



METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

Metropolitan Historic Zoning Commission
Sunnyside in Sevier Park
3000 Granny White Pike
Nashville, Tennessee 37204
Telephone: (615) 862-7970
Fax: (615) 862-7974

STAFF RECOMMENDATION 1714 Sweetbriar Avenue August 21, 2013

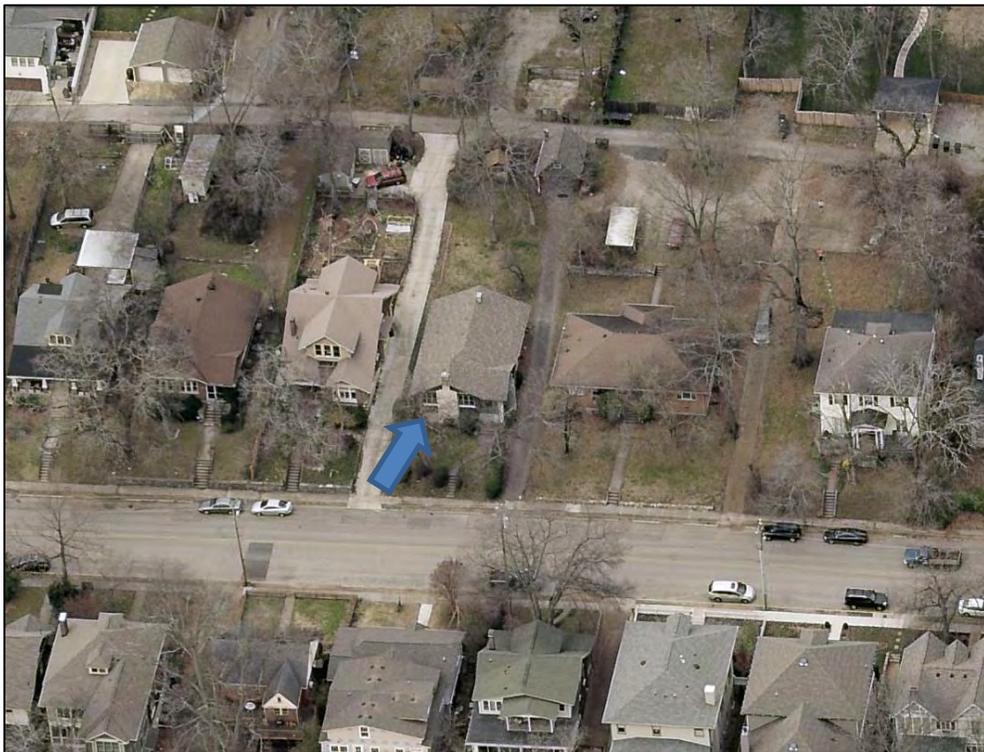
Application: New construction-addition (Rooftop photovoltaic panels)
District: Belmont-Hillsboro Neighborhood Conservation Zoning Overlay
Council District: 18
Map and Parcel Number: 11704000800
Applicant: Stephen Mallett, Owner
Project Lead: Sean Alexander, sean.alexander@nashville.gov

<p>Description of Project: The applicant is seeking approval to install twenty-four (24) photovoltaic solar panels on the roof of a contributing structure. The roof of the house is a gable with a front-to-back ridge, and the panels will be installed on the left and side slopes.</p> <p>Recommendation Summary: Staff recommends approval of the application to install solar panels on the side slopes of the roof of 1714 Sweetbriar Avenue, finding the proposal to meet guidelines II.B.1 and II.B.2, and that the appearance and location will have minimal effect on the form of the historic house.</p>	<p>Attachments A: Photographs B: Product Literature</p>
--	--

Vicinity Map:



Aerial Map:



Applicable Design Guidelines:

II. B. GUIDELINES

a. Height

The height of the foundation wall, porch roof(s), and main roof(s) of a new building shall be compatible, by not contrasting greatly, with those of surrounding historic buildings.

b. Scale

The size of a new building and its mass in relation to open spaces shall be compatible, by not contrasting greatly, with surrounding historic buildings.

