CASE COVER SHEET

City of Rockwall
Planning and Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087

PLANNING & ZONING CASE NO. Z2022-045

PLANNING & ZONING FEE $ 202.96

PLATTING APPLICATION
- ☐ MASTER PLAT
- ☐ PRELIMINARY PLAT
- ☐ FINAL PLAT
- ☐ REPLAT
- ☐ AMENDING OR MINOR PLAT
- ☐ PLAT REINSTATEMENT REQUEST

SITE PLAN APPLICATION
- ☐ SITE PLAN
- ☐ AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING

ZONING APPLICATION
- ☐ ZONING CHANGE
- ☑ SPECIFIC USE PERMIT
- ☐ PD DEVELOPMENT PLAN

OTHER APPLICATION
- ☐ TREE REMOVAL
- ☐ VARIANCE REQUEST/SPECIAL EXCEPTIONS

RECORD OF RECOMMENDATIONS, VOTING RECORDS, AND CONDITIONS OF APPROVAL

ARCHITECTURE REVIEW BOARD

PLANNING AND ZONING COMMISSION

On October 11, 2022, the Planning and Zoning Commission approved a motion to recommend approval of the Specific Use Permit (SUP) by a vote of 5-0, with Commissioner Womble, and Deckard absent.

CITY COUNCIL READING #1

On October 17, 2022, the City Council approved a motion to approve the Specific Use Permit (SUP) with the conditions of approval by a vote of 5-2, with Council Members Daniels and Moeller dissenting.

CITY COUNCIL READING #2

On November 7, 2022, the City Council approved a motion to approve the Specific Use Permit (SUP) with the conditions of approval by a vote of 5-2, with Council Members Daniels and Moeller dissenting.

CONDITIONS OF APPROVAL

NOTES

DEVELOPMENT APPLICATION

City of Rockwall
Planning and Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087

STAFF USE ONLY

PLANNING & ZONING CASE NO.

NOTE: *THE APPLICATION IS NOT CONSIDERED ACCEPTED BY THE CITY UNTIL THE PLANNING DIRECTOR AND CITY ENGINEER HAVE SIGNED BELOW.*

DIRECTOR OF PLANNING:

CITY ENGINEER:

PLEASE CHECK THE APPROPRIATE BOX BELOW TO INDICATE THE TYPE OF DEVELOPMENT REQUEST [SELECT ONLY ONE BOX]:

PLATTING APPLICATION FEES:
- ☐ MASTER PLAT ($100.00 + $15.00 ACRE) [1]
- ☐ PRELIMINARY PLAT ($200.00 + $15.00 ACRE) [1]
- ☐ FINAL PLAT ($300.00 + $20.00 ACRE) [1]
- ☐ REPLAT ($300.00 + $20.00 ACRE) [1]
- ☐ AMENDING OR MINOR PLAT ($150.00)
- ☐ PLAT REINSTATEMENT REQUEST ($100.00)

SITE PLAN APPLICATION FEES:
- ☐ SITE PLAN ($250.00 + $20.00 ACRE) [1]
- ☐ AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING PLAN ($100.00)

ZONING APPLICATION FEES:
- ☐ ZONING CHANGE ($200.00 + $15.00 ACRE) [1]
- ☑ SPECIFIC USE PERMIT ($200.00 + $15.00 ACRE) [1 & 2]
- ☐ PD DEVELOPMENT PLANS ($200.00 + $15.00 ACRE) [1]

OTHER APPLICATION FEES:
- ☐ TREE REMOVAL ($75.00)
- ☐ VARIANCE REQUEST/SPECIAL EXCEPTIONS ($100.00) [2]

NOTES:
[1]: IN DETERMINING THE FEE, PLEASE USE THE EXACT ACREAGE WHEN MULTIPLYING BY THE PER ACRE AMOUNT. FOR REQUESTS ON LESS THAN ONE ACRE, ROUND UP TO ONE (1) ACRE.
[2]: A ***$1,000.00*** FEE WILL BE ADDED TO THE APPLICATION FEE FOR ANY REQUEST THAT INVOLVES CONSTRUCTION WITHOUT OR NOT IN COMPLIANCE TO AN APPROVED BUILDING PERMIT.

PROPERTY INFORMATION [PLEASE PRINT]

ADDRESS	125 Lanshire Dr. Rockwall,TX 75032		
SUBDIVISION		LOT	BLOCK
GENERAL LOCATION			

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING		CURRENT USE	
PROPOSED ZONING		PROPOSED USE	Roof Mounted PV System
ACREAGE	LOTS [CURRENT]	LOTS [PROPOSED]	

☐ ***SITE PLANS AND PLATS:*** *BY CHECKING THIS BOX YOU ACKNOWLEDGE THAT DUE TO THE PASSAGE OF HB3167 THE CITY NO LONGER HAS FLEXIBILITY WITH REGARD TO ITS APPROVAL PROCESS, AND FAILURE TO ADDRESS ANY OF STAFF'S COMMENTS BY THE DATE PROVIDED ON THE DEVELOPMENT CALENDAR WILL RESULT IN THE DENIAL OF YOUR CASE.*

OWNER/APPLICANT/AGENT INFORMATION [PLEASE PRINT/CHECK THE PRIMARY CONTACT/ORIGINAL SIGNATURES ARE REQUIRED]

☐ OWNER		☑ APPLICANT	Tony Trammell
CONTACT PERSON		CONTACT PERSON	Tony Trammell
ADDRESS		ADDRESS	2407 E Loop 820 N
CITY, STATE & ZIP		CITY, STATE & ZIP	Fort Worth, TX 76118
PHONE		PHONE	817-616-3152
E-MAIL		E-MAIL	tx.permits@gosolnova.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Tony Trammell [OWNER] THE UNDERSIGNED, WHO STATED THE INFORMATION ON THIS APPLICATION TO BE TRUE AND CERTIFIED THE FOLLOWING:

"I HEREBY CERTIFY THAT I AM THE OWNER FOR THE PURPOSE OF THIS APPLICATION; ALL INFORMATION SUBMITTED HEREIN IS TRUE AND CORRECT; AND THE APPLICATION FEE OF $_____, TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE _____ DAY OF _____, 20___. BY SIGNING THIS APPLICATION, I AGREE THAT THE CITY OF ROCKWALL (I.E. "CITY") IS AUTHORIZED AND PERMITTED TO PROVIDE INFORMATION CONTAINED WITHIN THIS APPLICATION TO THE PUBLIC. THE CITY IS ALSO AUTHORIZED AND PERMITTED TO REPRODUCE ANY COPYRIGHTED INFORMATION SUBMITTED IN CONJUNCTION WITH THIS APPLICATION, IF SUCH REPRODUCTION IS ASSOCIATED OR IN RESPONSE TO A REQUEST FOR PUBLIC INFORMATION."

HALEY ANNE SPEIDEL
Notary Public, State of Texas
Comm. Expires 10-25-2025
Notary ID 133411039

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* September, 20 20.

OWNER'S SIGNATURE Tony Trammell

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS Haley Speidel

MY COMMISSION EXPIRES 10/25/2020

30 August 2022

UNIRAC

1411 Broadway Blvd. NE

Albuquerque, NM 87102

REFERENCE: Charles Fisher: 125 Lanshire Dr, Rockwall, TX 75032 USA

Solar Array Installation

To Whom It May Concern:

We have reviewed the existing structure referenced above. The purpose of the review was to evaluate its adequacy to support the proposed installation of solar panels on the roof as shown on the panel layout plan drawings. Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation.

Design Parameter

Code: International Building Code 2015 (IBC 2015)

Risk Category: II

Design wind speed: 115 MPH

Wind exposure category: B

Ground snow load: 5 PSF

Seismic design category: B

Existing Roof Structure

Roof Structure: 2"x4" rafters @24" o.c.

Roofing material: Comp Shingle

Connection to Roof

Mounting connection: One 5/16 in lag screw w/ min. 2.5 in embedment into framing at max. 72 in o.c. along rails

Two rails per row of panels, evenly spaced; panel length perpendicular to the rails not to exceed 74 in

Conclusions

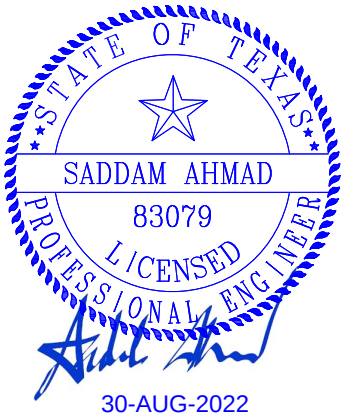
Based upon our evaluation, we conclude that the existing structure is adequate to support the proposed solar panel installation. In the area of the solar array, other live loads will not be present or will be greatly reduced (2015 IBC, Section 1607.12.5). The glass surface of the solar panels allows for a lower slope factor per ASCE 7, resulting in reduced design snow load on the panels. The stresses of the structural elements, resulting from the altered gravity loads in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

The solar array will be flush-mounted (not more than 5 in above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Regarding seismic loads, we conclude that any additional forces will be small. As per Section 1613.1, Exception-1 of the 2015 IBC, detached one- and two-family dwellings with Seismic Design Category A, B or C or located where the mapped short-period spectral response acceleration, Ss, is less than 0.4 g are exempted from seismic load. Therefore the existing lateral force resisting system can remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor must notify Engineering Alliance Inc. should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others are allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. The design of the solar panel racking (mounts, rails, etc.) and electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Engineering Alliance Inc assumes no responsibility for improper installation of the solar array.

Please feel free to call for any questions or clarifications.



30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

Prepared by

Engineering Alliance, Inc
Sugar Land, TX
Phone: 832 865 4757

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Calculations per ASCE 7-10
International Building Code 2015 (IBC 2015)

ROOF DEAD LOAD (D):

Material	Design material weight (psf)	Increase due to pitch	Material weight (psf)
Comp Shingle	2.23	1.11	2
1/2" Plywood	1.1	1.11	1
Framing	3		3
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.2	1.11	2
M, E & Misc	1.5		1.5
Total Dead Load	**10.6**		
PV Array Dead Load	**3.3**	1.11	3

ROOF LIVE LOAD (Lr):

Existing Design Roof Live Load [psf]	20	ASCE 7-10, Table 4-1
Roof Live Load With PV Array [psf]	0	2015 IBC, Section 1607.12.5

SEISMIC LOAD, (E):

Risk category:	II	Table 1.5-1
Seismic Design Category:	B	Table 11.6-2
I_p:	1	Table 1.5-2
Site Class:	D	
R_p:	1.5	Table 13.6-1
S_s:	0.103	
S_1:	0.055	
a_p:	1	Table 13.6-1
z:	1	ft
h:	1	ft
z/h:	1	
F_a:	1.6	Table 11.4-1
F_v:	2.4	Table 11.4-2
S_{MS}:	0.165	Eqs. 11.4-1
S_{M1}:	0.132	Eqs. 11.4-2
S_{DS}:	0.110	Eqs. 11.4-3
S_{D1}:	0.088	Eqs. 11.4-4

Engineering Alliance, Inc

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Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
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SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	105	
Exposure Category:	B	Sec. 26.7.3
Risk Category:	II	Table 1.5-1
Height of Roof, h [ft]:	30	(Approximate)
Roof Slope [°]:	26	
Site Elevation [ft]:	547	
Comp/Cladding Location:	Gable/Hip Roofs, 7° < θ ≤ 27°	FIGURE 30.4-2B
Enclosure Classification:	Enclosed Buildings	
Zone 1 GCp:	0.9	(enter largest abs. value)
Zone 2 GCp:	1.7	(enter largest abs. value)
Zone 3 GCp:	2.6	(enter largest abs. value)
α:	7	Table 26.9-1
z_g [ft]	1200	Table 26.9-1
K_h:	0.70	Table 30.3-1
K_{zt}:	1	Equation 26.8-1
K_d:	0.85	Table 26.6-1
Velocity Pressure, q_h [psf]:	16.81	Equation 30.3-1
GC_{pi}	0	Table 26.11-1

PRESSURES:

$$p = q_h((GC_p)-(GC_{pi})) \quad (lb/ft^2)$$ Equation 30.9-1

Zone 1 :	15.1	psf (1.0 W)
Zone 2 :	28.6	psf (1.0 W)
Zone 3 :	43.7	psf (1.0 W)

a [ft] = 3.6

Engineering Alliance, Inc

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COMPARE WIND & SEISMIC LOADS FOR CONNECTION (1 Sq. Ft. Section)

Wind Load, W:

Wind pressure, p:	9.1	psf (Zone 1: 0.6 W from wind pressure calculation)
Height, h:	1	ft
Width, w:	1	ft
Fperp:	9.1	lb (Uplift)

Seismic Load, E:

0.7 * F_p ,min:	0.069	lb
0.7 * F_p ,max:	0.369	lb
0.7 * F_p ,vert:	0.046	lb
0.7 * F_p ,long:	0.185	lb
0.7*F_p ,perp:	0.122	lb (uplift)

Wind (uplift) Controls Connection Design

CHECK INCREASE IN OVERALL SEISMIC LOADS

SEISMIC:

Seismic Design Category:	B

As per Section 1613.1, Exception-1 of the 2015 IBC, Seismic load is Exempted.

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
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Lag Screw Connection

Tributary Length (in):	74
Max Tributary Width (in):	72

Capacity:

Lag Screw Size[in] :	5/16	
C_d:	1.6	NDS Table 2.3.2
Embedment[1] [in]:	2.5	
Grade:	SPF (G = 0.42)	
Capacity [lbs/in]:	205	NDS Table 12.2A
Number of Screws in tension:	1	
Prying Coefficient:	1.4	
Total Capacity [lbs]:	586	

Demand:

Zone	Pressure (0.6 Wind) (psf)	Max Tributary Width (ft)	Max. Trib. Length (ft)	Max. Trib. Area2 (ft2)	Max. Uplift Force (lbs)
Zone 1 :	6.1	6.0	3.1	18.5	112
Zone 2 :	14.1	6.0	3.1	18.5	262
Zone 3 :	23.2	6.0	3.1	18.5	430

Total Tension Force(lbs):	430

Demand< Capacity: 73.3%, OK

Notes

1. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.
2. 'Max. Trib Area' is the product of the 'Max. Tributary Width' (along the rails) and 1/2 the panel width/height (perpendicular to the rails).

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SNOW LOAD (S):

	Existing	w/ Solar Panel Array	
Roof Slope [x:12]:	5.9	5.9	
Roof Slope [°]:	26	26	
Snow Ground Load, p_g [psf]:	5	5	ASCE 7-10, Section 7.2
Surface Roughness Category:	B	B	ASCE 7-10, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-10, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-10, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-10, Table 7-3
Risk Category:	II	II	ASCE 7-10, Table 1.5-1
Importance Factor, I_s:	1	1	ASCE 7-10, Table 1.5-2
Flat Roof Snow Load, p_f [psf]:	3	3	ASCE 7-10, Equation 7.3-1
Minimum Roof Snow Load, p_m [psf]:	0	0	ASCE 7-10, Section 7.3.4
Unobstructed Slippery Surface?	NO	YES	ASCE 7-10, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-10, Section 7.4
Roof Slope Factor, C_s:	1.00	0.73	ASCE 7-10, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	3	3	ASCE 7-10, Equation 7.4-1
Design Snow Load, S [psf]:	3	3	

Summary of Loads

	Existing	With PV Array
D [psf]	11	14
Lr [psf]	20	0
S [psf]	3	3

Maximum Gravity Loads:

	Existing	With PV Array	
(D + Lr) / Cd [psf]	24	15	ASCE 7-10, Section 2.4.1
(D + S) / Cd [psf]	12	14	ASCE 7-10, Section 2.4.1

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

Maximum Gravity Load [psf]:	24	15

Ratio Proposed Loading to Current Loading: **63%** **OK**

The gravity loads and; thus, the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

PHOTOVOLTAIC ROOF MOUNT SYSTEM

57 MODULES-ROOF MOUNTED - 22.80 kWDC, 16.53 kWAC

125 LANSHIRE DR, ROCKWALL, TX 75032 USA

SYSTEM SUMMARY:

(N) 57 - HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(N) 57 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(N) 02 - JUNCTION BOX
(E) 200A MAIN SERVICE PANEL WITH (N) 150A MAIN BREAKER
(N) 100A NON FUSED AC DISCONNECT
(N) 125A LOAD CENTER

DESIGN CRITERIA:

ROOF TYPE: - COMP SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @24" O.C.
STORY: - TWO STORY
SNOW LOAD : - 5 PSF
WIND SPEED :- 115 MPH
WIND EXPOSURE:- B
EXPOSURE CATEGORY:- II

GOVERNING CODES:

2017 NATIONAL ELECTRICAL CODE (NEC)
2015 INTERNATIONAL FIRE CODE (IFC)
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
2015 INTERNATIONAL MECHANICAL CODE (IMC)

SHEET INDEX

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PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAILS
PV-4	BRANCH LAYOUT
PV-5	ELECTRICAL LINE DIAGRAM
PV-6	ELECTRICAL CALCULATION
PV-6.1	LOAD CALCULATION & PANEL SCHEDULING
PV-7	PLACARDS & WARNING LABELS
PV-8	ADDITIONAL NOTES
PV-9+	EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

A LADDER SHALL BE IN PLACE FOR INSPECTION

THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.

EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.

EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A) REGARDLESS OF VOLTAGE.

PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED

ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.

HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" PER NEC 240.24

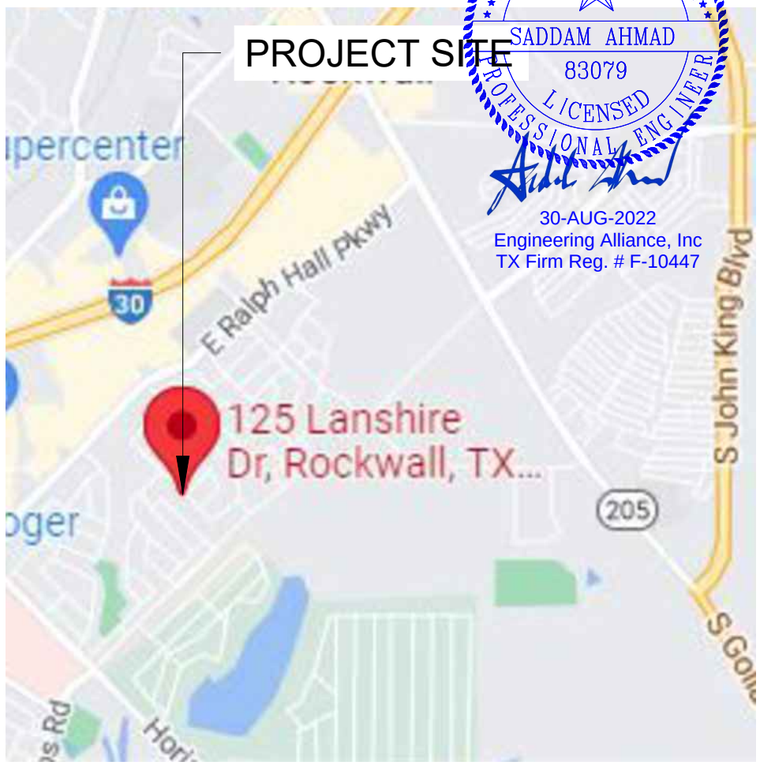
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER NEC 250.64C.
ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. NEC 690.64(B)(7)
SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

COVER SHEET

SHEET SIZE

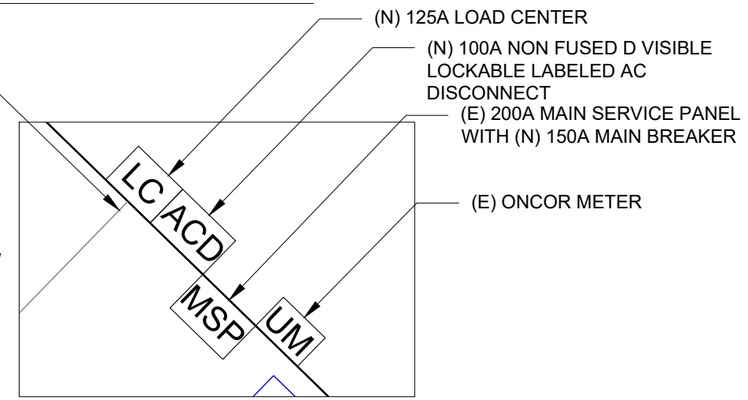
ANSI B
11" X 17"

SHEET NUMBER

PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

ENLARGED VIEW



STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 SITE PLAN WITH ROOF PLAN

SCALE: 1/16" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SITE PLAN WITH ROOF PLAN

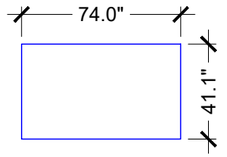
SHEET SIZE
ANSI B
11" X 17"

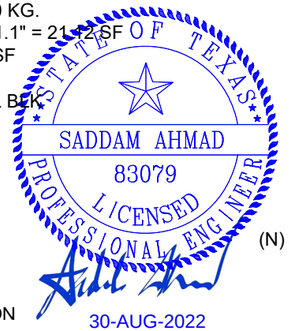
SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 57 MODULES
MODULE TYPE = HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
MODULE WEIGHT = 48.5 LBS / 22.0 KG.
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF
UNIT WEIGHT OF ARRAY = 2.30 PSF

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)





30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE:
INTERNATIONAL FIRE CODE SECTION 605.11.1.2 FOR RESIDENTIAL R-3 OCCUPANCIES AT LEAST THREE (3) FEET OF CLEARANCE ALONG THE EDGE (RAKE) OF THE ROOF TO A PANEL AND AT LEAST THREE (3) FEET FROM THE RIDGE OF THE ROOF TO A PANEL. PANELS SHALL BE AT LEAST ONE AND ONE-HALF (1-1/2) FEET FROM A VALLEY OR HIP. NO CLEARANCE IS REQUIRED AT THE EAVE.

