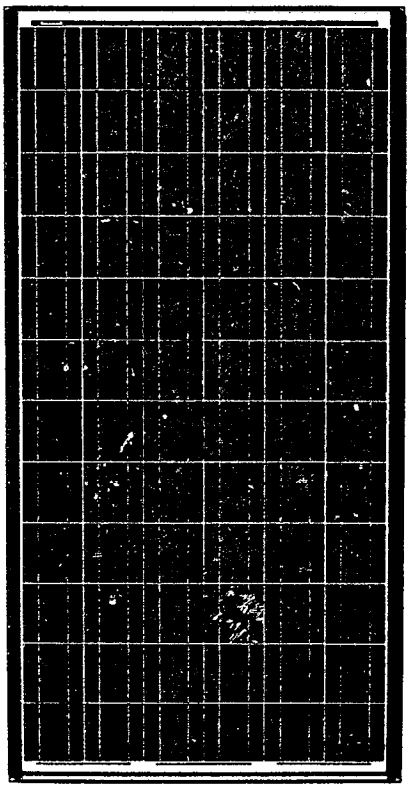
BP 175I

175 Watt Photovoltaic Module

High-efficiency photovoltaic module using silicon nitride multicrystalline silicon cells.

Performance

Rated power (P_{max})	175W
Power tolerance	± 5%
Nominal voltage	24V
Limited Warranty[1]	25 years



Configuration

BP 175I	Bronze frame with output cables and polarized Multicontact (MC) connectors

Electrical Characteristics[2]

	BP175I
Maximum power (P_{max})[3]	175W
Voltage at Pmax (V_{mp})	35.8V
Current at Pmax (I_{mp})	4.9A
Warranted minimum P_{max}	166.3W
Short-circuit current (I_{sc})	5.4A
Open-circuit voltage (V_{oc})	44.2V
Temperature coefficient of I_{sc}	(0.065±0.015)%/ °C
Temperature coefficient of V_{oc}	-(160±20)mV/°C
Temperature coefficient of power	-(0.5±0.05)%/ °C
NOCT (Air 20°C; Sun 0.8kW/m²; wind 1m/s)	47±2°C
Maximum series fuse rating	15A
Maximum system voltage	600V (U.S. NEC & IEC 61215 rating)

Mechanical Characteristics

Dimensions	Length: 1587mm (62.5") Width: 828mm (32.6") Depth: 50mm (1.97")
Weight	15.4 kg (33.9 pounds)
Solar Cells	72 cells (125mm x 125mm) in a 6x12 matrix connected in series
Output Cables	RHW AWG# 12 (4mm²) cable with polarized weatherproof DC rated Multicontact connectors
Diodes	***IntegraBus™*** technology includes Schottky by-pass diodes integrated into the printed circuit board bus
Construction	Front: High-transmission anti-reflective 3mm (1/8th inch) tempered glass; White back Encapsulant: EVA
Frame	Bronze anodized aluminum alloy type 6063T6 ***IntegraBus™*** frame; Color: Bronze

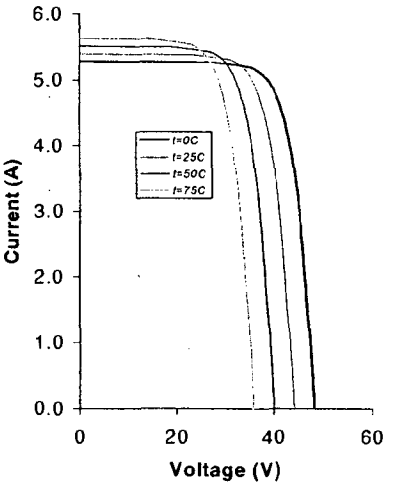
1. Warranty: Power output for 25 years. Freedom from defects in materials and workmanship for 5 years. See our website or your local representative for full terms of these warranties.
2. These data represent the performance of typical BP 175I products, and are based on measurements made in accordance with ASTM E1036 corrected to SRC (STC.)
3. During the stabilization process that occurs during the first few months of deployment, module power may decrease by up to 1% from typical P_{max}.

bp solar

Quality and Safety

ESTI	Module power measurements calibrated to World Radiometric Reference through ESTI (European Solar Test Installation at Ispra, Italy); Certified to IEC 61215
UL	Listed by Underwriter's Laboratories for electrical and fire safety (Class C fire rating)

BP 175I I-V Curves

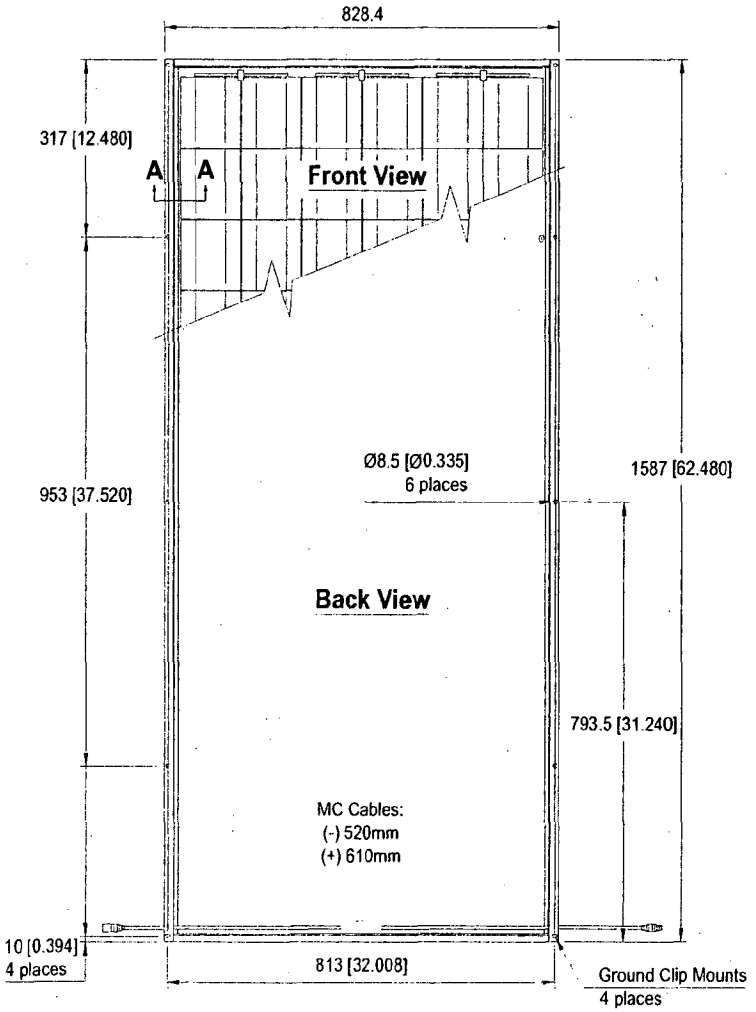


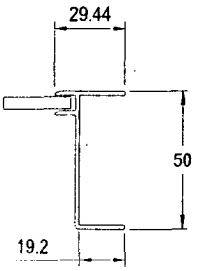
Qualification Test Parameters

Temperature cycling range	-40°C to +85°C (-40°F to 185°F)
Humidity freeze, damp heat	85% RH
Static load front and back (e.g. wind)	45psf (2160 pascals)
Hailstone impact	25mm (1 inch) at 23 m/s (52mph)

Module Diagram

Dimensions in brackets are in inches. Unbracketed dimensions are in millimeters. Overall tolerances ±3mm (1/8")





SECTION A-A

Included with each module: instruction sheet and warranty document.
Mounting, grounding, wiring, and row closer kits sold separately.

Note: This publication summarizes product warranty and specifications, which are subject to change without notice. Additional information may be found on our web site: **www.bpsolar.us**

6802.0007-v3 04/06

bp solar

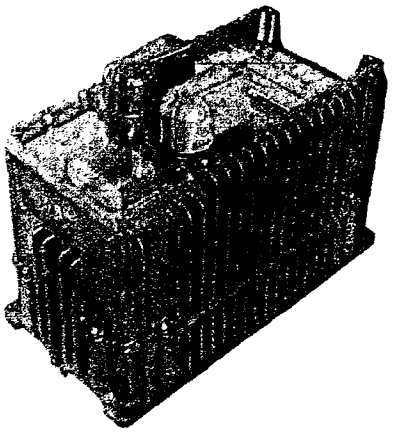
OutBack Power Systems, Inc.

MODULAR RUGGEDIZED SINEWAVE INVERTER/CHARGERS

Now Its Your Choice!

Although OutBack has become known for offering the first and only sealed sinewave inverter/charger, we still found some real reasons to consider offering a vented version of the popular FX series as well...

Introducing the VFX series sinewave inverter/chargers



original FX SERIES

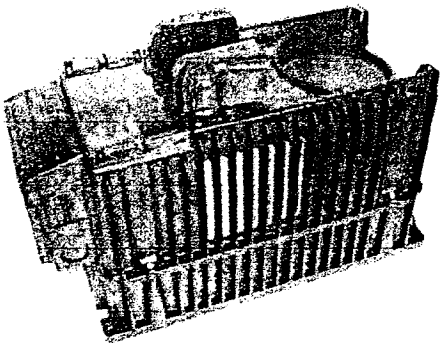
FX2024	2.0 kWAC	24 VDC	$1795 USD
FX2548	2.5 kWAC	48 VDC	$2245 USD

Sealed Construction Features:

- Powdercoated all aluminum die-cast chassis
- Internal electronic components are cooled by heat transfer
- Gaskets on all openings to provide water-resistance
- Sealed design protects internal electronics from salt, dirt or contaminated air, bugs, critters, mold etc.
- Conformal coated circuit boards to resist corrosion
- Designed to allow easy field servicing and repair

Ideal Applications:

- Hot and humid climates where a protected area is not available for installation of the inverter/charger system
- Salt air environments such as Hawaii where you can't get away from the salt air and where there is little difference between indoors and outdoors
- Dirty environments where dust or drifting organic matter such as cottonwood could clog an air opening in an unattended system
- Boats and RV's where water might splash on the inverter
- Greater control of unwanted radio frequency interference



new VFX SERIES

VFX2812	2.8 kWAC	12 VDC	$2345 USD
VFX3524	3.5 kWAC	24 VDC	$2345 USD
VFX3648	3.6 kWAC	48 VDC	$2345 USD

Vented Construction Features:

- Powdercoated all aluminum die-cast chassis
- Internal electronic components are cooled by outside air
- Stainless steel screen to protect air intake and internal fan
- UL 94V0 plastic vent grills to protect the air exhaust. All openings are 0.0025 inches square to keep out dirt, bugs, and other critters – we call it "bug proof" construction
- Air inlet comes with removable, washable foam filter insert to trap small particles
- Conformal coated circuit boards to resist corrosion
- Higher output power when inverting or battery charging when compared with the sealed FX inverter versions
- Designed to allow easy field servicing and repair

Ideal Applications:

- Montana or Arizona etc. where salt air is not a problem and climate is dry
- More watts per dollar
- Installations where well protected environments are available

