PROJECT NARRATIVE

Madhu Beriwal, owner of the property at 304 North Boundary Street has applied to install solar panels on three roofs at the property – 1) over the existing garage roof (see Exhibit B) and 2) over the flat roof of the existing home (see Exhibit B) and 3) over the roof of the proposed and approved extension to the home (se Exhibit B)

The solar panels will serve multiple functions. One, the solar panels will draw enough energy from the sun to lower electricity costs. Two, the solar panels will reduce overall greenhouse gas emissions. Three, the storage batteries installed with the system will allow backup power to the home and extension in times of power outages.

The solar panels to be used are shown as Exhibit D. The proposed solar panels are approximately one foot in height and will be placed with a 5 foot setback from the roof parapets for each of the roofs (garage, existing home flat roof), and proposed extension flat roof). The solar panels are not expected to be visible from the street, have adequate setbacks, and match the color of the roof materials (black). See Exhibit D.

No cables or pipes will be visible from the street.

The storage batteries to be used are shown as Exhibit E. The battery packs are approximately 43.5: by 24”.

HISTORY AND CHARACTER OF THE SUBJECT PROPERTY IN HISTORIC DISTRICT

304 North Boundary was new construction in the existing Franklin/Rosemary Historic District when it was built in 2000. It is modern architecture of predominately glass and metal and is unique in the district. The house has been identified as an exemplar of NC Modernist Architecture.

Designed by Kenneth Hopgood, FAIA, and originally commissioned by the Gravely Khatchatoorian Family, the house received numerous accolades after its construction.

The house was featured in Triangle Modern Architecture by Victoria Bell in 2020, not only within the book but on the cover. Other accolades for the house include 2003 The New American House 4: Innovations in Residential, by James Truelove and Il Kim, Whitney Library of Design, New York 2003, 2005 AIA Triangle Honor Award, 2006 SARC South Atlantic AIA Merit Award, 2007 Glass House: Building for Open Living, Published by Thames and Hudson London, 2008 News and Observer, February 16, 2008, 2009 Architectural Digest, March 2009.

The project as proposed continues the house's modern and forward-seeking design ethic, adding solar panels to reduce operational costs as well. The solar panels will also reduce greenhouse gas emissions.

The annual solar output is expected to be 16.924 kWh. Using this as the energy output, the system is expected to avoid 6.6 metric tons of CO_2 per year. This is equivalent to planting 165 trees or avoiding 740 gallons of gasoline consumption. Over a 25 year period, the CO_2 avoided rises to 165 metric tons.

There will be 3 Powerwall 3 batteries for storage of excess power for use during power outages.

DESCRIPTION OF EXISTING AND PROPOSED SITE CONDITIONS AND ARCHITECTURAL FEATURES

The house at 304 North Boundary Street was completed in 2000. An addition was approved in 2024. The house is a modern design of metal and glass.

The change proposed in this application is the addition of solar panels to the roofs of the existing garage, the flat roof of the existing home, and the roof of the proposed and HDC-approved extension, as well as storage batteries installed on the back wall of the existing garage.

DESCRIPTION OF PREVIOUS ADDITIONS, REMODELS OR ALTERATIONS TO THE STRUCTURE(S)

The house at 304 North Boundary Street was completed in July 2000. The HDC approved a Certificate of Appropriateness for an addition to this home in September 2024 (HDC24-29). The HDC approved a Certificate of Appropriateness for a Greenhouse/Gate on December 9, 2025.

DESCRIPTION OF ALL PROPOSED PHYSICAL CHANGES TO THE PROPERTY

The physical changes proposed are to add solar panels to the roofs of the existing garage, the flat roof of the existing home, and to the roof of the proposed and approved extension, as well as place storage batteries behind the existing garage.

IDENTIFY MATERIALS TO BE USED INCLUDING DIMENSIONS, MANUFACTURE DETAILS, MODEL NUMBERS AND SPECIFICATIONS IF APPLICABLE

Solar panels:

Total System Size Warranty Information: 16.02 kW DC

Estimated Annual Production: 16,924 kWh

Solar Panels: 36 - Canadian Solar N-Type 445

Inverter: (3)Tesla 11.5 kW AC

Storage Batteries:

3 Tesla Powerwall 3 40.5 kWh

See attached materials

IDENTIFY AND DESCRIBE HOW THE PROJECT MEETS ALL APPLICABLE DESIGN STANDARDS

3.9.7. Locate new mechanical equipment, utilities, and sustainable site features—including air-conditioning and heating units, meters, exposed pipes, rain barrels or cisterns, and raised planting beds—in locations that are minimally visible from the street and do not alter or remove historic fabric from the building or do not diminish or compromise the overall character of the building, site, or district. Screen ground-level equipment from view with vegetation or fencing.