INTERNATIONAL FIRE CODE SECTION 605.11.1.2.4 ROOFS WITH HIPS AND VALLEYS - WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY.

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
RAIL	33	ECOFASTEN CLICK RAIL 168" DARK
SPLICE	10	BND SPLICE BAR PRO SERIES DRK
MID CLAMP	74	UNIVERSAL AF MID CLAMPS
END CLAMP	80	UNIVERSAL AF END CLAMPS
ATTACHMENT	118	ECOFASTEN CLICKFIT
GROUNDING LUG	20	GROUND LUG

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

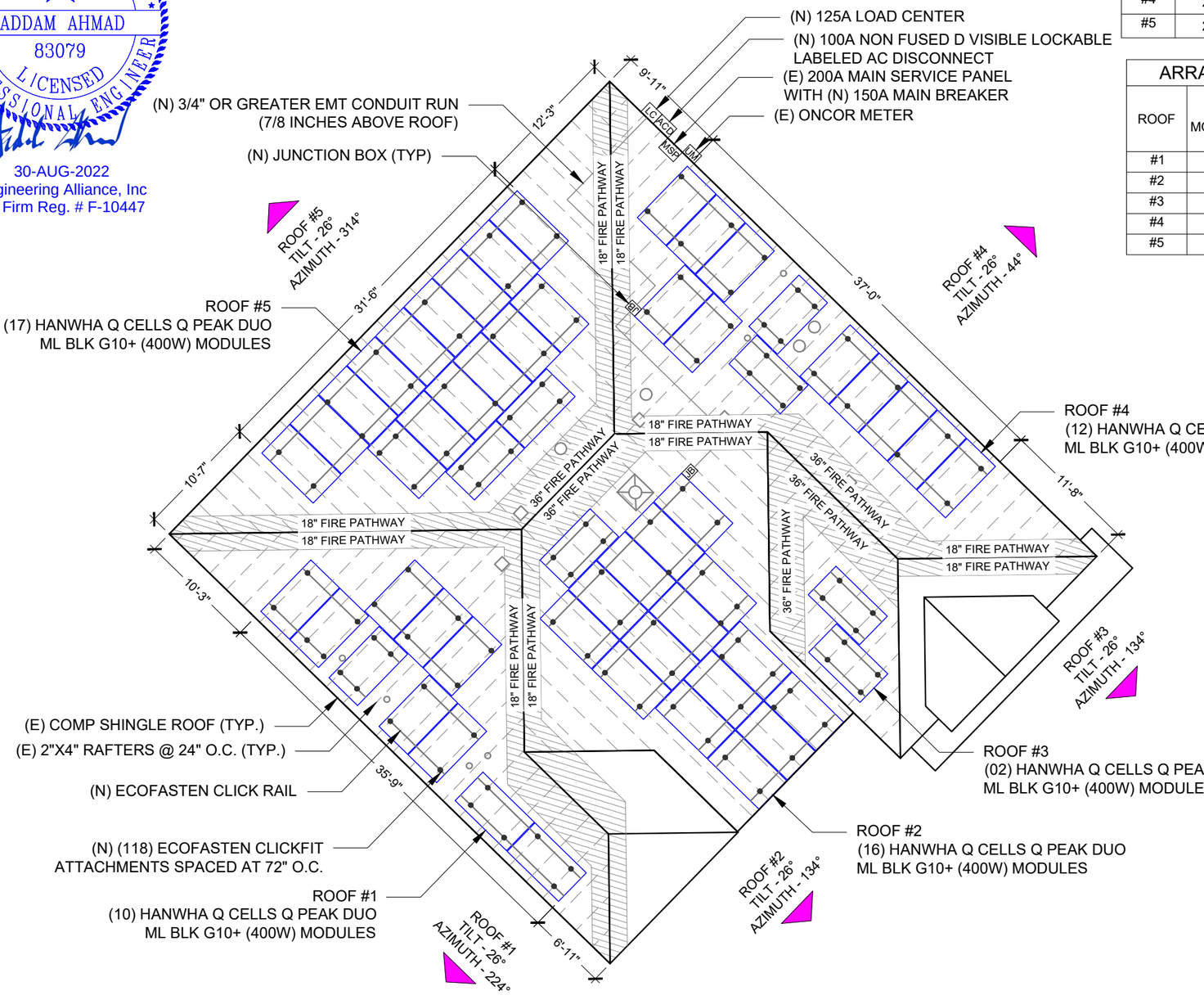
ROOF DESCRIPTION

ROOF	ROOF TYPE: ROOF TILT	ROOF TYPE: AZIMUTH	COMP SHINGLE ROOF: RAFTERS SIZE	COMP SHINGLE ROOF: RAFTERS SPACING
#1	26°	224°	2"x4"	24" O.C.
#2	26°	134°	2"x4"	24" O.C.
#3	26°	134°	2"x4"	24" O.C.
#4	26°	44°	2"x4"	24" O.C.
#5	26°	314°	2"x4"	24" O.C.

ARRAY AREA & ROOF AREA CALC'S

ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	211.21	539.16	39.17
#2	16	337.93	639.38	52.85
#3	02	42.24	189.84	22.25
#4	12	253.45	649.38	39.03
#5	17	359.05	705.06	50.93

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER



LEGEND

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- LC - LOAD CENTER
- JB - JUNCTION BOX
- CHIMNEY
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- FIRE PATHWAY

1 ROOF PLAN WITH MODULES

SCALE: 3/32" = 1'-0"

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

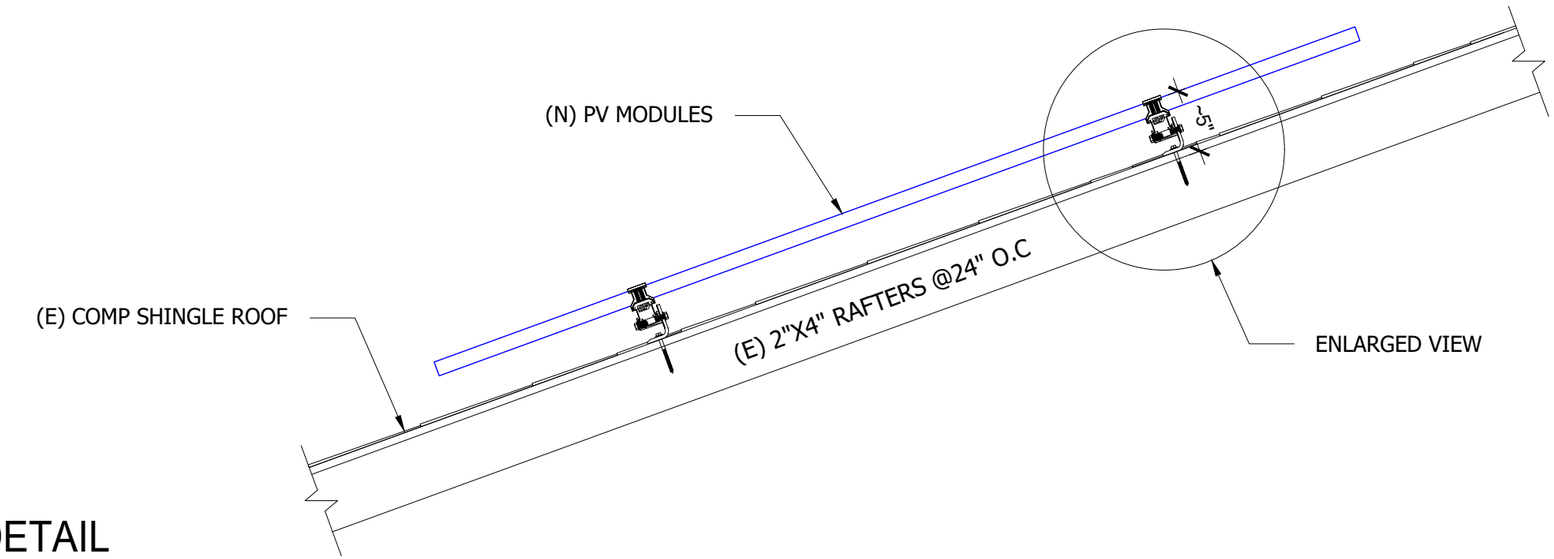
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

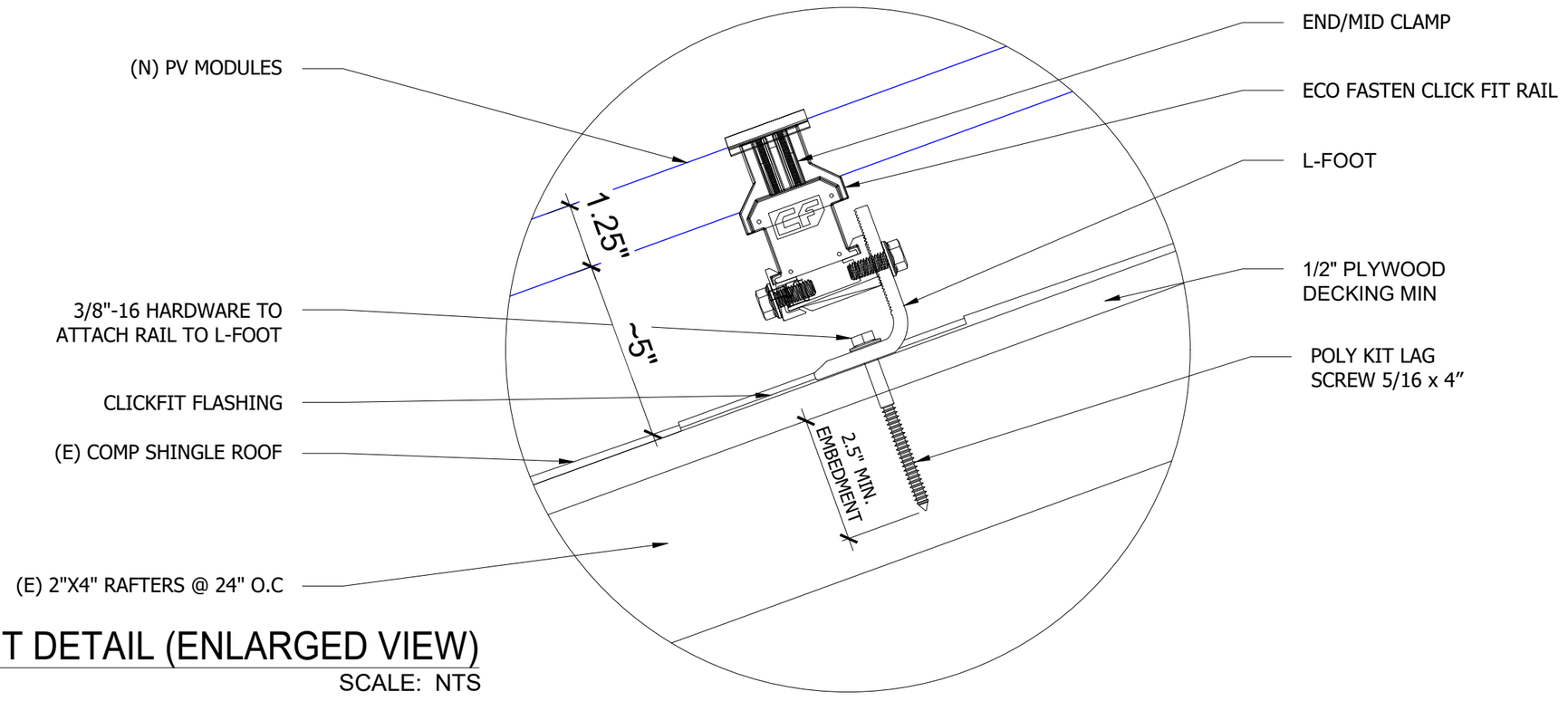
NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS(OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447



1 ATTACHMENT DETAIL
SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

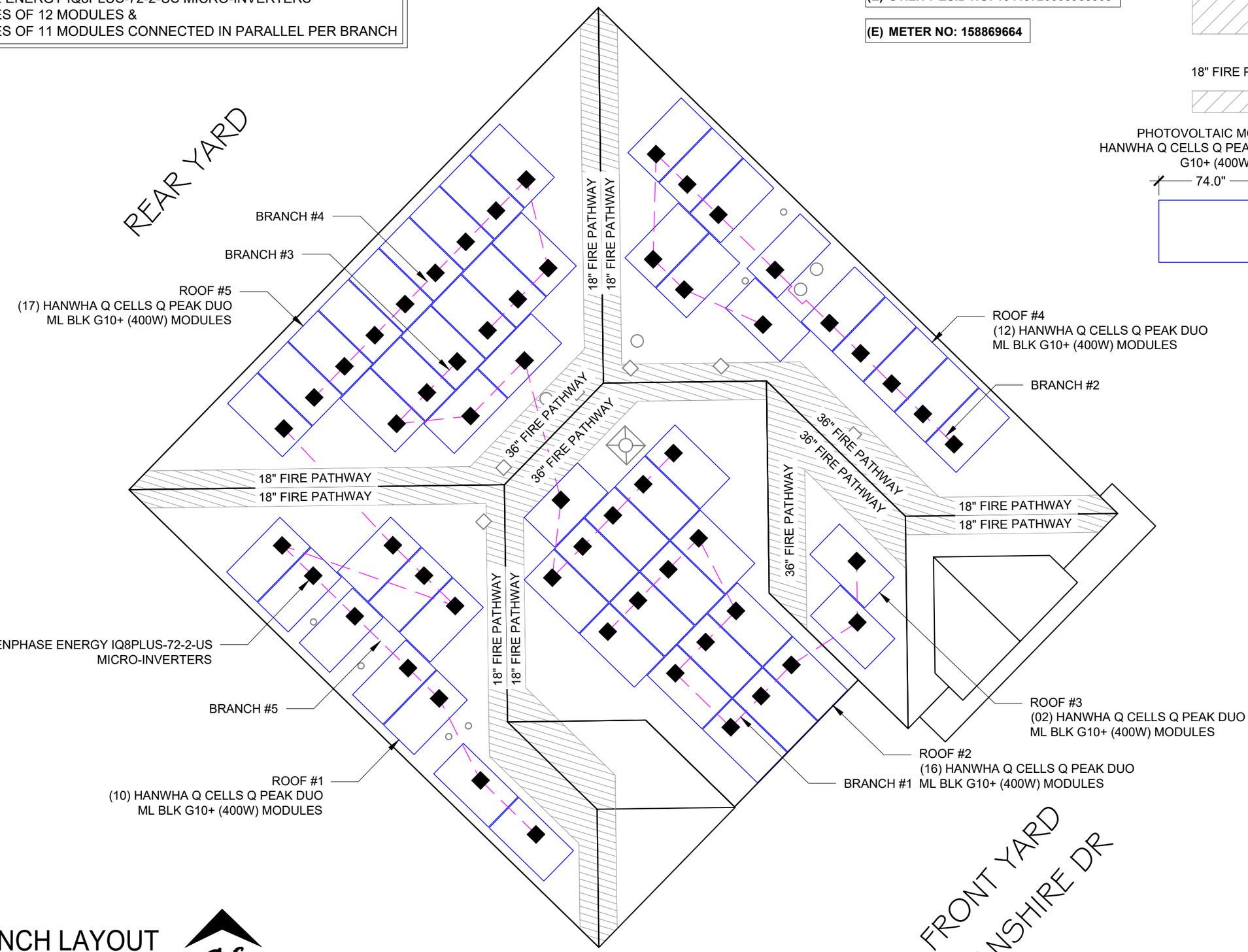
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

36" FIRE PATHWAY
3'-0"

18" FIRE PATHWAY
18"

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)
74.0"
41.1"



1 BRANCH LAYOUT

SCALE: 1/8" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

BRANCH LAYOUT

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-4

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

SYSTEM SIZE:- 57 x 400W = 22.80 kWDC
SYSTEM SIZE:- 57 x 290W = 16.53 kWAC

INTERCONNECTION
120% RULE - NEC 705.12(B)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED
150A +90A = 240A

BUSS RATING x 120%
200A x 120% = 240A

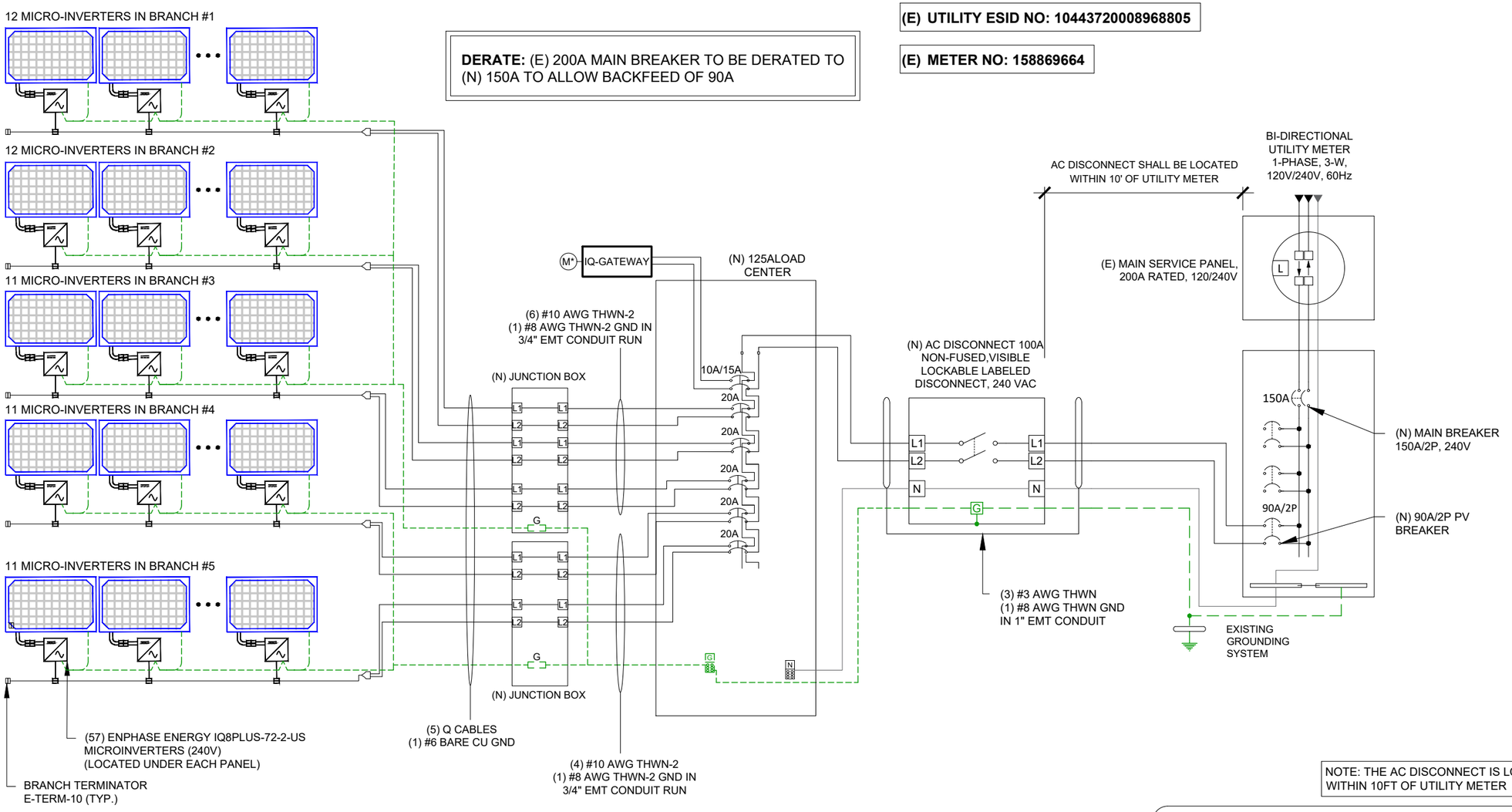
BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	57	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
INVERTER	57	ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
JUNCTION BOX	2	600V, 55A MAX, 4 INPUTS, MOUNTED ON ROOF FOR WIRE & CONDUIT TRANSITION
LOAD CENTER	1	125A PV LOAD CENTER
AC DISCONNECT	1	100A NON FUSED, VISIBLE LOCKABLE LABELED AC DISCONNECT, 240VAC, NEMA 3R, UL LISTED.

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A



NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP

WIRE RATED AND AMPACITY CALCULATED @ 90°C FOR ROOFTOP INSTALLATION AND ATTIC RUN TO INVERTER

ANY CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT. (NEC 300.6 C1, 310.8 D)

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

NOTE ON CONDUIT:
ALL CONDUIT SHALL BE EMT 3/4" IN DIAMETER UNLESS OTHERWISE STATED

PER NEC REQUIRMENTS GROUNDING CONDUCTORS SMALLER THAN 6AWG SHALL BE PROTECTED IN A CONDUIT, RACEWAY, OR ARMORED PROTECTIVE SHEATHING (NEC 250.64)

SERVICE INFO.