OutBack Power Systems, Inc.
ARLINGTON WA USA

MODULAR
RUGGEDIZED
REAL SINEWAVE
INVERTER/CHARGERS

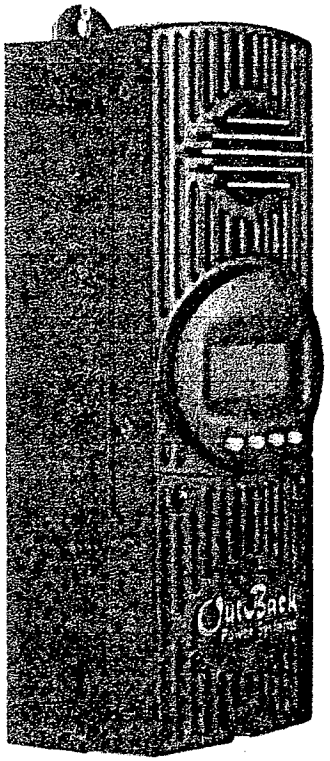
SPECIFICATIONS

	FX 2024	FX 2548	VFX 2812	VFX 3524	VFX 3648
Continuous Power Rating at 25 degrees C	2000VA	2500VA	2800VA	3500VA	3600VA
Nominal DC Input Voltage	24	48	12	24	48
Nominal AC Input Voltage / Frequency	120V/60Hz	120V/60Hz	120V/60Hz	120V/60Hz	120V/60Hz
Continuous AC RMS Output current at 25 C	17amps	21amps	23.3 amps	29.2 amps	30 amps
Idle Power (typical at no AC load) (sleep – 3 watts)	18-20 Watts	21-23 Watts	19-21 Watts	18-20 Watts	21-23 Watts
Efficiency (typical at 25 degree C and 75% resistive load)	92%	93%	>90%	>90%	>90%
Total Harmonic distortion voltage (typical / max)	2% / 5%	2% / 5%	2% / 5%	2% / 5%	2% / 5%
Output Voltage Regulation	+/- 2% typ	+/- 2% typ	+/- 2% typ	+/- 2% typ	+/- 2% typ
Surge Power Capability Peak (1mSec)	70 amps AC	70 amps AC	70 amps AC	70 amps AC	70 amps AC
Surge Power Capability RMS (100mSec)	50 amps AC	50 amps AC	50 amps AC	50 amps AC	50 amps AC
Overload Capability (from 25 C start) 5second	4800VA	4800VA	4800VA	5000VA	5000VA
Overload Capability (from 25 C start) 30 minutes	3200VA	3200VA	3200VA	4000VA	4000VA
Automatic AC transfer Relay (at nominal AC)	60 amps AC	60 amps AC	60 amps AC	60 amps AC	60 amps AC
AC Input Current (adjustable limits)	60 amps max	60 amps max	60 amps max	60 amps max	60 amps max
AC Input Voltage Range (adjustable limits)	90-140VAC	90-140VAC	90-140VAC	90-140VAC	90-140VAC
Frequency Range – AC Input	54-67.4 Hz	54-67.4 Hz	54-67.4 Hz	54-67.4 Hz	54-67.4 Hz
DC Input Range (adjustable low battery cut-out)	20-33 VDC	40-66 VDC	10-16 VDC	20-33 VDC	40-66 VDC
Recommended DC Breaker	OBDC-175	OBDC-100	OBDC-250	OBDC-250	OBDC-175
Continuous Battery Charger Output amps DC	55	35	125	85	45
Shipping Weight	60 Lbs	60 Lbs	62 Lbs	62 Lbs	62 Lbs

The VFX3524 & VFX3648 inverters are now ETL approved, in stock and ready for shipment.
The VFX2812 inverters will be available in limited supply by August 23, 2003. Please place orders in advance for guaranteed delivery.

Revision C

MPPT CHARGE CONTROLLER MX60



The OutBack MX60 Maximum Power Point Tracking (MPPT) charge controller enables your PV system to achieve its highest possible performance.

Rated for up to 60 amps of DC output current, the OutBack MX60 can be used with battery systems from 12 to 60 vdc with PV open circuit voltage as high as 125 vdc. The MX60's setpoints are fully adjustable to allow use with virtually any battery type, chemistry and charging profile.

The OutBack MX60 allows you to use a higher output voltage PV array with a lower voltage battery - such as charging a 24 vdc battery with a 48 vdc PV array. This reduces wire size and power loss from the PV array to the battery/inverter location and can maximize the performance of your PV system.

The OutBack MX60 comes standard with an easy to use and understand display of the PV system's performance. The four line, 80 character, backlit LCD display is also used for programming and monitoring of the system's operation.

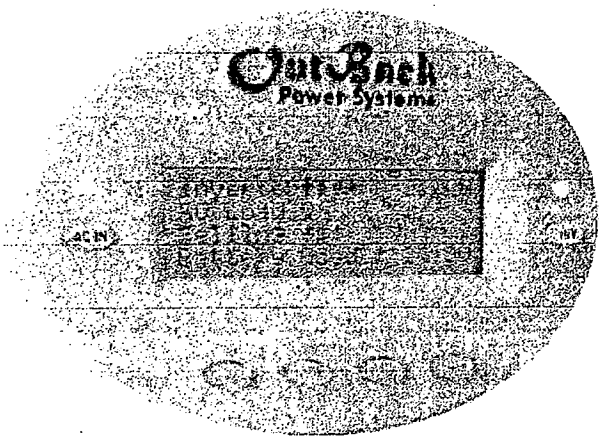
The OutBack MX60 can also be connected to the OutBack MATE system controller and display to allow monitoring of up to eight MX60 controllers from a distant location - up to 300 feet away. The MATE also includes an opto-isolated RS232 port for connection to a PC computer for data logging and system monitoring.

SPECIFICATIONS	MX60
Output Current Rating	60 amps DC Maximum at 12, 24 or 48 VDC
Nominal Battery Voltage	12, 24, 32, 36, 48, 54 or 60 VDC (programmable)
PV Open Circuit Voltage	125 VDC Maximum
Standby Power Consumption	Less than 1 watt typical
Charging Regulation Methods	Five Stage: Bulk, Absorption, Float, Silent, Equalization
Voltage Regulation Setpoints	13 - 80 VDC
Equalization Voltage	Adjustable 1.0 to 5.0 VDC above Bulk Setpoint
Temperature Compensation	Programmable slope -2.0mV/°C/Cell to -5.0mV/°C/Cell
Voltage Step-Down Capability	Can charge a 12 or 24 VDC battery from a 48V nominal PV array
Power Conversion Efficiency	99.1% @ 40 amps Output 97.3% @ 60 amps Output
Digital Display	4 line 80 character backlit LCD Display
Remote Interface	RJ 45 Modular Connector CAT 5 Cable 8 wire
Operating Temperature Range	-40 to 60°C Power derated above 25°C
Environmental Rating	Indoor Type 1
Conduit Knockouts	Two 3/4 - 1" on the back; One 1" - 1 1/2 " on each side; Two 1" - 1 1/2" on the bottom
Warranty	Two years parts and labor Optional Extended Warranty
Dimensions	Enclosure: 14.5 " H x 5.75" W x 5.75" D Shipping box: 17.75" H x 10" W x 7" D
Shipping Weight	12 lbs. - 5.4 kg

Preliminary - Specifications subject to change without notice

SYSTEM MANAGEMENT, REMOTE MONITOR AND CONTROL — MATE

The OutBack MATE is a complete system controller and display for both the OutBack FX2000 inverter/charger and MX60 MPPT PV charge controller. It provides a display of the operation as well as allows control and adjustment of the setpoints. The OutBack Mate also coordinates the operation of the entire system to maximize performance and to prevent multiple products from conflicting.



A single OutBack MATE is able to connect to multiple FX2000 inverter/charges, MX60 MPPT PV charge controllers and any other OutBack power conversion and control products offered in the future. A maximum of ten OutBack products will be able to be connected to a single MATE via CAT 5 / ethernet type cabling with 8 wire RJ45 modular connectors and the OutBack HUB communication manager.

The OutBack MATE includes a 4 line backlit LCD display with 80 alphanumeric characters. This allows multiple measurements to be displayed at the same time and reduces the amount of abbreviations required, simplifying the operation and reducing confusion. All of the programmed setpoints are stored in permanent memory to eliminate the need to reprogram the system after a shutdown or battery replacement.

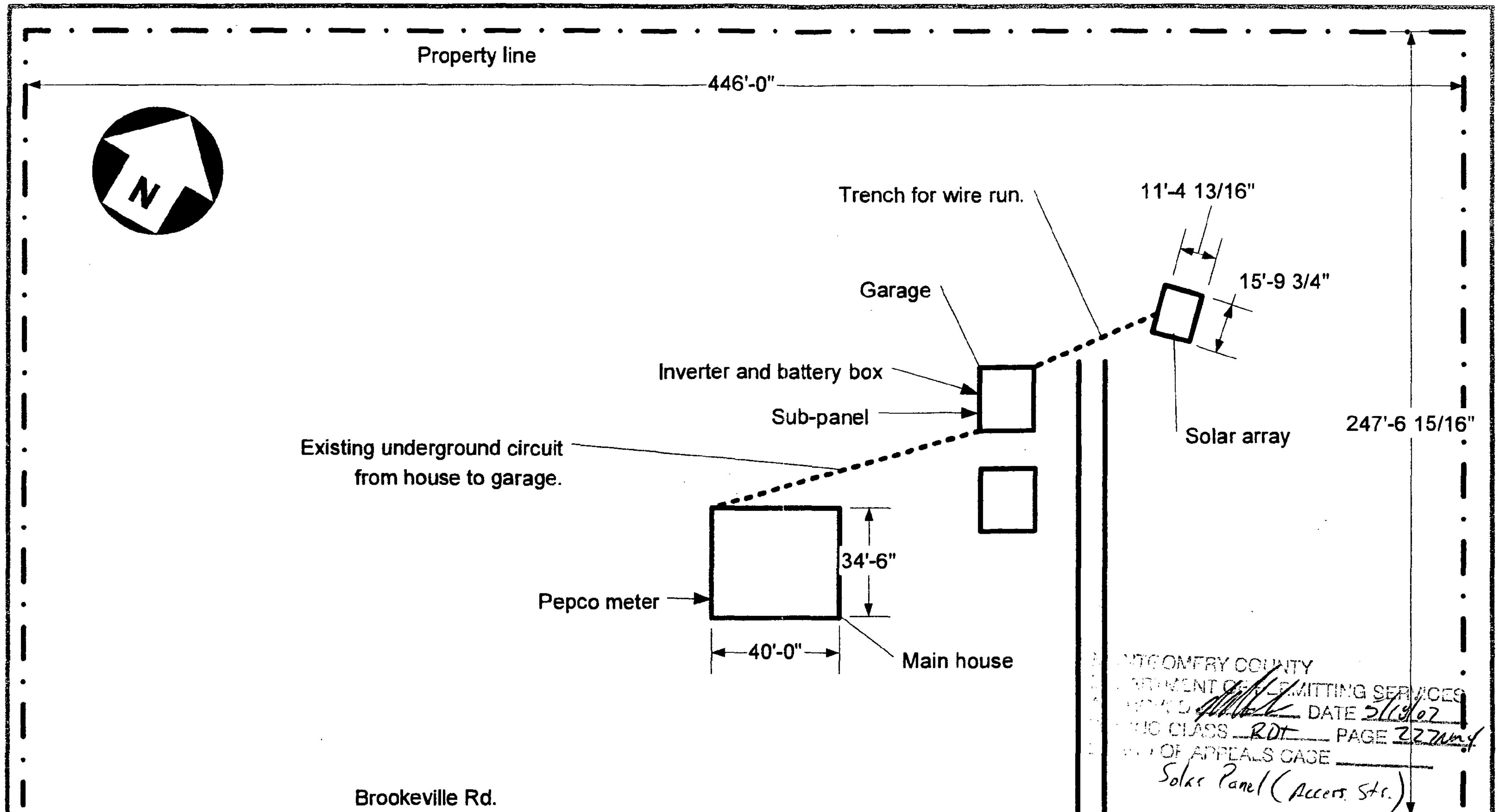
The OutBack MATE also includes a built in real time clock and calendar which allows programming of the inverter operation based on the time of day and even day of the week. This can be used to allow the system to work with time-of-day power rates or to limit a generator's run time to a specific time period of the day or week.

The OutBack MATE also includes an opto-isolated RS232 port with a DB9 jack for connection to the serial port of a PC computer.

OutBack is working with several third party developers to offer Windows based software programs for datalogging and graphical display of the system's operation and performance. This PC computer software will be available separately and is expected in September, 2002.