3.9.8. Locate low-profile solar panels on side or rear elevations, when possible, or on low-sloped roofs where they are minimally visible from the street.

a. Solar panels should be flush-mounted —installed parallel with and close to the surface of the roof to which they are attached—in order to minimize their visual impact.

b. Solar panels should match the color of the existing roof material as much as possible, in order to visually blend with the roof.

c. Solar panels should be set back from the edges of the roof to minimize their visibility.

d. Solar panels should not extend above the roof ridges or otherwise alter the roof form of the building.

e. No associated pipes or cables should be visible from the street.

SITE PLAN

See Exhibits A and B.

SUBJECT PROPERTY IN CONTEXT WITH THE NEARBY PROPERTIES

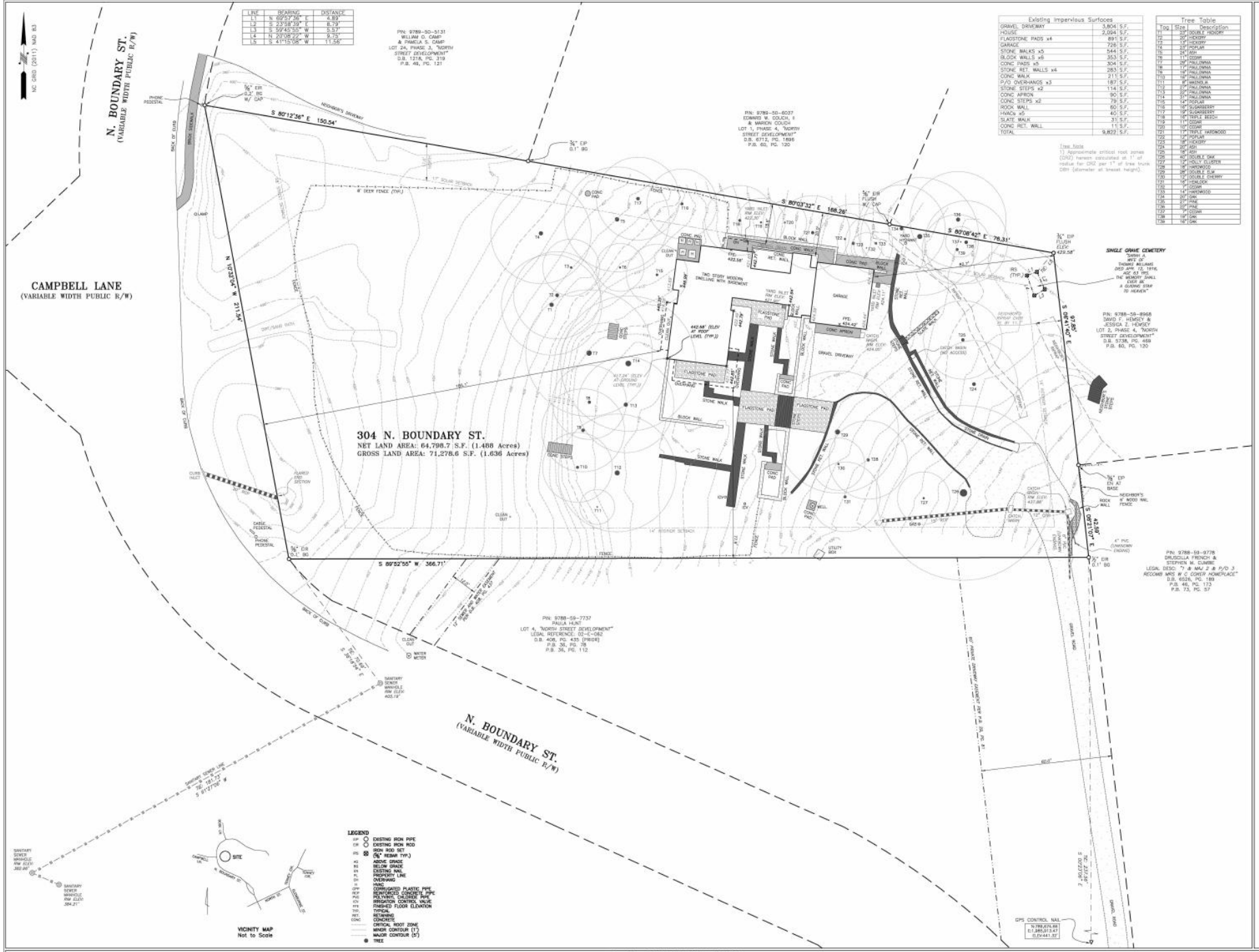
The project (both solar panel installations and storage batteries) as proposed is not visible from the nearest, adjacent and opposite properties. The project does not alter setbacks.