UTILITY PROVIDER:	ONCOR
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	(E) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 150A
MAIN SERVICE LOCATION:	NORTH-EAST
SERVICE FEED SOURCE:	UNDERGROUND

1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)MODULES
VMP	37.13
IMP	10.77
VOC	45.30
ISC	11.14
MODULE DIMENSION	74.0"L x 41.1"W x 1.26"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE ENERGY IQ8PLUS-72-2-US
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	1.21A

AMBIENT TEMPERATURE SPECS	
WEATHER STATION: DALLAS LOVE FIELD	
RECORD LOW TEMP	-8°
AMBIENT TEMP (HIGH TEMP 2%)	37°
CONDUIT HEIGHT	0.9"
ROOF TOP TEMP.	37°
CONDUCTOR TEMPERATURE RATE (ON ROOF)	90°
CONDUCTOR TEMPERATURE RATE (OFF ROOF)	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#1 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 06
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#2 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 04
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM LOAD CENTER TO INTERCONNECTION:

OF INVERTERS: 57
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.88
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(3)(a): 1.0
CIRCUIT CONDUCTOR SIZE: 3 AWG
CIRCUIT CONDUCTOR AMPACITY: 100A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X # MICRO-INVERTERS X MAX OUTPUT CURRENT =
1.25 X 1.21 X 57 = 86.21A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.88 X 1.0 X 100= 91A

RESULT SHOULD BE GREATER THAN 86.21A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

ELECTRICAL NOTES

1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

1 ELECTRICAL CALCULATION

SCALE: NTS

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

LOAD CALC RESULTS		
BUSS BAR RATING		TOTAL DEMAND
150	>	141.31

RESIDENTIAL LOAD CALULATION FOR EXISTING DWELLINGS					
3,522	SQ. FT. X 3 VA			10566	VA
2	SMALL APPLIANCE BRANCH CIRCUITS			3000	VA
1	LAUNDRY CIRCUIT (WASHER)			1500	VA
30	DRYER			5760	VA
50	N/A			9600	VA
20	MICRO-WAVE			1920	VA
20	DISPOSAL & DISHWASHER			1920	VA
20	WASHER			1920	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
TOTAL LOAD GROSS (VA)				36186	TOTAL VA
FIRST 10,000VA, VA X 100%				10000	VA
REMAINDER ABOVE 10,000 VA X 40%				10474.4	VA
TOTAL LOAD NET (VA)				20474.4	VA
TOTAL LOAD (AMPS) (VA/240V)				85.3	AMPS
AIR CONDITIONING LOADS					
30	1-A/C MIN. CIRCUIT AMPS			5760	VA
40	2-A/C MIN. CIRCUIT AMPS			7680	VA
	3-A/C MIN. CIRCUIT AMPS			0	VA
	4-A/C MIN. CIRCUIT AMPS			0	VA
	SUB POOL MIN. CIRCUIT AMPS			0	VA
	AHU VA (Breaker Amps X Volts X 80%)			0	
TOTAL A/C LOAD (VA)				13440	TOTAL VA
TOTAL LOAD (AMPS) (VA/240V)				56	AMPS
TOTAL DEMAND (AMPS)				141.3	AMPS

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

120% RULE: BACKFEED	
BUSSBAR RATING	200
NEW MAIN BREAKER	150
120% RULE: BACKFEED	120
PV OCPD	90

LOAD CALC RESULTS		
BUSSBAR RATING		TOTAL DEMAND
150	>	141.31

PANEL SCHEDULE

EXISTING PANEL			ALTERED PANEL		
Circuit	#	OCP AMP	Circuit	#	OCP AMP
MAIN BREAKER 200			NEW MAIN BREAKER 150		
DRYER	1	30	DRYER	1	30
N/A	2	50	N/A	2	50
DRYER	3	30	DRYER	3	30
N/A	4	50	N/A	4	50
AC	5	30	AC	5	30
N/A	6	20	N/A	6	20
AC	7	30	AC	7	30
N/A	8	20	N/A	8	20
GFI	9	20	GFI	9	20
N/A	10	20	N/A	10	20
REFRIGERATOR	11	20	REFRIGERATOR	11	20
MICROWAVE	12	20	MICROWAVE	12	20
BATH GFI	13	20	BATH GFI	13	20
MASTER BEDROOM	14	20	MASTER BEDROOM	14	20
GARAGE GFI	15	20	GARAGE GFI	15	20
N/A	16	20	N/A	16	20
LIVING ROOM& DINING LIGHTS	17	20	LIVING ROOM& DINING LIGHTS	17	20
FRONT & BACK LIGHTS	18	20	FRONT & BACK LIGHTS	18	20
WASHER	19	20	WASHER	19	20
FRONT BED & BACK BED LIGHTS	20	20	FRONT BED & BACK BED LIGHTS	20	20
GAME ROOM & MOVIE SMOKES	21	20	GAME ROOM & MOVIE SMOKES	21	20
AC	22	40	AC	22	40
GARAGE/ MASTER BATH/POWER BATH	23	20	GARAGE/ MASTER BATH/POWER BATH	23	20
AC	24	40	AC	24	40
NOOK PLUGS/COOK PLUGS	25	20	NOOK PLUGS/COOK PLUGS	25	20
EMPTY	26	EMPTY	EMPTY	26	EMPTY
DISPOSAL& DISHWASHER	27	20	DISPOSAL& DISHWASHER	27	20
EMPTY	28	EMPTY	EMPTY	28	EMPTY
EMPTY	29	EMPTY	EMPTY	29	EMPTY
EMPTY	30	EMPTY	EMPTY	30	EMPTY
EMPTY	31	EMPTY	EMPTY	31	EMPTY
EMPTY	32	EMPTY	EMPTY	32	EMPTY
EMPTY	33	EMPTY	EMPTY	33	EMPTY
EMPTY	34	EMPTY	EMPTY	34	EMPTY
EMPTY	35	EMPTY	EMPTY	35	EMPTY
EMPTY	36	EMPTY	EMPTY	36	EMPTY
EMPTY	37	EMPTY	EMPTY	37	EMPTY
EMPTY	38	EMPTY	EMPTY	38	EMPTY
EMPTY	39	EMPTY	PV BREAKER	39	90
EMPTY	40	EMPTY	PV BREAKER	40	90

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

LOAD CALCULATION& PANEL SCHEDULING

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-6.1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP
(PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 68.97 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
(PER CODE: NEC 705.12 (B)(2)(3)(B)

WARNING:PHOTOVOLTAIC POWER SOURCE

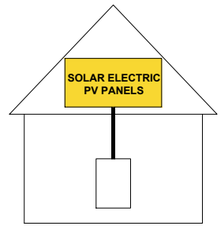
LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY

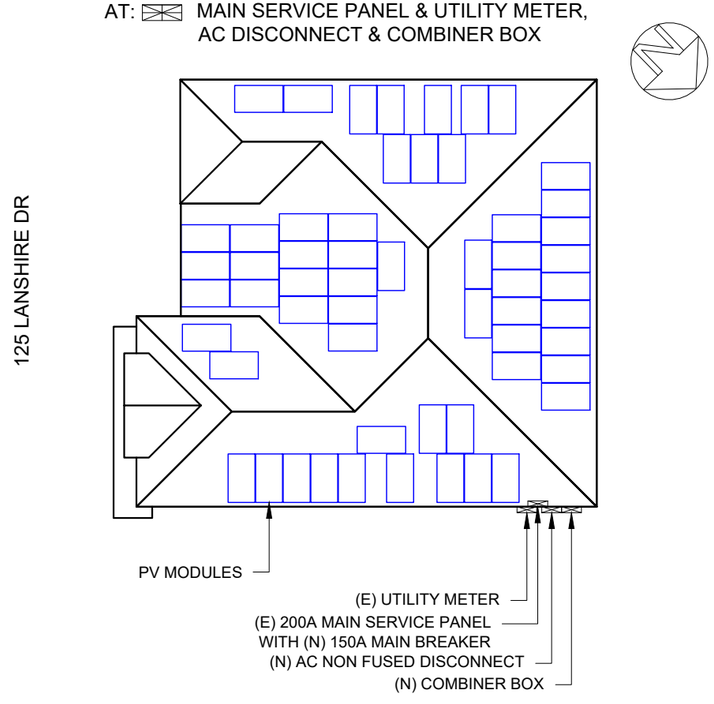


LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

CAUTION !

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

AT: MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & COMBINER BOX



SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.

2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.

3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT.

4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).

5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.

6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.

7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
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VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

Quality Controlled PV
TÜVRheinland CERTIFIED
www.tuv.com ID 1111232615

ASSEMBLED IN THE USA

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

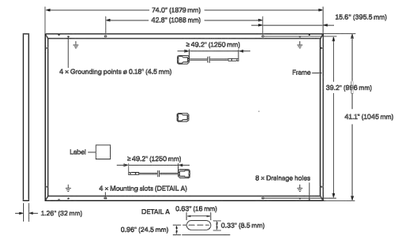
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (–) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

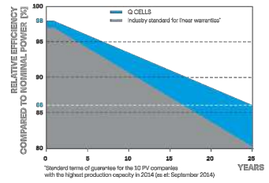


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP} [W]	385	390	395	400	405
Minimum	Short Circuit Current[1]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
Minimum	Open Circuit Voltage[1]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
Minimum	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
Minimum	Voltage at MPP	V_{MPP} [V]	36.36	36.62	36.88	37.13	37.39
Minimum	Efficiency[1]	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	288.8	292.6	296.3	300.1	303.8
Minimum	Short Circuit Current	I_{SC} [A]	8.90	8.92	8.95	8.97	9.00
Minimum	Open Circuit Voltage	V_{OC} [V]	42.62	42.65	42.69	42.72	42.76
Minimum	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
Minimum	Voltage at MPP	V_{MPP} [V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

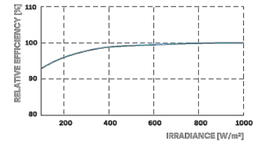
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS						
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.34	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells),

C Certified US UL 61730

CE

TÜVRheinland CERTIFIED www.tuv.com ID 1111232077

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

ENPHASE.

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.
** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility
(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

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125 LANSHIRE DR,
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APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

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SHEET NUMBER
PV-11

Data Sheet
Enphase Q Cable Accessories
Region: INDIA

Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

To learn more about Enphase offerings, visit **enphase.com/in**

ENPHASE.

Enphase Q Cable Accessories

Q CABLE SPECIFICATIONS	
Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60332-1-2

Q CABLE TYPES / ORDERING OPTIONS

Model Number	Max Nominal Voltage	Ampacity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

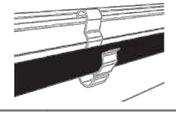
ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (male)	Q-CONN-3P-10M	Make connections using three-phase cable
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (single-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Disconnect tool	Q-DISC-3P-10	Disconnect tool for three-phase Field wireable connectors
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator (single-phase)	Q-TERM-R-10	Terminator cap for unused single-phase cable ends
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused three-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	DC adaptor to MC4 (max voltage 100 VDC)

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10))

SEALING CAPS
Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)
Three-phase model (Q-DISC-3P-10)



CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)

To learn more about Enphase offerings, visit **enphase.com/in**

2018-11-26

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

EcoFasten®
For Installers. By Installers.

CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

ClickFit is one of the fastest installing rail-based systems in the industry. Thanks to its Click-In rail assembly, the rails can be connected to any of EcoFasten's composition shingle, tile, and metal roof mounts in seconds without the need for fasteners or tools. The ClickFit system is made of robust materials such as aluminum and coated steel, to ensure corrosion-resistance and longevity. ClickFit conforms to UL 2703 and has been tested in extreme weather conditions including wind, fire, and snow.

FEATURES & BENEFITS

- Pre-installed rail fastening bolt
- Fully integrated bonding
- Click-On Mid & End Clamps
- Compatible with a variety of EcoFasten roof attachments

FAST INSTALLING SYSTEM FEATURING CLICK-IN RAIL ASSEMBLY

ROOF TYPE — Composition Shingle, Tile, Metal

RACKING — Rail-Based

ATTACHMENT — Structural-Attach Direct-Attach

WATER TIGHT TECHNOLOGY

25 YEAR WARRANTY

ECOFASTENSOLAR.COM

CLICKFIT

INTERNAL SPLICE

Tool-free bonded internal Splice installs in seconds.

MID CLAMP

Click-on mid clamp features integrated bonding pins and fits module frames sized 30-50mm.

CF MLPE MOUNT

Attach Module Level Power Electronics to the top of the rail.

END CLAMP

Click-on end clamp fits module frames sized 30-50mm.

END CAP

The slide-on end caps allow the end clamps to be accurately positioned on the rail in seconds, while providing an aesthetically pleasing, finished install.

RAIL

The ClickFit rail clicks into our proprietary composition shingle & tile L-foot and is tightened in place with a pre-installed bolt.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

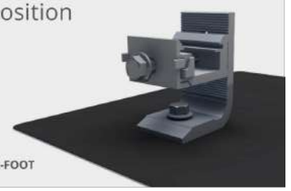
SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-13

COMPOSITION SHINGLE

Combine the versatile ClickFit L-Foot with the watertight GF-1 flashing for a fast installation on composition shingle roofs.



GF-1 FLASHING & L-FOOT

TILE ROOFS

Use the adjustable ClickFit Tile Hook for attaching the ClickFit system to tile roofs. Works with Flat, S, and W tile profiles.

CLICKFIT TILE HOOK

STANDING SEAM METAL ROOFS

Combine the ClickFit L-Foot with SimpleBlock®-U for a fast installation on standing seam metal roofs.

SIMPLEBLOCK-U

ECOFASTENSOLAR.COM

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

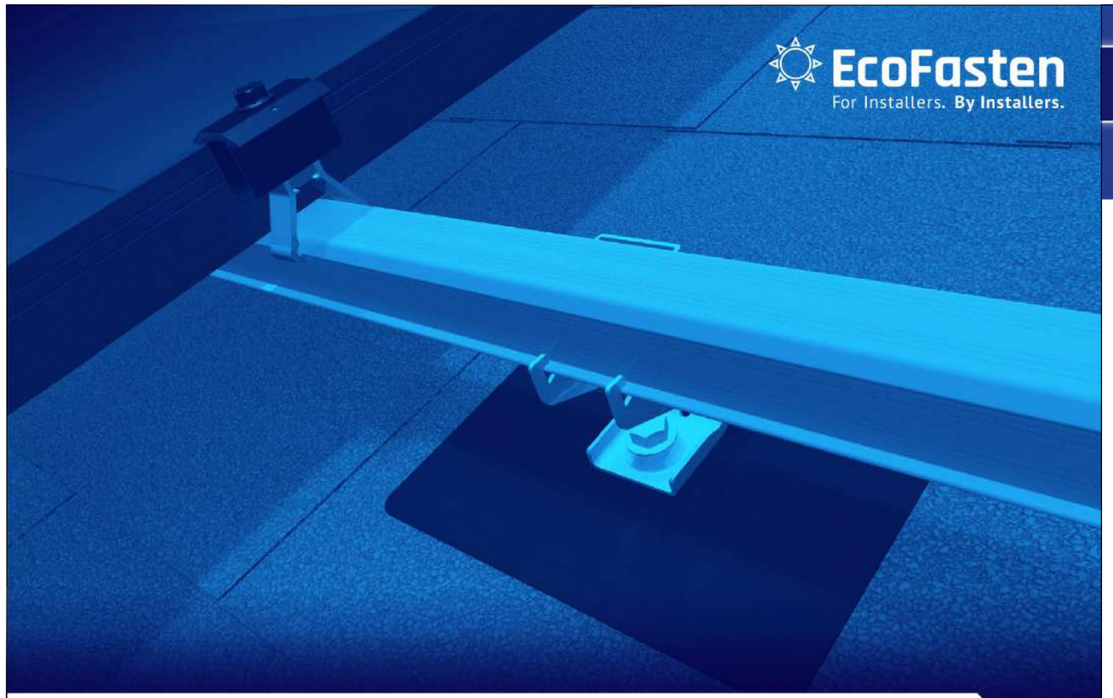
SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14



CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

INSTALLATION GUIDE

REVISION DATE: 04/09/21	VERSION: v2.4

ECOFASTENSOLAR.COM

MANUFACTURER	LIST OF UL2703 APPROVED MODULES
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72, 72H, or 72DH
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where "YY" can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HH2, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45, and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40, and 42mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, G5/SC, G5/TS, BLK-G5, BLK-G5/SC, BLK-G5/TS, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6/SC, G6/TS, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G6+/AC, BLK-G6+/SC, BLK-G6/TS, G6+/TS, BLK-G6+/TS, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, L-G8.3, L-G8.3/BFF, ML-G9, BLK ML-G9, ML-G9+, BLK ML-G9+, XL-G9, XL-G9.2 or XL-G9.3
Heliene	Heliene modules with 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "A" can be blank, HomePV, or Bifacial
HT-SAAE	HT-SAAE modules with 35 and 40 mm frames HTyy-156Z-xxx Where "yy" can be 60 or 72, "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C

MODULES

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

Engineering Alliance, Inc

https://www.eng-alliance.com

27-June-2022

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87101
Tel: 505 242 6411

Attn.: Engineering Department

Subject: Engineering Certification for the Unirac SOLARMOUNT Flush Rail System to Support Photovoltaic Panels.

The Unirac SOLARMOUNT Flush-to-Roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof.

We have reviewed the SOLARMOUNT system, a proprietary mounting system constructed from modular parts which are intended for rooftop installation of solar photovoltaic (PV) panels; and have reviewed the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the SOLARMOUNT rails (SM LIGHT rail, SM STANDARD rail, and SM HEAVY DUTY rail) with Standard and Pro Series hardware. All information, data and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. ASCE/SEI 7-05, 7-10, 7-16 Minimum Design Loads for Buildings and Other Structures
2. International Building Code, 2006-2021 Edition w/ Provisions from SEAOC PV-2 2017
3. International Residential Code, 2006- 2021 Edition w/ Provisions from SEAOC PV-2 2017
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
5. Aluminum Design Manual, 2015 & 2020 Edition

Following are typical specifications to meet the above code requirements:

Design Criteria:
Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

For Houston, TX:
Basic Wind Speed ASD Minimum 110 mph to 147 mph (3-sec gust ASCE 7-05 for IRC)
Basic Wind Speed LRFD Minimum 142 mph to 190 mph (Vult ASCE 7-10 for IBC)

Attachment Spacing: Per U-Builder 2.0 Engineering report.

Cantilever: The maximum cantilever length is L/3, where "L" is the span noted in the U-Builder 2.0 online Tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel
Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation

Installation Orientation: See SOLARMOUNT Rail Flush Installation Guide.

4603 April Meadow Way, Sugar Land, TX 77479. Ph: 832 865 4757

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-16

DEVELOPMENT APPLICATION

City of Rockwall
Planning and Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087

STAFF USE ONLY

PLANNING & ZONING CASE NO.

NOTE: *THE APPLICATION IS NOT CONSIDERED ACCEPTED BY THE CITY UNTIL THE PLANNING DIRECTOR AND CITY ENGINEER HAVE SIGNED BELOW.*

DIRECTOR OF PLANNING:

CITY ENGINEER:

PLEASE CHECK THE APPROPRIATE BOX BELOW TO INDICATE THE TYPE OF DEVELOPMENT REQUEST [SELECT ONLY ONE BOX]:

PLATTING APPLICATION FEES:
- ☐ MASTER PLAT ($100.00 + $15.00 ACRE) [1]
- ☐ PRELIMINARY PLAT ($200.00 + $15.00 ACRE) [1]
- ☐ FINAL PLAT ($300.00 + $20.00 ACRE) [1]
- ☐ REPLAT ($300.00 + $20.00 ACRE) [1]
- ☐ AMENDING OR MINOR PLAT ($150.00)
- ☐ PLAT REINSTATEMENT REQUEST ($100.00)

SITE PLAN APPLICATION FEES:
- ☐ SITE PLAN ($250.00 + $20.00 ACRE) [1]
- ☐ AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING PLAN ($100.00)

ZONING APPLICATION FEES:
- ☐ ZONING CHANGE ($200.00 + $15.00 ACRE) [1]
- ☑ SPECIFIC USE PERMIT ($200.00 + $15.00 ACRE) [1 & 2]
- ☐ PD DEVELOPMENT PLANS ($200.00 + $15.00 ACRE) [1]

OTHER APPLICATION FEES:
- ☐ TREE REMOVAL ($75.00)
- ☐ VARIANCE REQUEST/SPECIAL EXCEPTIONS ($100.00) [2]

NOTES:
[1]: IN DETERMINING THE FEE, PLEASE USE THE EXACT ACREAGE WHEN MULTIPLYING BY THE PER ACRE AMOUNT. FOR REQUESTS ON LESS THAN ONE ACRE, ROUND UP TO ONE (1) ACRE.
[2]: A ***$1,000.00*** FEE WILL BE ADDED TO THE APPLICATION FEE FOR ANY REQUEST THAT INVOLVES CONSTRUCTION WITHOUT OR NOT IN COMPLIANCE TO AN APPROVED BUILDING PERMIT.