Specifications	The MATE
Interface Display	4 line 80 character backlit LCD - Alphanumeric with graphic symbols
Control Keypad	6 backlit silicone membrane keys- dedicated inverter and AC input keys
Status Indicators	Two LED Status Indicators : Green = Inverter Yellow = AC Input
Communication Protocol	Proprietary OutBack Multi-drop using an OutBack HUB
Interconnection Cabling	Standard CAT 5 network cable with RJ45 modular jack - 50 ft included
PC Computer Interface	RS232 opto-isolated DB9 jack 9600 baud serial communication
Microprocessor	16 MHz low power consumption version
Setpoint and Data Memory	32K non-volatile flash RAM
Clock / Calendar	On-board real time clock with battery backup
Audible Indicator	2 KHz Transducer
Environmental Rating	Indoor Type 1. Optional outdoor Type 3R transparent lockable cover
Dimensions	5.75" W x 4.25" H x 2" D 14.6 cm x 10.8 cm x 5.08 cm
Shipping Weight	1 lb - 454 g
Warranty	Two years parts and labor Optional Extended Warranty

Preliminary - Specifications subject to change without notice



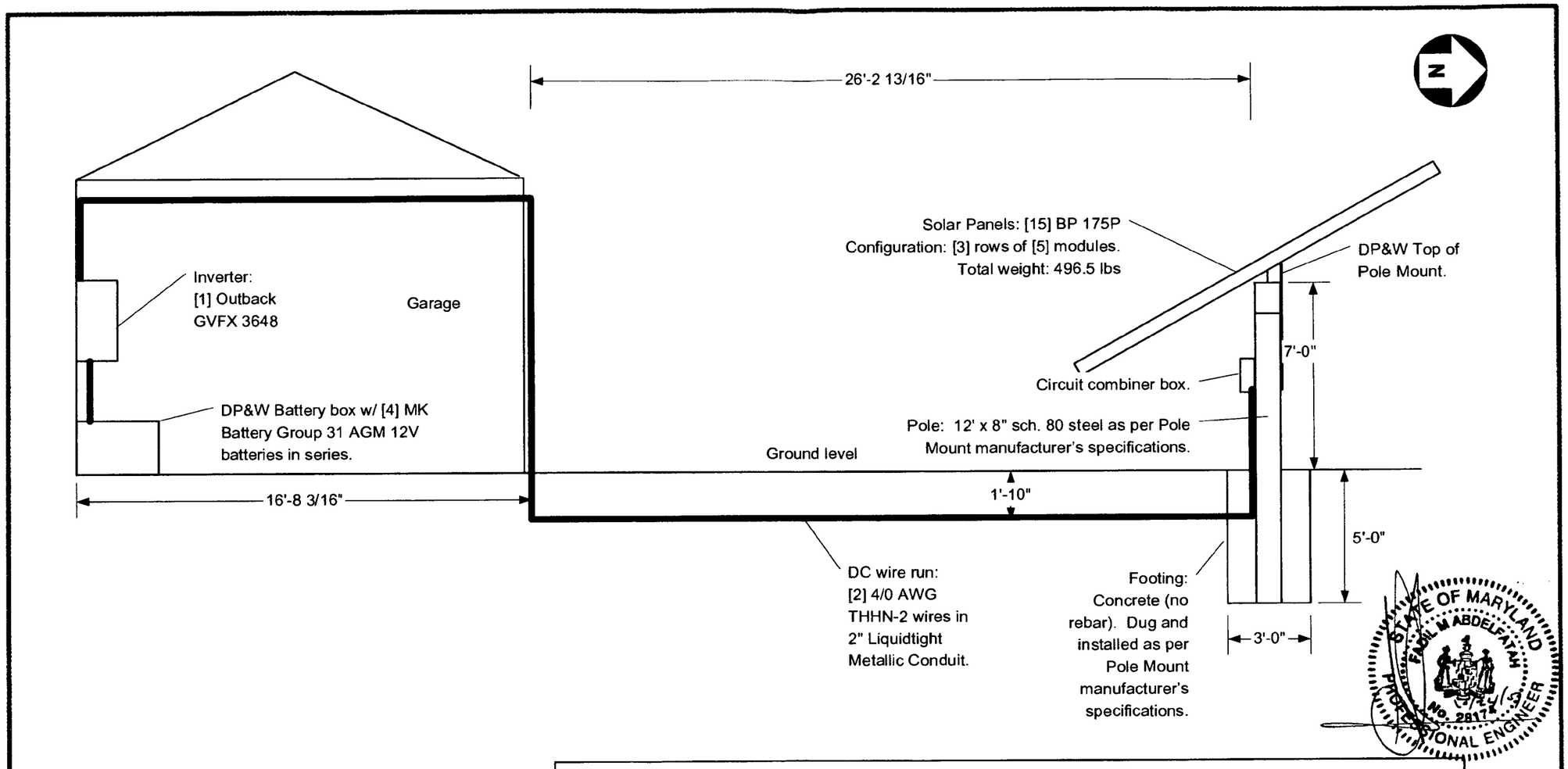
0 ft. 20 ft. 831ftn4.1 in. 66 ft. 8.2 in.

Location:

4415 Brookeville Rd.,
Brookeville, MD 20833

Standard Solar Inc.	15200 Shady Grove Rd. #202 Rockville MD 20850 (301) 296 - 4373
Drawn by: Andrew Truitt	Title: Plan view
Date: 3/6/07	File: Fuller site plan.vsd
Revised: 5/15/07	Page: 1 of 2

APPROVED
Montgomery County
Historic Preservation Commission
AF 11-5-07



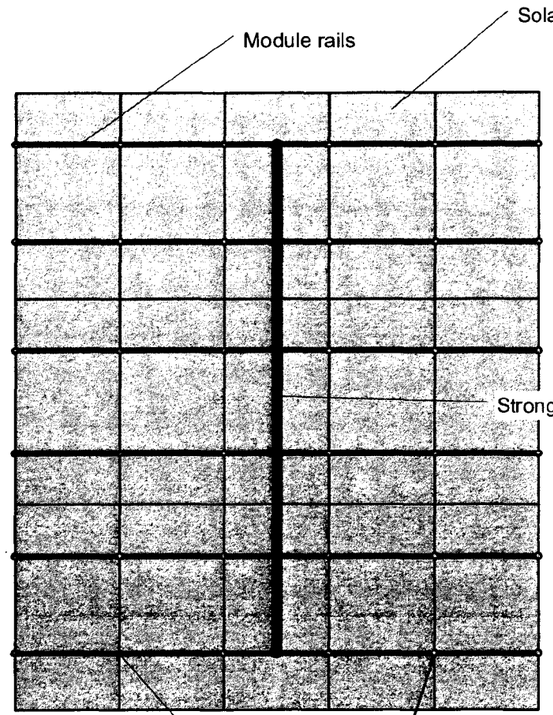
0.0 ft. 3.0 ft. 5.0 ft. 10.0 ft.

"Professional Certification: I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland, license no. 28174, expiration date: 01/23/09"

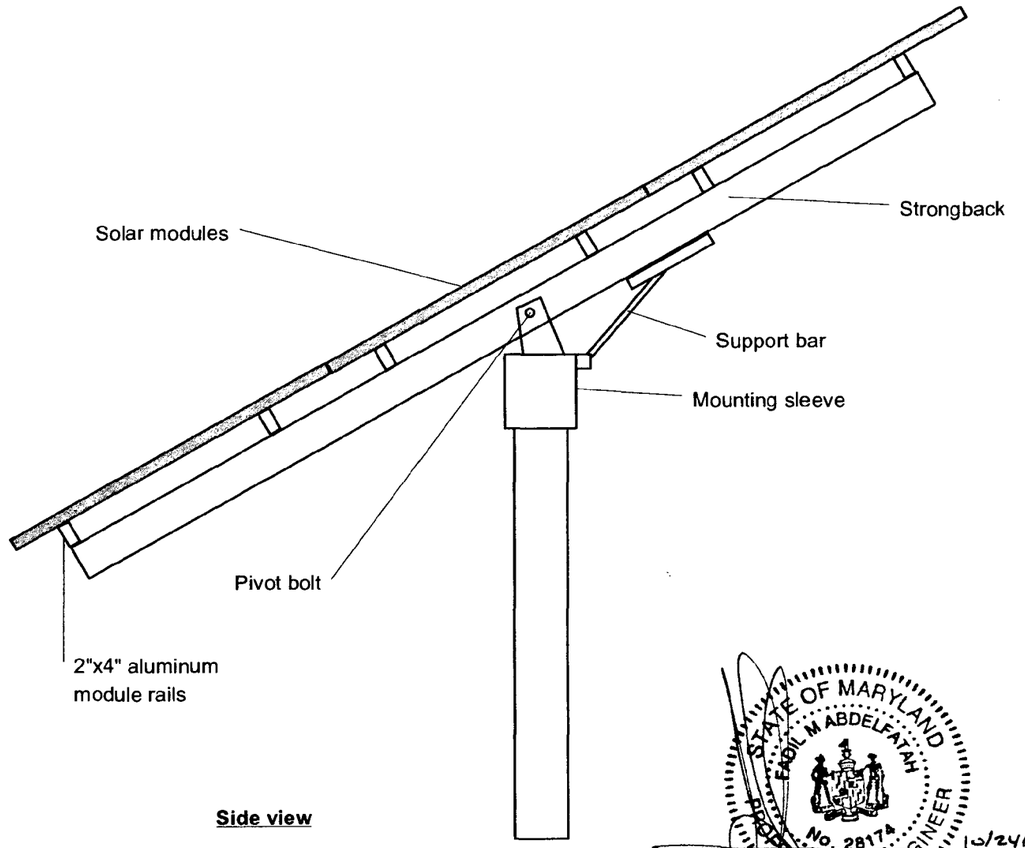
Location:

4415 Brookeville Rd.,
Brookville, MD 20833

Standard Solar Inc.	15200 Shady Grove Rd. #202 Rockville MD 20850 (301) 296 - 4373
Drawn by: Andrew Truitt	Title: Elevation view
Date: 10/7/07	File: Fuller site plan.vsd
Revised: 10/23/07	Page: 2 of 3

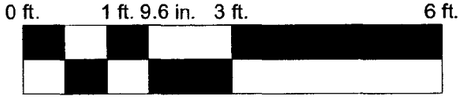


Front view



Side view

0 ft. 1 ft. 9.6 in. 3 ft. 6 ft.



"Professional Certification: I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland, license no. 28174, expiration date: 01/23/09"

STATE OF MARYLAND
FADIL M ABDELFATAH
No. 28174
PROFESSIONAL ENGINEER
10/24/07

Location:

4415 Brookeville Rd.,
Brookville, MD 20833

Standard Solar Inc.	15200 Shady Grove Rd. #202 Rockville MD 20850 (301) 296 - 4373
Drawn by: Andrew Truitt	Title: Array attachments / Elevation detail
Date: 10/7/07	File: Fuller site plan.vsd
Revised: 10/23/07	Page: 3 of 3

HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address	**Owner's Agent's** mailing address
Jef Fuller **4415 Brookeville Road** **Brookeville, MD 20833**	
Adjacent and confronting Property Owners mailing addresses	
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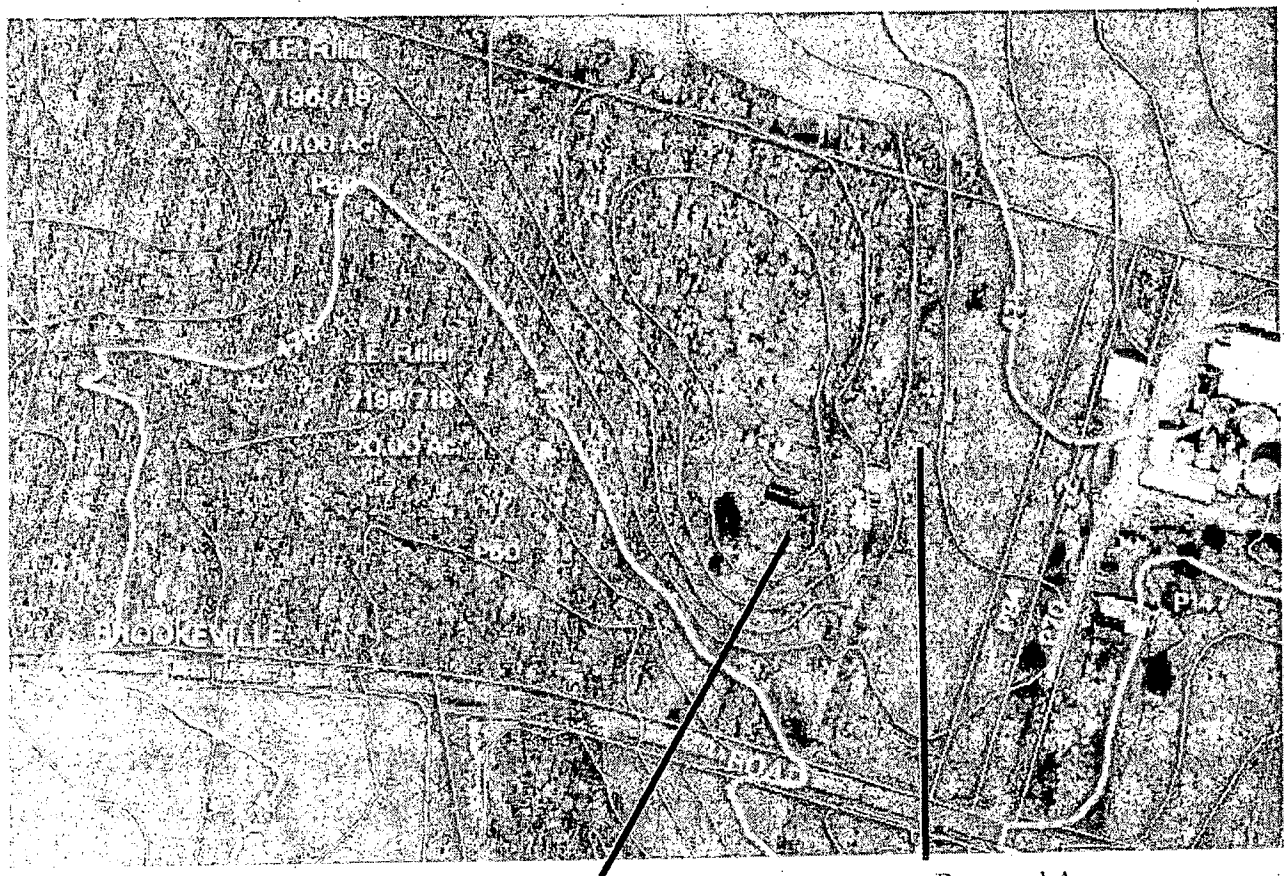