Foundation lines should be visually distinct from the predominant exterior wall material. This is typically accomplished with a change in material.

c. Setback and Rhythm of Spacing

The setback from front and side yard property lines established by adjacent historic buildings should be maintained. Generally, a dominant rhythm along a street is established by uniform lot and building width. Infill buildings should maintain that rhythm.

d. Materials, Texture, Details, and Material Color

The materials, texture, details, and material color of a new building's public facades shall be visually compatible, by not contrasting greatly, with surrounding historic buildings. Vinyl and aluminum siding are not appropriate.

e. Roof Shape

The roof(s) of a new building shall be visually compatible, by not contrasting greatly, with the roof shape, orientation, and pitch of surrounding historic buildings. With the exception of chimneys, roof-top equipment and roof penetrations shall be located so as to minimize their visibility from the street.

f. Orientation

The orientation of a new building's front facade shall be visually consistent with surrounding historic buildings.

g. Proportion and Rhythm of Openings

The relationship of width to height of windows and doors, and the rhythm of solids (walls) to voids (door and window openings) in a new building shall be compatible, by not contrasting greatly, with surrounding historic buildings.

2. ADDITIONS

- a. Generally, an addition should be situated at the rear of a building in such a way that it will not disturb either front or side facades. To distinguish between the historic structure and an addition, it is desirable to set the addition in from the building side wall or for the addition to have a different cladding.

Additions not normally recommended on historic structures may be appropriate for non-historic structures. Front or side alterations to non-historic structures that increase space or change exterior height should be compatible by not contrasting greatly with adjacent historic buildings.

b. When a lot exceeds 60 feet or the standard lot width on the block, it may be appropriate to add a side addition to a historic structure. The addition should set back from the face of the historic structure and should be subservient in height, width and massing to the historic structure.

c. The creation of an addition through enclosure of a front porch is not appropriate. The creation of an addition through the enclosure of a side porch may be appropriate if the addition is constructed in such a way that the original form and openings on the porch remain visible and undisturbed.

Side porch additions may be appropriate for corner building lots or lots more than 60' wide.

d. Contemporary designs for additions to existing properties are not discouraged when such additions do not destroy significant historical, architectural, or cultural material; and when such design is compatible, by not contrasting greatly, with the size, scale, color, material, and character of the property, neighborhood, or environment.

d. A new addition should be constructed in such a manner that if the addition were to be removed in the future, the essential form and integrity of the original structure would be unimpaired.

Connections should, as much as possible, use existing window and door openings rather than remove significant amounts of rear wall material.

e. Additions should follow the guidelines for new construction.

Background: The structure at 1714 Sweetbriar Avenue is a one-story brick and stone Craftsman-style bungalow with a front-to-rear-oriented gabled roof. The house is listed as being a contributing structure to the historic district.



Analysis and Findings: The applicant is proposing to install twenty-four (24) solar photovoltaic panels on the side slopes of the roof, ten (10) on the left and fourteen (14) on the right. The panels will be low-profile and flush-mounted, matching the pitch of the existing roof. The color will be a dark gray to black. This color is compatible with surrounding roofs and meets guideline II.B.1.d.

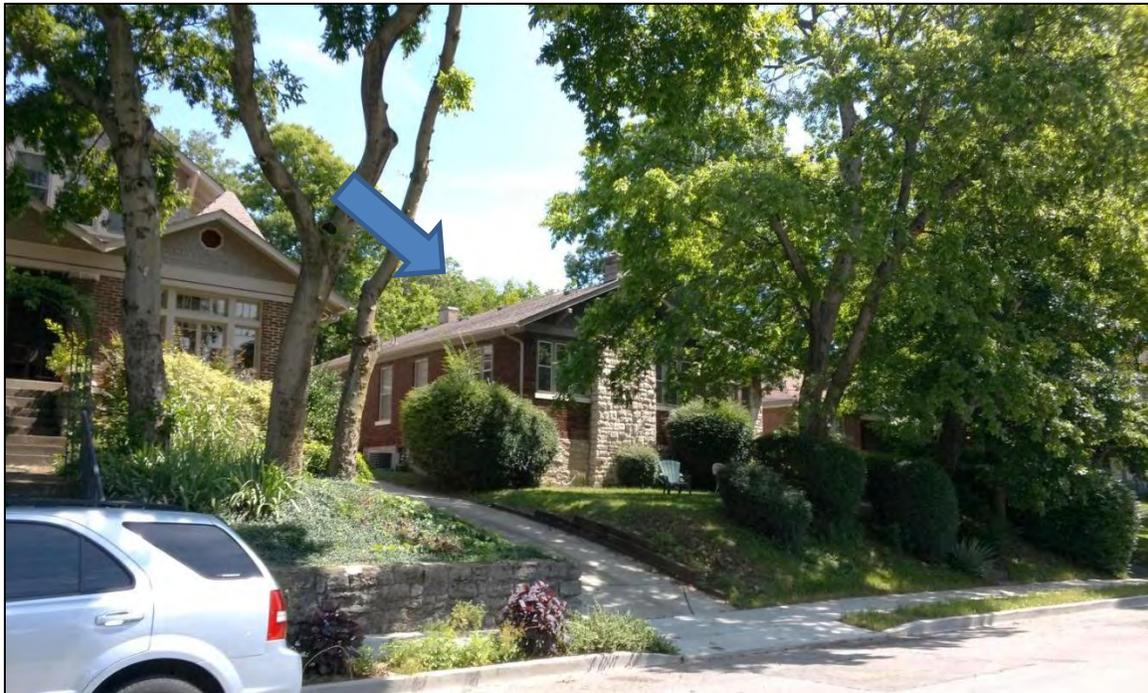
Because of the low-profile installation, staff finds that the solar panel system will be compatible with the height and character of the house, and will meet guideline II.B.1.a.