PROPERTY INFORMATION [PLEASE PRINT]

ADDRESS	125 Lanshire Dr. Rockwall,TX 75032		
SUBDIVISION		LOT	BLOCK
GENERAL LOCATION			

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING		CURRENT USE	
PROPOSED ZONING		PROPOSED USE	Roof Mounted PV System
ACREAGE	LOTS [CURRENT]	LOTS [PROPOSED]	

☐ ***SITE PLANS AND PLATS:*** *BY CHECKING THIS BOX YOU ACKNOWLEDGE THAT DUE TO THE PASSAGE OF HB3167 THE CITY NO LONGER HAS FLEXIBILITY WITH REGARD TO ITS APPROVAL PROCESS, AND FAILURE TO ADDRESS ANY OF STAFF'S COMMENTS BY THE DATE PROVIDED ON THE DEVELOPMENT CALENDAR WILL RESULT IN THE DENIAL OF YOUR CASE.*

OWNER/APPLICANT/AGENT INFORMATION [PLEASE PRINT/CHECK THE PRIMARY CONTACT/ORIGINAL SIGNATURES ARE REQUIRED]

☐ OWNER		☑ APPLICANT	Tony Trammell
CONTACT PERSON		CONTACT PERSON	Tony Trammell
ADDRESS		ADDRESS	2407 E Loop 820 N
CITY, STATE & ZIP		CITY, STATE & ZIP	Fort Worth, TX 76118
PHONE		PHONE	817-616-3152
E-MAIL		E-MAIL	tx.permits@gosolnova.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Tony Trammell [OWNER] THE UNDERSIGNED, WHO STATED THE INFORMATION ON THIS APPLICATION TO BE TRUE AND CERTIFIED THE FOLLOWING:

"I HEREBY CERTIFY THAT I AM THE OWNER FOR THE PURPOSE OF THIS APPLICATION; ALL INFORMATION SUBMITTED HEREIN IS TRUE AND CORRECT; AND THE APPLICATION FEE OF $_____, TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE _____ DAY OF _____, 20___. BY SIGNING THIS APPLICATION, I AGREE THAT THE CITY OF ROCKWALL (I.E. "CITY") IS AUTHORIZED AND PERMITTED TO PROVIDE INFORMATION CONTAINED WITHIN THIS APPLICATION TO THE PUBLIC. THE CITY IS ALSO AUTHORIZED AND PERMITTED TO REPRODUCE ANY COPYRIGHTED INFORMATION SUBMITTED IN CONJUNCTION WITH THIS APPLICATION, IF SUCH REPRODUCTION IS ASSOCIATED OR IN RESPONSE TO A REQUEST FOR PUBLIC INFORMATION."

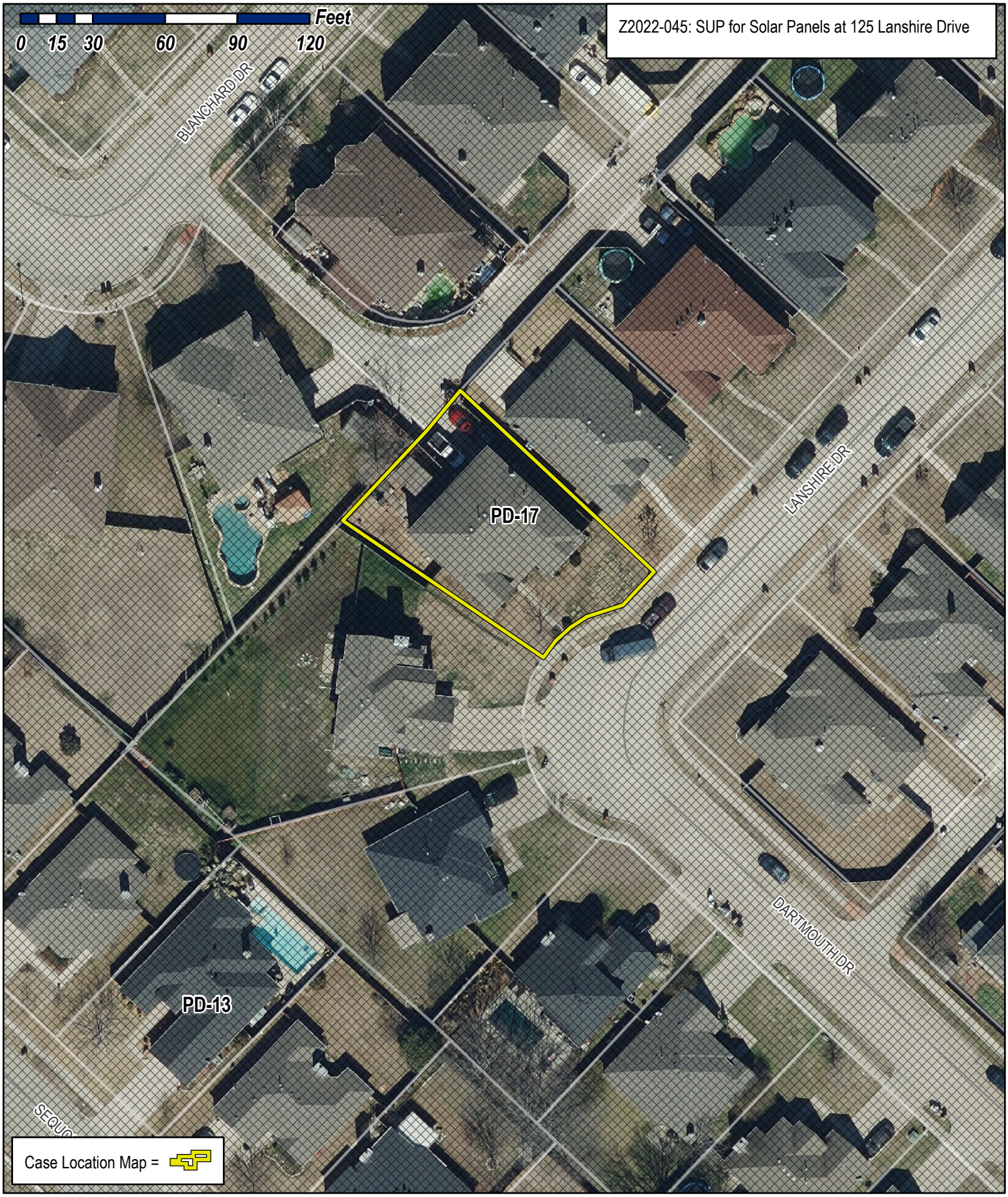
HALEY ANNE SPEIDEL
Notary Public, State of Texas
Comm. Expires 10-25-2025
Notary ID 133411039

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* September, 20 20.

OWNER'S SIGNATURE Tony Trammell

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS Haley Speidel

MY COMMISSION EXPIRES 10/25/2020

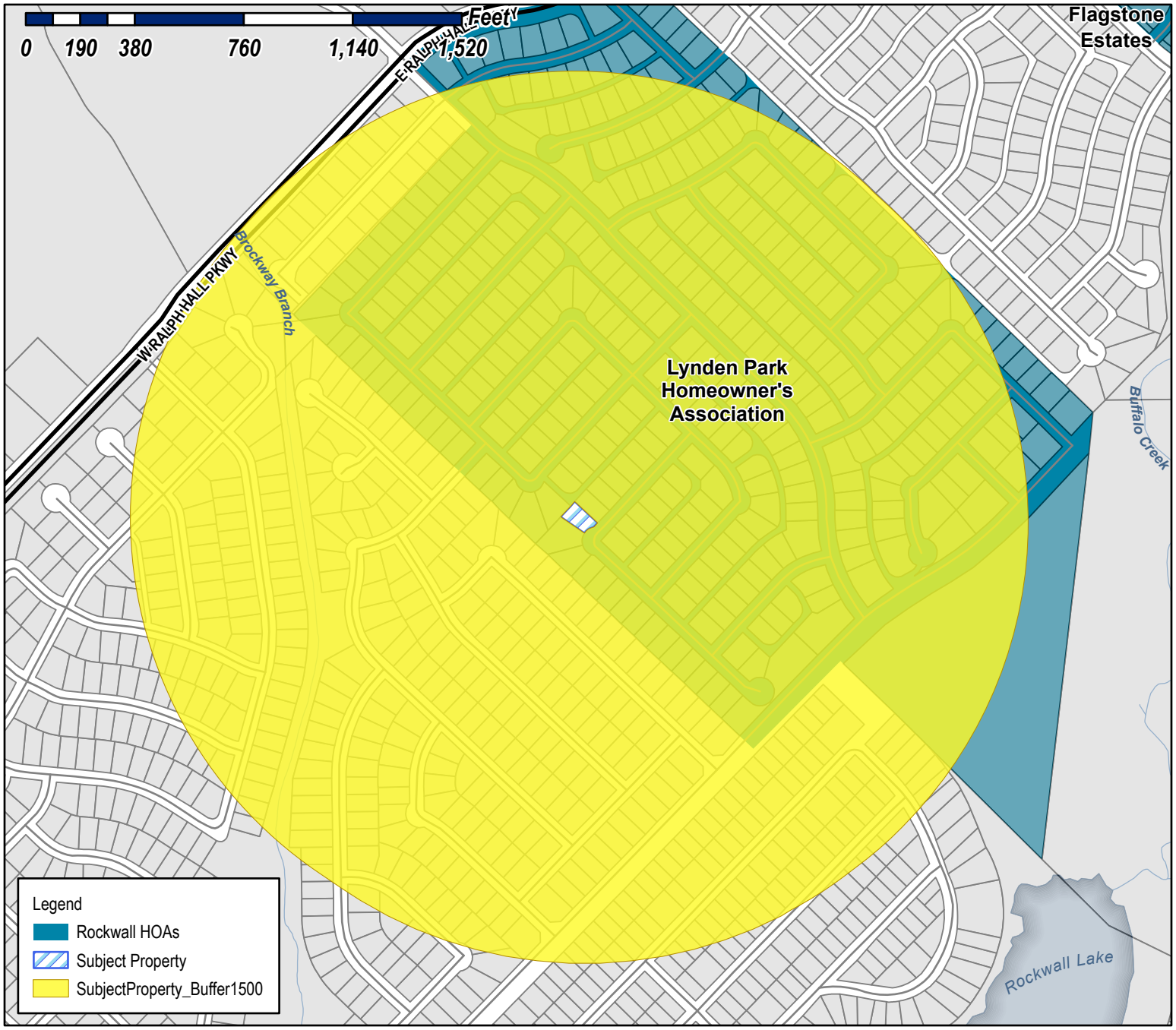


City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75032
(P): (972) 771-7745
(W): www.rockwall.com

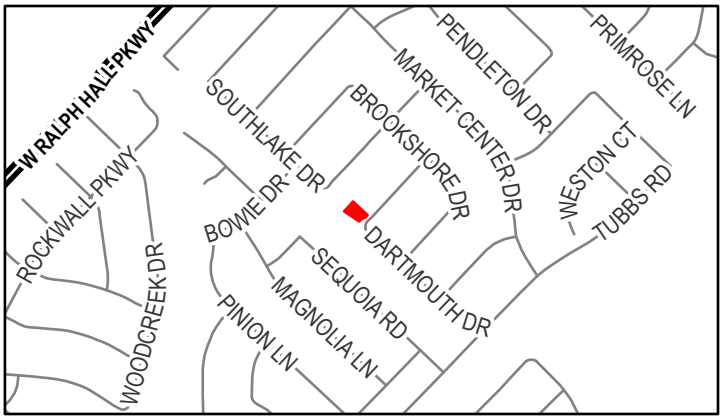
City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com



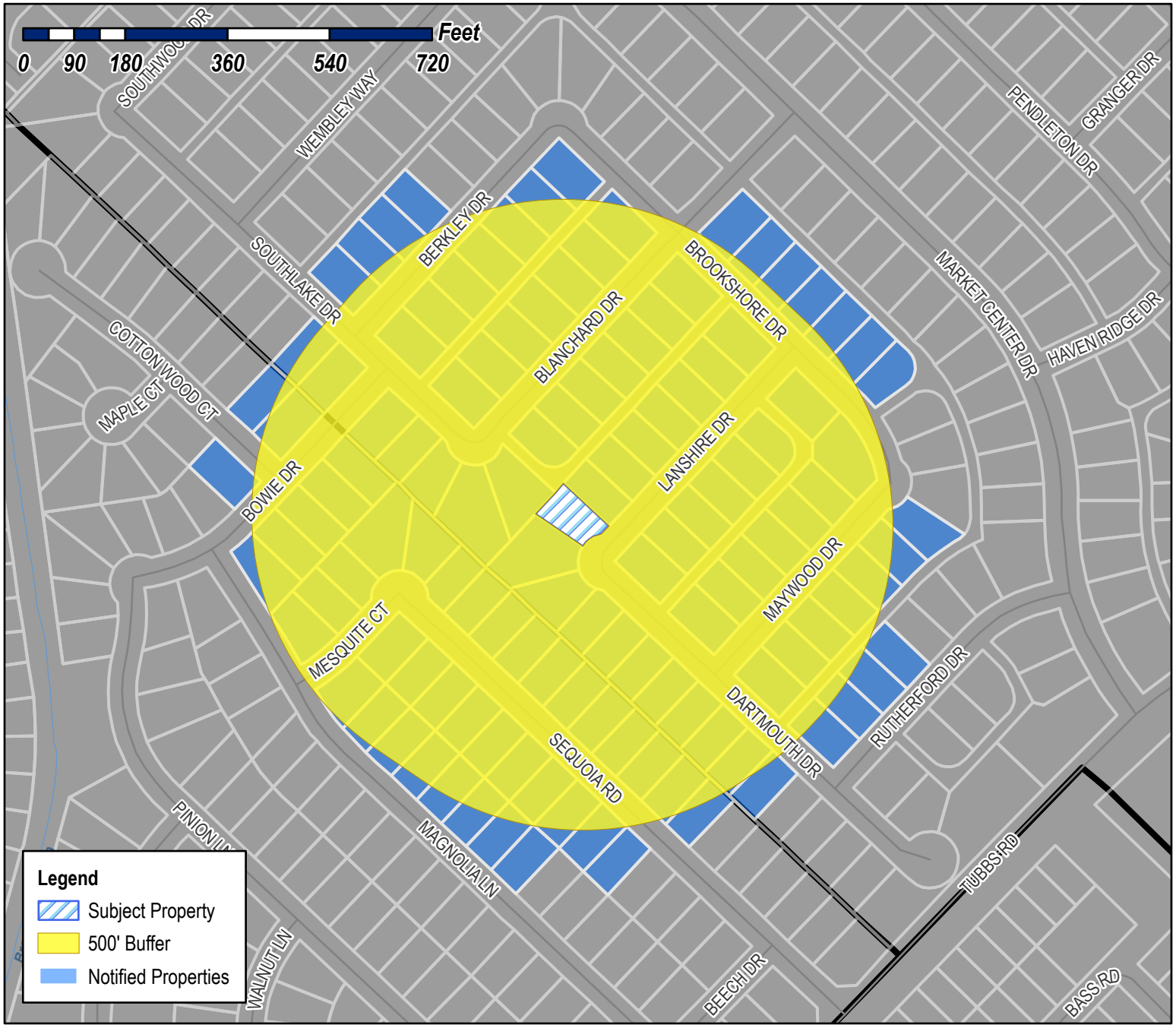
Case Number: Z2022-045
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Planned Development District 17 (PD-17)
Case Address: 125 Lanshire Drive

Date Saved: 9/16/2022
For Questions on this Case Call (972) 771-7745



City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com



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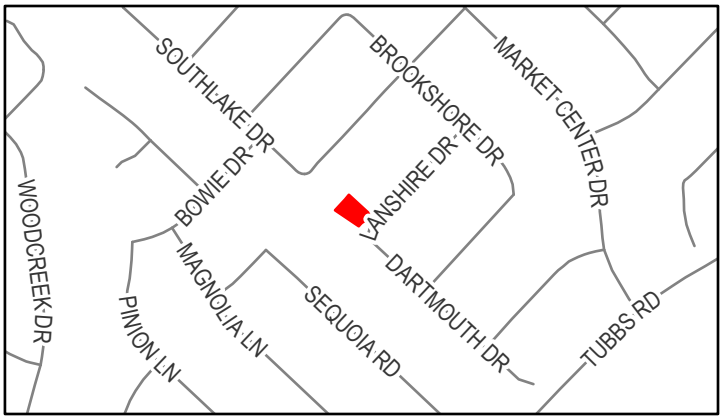


ISYA LIMITED PARTNERSHIP
1018 MOUNT AUBURN
DALLAS, TX 75223

CAMPBELL FLORENCE I
106 BROOKSHORE DR
ROCKWALL, TX 75032

STARNES CHARLES O & LORRAINE K
108 BROOKSHORE DR
ROCKWALL, TX 75032

520 YFLK LLC
110 BROOKSHORE DR
ROCKWALL, TX 75032

OFFILL ROBERT L & CRYSTAL J
110 LANSHIRE DR
ROCKWALL, TX 75032

DELIZ CRYSTAL D
110 MAYWOOD DRIVE
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
111 LANSHIRE DR
ROCKWALL, TX 75032

ALSAMMAK AHMED AND
BAN AL TAIE
111 LANSHIRE DRIVE
ROCKWALL, TX 75032

ENRIGHT THOMAS & ROXANNE
111 MAYWOOD DR
ROCKWALL, TX 75032

TATE ANTHONY R
112 MAYWOOD DR
ROCKWALL, TX 75032

GUAJARDO RAUL E & JORDANNE MORROW
112 BROOKSHORE DRIVE
ROCKWALL, TX 75032

PROGRESS RESIDENTIAL BORROWER 16 LLC
113 LANSHIRE DR
ROCKWALL, TX 75032

GONZALEZ VICTOR M
113 MAYWOOD
ROCKWALL, TX 75032

HENDERSON NORMA
114 MAYWOOD DR
ROCKWALL, TX 75032

GALLOWAY STEPHEN J & GWENDOLYN R
114 BROOKSHORE DR
ROCKWALL, TX 75032

LECLERC ANDRE
114 LANSHIRE DR
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
115 LANSHIRE DR
ROCKWALL, TX 75032

ELLIS MARK AND
DENISE HENRY
115 MAYWOOD DR
ROCKWALL, TX 75032

RSB TOKEN INVESTMENTS LLC
116 MAYWOOD DR
ROCKWALL, TX 75032

WAFER CHRISTOPHER D & WILANDA L
116 BROOKSHORE DR
ROCKWALL, TX 75032

TRAN NGOC AND XUYEN HUYNH
116 LANSHIRE DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
117 LANSHIRE DR
ROCKWALL, TX 75032

LIMON MARIA ARACELY AND NORBERTO
117 MAYWOOD
ROCKWALL, TX 75032

CLARK ERIC DWAYNE & PATRICIA D
117 RUTHERFORD DR
ROCKWALL, TX 75032

PARAMOUNT LAURELS LLC
118 BROOKSHORE DR
ROCKWALL, TX 75032

VAN HEYST DAUAN N & RANDALL
118 LANSHIRE DR
ROCKWALL, TX 75032

RIDGEWAY RYAN A & HARRIS H JORGENSEN
118 MAYWOO DRIVE
ROCKWALL, TX 75032

PAGADUAN KEVIN I & DEEJAY
119 LANDSHIRE DRIVE
ROCKWALL, TX 75032

NUNEZ ARMANDO M & DELIA ANGUIANO
119 MAYWOOD
ROCKWALL, TX 75032

SOUMIE NAHNAH P
119 RUTHERFORD DR
ROCKWALL, TX 75032

LOZA FABIOLA ESTRADA
119 SOUTHLAKE DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
120 LANSHIRE DR
ROCKWALL, TX 75032

SAMMIS FLEETWOOD & MELONIE
120 MAYWOOD
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
121 RUTHERFORD DR
ROCKWALL, TX 75032

WILLIAMS LATONYA
121 BLANCHARD DRIVE
ROCKWALL, TX 75032

UKPAI OGBEYALU
121 LANSHIRE DR
ROCKWALL, TX 75032

ANDERSON AMBER
121 MAYWOOD DR
ROCKWALL, TX 75032

MERINO TROY A
122 BERKLEY DRIVE
ROCKWALL, TX 75032

MARROQUIN DOMINGO & CLAUDIA D
122 BLANCHARD DR
ROCKWALL, TX 75032

HOUSER MICKEY AND
JENNIFFER MALABOSA
122 LANSHIRE DRIVE
ROCKWALL, TX 75032

CORUJO JAMES AND JANISS
122 MAYWOOD DR
ROCKWALL, TX 75032

COZART MICHAEL AND CASSANDRA HARRIS-
123 LANSHIRE DR
ROCKWALL, TX 75032

MAREZ SARAH E AND MICHAEL E AND
CYNTHIA ANN HERRERA
123 MAYWOOD
ROCKWALL, TX 75032

JACKSON DALE E
123 RUTHERFORD DR
ROCKWALL, TX 75032

MYLES BOBBY J JR
123 SOUTHLAKE DR
ROCKWALL, TX 75032

CUELLAR JOEL A & MARTHA C
124 LANSHIRE DR
ROCKWALL, TX 75032

SANCHEZ JAYLYN MARIE
124 SEQUOIA ROAD
ROCKWALL, TX 75032

ELKINS THOMAS
125 BLANCHARD DR
ROCKWALL, TX 75032

FISHER CHARLES F JR
125 LANSHIRE DR
ROCKWALL, TX 75032

RASA GABRIEL N & MARIA C
125 SEQUOIA RD
ROCKWALL, TX 75032

NABI NABIULLAH AND SIMIN
126 BERKLEY DRIVE
ROCKWALL, TX 75032

DUNN CLAYTON F AND JILLIAN
126 BLANCHARD
ROCKWALL, TX 75087

AMH 2014-2 BORROWER LLC
127 SOUTHLAKE DR
ROCKWALL, TX 75032

FAY TERRENCE R & RENEE L
127 LANSHIRE DR
ROCKWALL, TX 75032

MARICH GARY C
128 SEQUOIA RD
ROCKWALL, TX 75032

AL BANNA WALID AHMAD
129 BLANCHARD DR
ROCKWALL, TX 75032

HERNANDEZ TERRI
129 SEQUOIA RD
ROCKWALL, TX 75032

SKYLES BRENDA RENEE AND RICHARD ERIC
HYATT
130 BERKLEY DR
ROCKWALL, TX 75032

PEMBERTON DAVID S & SABRINA
130 BLANCHARD DRIVE
ROCKWALL, TX 75032

BANKS LIDIA ELIZABETH & DARREL JAMES
131 SOUTHLAKE DRIVE
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
132 MAGNOLIA LN
ROCKWALL, TX 75032