Locust Hill - Historic House

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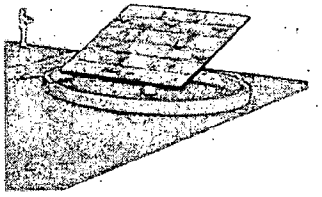

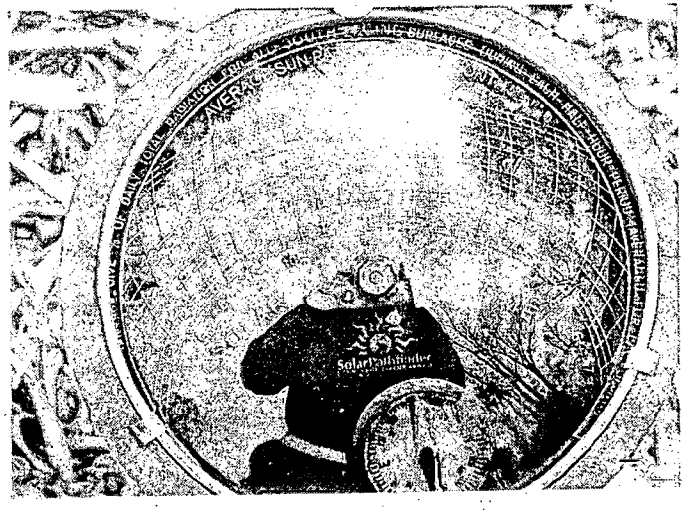

Pathfinder @ Northern Array

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Jan 23, 2007

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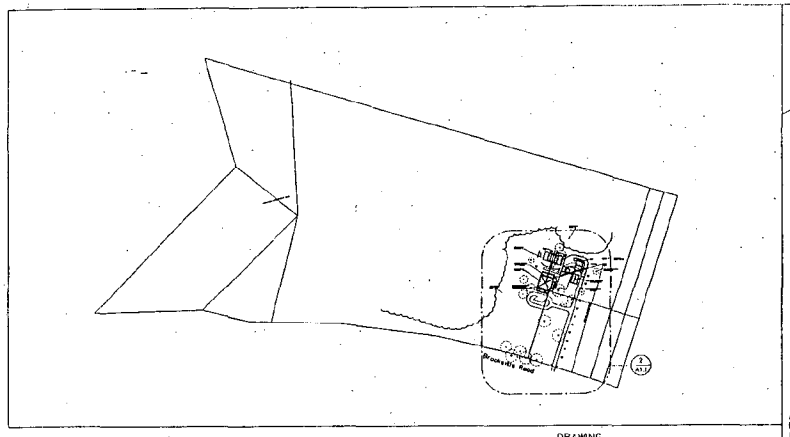
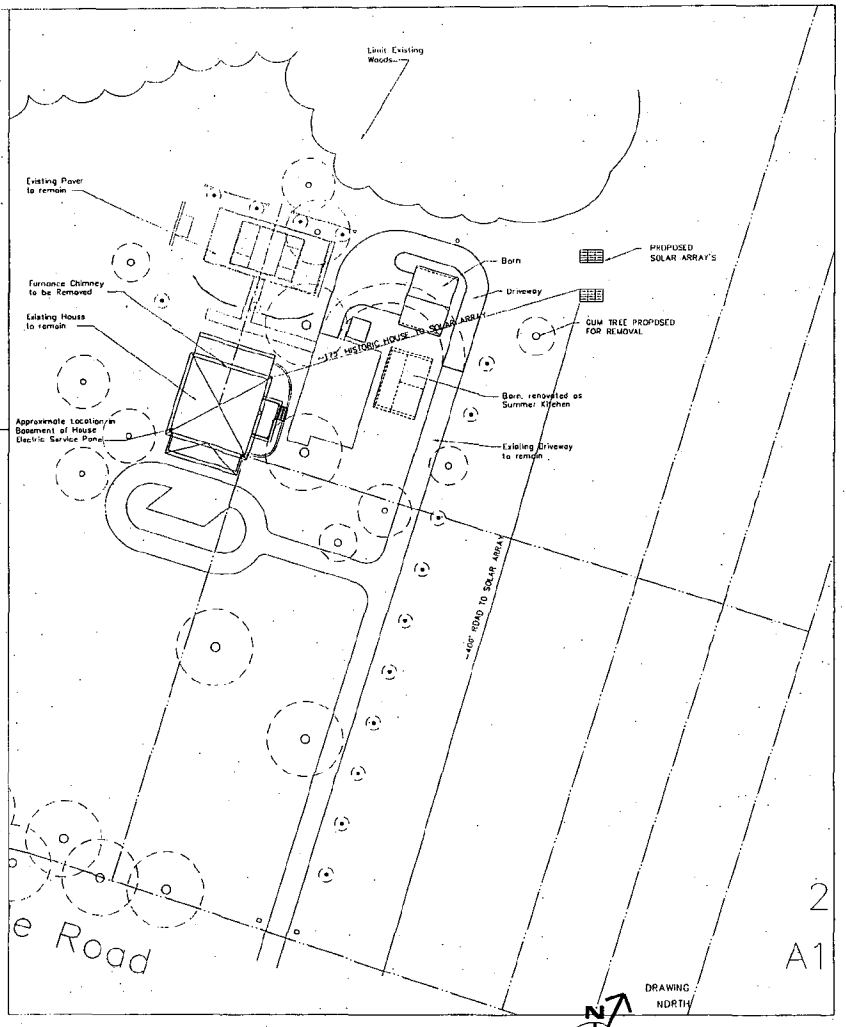


DRAWING NORTH

1 / A1.1 Site Plan - Locust Hill (ENTIRE PROPERTY)
NOT TO SCALE



2 / A1.1 Site Plan - Locust Hill (4415 Brookeville Rd)
Scale: 1"=30'-0"

DNC ARCHITECTS, INC.

CONSULTANT

KEY PLAN

PROFESSIONAL CERTIFICATION

PROGRESS PRINTING

ISSUED FOR CONSTRUCTION

REVISIONS

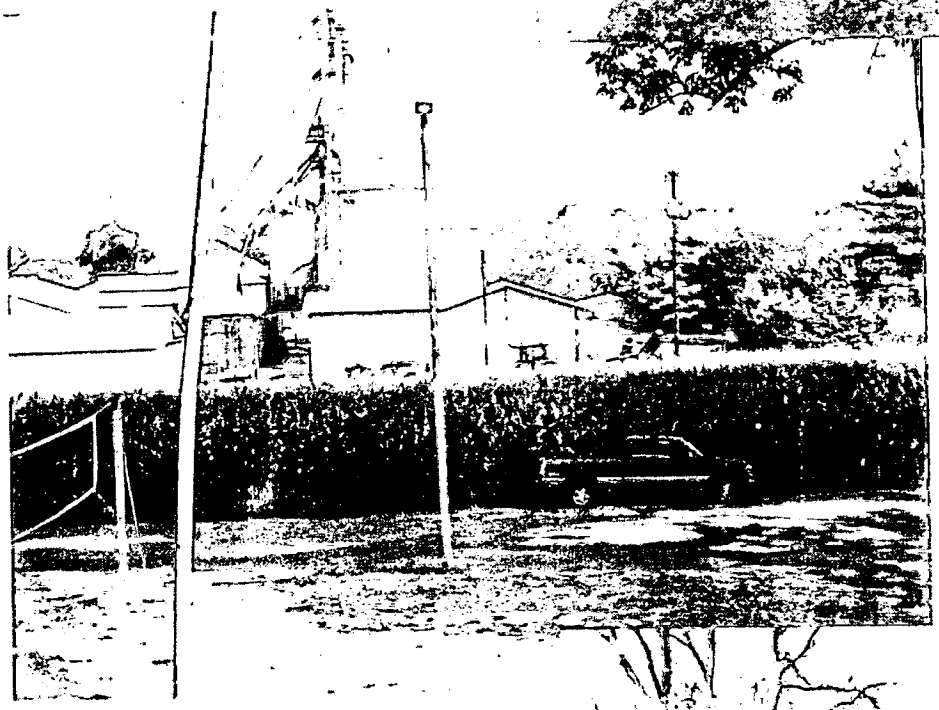
LOCUST HILL SOLAR ARRAY

SITE PLAN

A1.1

Locust Hill - Solar Array

Jan 23, 2007



RETURN TO: DEPARTMENT OF PERMITTING SERVICES
255 ROCKVILLE PIKE 2nd FLOOR ROCKVILLE MD 20850
240 777-6370

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: Jef Fuller

Daytime Phone No.: 301-840-1100

Tax Account No.: 02645563

Name of Property Owner: John E Fuller Daytime Phone No.: 301-840-1100

Address: 4415 Brookeville Rd (Street Number) Brookeville (City) MD (State) 20833 (Zip Code)

Contractorr: TBD Phone No.:

Contractor Registration No.:

Agent for Owner: Self Daytime Phone No.: Same

LOCATION OF BUILDING/PREMISE

House Number: 4415 Street: Brookeville Rd

Town/City: Brookeville Nearest Cross Street: Zion Rd

Lot: Block: Subdivision: Brooke Grove 502, Parcel P060

Liber: 2186 Folio: 534 Parcel:

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

☑ Construct ☐ Extend ☐ Alter/Renovate

☐ Move ☑ Install ☐ Wreck/Raze

☐ Revision ☐ Repair ☐ Revocable

CHECK ALL APPLICABLE:

☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed

☑ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family

☐ Fence/Wall (complete Section 4) ☑ Other:

1B. Construction cost estimate: $ ~25 K/Array

1C. If this is a revision of a previously approved active permit, see Permit #

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other:

2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other:

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height feet inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent — Date: 1/23/03

Approved: For Chairperson, Historic Preservation Commission

Disapproved: Signature: Date:

Application/Permit No.: Date Filed: Date Issued:

Edit 6/21/99

SEE REVERSE SIDE FOR INSTRUCTIONS

THE FOLLOWING ITEMS MUST BE COMPLETED AND THE REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.

1. **WRITTEN DESCRIPTION OF PROJECT**

   a. Description of existing structure(s) and environmental setting, including their historical features and significance:

   Locust Hill was built by the Riggs family in 1868. It is a 2 story with basement stone house that sits prominently on a hill, surrounded by a relatively mature forest to the north & west. East of the house are a new garage/barn beyond is a corn field. Adjoining me to the east is Pleasant Valley Farm, with the major grain processing operation.

   The other remaining historical feature of the property is a spring house located at the SW corner of the yard area.

   The arrays are proposed to be located over 175' from the house & 400' from the road.

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   The project involves the phased construction of two solar arrays. Each array will be 13' long and 15' wide, and consist of 15 175 W panels. The top of the array will be 11' above the field, the bottom will be 3' above the field. Each array will be mounted on a single 8" steel pole. To provide adequate sun, one existing ~14" gum tree will need to be removed east of the barns. Based on the topography and existing trees, the arrays will only be marginally visible from the road (when crops are up they will be invisible) and will be small in comparison the the farm equipment frequently left in the the same field.