See Exhibit F.

304 N. Boundary St

Solar Panels and Battery Backup

Exhibit A:
Site



LINE	BEARING	DISTANCE
L1	N 69°57'39" E	6.89'
L2	S 23°58'39" E	8.79'
L3	S 59°43'55" W	5.57'
L4	N 20°08'22" W	9.75'
L5	S 41°15'08" W	11.58'

Existing Impervious Surfaces	
GRAVEL DRIVEWAY	3,804 S.F.
HOUSE	2,094 S.F.
FLAGSTONE PADS x4	891 S.F.
GARAGE	726 S.F.
STONE WALKS x5	544 S.F.
BLOCK WALLS x6	353 S.F.
CONC PADS x5	304 S.F.
STONE RET. WALLS x4	283 S.F.
CONC WALK	211 S.F.
P/O OVERHANGS x3	187 S.F.
STONE STEPS x2	114 S.F.
CONC APRON	90 S.F.
CONC STEPS x2	79 S.F.
ROCK WALL	60 S.F.
HANDA x3	40 S.F.
SLATE WALK	31 S.F.
CONC RET. WALL	11 S.F.
TOTAL	9,822 S.F.

Tree Table		
Tag	Size	Description
T1	33"	DOUBLE HICKORY
T2	20"	HICKORY
T3	13"	HICKORY
T4	19"	POPLAR
T5	24"	ASH
T6	11"	OSSAW
T7	29"	PAULOWNIA
T8	17"	PAULOWNIA
T9	19"	PAULOWNIA
T10	16"	PAULOWNIA
T11	8"	MAGNOLIA
T12	27"	PAULOWNIA
T13	29"	PAULOWNIA
T14	31"	PAULOWNIA
T15	14"	POPLAR
T16	16"	SUGARBERRY
T17	19"	SUGARBERRY
T18	18"	TRIPLE BEECH
T19	11"	OSSAW
T20	10"	OSSAW
T21	17"	TRIPLE HARDWOOD
T22	12"	POPLAR
T23	18"	HICKORY
T24	20"	ASH
T25	18"	ASH
T26	40"	DOUBLE OAK
T27	12"	HOLLY CLUSTER
T28	18"	HARDWOOD
T29	28"	DOUBLE ELM
T30	13"	DOUBLE CHERRY
T31	16"	HEMLOCK
T32	7"	OSSAW
T33	14"	HARDWOOD
T34	20"	OAK
T35	21"	PINE
T36	20"	PINE
T37	7"	OSSAW
T38	18"	OAK
T39	16"	OAK

Tree Note
1) Approximate critical root zones (CRZ) herein calculated at 1' of radius for CRZ per 1" of tree trunk DBH (diameter at breast height).

I CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK 5982, PAGE 481); THAT THE BOUNDARIES NOT SURVEYED ARE INDICATED AS DRAWN FROM SOURCES NOTED HEREON; THAT THE RATIO OF PRECISION IS 1:10,000 OR BETTER; AND THAT THIS MAP MEETS THE REQUIREMENTS OF THE STANDARDS OF PRACTICE FOR LAND SURVEYING IN NORTH CAROLINA (21 NCAC 56.1600). WITNESS MY SIGNATURE, LICENSE NUMBER, AND SEAL THIS 25th DAY OF JULY, 2025. Stephen Hallstrom

NORTH CAROLINA PROFESSIONAL L-5083 LAND SURVEYOR STEPHEN M. HALLSTROM

BERIWAL HOUSE
RESIDENTIAL RENOVATION & ADDITION
100% SCHEMATIC DESIGN DRAWING SET
304 N BOUNDARY ST
CHAPEL HILL, NORTH CAROLINA 27514

PLAN INFORMATION

PROJECT NO.