COKELEZ KENAN
132 SEQUOIA ROAD
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
1321 UPLAND DR UNIT 6293
HOUSTON, TX 77043

AH4R PROPERTIES TWO LLC
133 BERKLEY DR
ROCKWALL, TX 75032

BUDLONG GARY C & PEGGY B P
LIVING TRUST
133 SEQUOIA RD
ROCKWALL, TX 75032

UDOFIA UKO
133 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
134 BOWIE DR
ROCKWALL, TX 75032

LAM SEAN ANDREW
SREY LAM
134 BERKLEY DR
ROCKWALL, TX 75032

BIRDSONG SERENA AND
BILLY COCHARD
134 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
135 MESQUITE CT
ROCKWALL, TX 75032

BIGGS FREDDIE L & SYLVIA L
135 SOUTHLAKE DR
ROCKWALL, TX 75032

ISYA LIMITED PARTNERSHIP
136 SEQUOIA RD
ROCKWALL, TX 75032

PORTER KRISTEN
136 MAGNOLIA LN
ROCKWALL, TX 75032

FALLS DAVID & TERRI
137 BLANCHARD DR
ROCKWALL, TX 75032

CARRIZALES ERI & LENNY
137 BOWIE DR
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
137 SEQUOIA RD
ROCKWALL, TX 75032

WESTERVELT BARBARA
137 BERKLEY DR
ROCKWALL, TX 75032

CHEN QINGSHENG & YAN FENG
138 BERKLEY DR
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
138 BLANCHARD DR
ROCKWALL, TX 75032

LACY'S INVESTMENTS ENTERPRISES LLC
138 BOWIE DR
ROCKWALL, TX 75032

FALLS DAVID AND TERRI
139 MESQUITE CT
ROCKWALL, TX 75032

YOUNG SCOTT ALLEN & VETRICA LANITA YOUNG
139 SOUTHLAKE DR
ROCKWALL, TX 75032

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
140 MAGNOLIA LN
ROCKWALL, TX 75032

PETE MICHAEL A & SHANNAN D
140 SEQUOIA RD
ROCKWALL, TX 75032

TYLER MATTHEW
141 SEQUOIA RD
ROCKWALL, TX 75032

DEDNER WANDA G
141 BERKLEY DR
ROCKWALL, TX 75032

MORGAN PAULA
141 BLANCHARD DR
ROCKWALL, TX 75032

<Null>
142 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
142 BOWIE DR
ROCKWALL, TX 75032

JOSEPH STEPHEN K & JESSY
142 BERKLEY DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
14264 FAITH DR
FRISCO, TX 75035

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
143 MESQUITE CT
ROCKWALL, TX 75032

MURPHREE APRIL L
144 MAGNOLIA LN
ROCKWALL, TX 75032

SEDLAK AMANDA MARIE
144 SEQUOIA ROAD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
145 SEQUOIA RD
ROCKWALL, TX 75032

THOMAS MAKIA S
145 BERKLEY DR
ROCKWALL, TX 75032

TATUM LANCE
145 BLANCHARD DR
ROCKWALL, TX 75032

AMH 2014-3 BORROWER LLC
146 BOWIE DR
ROCKWALL, TX 75032

GONZALEZ GRACIELA & ROLANDO
146 BERKLEY DR
ROCKWALL, TX 75032

MURPHY AUDREY LENEE ANDREWS
146 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFF
147 MESQUITE CT
ROCKWALL, TX 75032

ROVILLOS JOHN ISRAEL AMANDE AND GRACE HALIMA
148 MAGNOLIA LANE
ROCKWALL, TX 75032

FARMER BETTY K
148 SEQUOIA RD
ROCKWALL, TX 75032

MENO ROLAND A & WAYNETTE M
149 SEQUOIA RD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
15 CENTER CT
HEATH, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL COURT
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL CT
HEATH, TX 75032

BOYD SONIA B AND
MACEO R PRICE JR
150 BLANCHARD DRIVE
ROCKWALL, TX 75032

IRISH SARAH K
150 BOWIE DR
ROCKWALL, TX 75032

GARDNER EDWIN & DIANNE
152 MAGNOLIA
ROCKWALL, TX 75032

TUNNELL DAVID AND PENNY
152 SEQUOIA ROAD
ROCKWALL, TX 75032

FALLS TERRI & DAVID
153 SEQUOIA RD
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
1553 VZ COUNTY ROAD 1213
CANTON, TX 75103

CARSON MICHELE L
156 MAGNOLIA LN
ROCKWALL, TX 75032

SHAH VIREN
156 SEQUOIA
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
157 SEQUOIA RD
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
16 GUMBLE CT
HILLSBOROUGH, NJ 8844

TATE ANTHONY R
160 CROSS OAK LANE
EADS, TN 38028

ABUNDIS ROBERTO AND YADIRA
160 MAGNOLIA LANE
ROCKWALL, TX 75087

MENCHACA JENNIFER
160 SEQUOIA RD
ROCKWALL, TX 75032

SIPES RICKY W
161 SEQUOIA ROAD
ROCKWALL, TX 75032

SUAREZ MARIA J & BETSY M
164 SEQUOIA RD
ROCKWALL, TX 75032

LE THAO M AND
THAI PHAM
168 SEQUOIA ROAD
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
1850 PARKWAY PLACE SUITE 900
MARIETTA, GA 30067

LE BUU VAN
220 COTTON WOOD CT
ROCKWALL, TX 75032

SHAFFER LAURA H &
WILLIAM B WATTS
221 DARTMOUTH DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
223 DARTMOUTH DR
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
224 COTTON WOOD CT
ROCKWALL, TX 75032

WKB PARTNERS LP
225 DARTMOUTH DR
ROCKWALL, TX 75032

ARELLANO-CRUZ PAULA M AND FELIX
227 DARTMOUTH DR
ROCKWALL, TX 75032

AUSTIN TAMIKA S
229 DARTMOUTH DR
ROCKWALL, TX 75032

RODRIGUEZ ROGELIO
231 DARTMOUTH DR
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
233 DARTMOUTH DR
ROCKWALL, TX 75032

DAVIS DONNA B
235 DARTMOUTH DR
ROCKWALL, TX 75032

KIWALE THEREZIA
237 DARTMOUTH DRIVE
ROCKWALL, TX 75032

AMH 2014-2 BORROWER LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AH4R PROPERTIES TWO LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

TYLER MATTHEW
2683 POTTER ST
EUGENE, OR 97405

BUDLONG GARY C & PEGGY B P
LIVING TRUST
2920 WINAM AVE
HONOLULU, HI 96816

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
30 WINDSOR DRIVE
ROCKWALL, TX 75032

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID AND TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS TERRI & DAVID
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

520 YFLK LLC
3105 CORNELL AVENUE
DALLAS, TX 75205

WKB PARTNERS LP
463 KEYSTONE BEND
HEATH, TX 75032

CHEN QINGSHENG & YAN FENG
4715 147TH PL SE
BELLEVUE, WA 98006

LACY'S INVESTMENTS ENTERPRISES LLC
510 HIGHWATER CROSSING
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
519 I 30 #140
ROCKWALL, TX 75032

LIGHT JEFF
519 INTERSTATE 30 #140
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
637 FOREST BEND DRIVE
PLANO, TX 75025

MARICH GARY C
7822 STONEHAVEN LN
ROWLETT, TX 75089

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

AMH 2014-3 BORROWER LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

CARRIZALES ERI & LENNY
PO BOX 1244
ROCKWALL, TX 75087

RSB TOKEN INVESTMENTS LLC
PO BOX 1664
ROCKWALL, TX 75087

PROGRESS RESIDENTIAL BORROWER 16 LLC
PO BOX 4090
SCOTTSDALE, AZ 85261

HENDERSON NORMA
PO BOX 705
ROCKWALL, TX 75087

PARAMOUNT LAURELS LLC
PO BOX 786
WYLIE, TX 75098

30 August 2022

UNIRAC

1411 Broadway Blvd. NE

Albuquerque, NM 87102

REFERENCE: Charles Fisher: 125 Lanshire Dr, Rockwall, TX 75032 USA

Solar Array Installation

To Whom It May Concern:

We have reviewed the existing structure referenced above. The purpose of the review was to evaluate its adequacy to support the proposed installation of solar panels on the roof as shown on the panel layout plan drawings. Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation.

Design Parameter

Code: International Building Code 2015 (IBC 2015)

Risk Category: II

Design wind speed: 115 MPH

Wind exposure category: B

Ground snow load: 5 PSF

Seismic design category: B

Existing Roof Structure

Roof Structure: 2"x4" rafters @24" o.c.

Roofing material: Comp Shingle

Connection to Roof

Mounting connection: One 5/16 in lag screw w/ min. 2.5 in embedment into framing at max. 72 in o.c. along rails

Two rails per row of panels, evenly spaced; panel length perpendicular to the rails not to exceed 74 in

Conclusions

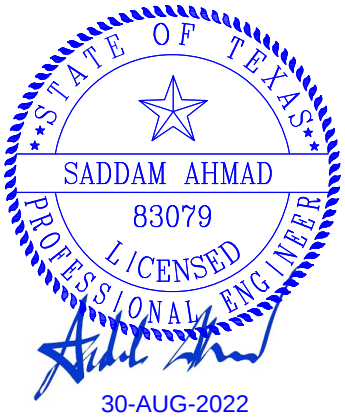
Based upon our evaluation, we conclude that the existing structure is adequate to support the proposed solar panel installation. In the area of the solar array, other live loads will not be present or will be greatly reduced (2015 IBC, Section 1607.12.5). The glass surface of the solar panels allows for a lower slope factor per ASCE 7, resulting in reduced design snow load on the panels. The stresses of the structural elements, resulting from the altered gravity loads in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

The solar array will be flush-mounted (not more than 5 in above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Regarding seismic loads, we conclude that any additional forces will be small. As per Section 1613.1, Exception-1 of the 2015 IBC, detached one- and two-family dwellings with Seismic Design Category A, B or C or located where the mapped short-period spectral response acceleration, Ss, is less than 0.4 g are exempted from seismic load. Therefore the existing lateral force resisting system can remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor must notify Engineering Alliance Inc. should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others are allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. The design of the solar panel racking (mounts, rails, etc.) and electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Engineering Alliance Inc assumes no responsibility for improper installation of the solar array.

Please feel free to call for any questions or clarifications.



30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

Prepared by

Engineering Alliance, Inc
Sugar Land, TX
Phone: 832 865 4757

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Calculations per ASCE 7-10
International Building Code 2015 (IBC 2015)

ROOF DEAD LOAD (D):

Material	Design material weight (psf)	Increase due to pitch	Material weight (psf)
Comp Shingle	2.23	1.11	2
1/2" Plywood	1.1	1.11	1
Framing	3		3
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.2	1.11	2
M, E & Misc	1.5		1.5
Total Dead Load	**10.6**		
PV Array Dead Load	**3.3**	1.11	3

ROOF LIVE LOAD (Lr):

Existing Design Roof Live Load [psf]	20	ASCE 7-10, Table 4-1
Roof Live Load With PV Array [psf]	0	2015 IBC, Section 1607.12.5

SEISMIC LOAD, (E):

Risk category:	II	Table 1.5-1
Seismic Design Category:	B	Table 11.6-2
I_p:	1	Table 1.5-2
Site Class:	D	
R_p:	1.5	Table 13.6-1
S_s:	0.103	
S_1:	0.055	
a_p:	1	Table 13.6-1
z:	1	ft
h:	1	ft
z/h:	1	
F_a:	1.6	Table 11.4-1
F_v:	2.4	Table 11.4-2
S_{MS}:	0.165	Eqs. 11.4-1
S_{M1}:	0.132	Eqs. 11.4-2
S_{DS}:	0.110	Eqs. 11.4-3
S_{D1}:	0.088	Eqs. 11.4-4

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	105	
Exposure Category:	B	Sec. 26.7.3
Risk Category:	II	Table 1.5-1
Height of Roof, h [ft]:	30	(Approximate)
Roof Slope [°]:	26	
Site Elevation [ft]:	547	
Comp/Cladding Location:	Gable/Hip Roofs, 7° < θ ≤ 27°	FIGURE 30.4-2B
Enclosure Classification:	Enclosed Buildings	
Zone 1 GCp:	0.9	(enter largest abs. value)
Zone 2 GCp:	1.7	(enter largest abs. value)
Zone 3 GCp:	2.6	(enter largest abs. value)
α:	7	Table 26.9-1
z_g [ft]	1200	Table 26.9-1
K_h:	0.70	Table 30.3-1
K_{zt}:	1	Equation 26.8-1
K_d:	0.85	Table 26.6-1
Velocity Pressure, q_h [psf]:	16.81	Equation 30.3-1
GC_{pi}	0	Table 26.11-1

PRESSURES:

$$p = q_h((GC_p)-(GC_{pi})) \quad (lb/ft^2)$$ Equation 30.9-1

Zone 1 :	15.1	psf (1.0 W)
Zone 2 :	28.6	psf (1.0 W)
Zone 3 :	43.7	psf (1.0 W)

a [ft] = 3.6

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

COMPARE WIND & SEISMIC LOADS FOR CONNECTION (1 Sq. Ft. Section)

Wind Load, W:

Wind pressure, p:	9.1	psf (Zone 1: 0.6 W from wind pressure calculation)
Height, h:	1	ft
Width, w:	1	ft
Fperp:	9.1	lb (Uplift)

Seismic Load, E:

0.7 * F_p ,min:	0.069	lb
0.7 * F_p ,max:	0.369	lb
0.7 * F_p ,vert:	0.046	lb
0.7 * F_p ,long:	0.185	lb
0.7*F_p ,perp:	0.122	lb (uplift)

Wind (uplift) Controls Connection Design

CHECK INCREASE IN OVERALL SEISMIC LOADS

SEISMIC:

Seismic Design Category:	B

As per Section 1613.1, Exception-1 of the 2015 IBC, Seismic load is Exempted.

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Lag Screw Connection

Tributary Length (in):	74
Max Tributary Width (in):	72

Capacity:

Lag Screw Size[in] :	5/16	
C_d:	1.6	NDS Table 2.3.2
Embedment[1] [in]:	2.5	
Grade:	SPF (G = 0.42)	
Capacity [lbs/in]:	205	NDS Table 12.2A
Number of Screws in tension:	1	
Prying Coefficient:	1.4	
Total Capacity [lbs]:	586	

Demand:

Zone	Pressure (0.6 Wind) (psf)	Max Tributary Width (ft)	Max. Trib. Length (ft)	Max. Trib. Area2 (ft2)	Max. Uplift Force (lbs)
Zone 1 :	6.1	6.0	3.1	18.5	112
Zone 2 :	14.1	6.0	3.1	18.5	262
Zone 3 :	23.2	6.0	3.1	18.5	430

Total Tension Force(lbs):	430

Demand< Capacity: 73.3%, OK

Notes

1. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.
2. 'Max. Trib Area' is the product of the 'Max. Tributary Width' (along the rails) and 1/2 the panel width/height (perpendicular to the rails).

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SNOW LOAD (S):

	Existing	w/ Solar Panel Array	
Roof Slope [x:12]:	5.9	5.9	
Roof Slope [°]:	26	26	
Snow Ground Load, p_g [psf]:	5	5	ASCE 7-10, Section 7.2
Surface Roughness Category:	B	B	ASCE 7-10, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-10, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-10, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-10, Table 7-3
Risk Category:	II	II	ASCE 7-10, Table 1.5-1
Importance Factor, I_s:	1	1	ASCE 7-10, Table 1.5-2
Flat Roof Snow Load, p_f [psf]:	3	3	ASCE 7-10, Equation 7.3-1
Minimum Roof Snow Load, p_m [psf]:	0	0	ASCE 7-10, Section 7.3.4
Unobstructed Slippery Surface?	NO	YES	ASCE 7-10, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-10, Section 7.4
Roof Slope Factor, C_s:	1.00	0.73	ASCE 7-10, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	3	3	ASCE 7-10, Equation 7.4-1
Design Snow Load, S [psf]:	3	3	

Summary of Loads

	Existing	With PV Array
D [psf]	11	14
Lr [psf]	20	0
S [psf]	3	3

Maximum Gravity Loads:

	Existing	With PV Array	
(D + Lr) / Cd [psf]	24	15	ASCE 7-10, Section 2.4.1
(D + S) / Cd [psf]	12	14	ASCE 7-10, Section 2.4.1

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

Maximum Gravity Load [psf]:	24	15

Ratio Proposed Loading to Current Loading: **63%** **OK**

The gravity loads and; thus, the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

PHOTOVOLTAIC ROOF MOUNT SYSTEM

57 MODULES-ROOF MOUNTED - 22.80 kWDC, 16.53 kWAC

125 LANSHIRE DR, ROCKWALL, TX 75032 USA

SYSTEM SUMMARY:

(N) 57 - HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(N) 57 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(N) 02 - JUNCTION BOX
(E) 200A MAIN SERVICE PANEL WITH (N) 150A MAIN BREAKER
(N) 100A NON FUSED AC DISCONNECT
(N) 125A LOAD CENTER

DESIGN CRITERIA:

ROOF TYPE: - COMP SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @24" O.C.
STORY: - TWO STORY
SNOW LOAD : - 5 PSF
WIND SPEED :- 115 MPH
WIND EXPOSURE:- B
EXPOSURE CATEGORY:- II

GOVERNING CODES:

2017 NATIONAL ELECTRICAL CODE (NEC)
2015 INTERNATIONAL FIRE CODE (IFC)
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
2015 INTERNATIONAL MECHANICAL CODE (IMC)

SHEET INDEX

PV-0	COVER SHEET
PV-1	SITE PLAN WITH ROOF PLAN
PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAILS
PV-4	BRANCH LAYOUT
PV-5	ELECTRICAL LINE DIAGRAM
PV-6	ELECTRICAL CALCULATION
PV-6.1	LOAD CALCULATION & PANEL SCHEDULING
PV-7	PLACARDS & WARNING LABELS
PV-8	ADDITIONAL NOTES
PV-9+	EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

A LADDER SHALL BE IN PLACE FOR INSPECTION

THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.

EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.

EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A) REGARDLESS OF VOLTAGE.

PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED

ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.

HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" PER NEC 240.24

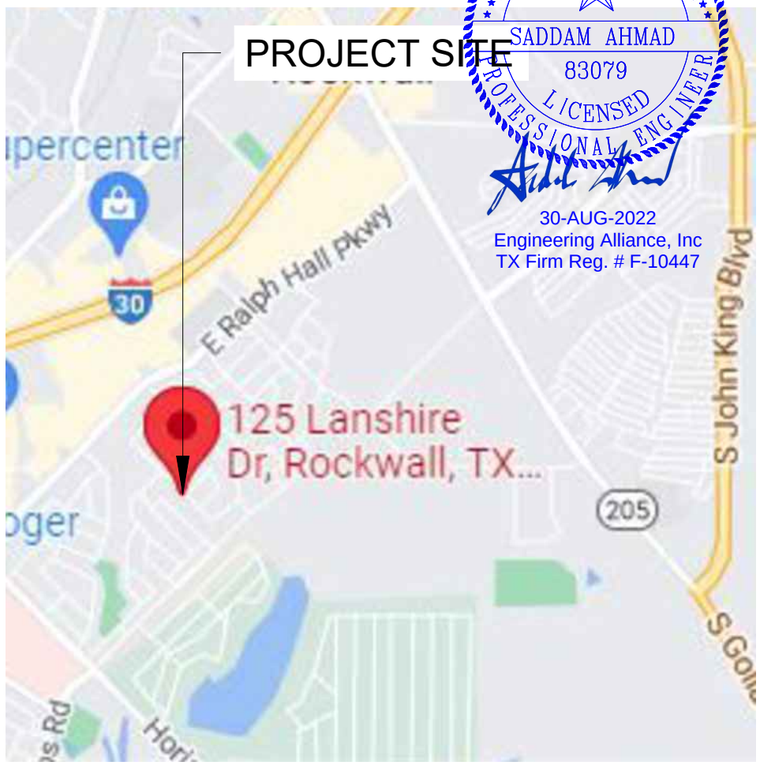
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER NEC 250.64C.
ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. NEC 690.64(B)(7)
SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

COVER SHEET

SHEET SIZE

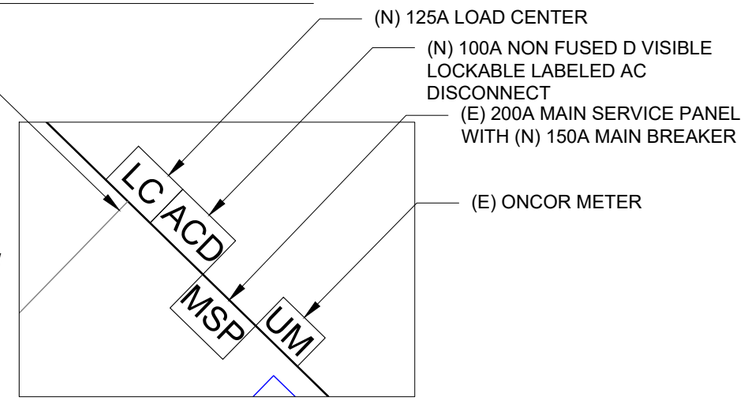
ANSI B
11" X 17"

SHEET NUMBER

PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

ENLARGED VIEW



STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 SITE PLAN WITH ROOF PLAN

SCALE: 1/16" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SITE PLAN WITH ROOF PLAN

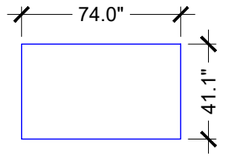
SHEET SIZE
ANSI B
11" X 17"

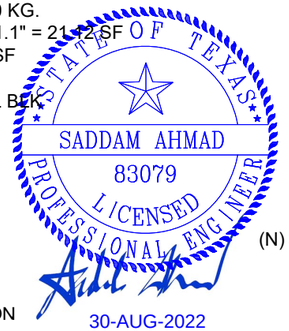
SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 57 MODULES
MODULE TYPE = HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
MODULE WEIGHT = 48.5 LBS / 22.0 KG.
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF
UNIT WEIGHT OF ARRAY = 2.30 PSF

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)





30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE:
INTERNATIONAL FIRE CODE SECTION 605.11.1.2 FOR RESIDENTIAL R-3 OCCUPANCIES AT LEAST THREE (3) FEET OF CLEARANCE ALONG THE EDGE (RAKE) OF THE ROOF TO A PANEL AND AT LEAST THREE (3) FEET FROM THE RIDGE OF THE ROOF TO A PANEL. PANELS SHALL BE AT LEAST ONE AND ONE-HALF (1-1/2) FEET FROM A VALLEY OR HIP. NO CLEARANCE IS REQUIRED AT THE EAVE.