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   Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

   a. the scale, north arrow, and date;

   b. dimensions of all existing and proposed structures; and

   c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

   You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

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4. **MATERIALS SPECIFICATIONS**

   General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

5. **PHOTOGRAPHS**

   a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.

   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

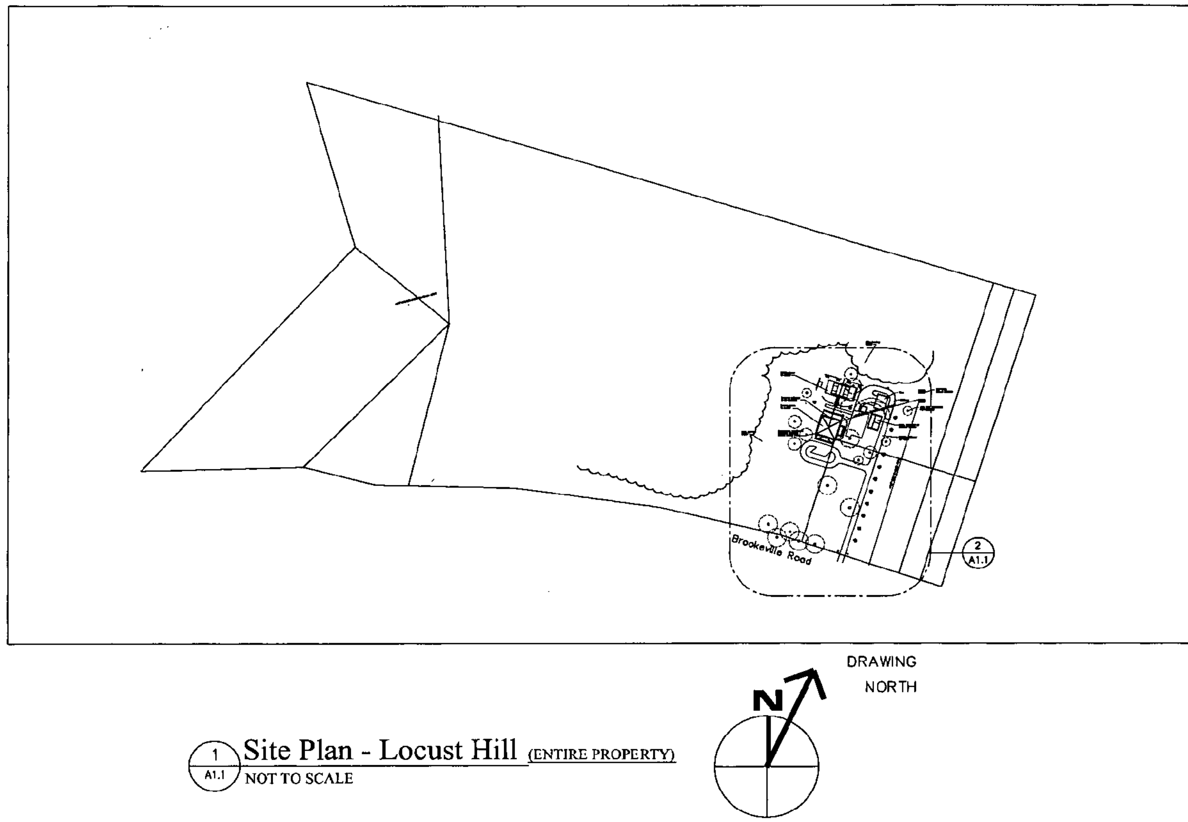
6. **TREE SURVEY**

   If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diametar (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

   For **ALL** projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question. You can obtain this information from the Department of Assessments and Taxation, 51 Monroe Street, Rockville, (301/279-1355).

PLEASE PRINT (IN BLUE OR BLACK INK) OR TYPE THIS INFORMATION ON THE FOLLOWING PAGE.
PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.



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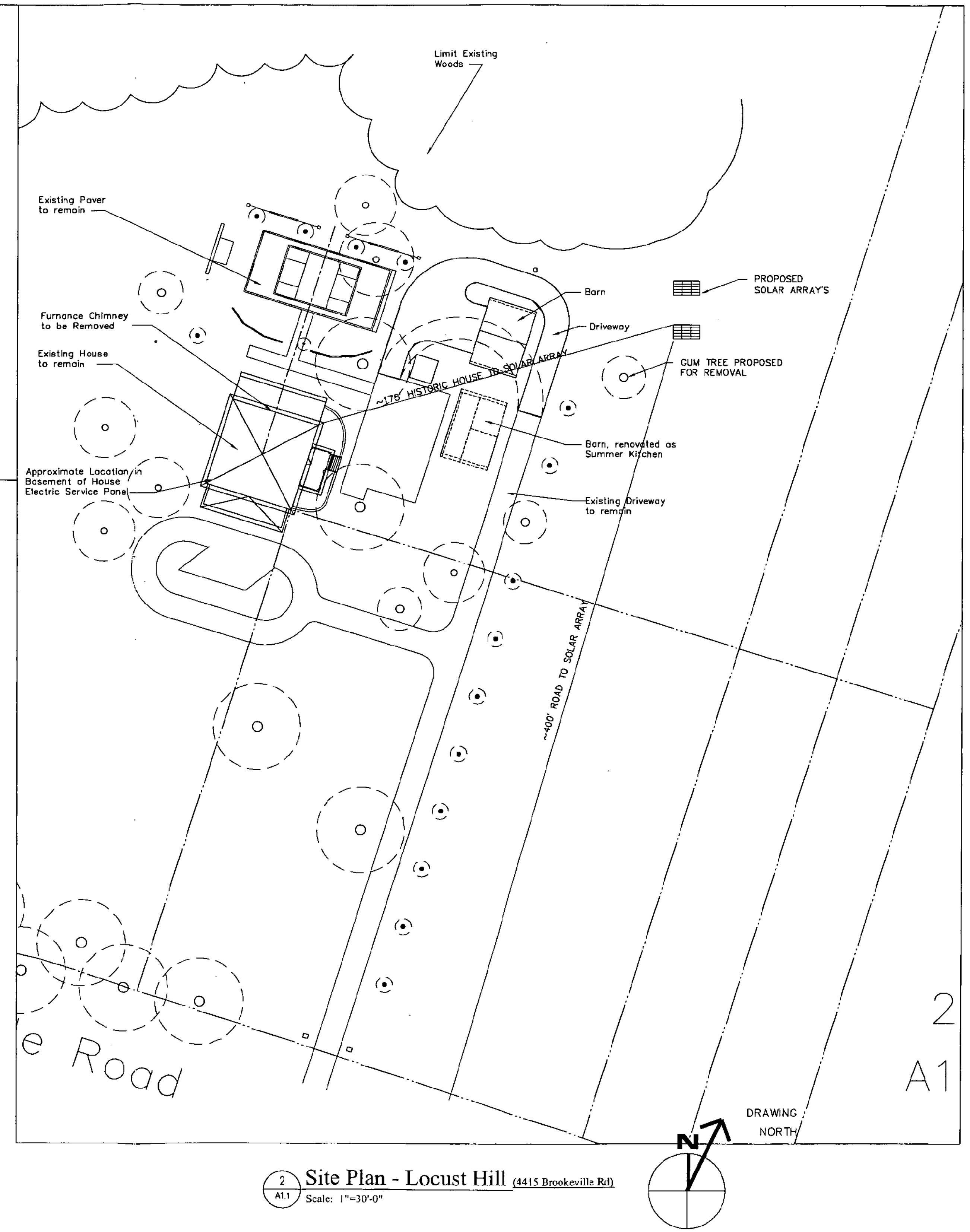


2 A1.1 Site Plan - Locust Hill (4415 Brookeville Rd)
Scale: 1"=30'-0"

DNC ARCHITECTS, INC.
1370 Piccard Drive, Rockville, Maryland 20850
(301) 840-1100 fax (301) 977-9193
DNC@DNCARCH.COM

CONSULTANT

KEY PLAN

PROFESSIONAL CERTIFICATION
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND I AM A DULY LICENSED ARCHITECT UNDER THE STATE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 7386-R, EXPIRATION DATE 12/05/2002

PROGRESS PRINTING

ISSUED FOR	DATE
FOR HAWP	JAN 23, 2007

ISSUED FOR CONSTRUCTION
--

REVISIONS

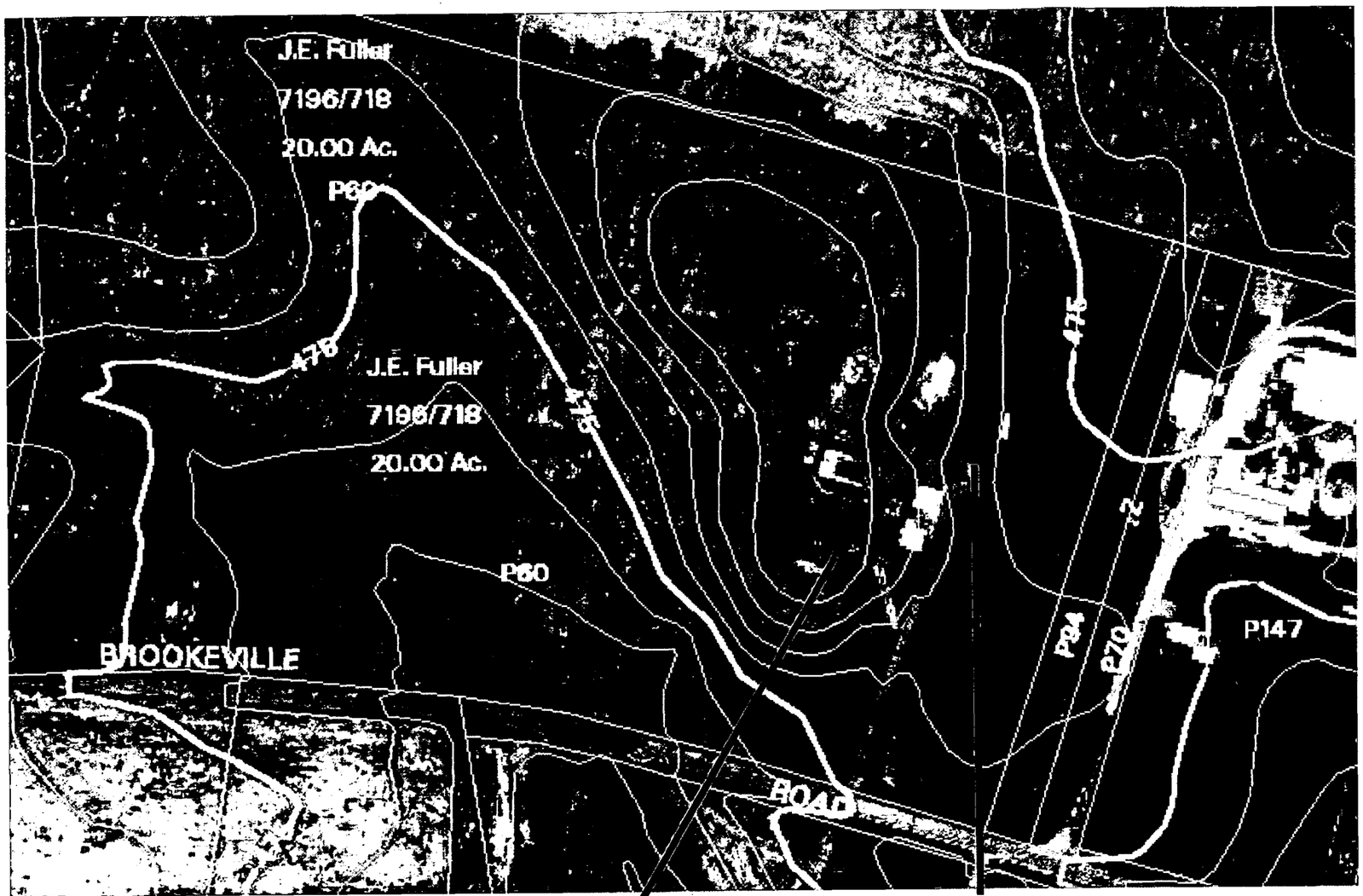
NO.	REVISION	DATE

LOCUST HILL SOLAR ARRAY

SITE PLAN

DNC PROJECT NUMBER
97039

A1.1



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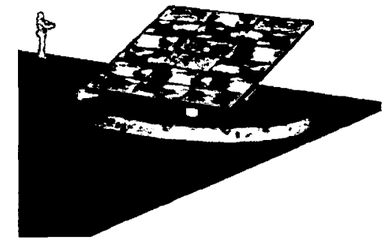