SHEET NAME TOPO & 2D TREE SURVEY

SHEET

GN2.0

Notes
1) This survey was performed without the benefit of a title report. This survey is subject to any facts and easements which may be disclosed by a full and accurate title search.
2) All distances are horizontal ground distances, unless otherwise noted. All areas by coordinate computation.
3) This property is not in a flood hazard zone per DFIRM panel 9789, map #3710978900J, effective 2007-02-02, and DFIRM panel 9788, map #3710978500K, effective 2017-11-17.
4) State Plane coordinates (and elevations) were established for this survey using a Spectra SP85 GPS antenna with the RTK method.
5) Elevation data shown hereon is relative to NAVD 88.
6) This property is within the Jordan Lake Unprotected Watershed District per Orange County GIS.
7) This property is zoned R-1 per Town of Chapel Hill GIS.
Dimensional Standards per Town of Chapel Hill LUMO Sec. 3.8.1:
Min. Street Setback: 28'
Min. Interior Setback: 14'
Min. Solar Setback: 17'
Max. Building Height, Setback: 29'
Max. Building Height, Core: 40'
8) This property is within the Franklin-Rosemary Historic District (HD-1) per Town of Chapel Hill GIS.

SHEET 1 OF 2

TOPOGRAPHY & 2D TREE SURVEY

PROPERTY OF

MADHU BERIWAL

PROPERTY ADDRESS: 304 N. BOUNDARY STREET

LEGAL DESC: *"N/O NORTH STREET"*
PIN REFERENCE: 9788-59-6951
DEED REFERENCE: D.B. 5982, PG. 481
PLAT REFERENCE: P.B. 29, PG. 81

CHAPEL HILL TOWNSHIP
ORANGE COUNTY
NORTH CAROLINA

TREE SURVEY: JUL. 17, 2025
TOPOGRAPHY SURVEY: JUN. 30, 2025

SCALE: 1" = 20'

0 10 20 40 60 80

FREEHOLD LAND SURVEYS, INC. C-165

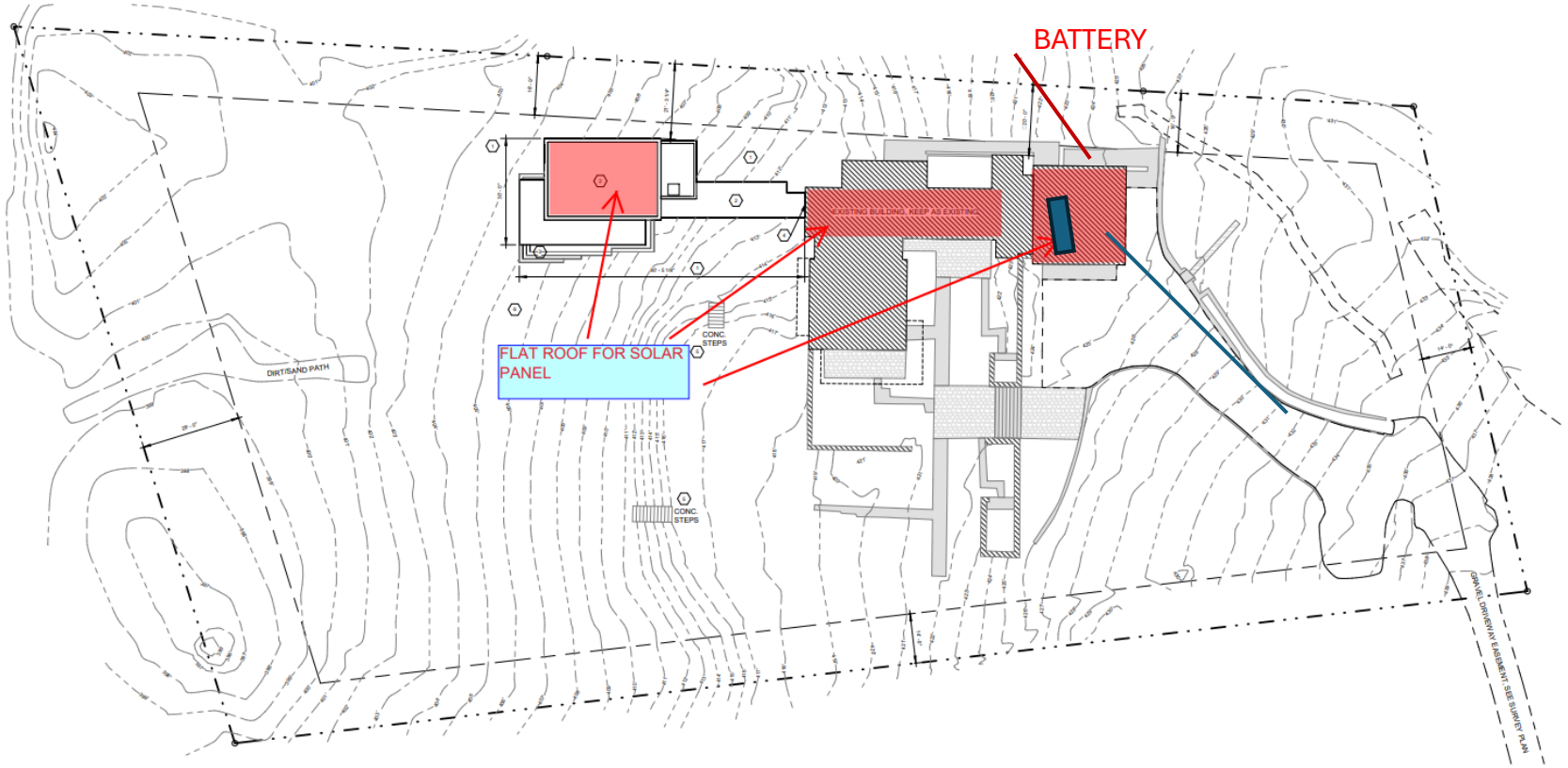
mailing address: P.O. BOX 188, CARRBORO, NC 27510
office address: 1777 FORDHAM BLVD. SUITE 104 CHAPEL HILL, NC 27514
phone: 919-929-8090
website: www.freeholdlandsurveys.com