INTERNATIONAL FIRE CODE SECTION 605.11.1.2.4 ROOFS WITH HIPS AND VALLEYS - WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY.

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
RAIL	33	ECOFASTEN CLICK RAIL 168" DARK
SPLICE	10	BND SPLICE BAR PRO SERIES DRK
MID CLAMP	74	UNIVERSAL AF MID CLAMPS
END CLAMP	80	UNIVERSAL AF END CLAMPS
ATTACHMENT	118	ECOFASTEN CLICKFIT
GROUNDING LUG	20	GROUND LUG

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

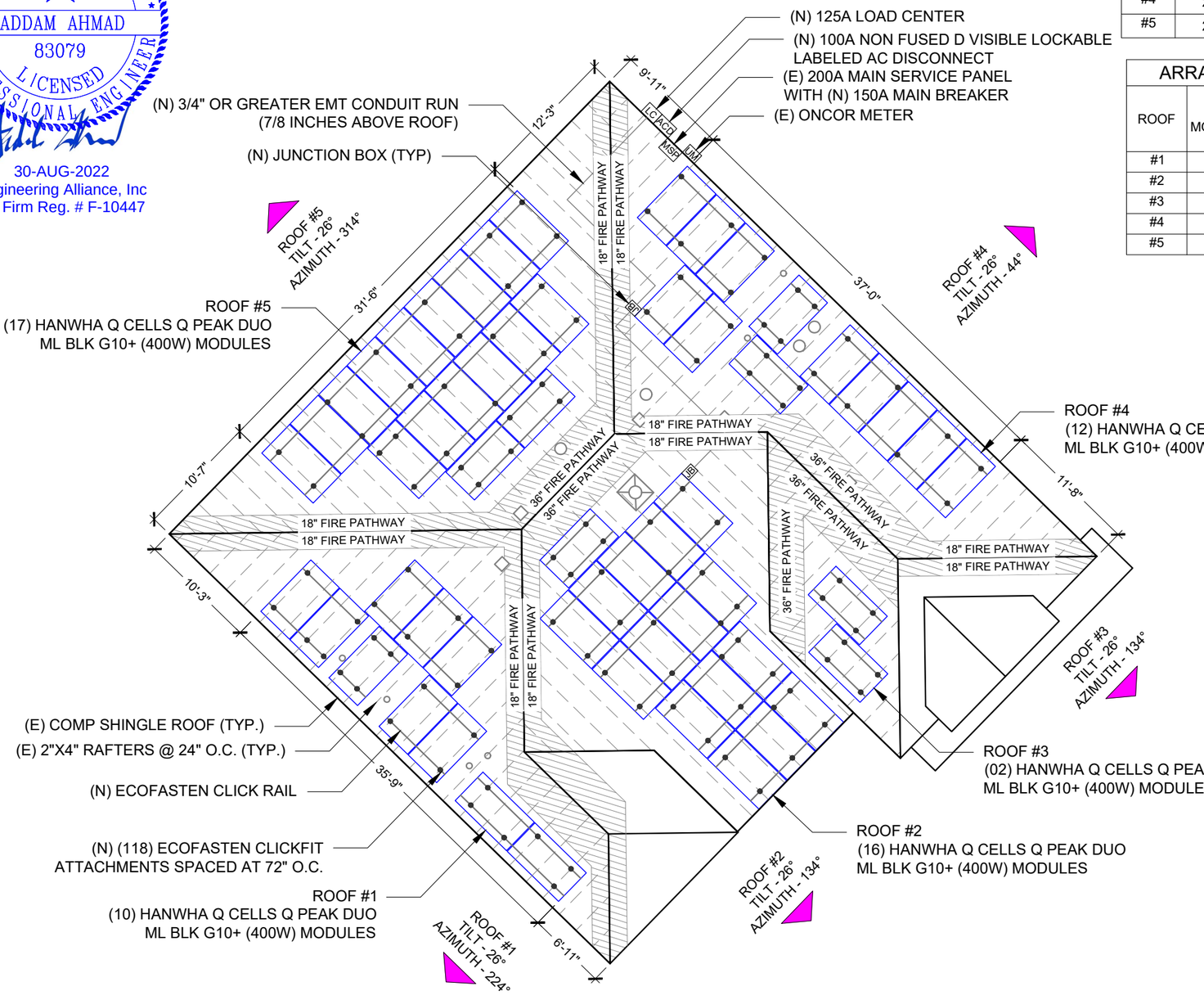
ROOF DESCRIPTION

ROOF	ROOF TYPE: ROOF TILT	ROOF TYPE: AZIMUTH	COMP SHINGLE ROOF: RAFTERS SIZE	COMP SHINGLE ROOF: RAFTERS SPACING
#1	26°	224°	2"x4"	24" O.C.
#2	26°	134°	2"x4"	24" O.C.
#3	26°	134°	2"x4"	24" O.C.
#4	26°	44°	2"x4"	24" O.C.
#5	26°	314°	2"x4"	24" O.C.

ARRAY AREA & ROOF AREA CALC'S

ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	211.21	539.16	39.17
#2	16	337.93	639.38	52.85
#3	02	42.24	189.84	22.25
#4	12	253.45	649.38	39.03
#5	17	359.05	705.06	50.93

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER



LEGEND

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- LC - LOAD CENTER
- JB - JUNCTION BOX
- CHIMNEY
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- FIRE PATHWAY

1 ROOF PLAN WITH MODULES

SCALE: 3/32" = 1'-0"

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
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INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS(OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
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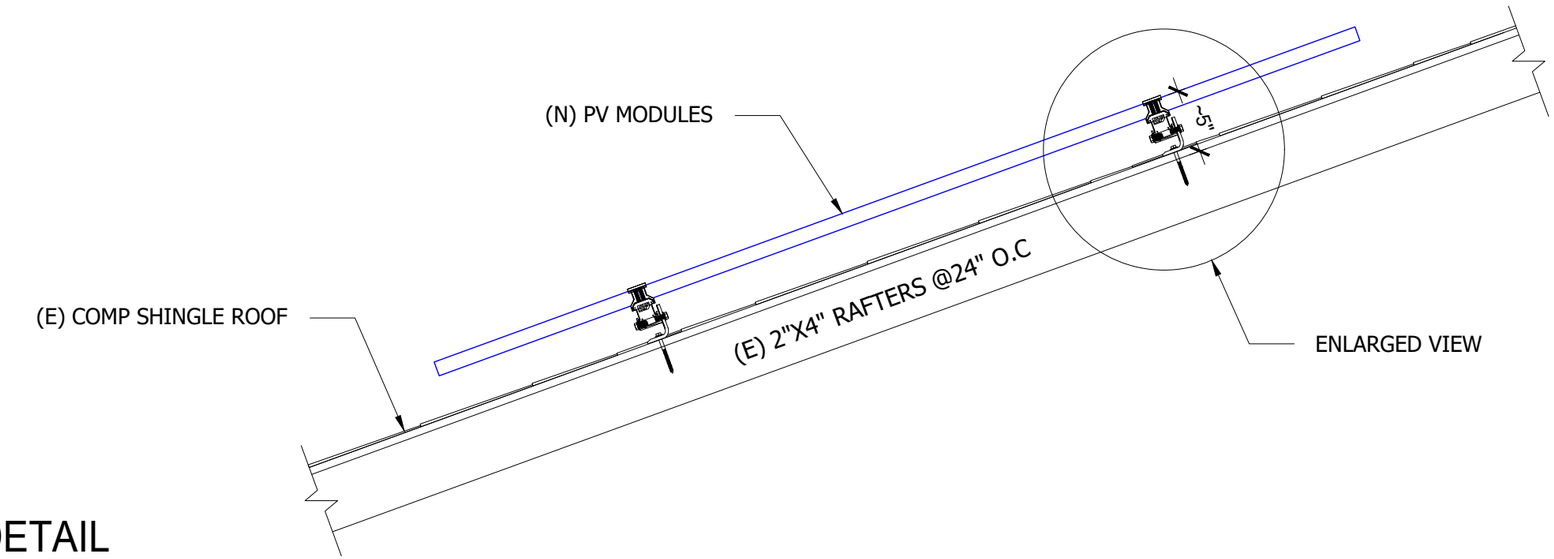
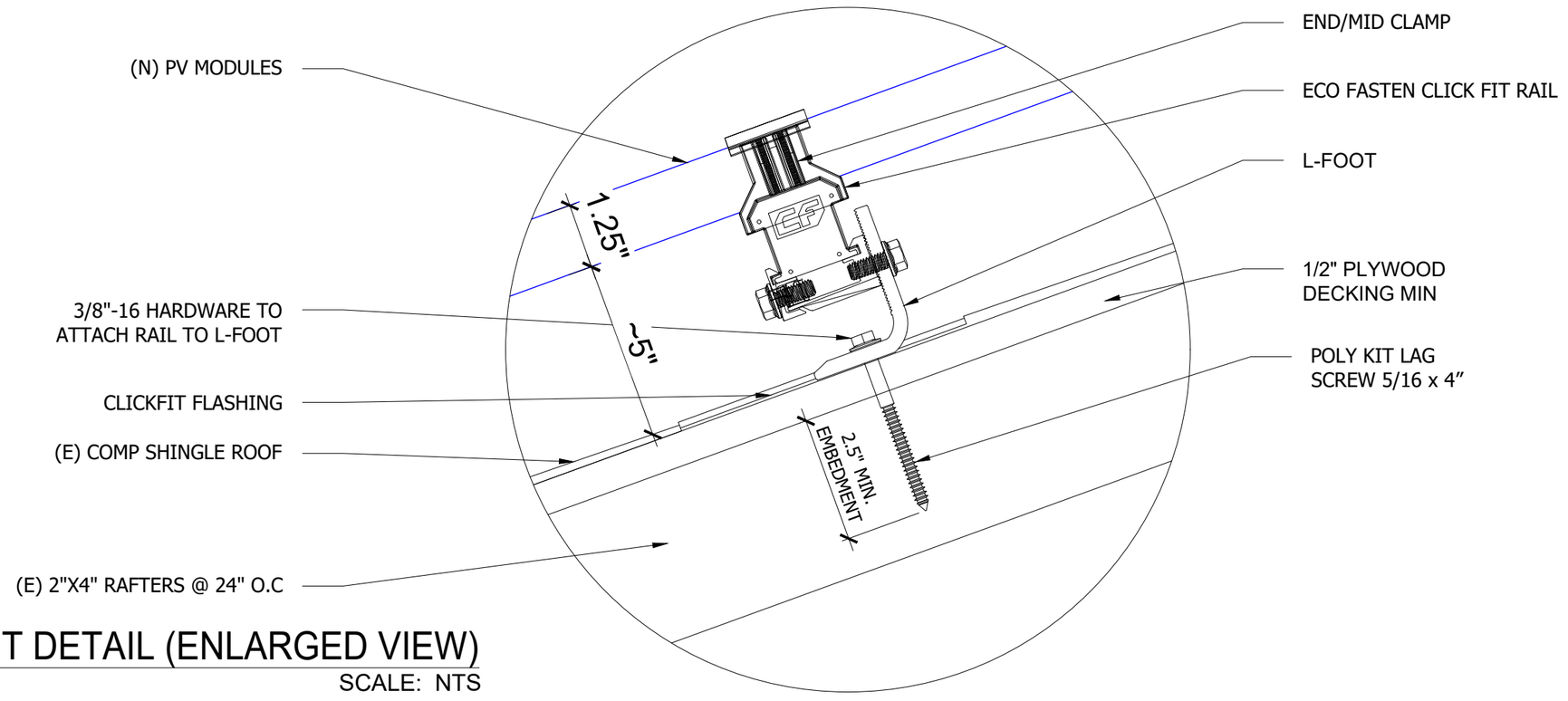
30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447



1 ATTACHMENT DETAIL
SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

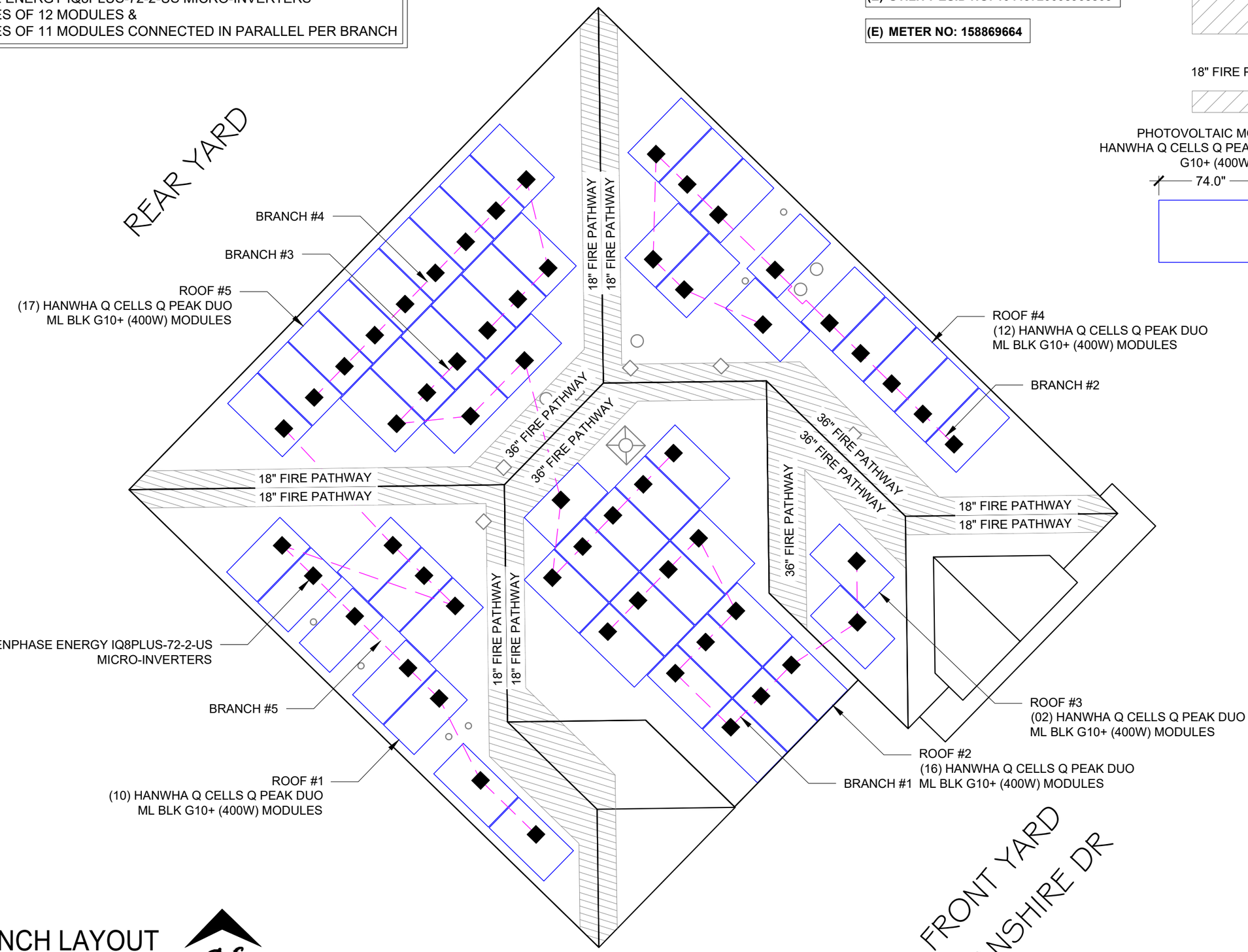
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

36" FIRE PATHWAY
3'-0"

18" FIRE PATHWAY
18"

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)
74.0"
41.1"



1 BRANCH LAYOUT

SCALE: 1/8" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

BRANCH LAYOUT

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-4

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

SYSTEM SIZE:- 57 x 400W = 22.80 kWDC
SYSTEM SIZE:- 57 x 290W = 16.53 kWAC

INTERCONNECTION
120% RULE - NEC 705.12(B)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED
150A +90A = 240A

BUSS RATING x 120%
200A x 120% = 240A

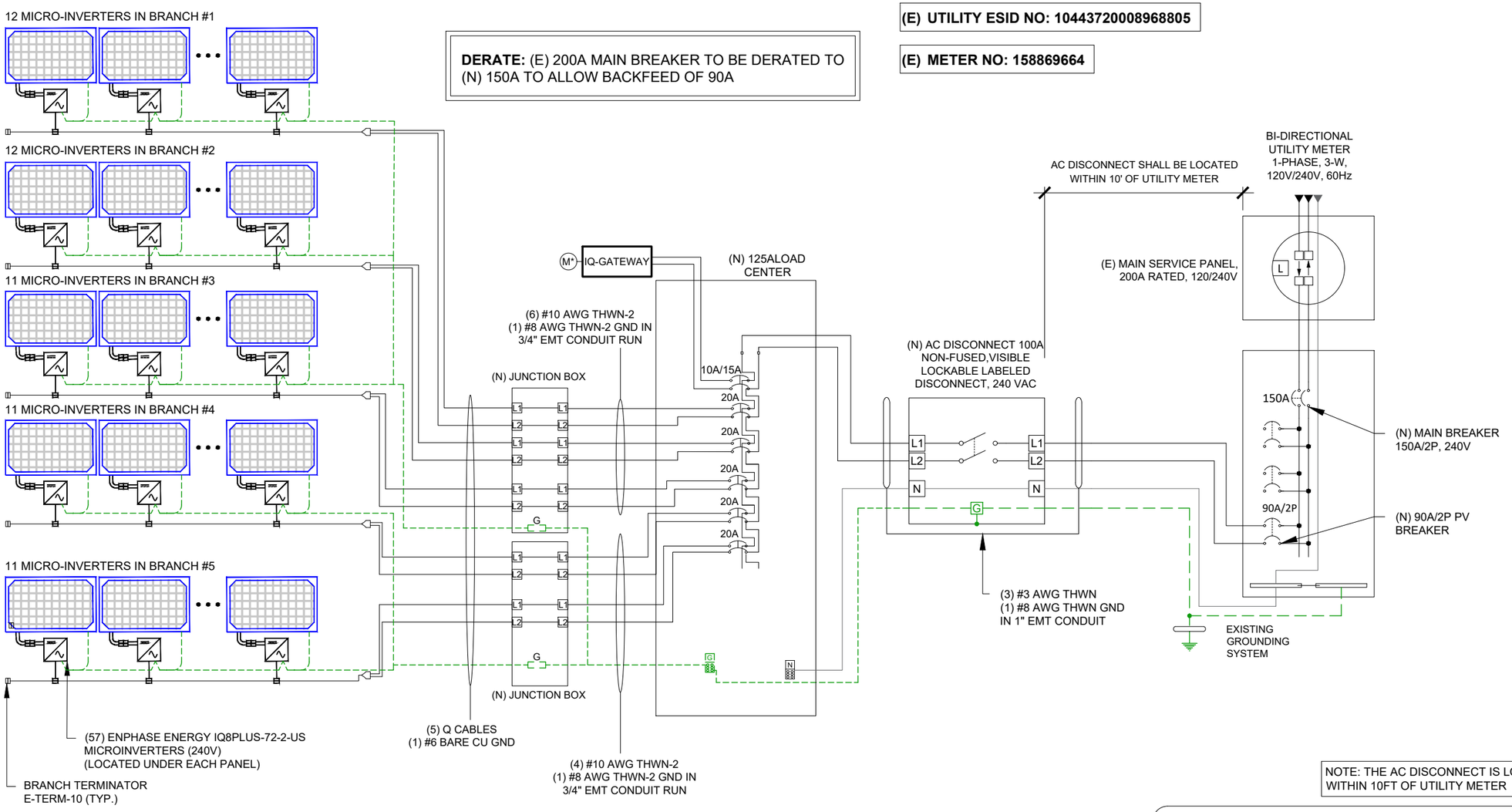
BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	57	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
INVERTER	57	ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
JUNCTION BOX	2	600V, 55A MAX, 4 INPUTS, MOUNTED ON ROOF FOR WIRE & CONDUIT TRANSITION
LOAD CENTER	1	125A PV LOAD CENTER
AC DISCONNECT	1	100A NON FUSED, VISIBLE LOCKABLE LABELED AC DISCONNECT, 240VAC, NEMA 3R, UL LISTED.

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A



NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP

WIRE RATED AND AMPACITY CALCULATED @ 90°C FOR ROOFTOP INSTALLATION AND ATTIC RUN TO INVERTER

ANY CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT. (NEC 300.6 C1, 310.8 D)

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

NOTE ON CONDUIT:
ALL CONDUIT SHALL BE EMT 3/4" IN DIAMETER UNLESS OTHERWISE STATED

PER NEC REQUIRMENTS GROUNDING CONDUCTORS SMALLER THAN 6AWG SHALL BE PROTECTED IN A CONDUIT, RACEWAY, OR ARMORED PROTECTIVE SHEATHING (NEC 250.64)

SERVICE INFO.