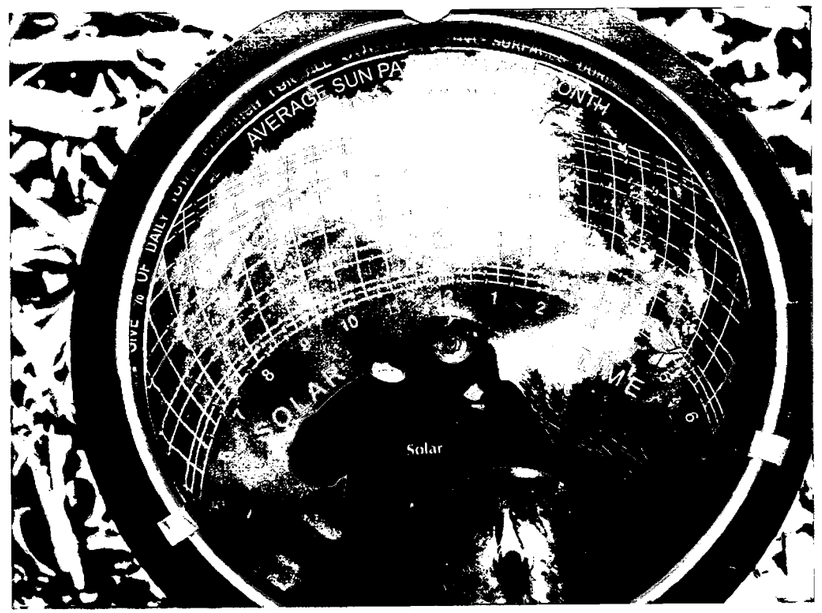

Pathfinder @ Northern Array

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Jan 23, 2007

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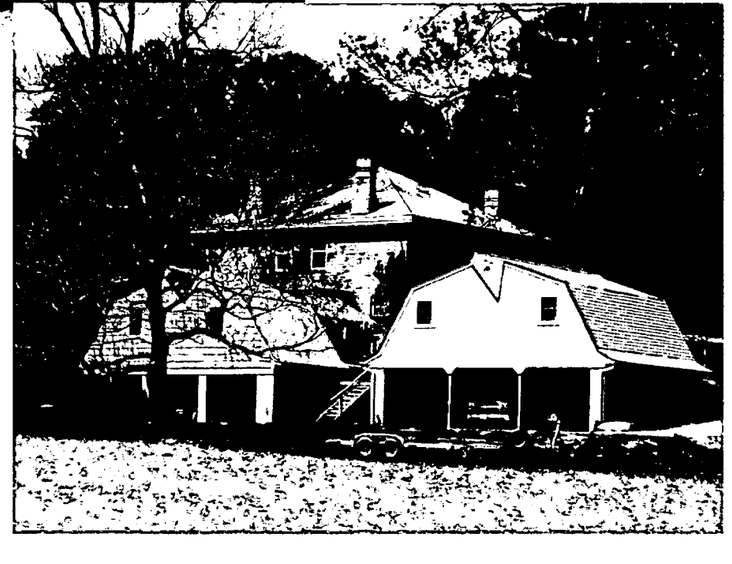
An example of Sustainable Approach



Locust Hill - Solar Array

Jan 23, 2007

HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address **Jef Fuller** **4415 Brookeville Road** **Brookeville, MD 20833**	**Owner's Agent's** mailing address
Adjacent and confronting Property Owners mailing addresses	
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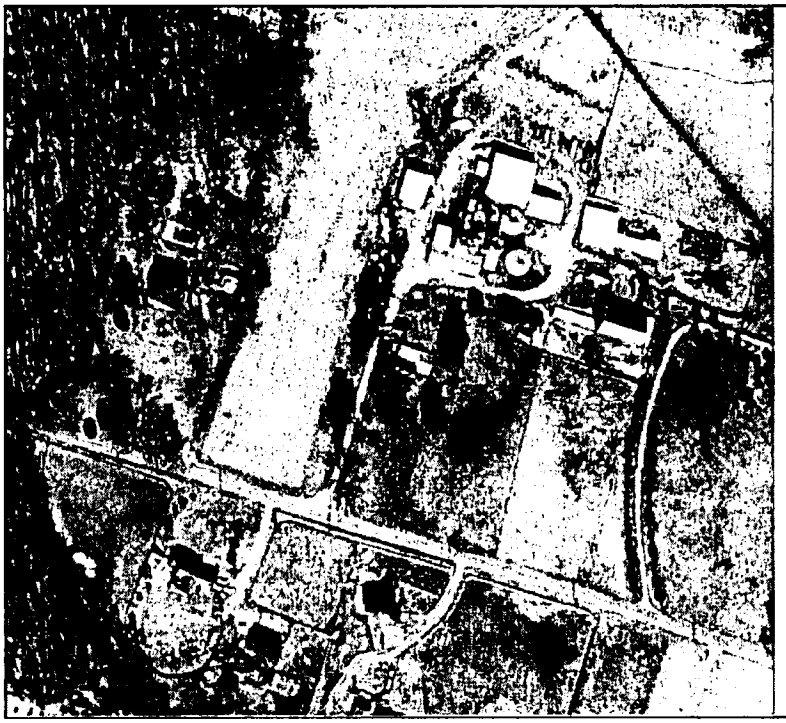

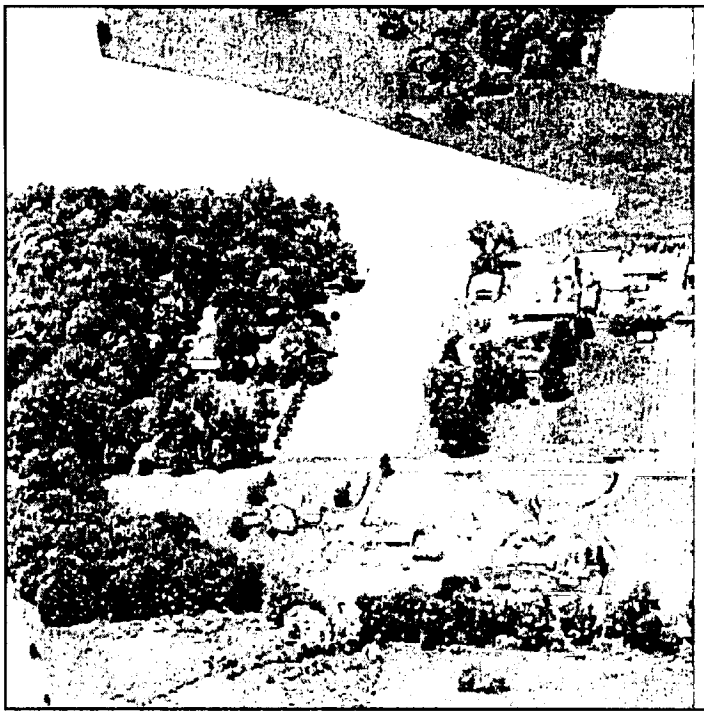

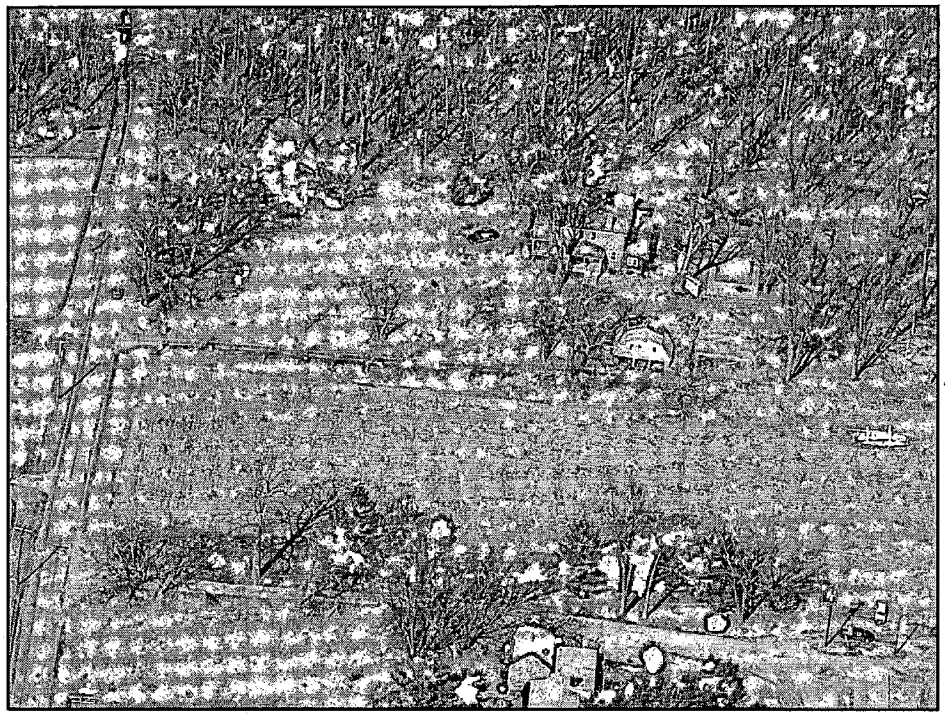

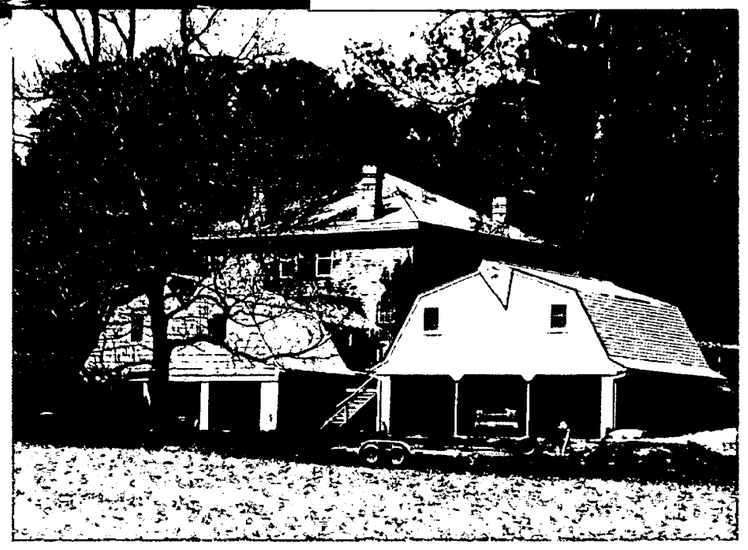

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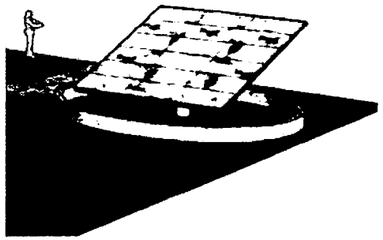

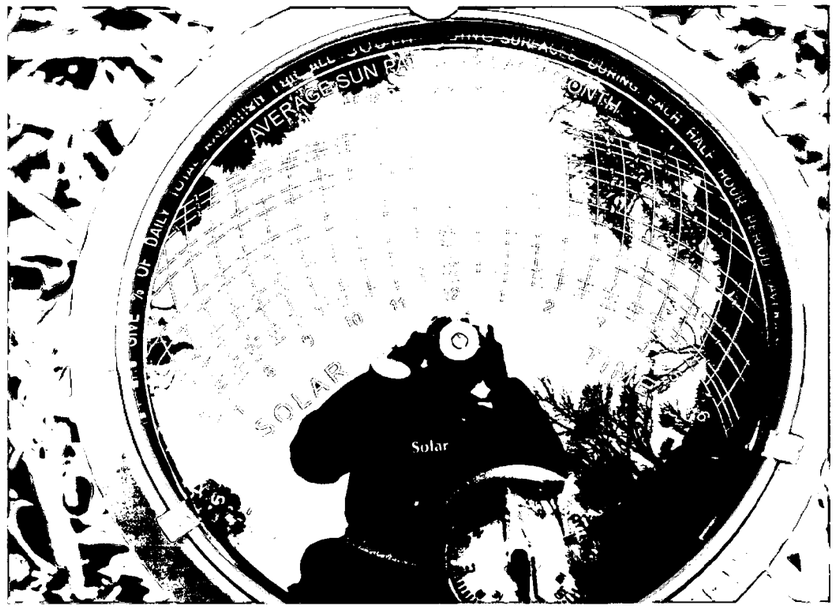

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HISTORIC PRESERVATION COMMISSION STAFF REPORT

Address:	4415 Brookeville Rd, Brookeville	**Meeting Date:**	2/14/2007
Resource:	*Master Plan* Site #23/059 **Locust Hill**	**Report Date:**	2/7/2007
Applicant:	Jef Fuller	**Public Notice:**	1/31/2007
Review:	HAWP	**Tax Credit:**	None
Case Number:	23/59-07A	**Staff:**	Tania Tully