Preferably, solar panels would be installed on a rear or roof plane, or on the roof of an accessory building. However, the orientation of the gable is such that the side slopes of the roof are the only feasible locations. Installation of the solar panels will have a

minimal effect on the historic home as there are few penetrations and the system can easily be removed without affecting the historic form. Staff finds that this is a compatible addition under guideline II.B.1.

Recommendation:

Staff recommends approval of the application to install solar panels on the side slopes of the roof of 1714 Sweetbriar Avenue, finding the proposal to meet guidelines II.B.1 and II.B.2, and that the appearance and location will have minimal effect on the form of the historic house.



1714 Sweetbriar Avenue, left.



1714 Sweetbriar Avenue, right.



Recent solar panel installation at 504 Fairfax Avenue.

SYSTEM VALUES

ARRAY

6.0 kW
1 string of 14 - 250w Sharp panels
 (on the east-facing roof)
1 string of 10 - 250w Sharp panels
 (on the west-facing roof)

PV SOURCE CIRCUIT

(in module leads only)

Short-circuit Current: 8.9 Adc
 Max. Power Current: 8.4 Adc
 Max. Power Voltage: 29.8 Vdc
 Open-circuit Voltage: 38.3 Vdc

AC OUTPUT

24 - Enphase M-215 microinverters
 Nominal Operating Voltage 240 Vac
 Max. System Current (Cont.) 27.0 Aac
 (UL 1741, IEEE1547 Compliant)