UTILITY PROVIDER:	ONCOR
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	(E) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 150A
MAIN SERVICE LOCATION:	NORTH-EAST
SERVICE FEED SOURCE:	UNDERGROUND

1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

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VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)MODULES
VMP	37.13
IMP	10.77
VOC	45.30
ISC	11.14
MODULE DIMENSION	74.0"L x 41.1"W x 1.26"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE ENERGY IQ8PLUS-72-2-US
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	1.21A

AMBIENT TEMPERATURE SPECS	
WEATHER STATION: DALLAS LOVE FIELD	
RECORD LOW TEMP	-8°
AMBIENT TEMP (HIGH TEMP 2%)	37°
CONDUIT HEIGHT	0.9"
ROOF TOP TEMP.	37°
CONDUCTOR TEMPERATURE RATE (ON ROOF)	90°
CONDUCTOR TEMPERATURE RATE (OFF ROOF)	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#1 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 06
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#2 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 04
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM LOAD CENTER TO INTERCONNECTION:

OF INVERTERS: 57
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.88
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(3)(a): 1.0
CIRCUIT CONDUCTOR SIZE: 3 AWG
CIRCUIT CONDUCTOR AMPACITY: 100A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X # MICRO-INVERTERS X MAX OUTPUT CURRENT =
1.25 X 1.21 X 57 = 86.21A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.88 X 1.0 X 100= 91A

RESULT SHOULD BE GREATER THAN 86.21A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

ELECTRICAL NOTES

1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

1 ELECTRICAL CALCULATION

SCALE: NTS

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
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125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

LOAD CALC RESULTS		
BUSS BAR RATING		TOTAL DEMAND
150	>	141.31

RESIDENTIAL LOAD CALULATION FOR EXISTING DWELLINGS					
3,522	SQ. FT. X 3 VA			10566	VA
2	SMALL APPLIANCE BRANCH CIRCUITS			3000	VA
1	LAUNDRY CIRCUIT (WASHER)			1500	VA
30	DRYER			5760	VA
50	N/A			9600	VA
20	MICRO-WAVE			1920	VA
20	DISPOSAL & DISHWASHER			1920	VA
20	WASHER			1920	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
TOTAL LOAD GROSS (VA)				36186	TOTAL VA
FIRST 10,000VA, VA X 100%				10000	VA
REMAINDER ABOVE 10,000 VA X 40%				10474.4	VA
TOTAL LOAD NET (VA)				20474.4	VA
TOTAL LOAD (AMPS) (VA/240V)				85.3	AMPS
AIR CONDITIONING LOADS					
30	1-A/C MIN. CIRCUIT AMPS			5760	VA
40	2-A/C MIN. CIRCUIT AMPS			7680	VA
	3-A/C MIN. CIRCUIT AMPS			0	VA
	4-A/C MIN. CIRCUIT AMPS			0	VA
	SUB POOL MIN. CIRCUIT AMPS			0	VA
	AHU VA (Breaker Amps X Volts X 80%)			0	
TOTAL A/C LOAD (VA)				13440	TOTAL VA
TOTAL LOAD (AMPS) (VA/240V)				56	AMPS
TOTAL DEMAND (AMPS)				141.3	AMPS

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

120% RULE: BACKFEED	
BUSSBAR RATING	200
NEW MAIN BREAKER	150
120% RULE: BACKFEED	120
PV OCPD	90

LOAD CALC RESULTS		
BUSSBAR RATING		TOTAL DEMAND
150	>	141.31

PANEL SCHEDULE

EXISTING PANEL			ALTERED PANEL		
Circuit	#	OCP AMP	Circuit	#	OCP AMP
MAIN BREAKER 200			NEW MAIN BREAKER 150		
DRYER	1	30	DRYER	1	30
N/A	2	50	N/A	2	50
DRYER	3	30	DRYER	3	30
N/A	4	50	N/A	4	50
AC	5	30	AC	5	30
N/A	6	20	N/A	6	20
AC	7	30	AC	7	30
N/A	8	20	N/A	8	20
GFI	9	20	GFI	9	20
N/A	10	20	N/A	10	20
REFRIGERATOR	11	20	REFRIGERATOR	11	20
MICROWAVE	12	20	MICROWAVE	12	20
BATH GFI	13	20	BATH GFI	13	20
MASTER BEDROOM	14	20	MASTER BEDROOM	14	20
GARAGE GFI	15	20	GARAGE GFI	15	20
N/A	16	20	N/A	16	20
LIVING ROOM& DINING LIGHTS	17	20	LIVING ROOM& DINING LIGHTS	17	20
FRONT & BACK LIGHTS	18	20	FRONT & BACK LIGHTS	18	20
WASHER	19	20	WASHER	19	20
FRONT BED & BACK BED LIGHTS	20	20	FRONT BED & BACK BED LIGHTS	20	20
GAME ROOM & MOVIE SMOKES	21	20	GAME ROOM & MOVIE SMOKES	21	20
AC	22	40	AC	22	40
GARAGE/ MASTER BATH/POWER BATH	23	20	GARAGE/ MASTER BATH/POWER BATH	23	20
AC	24	40	AC	24	40
NOOK PLUGS/COOK PLUGS	25	20	NOOK PLUGS/COOK PLUGS	25	20
EMPTY	26	EMPTY	EMPTY	26	EMPTY
DISPOSAL& DISHWASHER	27	20	DISPOSAL& DISHWASHER	27	20
EMPTY	28	EMPTY	EMPTY	28	EMPTY
EMPTY	29	EMPTY	EMPTY	29	EMPTY
EMPTY	30	EMPTY	EMPTY	30	EMPTY
EMPTY	31	EMPTY	EMPTY	31	EMPTY
EMPTY	32	EMPTY	EMPTY	32	EMPTY
EMPTY	33	EMPTY	EMPTY	33	EMPTY
EMPTY	34	EMPTY	EMPTY	34	EMPTY
EMPTY	35	EMPTY	EMPTY	35	EMPTY
EMPTY	36	EMPTY	EMPTY	36	EMPTY
EMPTY	37	EMPTY	EMPTY	37	EMPTY
EMPTY	38	EMPTY	EMPTY	38	EMPTY
EMPTY	39	EMPTY	PV BREAKER	39	90
EMPTY	40	EMPTY	PV BREAKER	40	90

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

LOAD CALCULATION& PANEL SCHEDULING

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-6.1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP
(PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 68.97 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
(PER CODE: NEC 705.12 (B)(2)(3)(B)

WARNING:PHOTOVOLTAIC POWER SOURCE

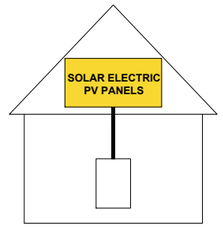
LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY

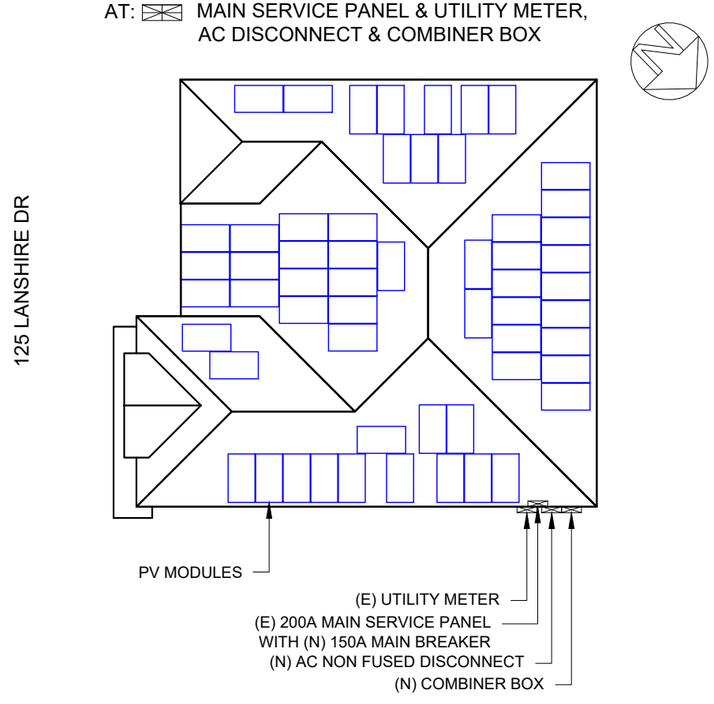


LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

CAUTION !

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

AT: MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & COMBINER BOX



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2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.

2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.

3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT.

4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).

5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.

6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.

7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

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VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

Quality Controlled PV
TÜVRheinland CERTIFIED
www.tuv.com ID 1111232615

ASSEMBLED IN THE USA

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

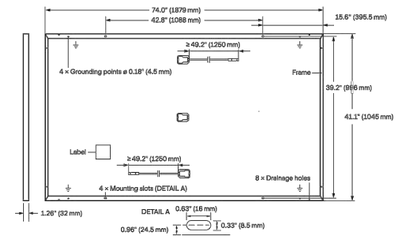
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (–) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

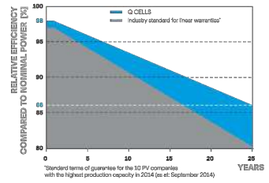


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP} [W]	385	390	395	400	405
Minimum	Short Circuit Current[1]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
Minimum	Open Circuit Voltage[1]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
Minimum	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
Minimum	Voltage at MPP	V_{MPP} [V]	36.36	36.62	36.88	37.13	37.39
Minimum	Efficiency[1]	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	288.8	292.6	296.3	300.1	303.8
Minimum	Short Circuit Current	I_{SC} [A]	8.90	8.92	8.95	8.97	9.00
Minimum	Open Circuit Voltage	V_{OC} [V]	42.62	42.65	42.69	42.72	42.76
Minimum	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
Minimum	Voltage at MPP	V_{MPP} [V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

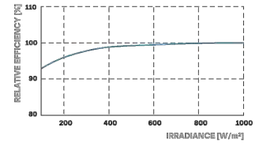
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS						
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.34	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells),

C Certified US UL 61730

CE

TÜVRheinland CERTIFIED www.tuv.com ID 1111232077

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

ENPHASE.

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.
** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility
(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

SOLNOVA

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SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

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Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

Data Sheet
Enphase Q Cable Accessories
Region: INDIA

Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

To learn more about Enphase offerings, visit **enphase.com/in**

ENPHASE.

Enphase Q Cable Accessories

Q CABLE SPECIFICATIONS	
Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60332-1-2

Q CABLE TYPES / ORDERING OPTIONS

Model Number	Max Nominal Voltage	Ampacity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

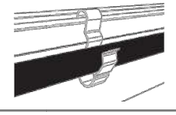
ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (male)	Q-CONN-3P-10M	Make connections using three-phase cable
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (single-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Disconnect tool	Q-DISC-3P-10	Disconnect tool for three-phase Field wireable connectors
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator (single-phase)	Q-TERM-R-10	Terminator cap for unused single-phase cable ends
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused three-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	DC adaptor to MC4 (max voltage 100 VDC)

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10))

SEALING CAPS
Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)
Three-phase model (Q-DISC-3P-10)



CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)

To learn more about Enphase offerings, visit **enphase.com/in**

2018-11-26

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

EcoFasten®
For Installers. By Installers.

CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

ClickFit is one of the fastest installing rail-based systems in the industry. Thanks to its Click-In rail assembly, the rails can be connected to any of EcoFasten's composition shingle, tile, and metal roof mounts in seconds without the need for fasteners or tools. The ClickFit system is made of robust materials such as aluminum and coated steel, to ensure corrosion-resistance and longevity. ClickFit conforms to UL 2703 and has been tested in extreme weather conditions including wind, fire, and snow.

FEATURES & BENEFITS

- Pre-installed rail fastening bolt
- Fully integrated bonding
- Click-On Mid & End Clamps
- Compatible with a variety of EcoFasten roof attachments

FAST INSTALLING SYSTEM FEATURING CLICK-IN RAIL ASSEMBLY

ROOF TYPE — Composition Shingle, Tile, Metal

RACKING — Rail-Based

ATTACHMENT — Structural-Attach Direct-Attach

WATER TIGHT TECHNOLOGY

25 YEAR WARRANTY

ECOFASTENSOLAR.COM

CLICKFIT

INTERNAL SPLICE

Tool-free bonded internal Splice installs in seconds.

MID CLAMP

Click-on mid clamp features integrated bonding pins and fits module frames sized 30-50mm.

CF MLPE MOUNT

Attach Module Level Power Electronics to the top of the rail.

END CLAMP

Click-on end clamp fits module frames sized 30-50mm.

END CAP

The slide-on end caps allow the end clamps to be accurately positioned on the rail in seconds, while providing an aesthetically pleasing, finished install.

RAIL

The ClickFit rail clicks into our proprietary composition shingle & tile L-foot and is tightened in place with a pre-installed bolt.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

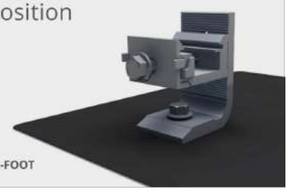
SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-13

COMPOSITION SHINGLE

Combine the versatile ClickFit L-Foot with the watertight GF-1 flashing for a fast installation on composition shingle roofs.



GF-1 FLASHING & L-FOOT

TILE ROOFS

Use the adjustable ClickFit Tile Hook for attaching the ClickFit system to tile roofs. Works with Flat, S, and W tile profiles.

CLICKFIT TILE HOOK

STANDING SEAM METAL ROOFS

Combine the ClickFit L-Foot with SimpleBlock®-U for a fast installation on standing seam metal roofs.

SIMPLEBLOCK-U

ECOFASTENSOLAR.COM

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

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INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

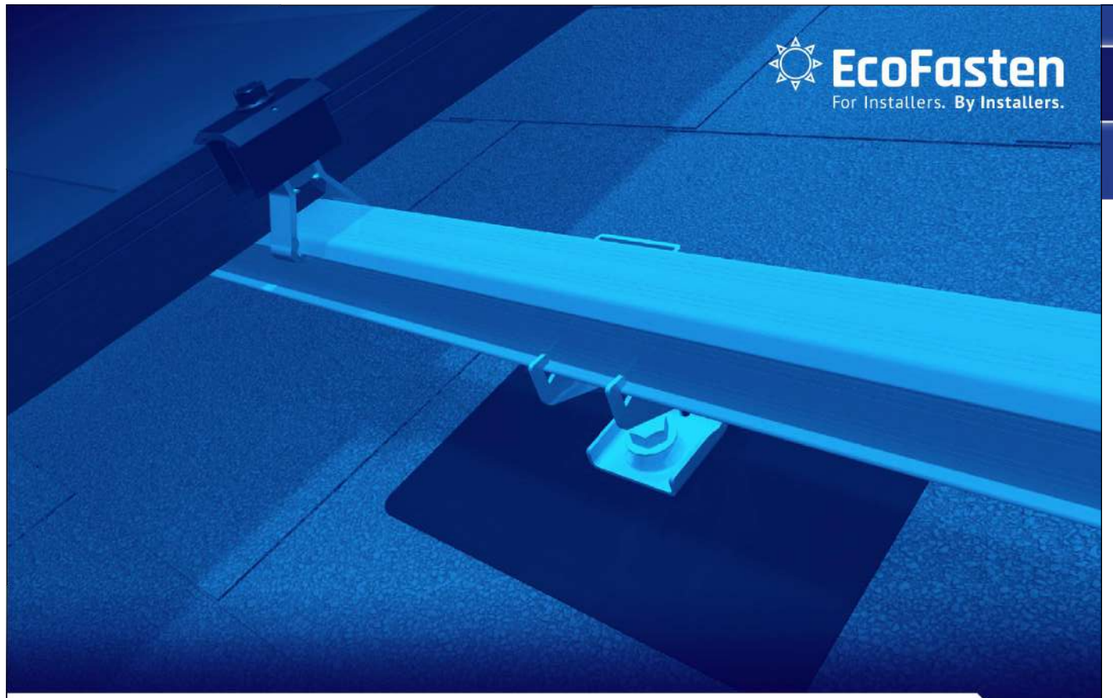
SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14



CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

INSTALLATION GUIDE

REVISION DATE: 04/09/21	VERSION: v2.4

ECOFASTENSOLAR.COM

MANUFACTURER	LIST OF UL2703 APPROVED MODULES
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72, 72H, or 72DH
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where "YY" can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HH2, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45, and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40, and 42mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, G5/SC, G5/TS, BLK-G5, BLK-G5/SC, BLK-G5/TS, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6/SC, G6/TS, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G6+/AC, BLK-G6+/SC, BLK-G6/TS, G6+/TS, BLK-G6+/TS, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, L-G8.3, L-G8.3/BFF, ML-G9, BLK ML-G9, ML-G9+, BLK ML-G9+, XL-G9, XL-G9.2 or XL-G9.3
Heliene	Heliene modules with 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "A" can be blank, HomePV, or Bifacial
HT-SAAE	HT-SAAE modules with 35 and 40 mm frames HTyy-156Z-xxx Where "yy" can be 60 or 72, "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C

MODULES

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

Engineering Alliance, Inc

https://www.eng-alliance.com

27-June-2022

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87101
Tel: 505 242 6411

Attn.: Engineering Department

Subject: Engineering Certification for the Unirac SOLARMOUNT Flush Rail System to Support Photovoltaic Panels.

The Unirac SOLARMOUNT Flush-to-Roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof.

We have reviewed the SOLARMOUNT system, a proprietary mounting system constructed from modular parts which are intended for rooftop installation of solar photovoltaic (PV) panels; and have reviewed the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the SOLARMOUNT rails (SM LIGHT rail, SM STANDARD rail, and SM HEAVY DUTY rail) with Standard and Pro Series hardware. All information, data and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. ASCE/SEI 7-05, 7-10, 7-16 Minimum Design Loads for Buildings and Other Structures
2. International Building Code, 2006-2021 Edition w/ Provisions from SEAOC PV-2 2017
3. International Residential Code, 2006- 2021 Edition w/ Provisions from SEAOC PV-2 2017
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
5. Aluminum Design Manual, 2015 & 2020 Edition

Following are typical specifications to meet the above code requirements:

Design Criteria:
Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

For Houston, TX:
Basic Wind Speed ASD Minimum 110 mph to 147 mph (3-sec gust ASCE 7-05 for IRC)
Basic Wind Speed LRFD Minimum 142 mph to 190 mph (Vult ASCE 7-10 for IBC)

Attachment Spacing: Per U-Builder 2.0 Engineering report.

Cantilever: The maximum cantilever length is L/3, where "L" is the span noted in the U-Builder 2.0 online Tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel
Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation

Installation Orientation: See SOLARMOUNT Rail Flush Installation Guide.

4603 April Meadow Way, Sugar Land, TX 77479. Ph: 832 865 4757

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

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CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-16

PROJECT COMMENTS

CITY OF ROCKWALL
385 S. GOLIAD STREET
ROCKWALL, TEXAS 75087
PHONE: (972) 771-7700

DATE: 9/22/2022

PROJECT NUMBER:	Z2022-045	CASE MANAGER:	Bethany Ross
PROJECT NAME:	SUP for Solar Panels at 125 Lanshire Drive	CASE MANAGER PHONE:	(972) 772-6488
SITE ADDRESS/LOCATIONS:	125 LANSHIRE DR	CASE MANAGER EMAIL:	bross@rockwall.com

CASE CAPTION: Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a Specific Use Permit (SUP) for Solar Panels exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
	Bethany Ross	09/22/2022	Approved w/ Comments

09/22/2022: Z2022-045; Specific Use Permit (SUP) for Solar Panels at 125 Lanshire Drive
Please address the following comments (M= Mandatory Comments; I = Informational Comments)

I.1 This is a by Tony Trammel for the approval of a Specific Use Permit (SUP) for Solar Panels exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive.

I.2 For questions or comments concerning this case please contact Bethany Ross in the Planning Department at (972) 772-6488 or email bross@rockwall.com.

M.3 For reference, include the case number (Z2022-045) in the lower right-hand corner of all pages on future submittals.

I.4 The subject property is zoned Planned Development 17 (PD-17) for Single Family 7 (SF-7) District land uses.

I.5 In this case, the proposed solar panels exceed 1,000 SF, at a proposed total of 1,150 SF, which is permitted through a Specific Use Permit (SUP) process.

I.6 The following conditions pertain to the operation of Solar Panels on the Subject Property and conformance to these conditions are required for continued operations:
(1) Fifty-seven (57) solar panels shall be attached to the roof as shown on the roof plan elevations submitted by the applicant.
(2) All mechanical equipment (e.g. micro inverters) and batteries shall be completely screened from adjacent right-of-ways and properties.

M.7 Please review the attached Draft Ordinance prior to the September 27, 2022 Planning and Zoning Commission Work Session meeting, and provide staff with your markups by no later than October 4, 2022.

I.8 Staff has identified the aforementioned items necessary to continue the submittal process. Please make these revisions and corrections, and provide any additional information that is requested. Revisions for this case will be due on October 4, 2022; however, it is encouraged for applicants to submit revisions as soon as possible to give staff ample time to review the case prior to the October 11, 2022 Planning and Zoning Commission Public Hearing Meeting. The Planning and Zoning Commission Work Session Meeting for this case will be held on September 27, 2022.

I.9 The projected City Council meeting dates for this case will be October 17 2022 (1st Reading) and November 7, 2022 (2nd Reading).