PROPOSAL: solar array installation

RECOMMENDATION: Approve

ARCHITECTURAL DESCRIPTION/ HISTORIC CONTEXT

SIGNIFICANCE: Individually Designated *Master Plan* Site #23/059
STYLE: Greek Revivalival/Italianate
DATE: 1868

This substantial stone dwelling is associated with the prominent Riggs family of upper Montgomery County. John Adams Riggs built the house in 1868 upon inheriting 260 acres from his father Remus Riggs. The construction date is carved in the wall of the main facade. The house is built of uncoursed fieldstone with corner quoins. Windows have granite lintels and sills. In style, the residence is transitional, with Greek Revival influence evident in the front doorway with rectilinear transom and sidelights, and shallow hipped roof, and Italianate influence in roofline with deep eaves, simple brackets, and corbeled chimney stacks. The farmstead has a notable collection of farm buildings including a bank barn and stone springhouse.

PROPOSAL:

Install two 13'x15' solar arrays and remove one 13" gum tree.

APPLICABLE GUIDELINES:

Proposed alterations to individual Master Plan Sites are reviewed under Montgomery County Code Chapter 24A (Chapter 24A) and the *Secretary of the Interior's Standards for Rehabilitation.* Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.

Montgomery County Code; Chapter 24A

- A HAWP permit should be issued if the Commission finds that:

    1. The proposal will not substantially alter the exterior features of a historic site or historic resource within a historic district.
    2. The proposal is compatible in character and nature with the historical archaeological, architectural or cultural features of the historic site or the historic district in which a historic resource is located and would not be detrimental thereto of to the achievement of the purposes of this chapter.

Secretary of the Interior's Standards for Rehabilitation:

STAFF DISCUSSION

As an individual *Master Plan* site, Locust Hill is subject to the highest level of review. It is only because of the uniqueness of solar arrays that Staff chose to pr4esent this application in a full Staff Report format. Installation of these solar arrays is best reviewed under Criteria 9 and 10 of the *Standards*. They will not destroy any historic materials, features, or spatial relationships that characterize the property. The size of the arrays, at a maximum of 11 feet in height, is compatible with the size, scale, and proportions of the historic property. The arrays have been sites ad far from the road and the historic house as possible while still allowing for sunlight required for their operation. The arrays are very obviously differentiated from the old and with installation of each on a single 8' steel pole; there will be little impact to the property and its environment. The tree proposed for removal is one of many on the property and is not a specimen tree. Staff recommends approval.

STAFF RECOMMENDATION:

Staff recommends that the Commission **approve** the HAWP application as being consistent with Chapter 24A-8(b)(1) & (2);

and with the *Secretary of the Interior's Standards for Rehabilitation;*

and with the general condition that the applicant shall present the **3 permit sets of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping** prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that the applicant shall notify the Historic Preservation Staff if they propose to make **any alterations** to the approved plans.

Secretary of the Interior's Standards for Rehabilitation

1. A Property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, space and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that has acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

T

RETURN TO: DEPARTMENT OF PERMITTING SERVICES
255 ROCKVILLE PIKE 2nd FLOOR ROCKVILLE MD 20850
240-777-6370

DPS - #8

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301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: Jef Fuller

Daytime Phone No.: 301-840-1100

Tax Account No.: 02645563

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I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent — Date: 11/23/07

Approved: For Chairperson, Historic Preservation Commission

Disapproved: Signature: Date:

Application/Permit No.: Date Filed: Date Issued:

Edit 6/21/99

SEE REVERSE SIDE FOR INSTRUCTIONS

(4)

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   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

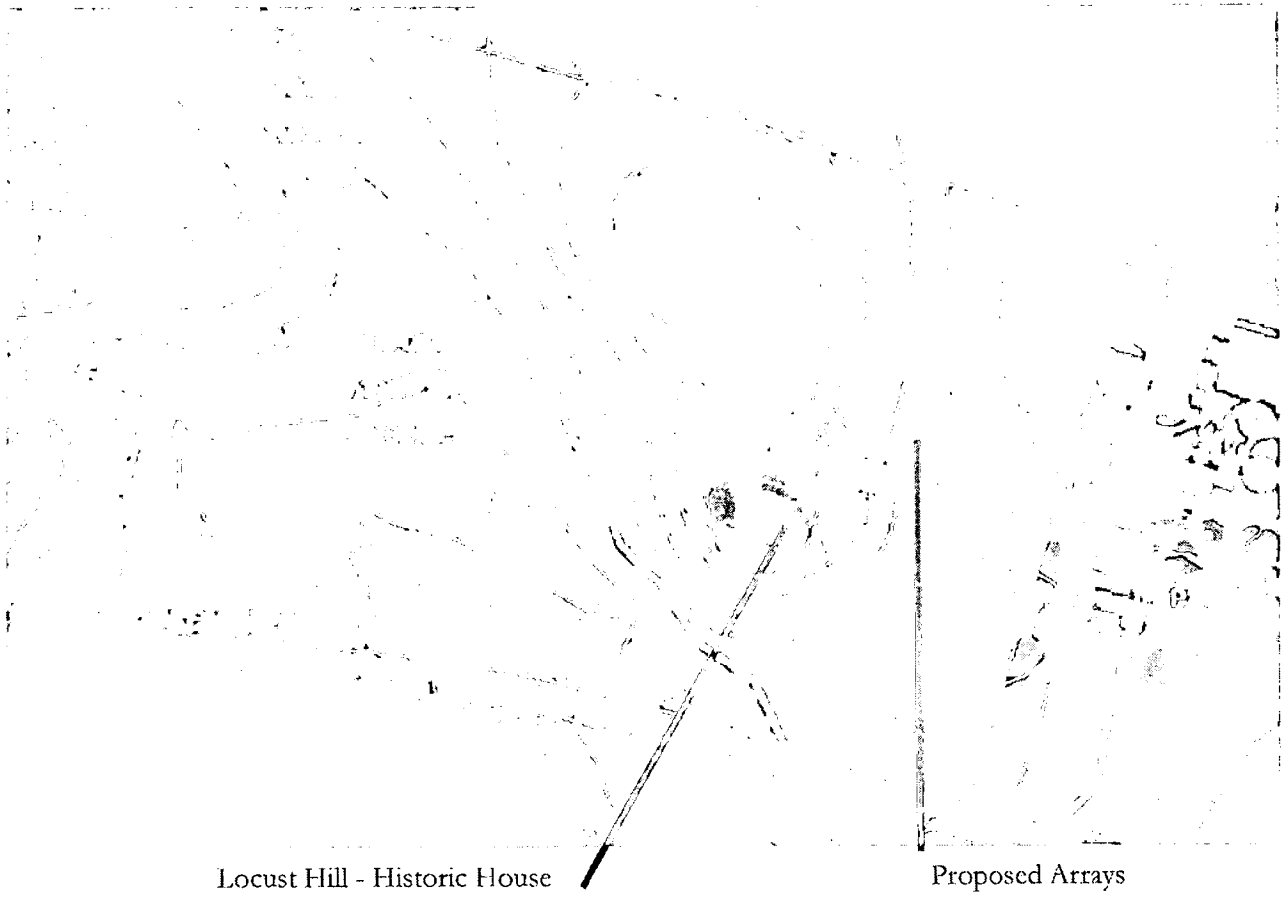
6. **TREE SURVEY**

   If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

   For **ALL** projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question. You can obtain this information from the Department of Assessments and Taxation, 51 Monroe Street, Rockville, (301/279-1355).

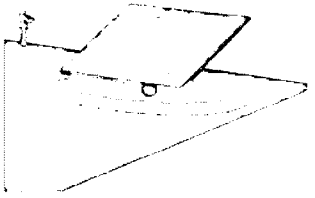
PLEASE PRINT (IN BLUE OR BLACK INK) OR TYPE THIS INFORMATION ON THE FOLLOWING PAGE.
PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.

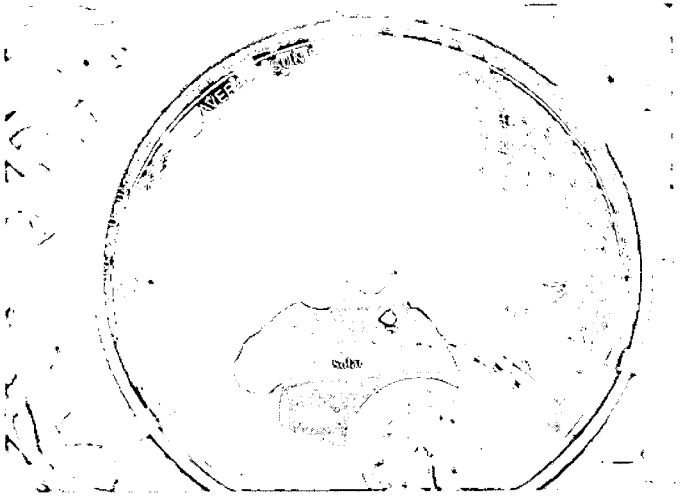


Locust Hill - Historic House

Proposed Arrays

Solar Array
To be 13' long, 15' wide
Top 11' & Bottom 3'
above field.
Grade in field approx
15' below that at house