STEPHEN M. HALLSTROM PROFESSIONAL LAND SURVEYOR L-5083

J26486

Exhibit B:

Site & Location of Panels



#	NOTES BY NUMBER
NUMBER	NOTE
1	EXISTING TREE LOCATOINS SEE SURVEY PLAN FOR DTL
2	SEE A1.3 ROOF PLAN FOR SLOPE & DIMENSIONS
3	TERRACE STEPS @ BASEMENT LEVEL, SEE A1.1
4	DEMO EXISTING OPENING FOR CONNECTING TO THE BRIDGE AND NEW ADDITION
5	EXISING CONCRETE STEPS, SEE SURVEY PLAN FOR COORDINATION
6	TOPO TO BE REGRADED FOR DRAINAGE, SEE CIVIL DWG

1 Site
1/16" = 1'-0"

HOBGOOD ARCHITECTS
a 409 Hillsborough Street
Raleigh, NC 27603
t +1 919 828 7711
f +1 919 828 0011
w hobgoodarchitects.com

CLIENT

NAME Ms. Madhu Beriwal
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ADDRESS CHAPEL HILL, NC 27514
PHONE: 225.281.0071
EMAIL: gardenfind@gmail.com

BERIWAL HOUSE
RESIDENTIAL RENOVATION & ADDITION
100% SCHEMATIC DESIGN DRAWING SET
304 N BOUNDARY ST
CHAPEL HILL, NORTH CAROLINA 27514

2025/08/29

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.
SHEET NAME ARCHITECTURAL SITE PL
CHECKED BY A.T.
DRAWN BY M.L.
SCALE 1/16" = 1'-0"
DATE 2025/08/29