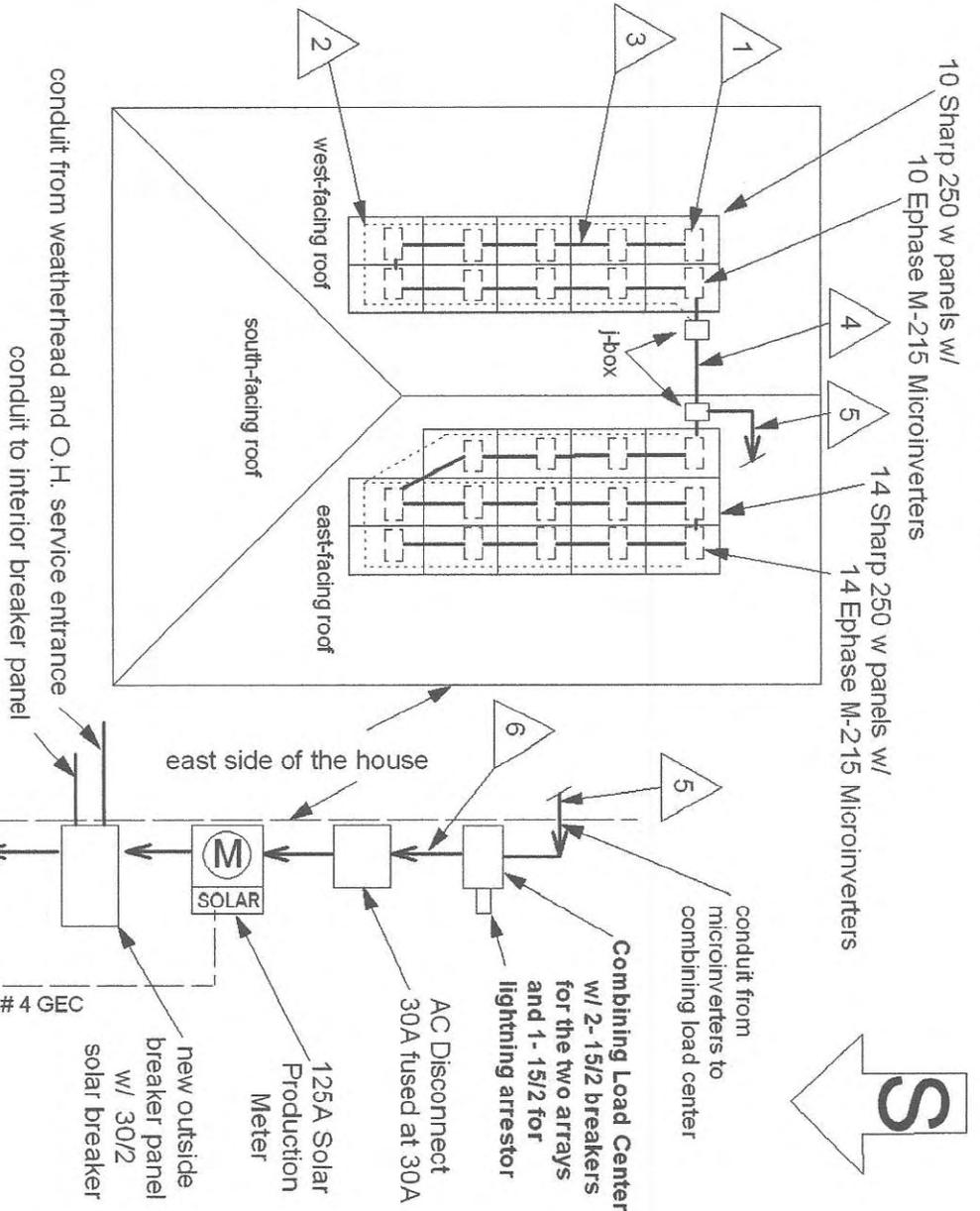
Wire

KEY	1	2
Wire	#12M/C4 Module leads	#8 bare solid equipment ground
Conduit	N/A (not shown)	N/A

Schedule DC Wiring

KEY	3	4	5	6
AC Wiring	Engage [®] Cable System	2-#10 THWN-2 1-#10 ground	4-#10 THWN-2 1-#10 ground	2-#6 THWN-2 1-#8 THWN-2 1-#8 ground
	N/A	3/4" EMT	3/4" EMT	1" EMT

AC Wiring



Solar Site Plan / One-Line Electrical
 Stephen Mallett 1714 Sweetbriar, Nashville TN 37212

Tenn. Electrical
 Cont. Lic. # 64350

Roof-Mounted Solar Array - 6.0 kWdc

Not to Scale

Drawing by R. C.

Designed by G. W.





solar electricity

240 WATT

MULTI-PURPOSE MODULE



ND-240QCJ

MULTI-PURPOSE 240 WATT
MODULE FROM THE WORLD'S
TRUSTED SOURCE FOR SOLAR.

Using breakthrough technology, made possible by nearly 50 years of proprietary research and development, Sharp's ND-240QCJ solar module incorporates an advanced surface texturing process to increase light absorption and improve efficiency. Common applications include commercial and residential grid-tied roof systems as well as ground mounted arrays. Designed to withstand rigorous operating conditions, this module offers high power output per square foot of solar array.

This module is ideal for large commercial applications, demonstrating financial astuteness and environmental stewardship.

ENGINEERING EXCELLENCE

High module efficiency for an outstanding balance of size and weight to power and performance.

5% POSITIVE POWER TOLERANCE

Count on Sharp to deliver all the watts you pay for with a positive-only power tolerance of +5%.

RELIABLE

25-year limited warranty on power output and 10-year limited warranty on materials or workmanship.

HIGH PERFORMANCE

This module uses an advanced surface texturing process to increase light absorption and improve efficiency.



Sharp multi-purpose modules offer industry-leading performance for a variety of applications.



Tempered glass, EVA lamination and weatherproof backskin provide long-life and enhanced cell performance.

SHARP: THE NAME TO TRUST

When you choose Sharp, you get more than well-engineered products. You also get Sharp's proven reliability, outstanding customer service and the assurance of both our 10-year warranty on materials or workmanship as well as the 25-year limited warranty on power output. With over 50 years experience in solar and over 4.3 GW of installed capacity, Sharp has a proven legacy as a trusted name in solar.