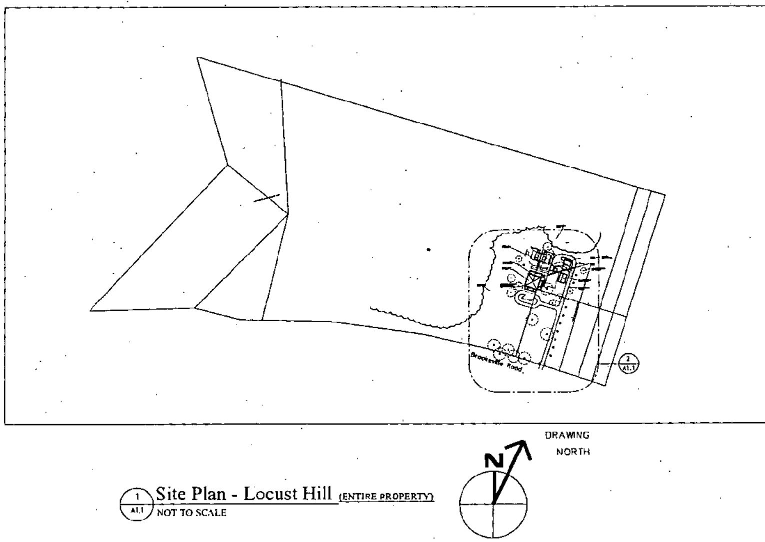


Pathfinder @ Northern Array

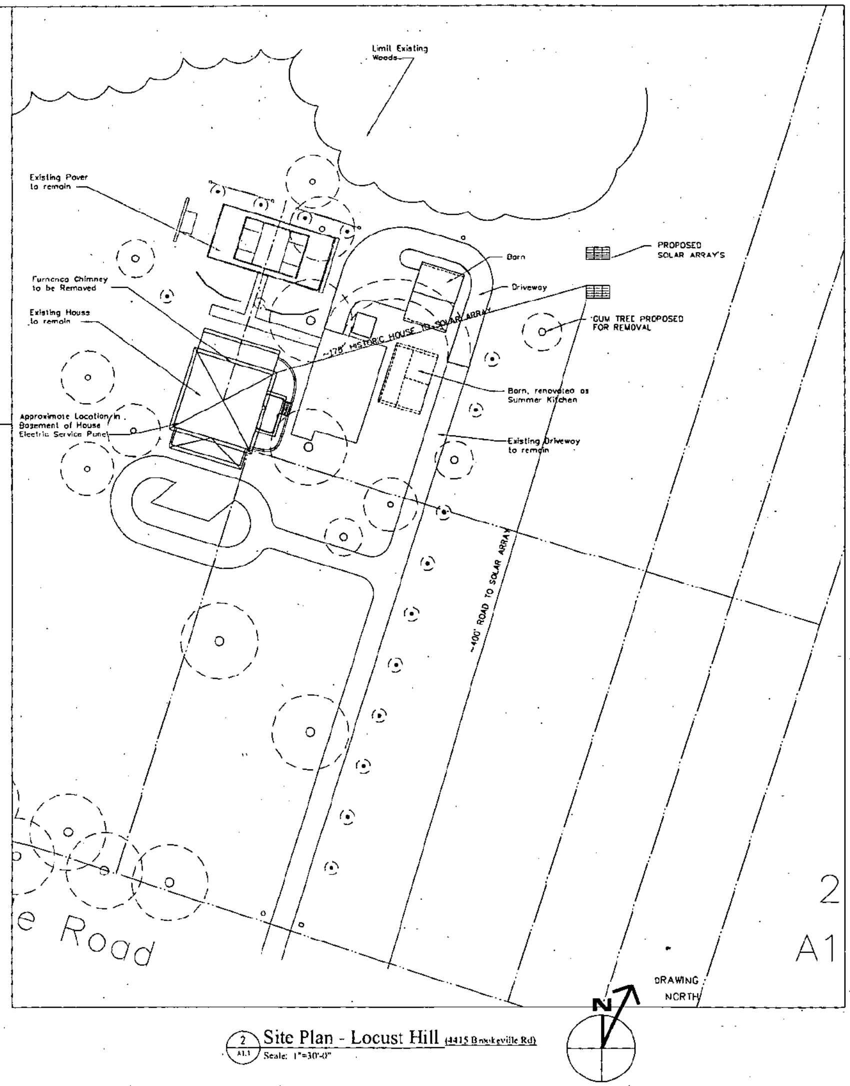
Locust Hill - Solar Array

Jan 23, 2007

Objective: First Two Arrays/ Phases to Reduce electric power use by 50%
Each Array is rated at 2.6 KW, and each will produce ~3.6 KWH/year
Two Future Arrays/Phases to meet 100% of electric power needs
An example of Sustainable Approach



1 A1.1 Site Plan - Locust Hill (ENTIRE PROPERTY)
NOT TO SCALE



2 A1.1 Site Plan - Locust Hill (4415 Brookeville Rd)
Scale: 1"=30'-0"

DNC ARCHITECTS, INC.

CONSULTANT

KEY PLAN

PROFESSIONAL CERTIFICATION

PROGRESS PRINTING

ISSUED FOR CONSTRUCTION

REVISIONS

LOCUST HILL
SOLAR ARRAY

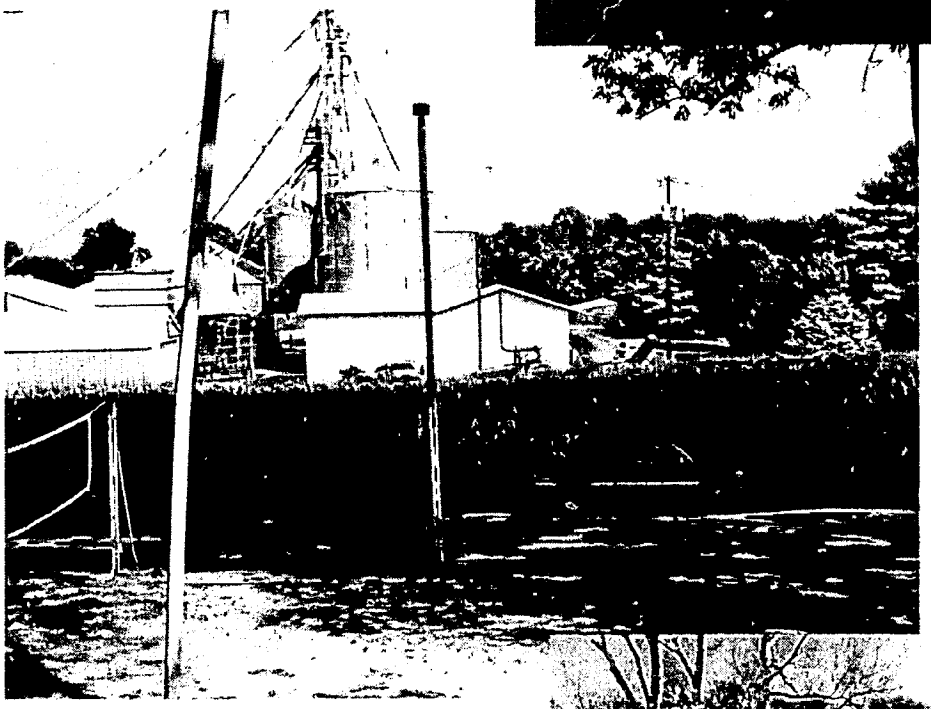
SITE PLAN

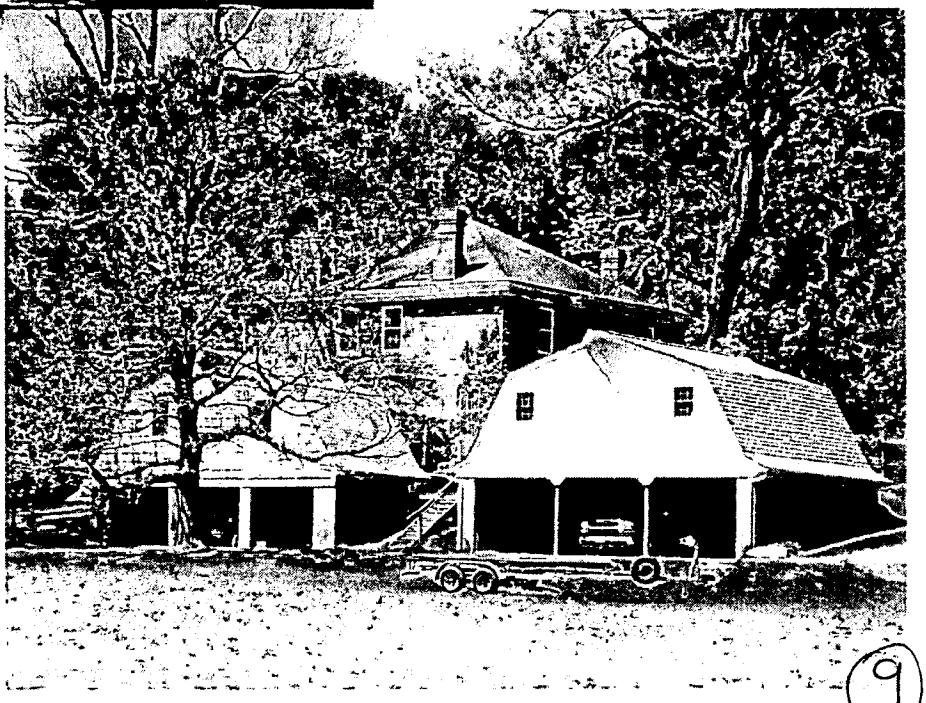
A1.1

Locust Hill - Solar Array

Jan 23, 2007

(8)

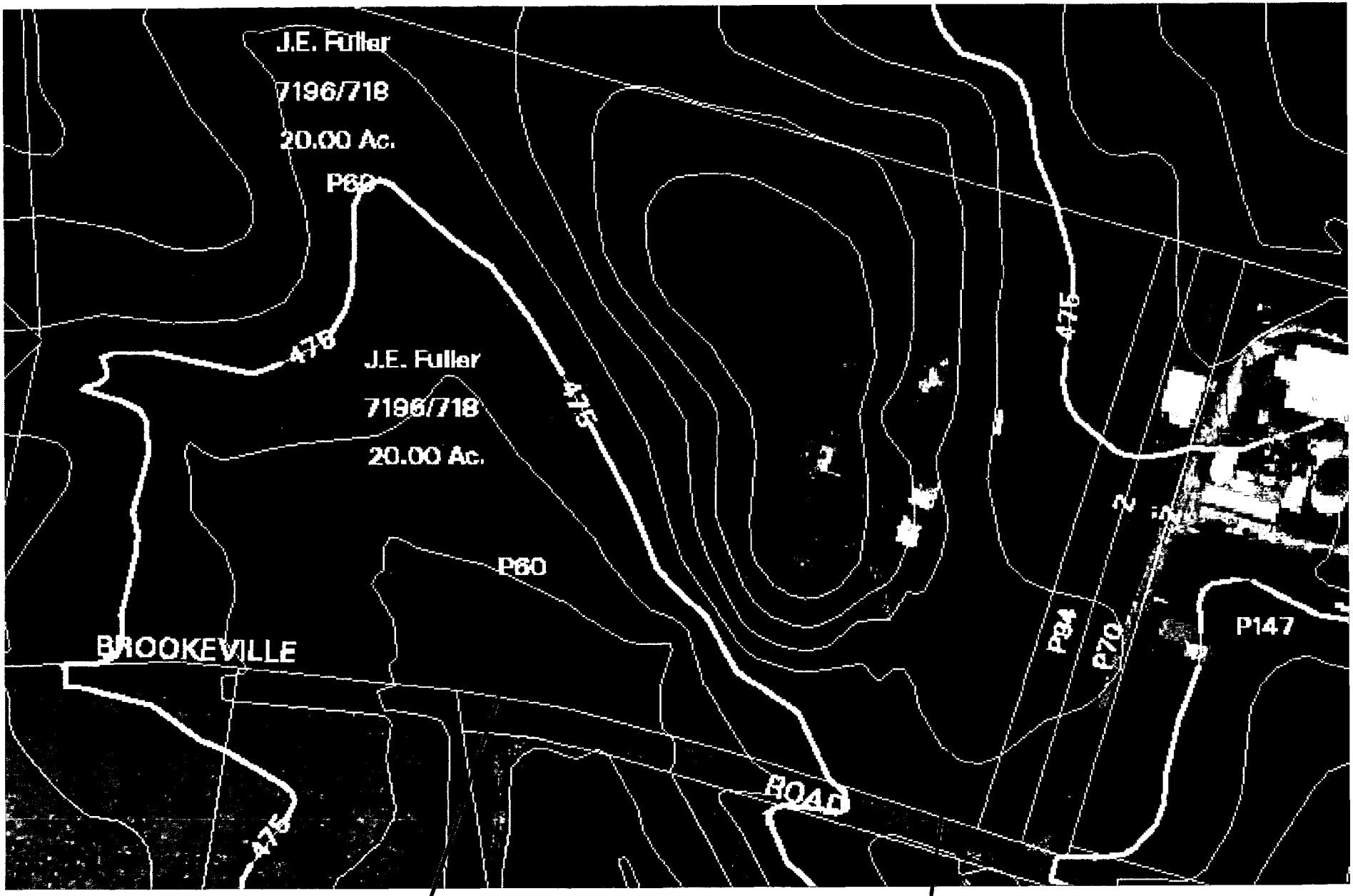




HAWP APPLICATION: MAILING ADDRESSES FOR NOTIFING
[Owner, Owner's Agent, Adjacent and Confronting Property Owners]

Owner's mailing address	**Owner's Agent's** mailing address
Jef Fuller **4415 Brookeville Road** **Brookeville, MD 20833**	
Adjacent and confronting Property Owners mailing addresses	
Robert & Betsy Stabler 4401 Brookeville Road Brookeville, MD 20833	**Stephen White & Lynn Fields** 4410 Brookeville Road Brookeville, MD 20833
Our House 19715 Zion Road Brookeville, MD 20833	**Richard Martin** 4615 Brookeville Road Brookeville, MD 20833
Donald Nash, et al 20530 Georgia Ave Brookeville, MD 20833	

1) Tenant Farm House
1) Tax Credit ?
2) Siding [illegible]
2) Solar → Forward Bank Trzo
3) EIS ?



ReBuild Tenant Farm House

↳ tax cred?

New Solar Array's

3 ↓

facing south

Locust Hill