SHEET

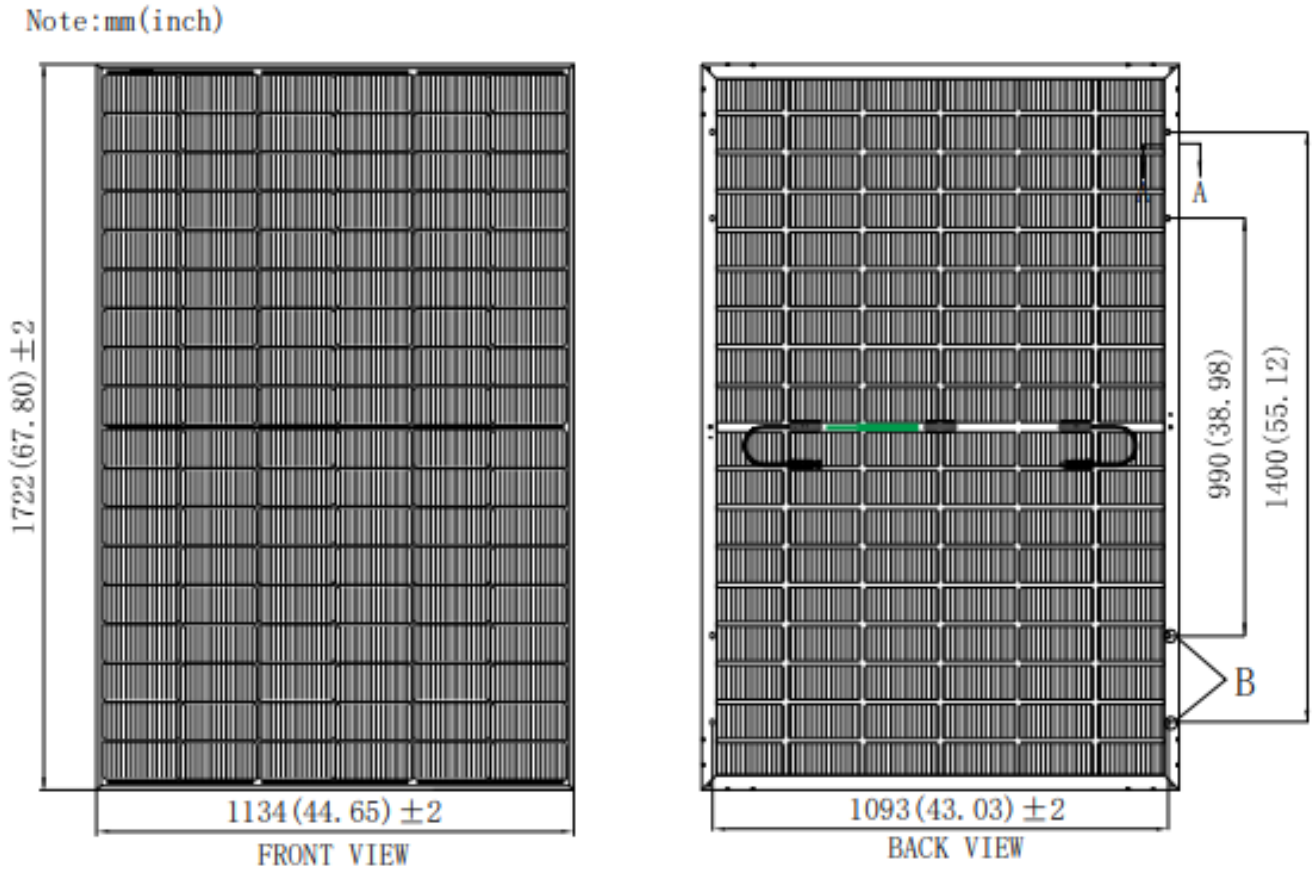
A1.0

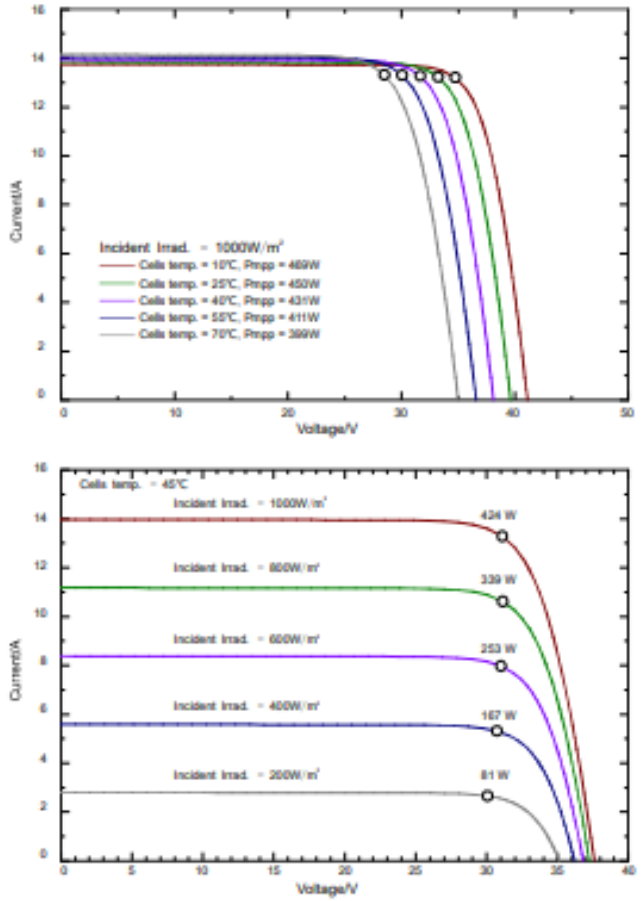
Exhibit C:

Location of Solar Panels

Exhibit D:

Solar Panels





Excellent performance under weak light condition.