BECOME POWERFUL

240 WATT

ND-240QCJ

Module output cables: 12 AWG PV Wire (per UL Subject 4703)

ELECTRICAL CHARACTERISTICS

Maximum Power (Pmax)*	240 W
Tolerance of Pmax	+5%/-0%
PTC Rating	216.4 W
Type of Cell	Polycrystalline silicon
Cell Configuration	60 in series
Open Circuit Voltage (Voc)	37.5 V
Maximum Power Voltage (Vpm)	29.3 V
Short Circuit Current (Isc)	8.75 A
Maximum Power Current (Ipm)	8.19 A
Module Efficiency (%)	14.7%
Maximum System (DC) Voltage	600 V (UL)/1000V (IEC)
Series Fuse Rating	15 A
NOCT	47.5°C
Temperature Coefficient (Pmax)	-0.485%/°C
Temperature Coefficient (Voc)	-0.36%/°C
Temperature Coefficient (Isc)	0.053%/°C

*Illumination of 1 kW/m² (1 sun) at spectral distribution of AM 1.5 (ASTM E892 global spectral irradiance) at a cell temperature of 25°C.

MECHANICAL CHARACTERISTICS

Dimensions (A x B x C to the right)	39.1" x 64.6" x 1.8"/994 x 1640 x 46 mm
Cable Length (G)	43.3"/1100 mm
Output Interconnect Cable	12 AWG with *SMK Locking Connector
Hail Impact Resistance	1" (25 mm) at 52 mph (23 m/s)
Weight	41.9 lbs / 19.0 kg
Max Load	50 psf (2400 Pascals)
Operating Temperature (cell)	-40 to 194°F / -40 to 90°C

*Intertek recognized for mating with MC-4 connectors (part numbers PV-KST4; PV-KBT4)

CERTIFICATIONS

UL 1703, ULC/ORD-C1703, IEC 61215, IEC 61730, CEC, FSEC



WARRANTY

25-year limited warranty on power output
Contact Sharp for complete warranty information

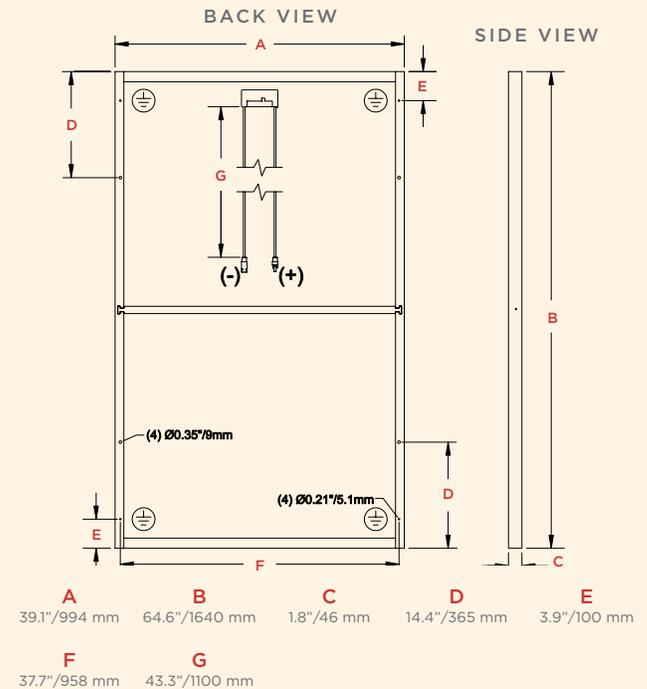
Design and specifications are subject to change without notice. Sharp is a registered trademark of Sharp Corporation. All other trademarks are property of their respective owners. Cover photo: Solar installation by Pacific Power Management, Auburn CA.



SHARP®

SHARP ELECTRONICS CORPORATION
5700 NW Pacific Rim Boulevard, Camas, WA 98607
1-800-SOLAR-06 • Email: sharpsolar@sharpusa.com
www.sharpusa.com/solar

DIMENSIONS



Contact Sharp for tolerance specifications

ISO QUALITY & ENVIRONMENTAL MANAGEMENT

Sharp solar modules are manufactured in ISO 9001:2000 AND ISO 14001:2004 certified facilities.

"BUY AMERICAN"

Sharp solar modules are manufactured in the United States and Japan, and qualify as "American" goods under the "Buy American" clause of the American Recovery and Reinvestment Act (ARRA).