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
ENGINEERING	Sarah Johnston	09/21/2022	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
BUILDING	Rusty McDowell	09/20/2022	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
FIRE	Ariana Kistner	09/20/2022	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
GIS	Lance Singleton	09/19/2022	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
POLICE	Chris Cleveland	09/19/2022	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
PARKS	Travis Sales	09/19/2022	Approved

No Comments

DEVELOPMENT APPLICATION

City of Rockwall
Planning and Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087

STAFF USE ONLY

PLANNING & ZONING CASE NO.

NOTE: *THE APPLICATION IS NOT CONSIDERED ACCEPTED BY THE CITY UNTIL THE PLANNING DIRECTOR AND CITY ENGINEER HAVE SIGNED BELOW.*

DIRECTOR OF PLANNING:

CITY ENGINEER:

PLEASE CHECK THE APPROPRIATE BOX BELOW TO INDICATE THE TYPE OF DEVELOPMENT REQUEST [SELECT ONLY ONE BOX]:

PLATTING APPLICATION FEES:
- ☐ MASTER PLAT ($100.00 + $15.00 ACRE) [1]
- ☐ PRELIMINARY PLAT ($200.00 + $15.00 ACRE) [1]
- ☐ FINAL PLAT ($300.00 + $20.00 ACRE) [1]
- ☐ REPLAT ($300.00 + $20.00 ACRE) [1]
- ☐ AMENDING OR MINOR PLAT ($150.00)
- ☐ PLAT REINSTATEMENT REQUEST ($100.00)

SITE PLAN APPLICATION FEES:
- ☐ SITE PLAN ($250.00 + $20.00 ACRE) [1]
- ☐ AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING PLAN ($100.00)

ZONING APPLICATION FEES:
- ☐ ZONING CHANGE ($200.00 + $15.00 ACRE) [1]
- ☑ SPECIFIC USE PERMIT ($200.00 + $15.00 ACRE) [1 & 2]
- ☐ PD DEVELOPMENT PLANS ($200.00 + $15.00 ACRE) [1]

OTHER APPLICATION FEES:
- ☐ TREE REMOVAL ($75.00)
- ☐ VARIANCE REQUEST/SPECIAL EXCEPTIONS ($100.00) [2]

NOTES:
[1]: IN DETERMINING THE FEE, PLEASE USE THE EXACT ACREAGE WHEN MULTIPLYING BY THE PER ACRE AMOUNT. FOR REQUESTS ON LESS THAN ONE ACRE, ROUND UP TO ONE (1) ACRE.
[2]: A ***$1,000.00*** FEE WILL BE ADDED TO THE APPLICATION FEE FOR ANY REQUEST THAT INVOLVES CONSTRUCTION WITHOUT OR NOT IN COMPLIANCE TO AN APPROVED BUILDING PERMIT.

PROPERTY INFORMATION [PLEASE PRINT]

ADDRESS	125 Lanshire Dr. Rockwall,TX 75032		
SUBDIVISION		LOT	BLOCK
GENERAL LOCATION			

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING		CURRENT USE	
PROPOSED ZONING		PROPOSED USE	Roof Mounted PV System
ACREAGE	LOTS [CURRENT]	LOTS [PROPOSED]	

☐ ***SITE PLANS AND PLATS:*** *BY CHECKING THIS BOX YOU ACKNOWLEDGE THAT DUE TO THE PASSAGE OF HB3167 THE CITY NO LONGER HAS FLEXIBILITY WITH REGARD TO ITS APPROVAL PROCESS, AND FAILURE TO ADDRESS ANY OF STAFF'S COMMENTS BY THE DATE PROVIDED ON THE DEVELOPMENT CALENDAR WILL RESULT IN THE DENIAL OF YOUR CASE.*

OWNER/APPLICANT/AGENT INFORMATION [PLEASE PRINT/CHECK THE PRIMARY CONTACT/ORIGINAL SIGNATURES ARE REQUIRED]

☐ OWNER		☑ APPLICANT	Tony Trammell
CONTACT PERSON		CONTACT PERSON	Tony Trammell
ADDRESS		ADDRESS	2407 E Loop 820 N
CITY, STATE & ZIP		CITY, STATE & ZIP	Fort Worth, TX 76118
PHONE		PHONE	817-616-3152
E-MAIL		E-MAIL	tx.permits@gosolnova.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Tony Trammell [OWNER] THE UNDERSIGNED, WHO STATED THE INFORMATION ON THIS APPLICATION TO BE TRUE AND CERTIFIED THE FOLLOWING:

"I HEREBY CERTIFY THAT I AM THE OWNER FOR THE PURPOSE OF THIS APPLICATION; ALL INFORMATION SUBMITTED HEREIN IS TRUE AND CORRECT; AND THE APPLICATION FEE OF $_____, TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE _____ DAY OF _____, 20___. BY SIGNING THIS APPLICATION, I AGREE THAT THE CITY OF ROCKWALL (I.E. "CITY") IS AUTHORIZED AND PERMITTED TO PROVIDE INFORMATION CONTAINED WITHIN THIS APPLICATION TO THE PUBLIC. THE CITY IS ALSO AUTHORIZED AND PERMITTED TO REPRODUCE ANY COPYRIGHTED INFORMATION SUBMITTED IN CONJUNCTION WITH THIS APPLICATION, IF SUCH REPRODUCTION IS ASSOCIATED OR IN RESPONSE TO A REQUEST FOR PUBLIC INFORMATION."

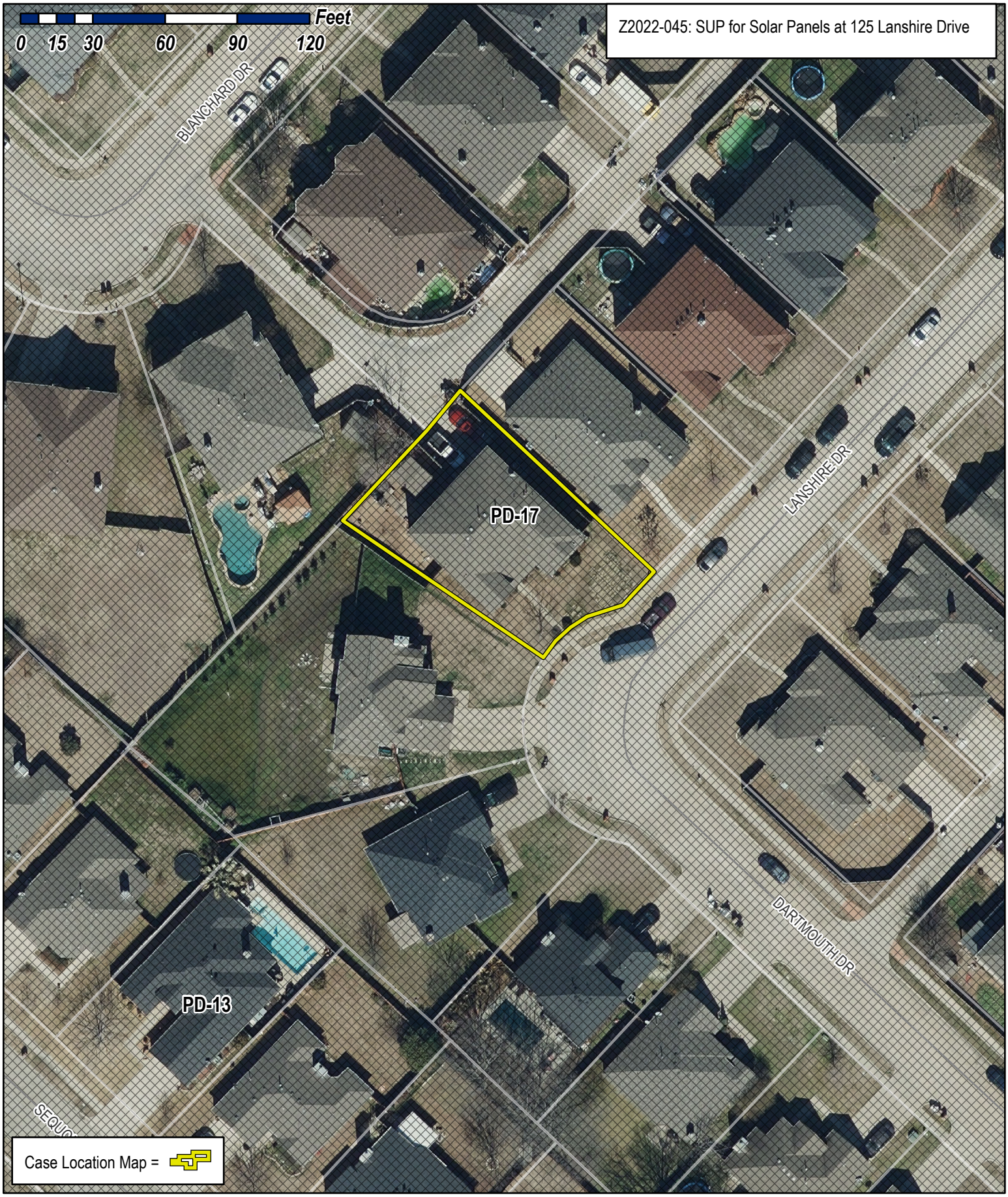
HALEY ANNE SPEIDEL
Notary Public, State of Texas
Comm. Expires 10-25-2025
Notary ID 133411039

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* September, 20 20.

OWNER'S SIGNATURE Tony Trammell

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS Haley Speidel

MY COMMISSION EXPIRES 10/25/2020



City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75032
(P): (972) 771-7745
(W): www.rockwall.com

City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
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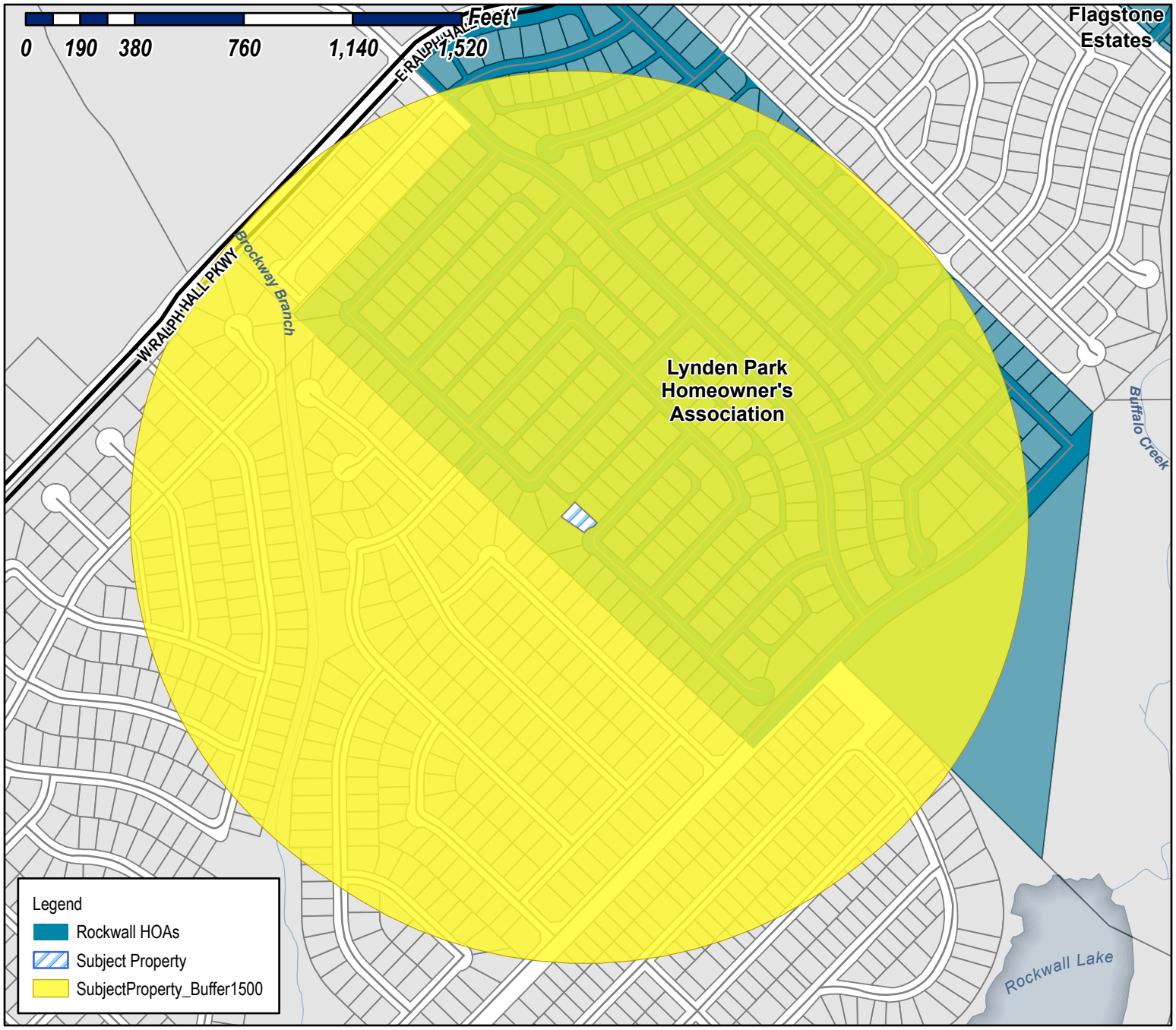
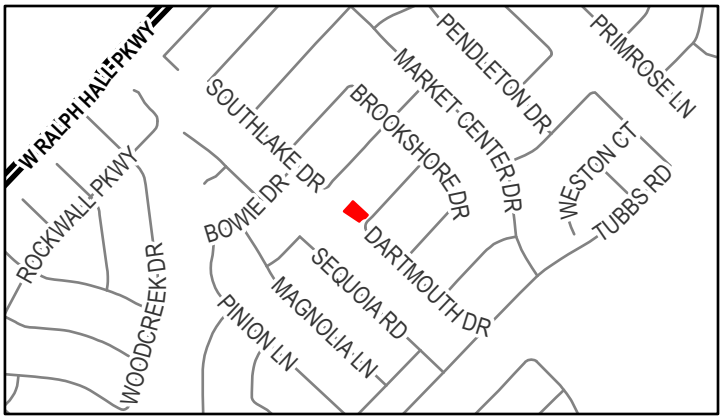


Case Number: Z2022-045
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Planned Development District 17 (PD-17)
Case Address: 125 Lanshire Drive

Date Saved: 9/16/2022
For Questions on this Case Call (972) 771-7745



Miller, Ryan

From: Gamez, Angelica
Sent: Tuesday, September 20, 2022 10:15 AM
Cc: Miller, Ryan; Ross, Bethany; Lee, Henry
Subject: Neighborhood Notification Program [Z2022-045]
Attachments: Public Notice Z2022-045.pdf; HOA Map Z2022-045.pdf

HOA/Neighborhood Association Representative:

Per your participation in the *Neighborhood Notification Program*, you are receiving this notice to inform your organization that a zoning case has been filed with the City of Rockwall that is located within 1,500-feet of the boundaries of your neighborhood. As the contact listed for your organization, you are encouraged to share this information with the residents of your subdivision. Please find the attached map detailing the property requesting to be rezoned in relation to your subdivision boundaries. Additionally, below is the summary of the zoning case that will be published in the Rockwall Herald Banner on *September 23, 2022*. The Planning and Zoning Commission will hold a public hearing on *Tuesday, October 11, 2022 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, October 17, 2022 at 6:00 PM*. Both hearings will take place at 6:00 PM at City Hall, 385 S. Goliad, Rockwall, TX 75087.

All interested parties are encouraged to submit public comments via email to Planning@rockwall.com at least 30 minutes in advance of the meeting. Please include your name, address, and the case number your comments are referring to. These comments will be read into the record during each of the public hearings. Additional information on all current development cases can be found on the City's website: https://sites.google.com/site/rockwallplanning/development/development-cases.

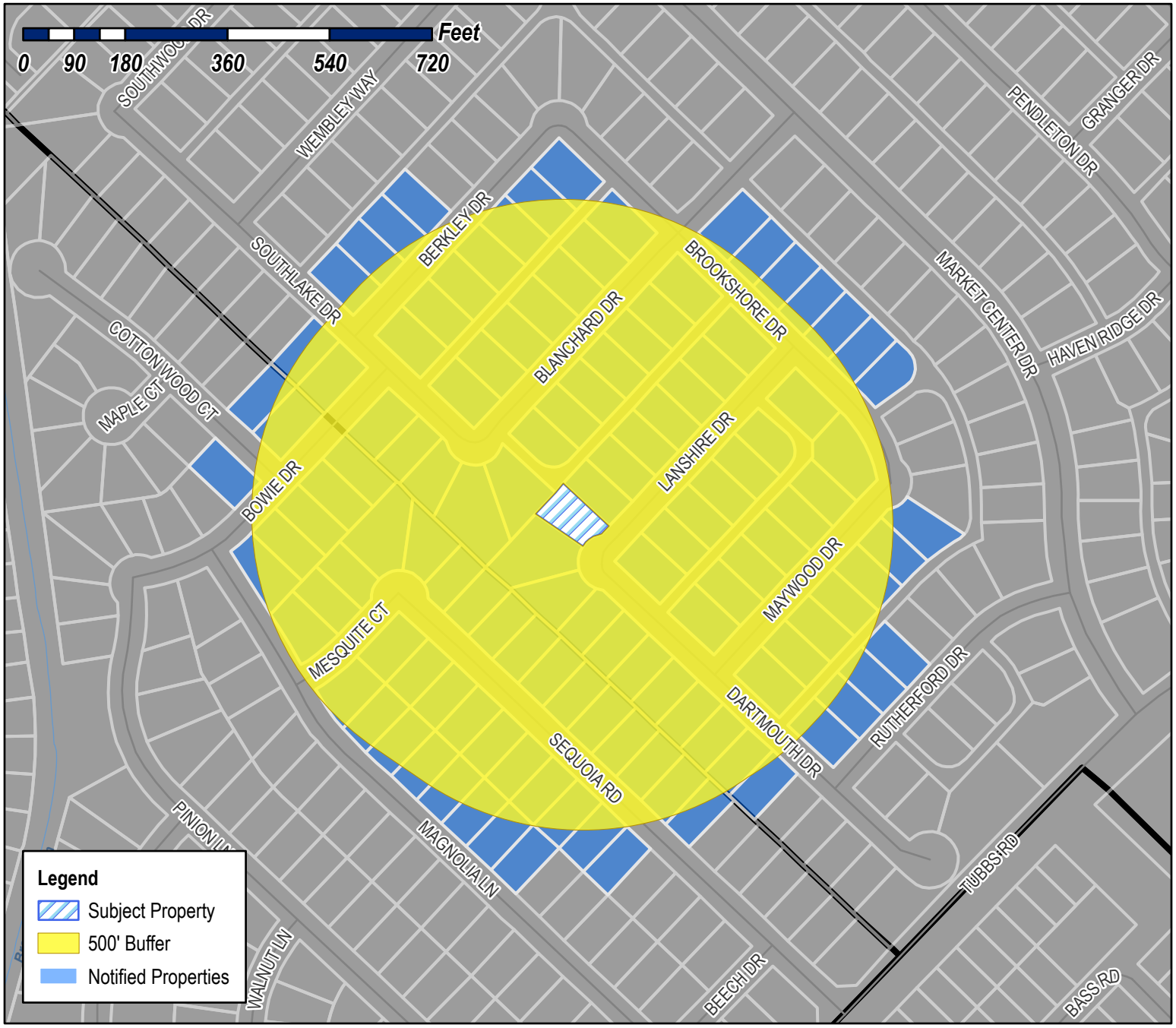
Z2022-045: SUP for Solar Panels
Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels* exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

Thank you,

Angelica Guevara
Planning & Zoning Coordinator
City of Rockwall
972.771.7745 Office
972.772.6438 Direct
http://www.rockwall.com/planning/

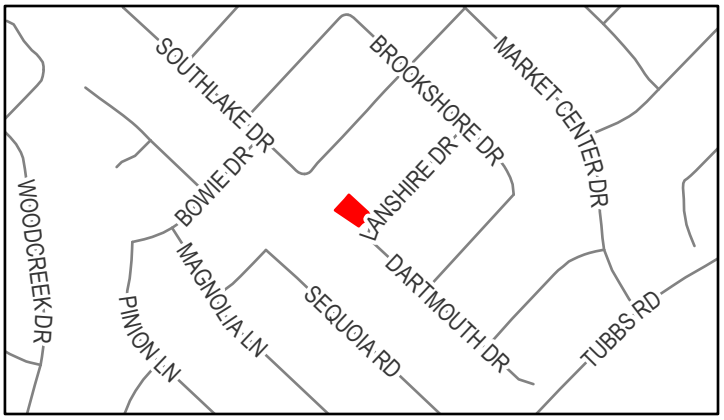
City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com



Case Number: Z2022-045
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Planned Development District 17 (PD-17)
Case Address: 125 Lanshire Drive

Date Saved: 9/16/2022
For Questions on this Case Call (972) 771-7745



ISYA LIMITED PARTNERSHIP
1018 MOUNT AUBURN
DALLAS, TX 75223

CAMPBELL FLORENCE I
106 BROOKSHORE DR
ROCKWALL, TX 75032

STARNES CHARLES O & LORRAINE K
108 BROOKSHORE DR
ROCKWALL, TX 75032

520 YFLK LLC
110 BROOKSHORE DR
ROCKWALL, TX 75032

OFFILL ROBERT L & CRYSTAL J
110 LANSHIRE DR
ROCKWALL, TX 75032

DELIZ CRYSTAL D
110 MAYWOOD DRIVE
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
111 LANSHIRE DR
ROCKWALL, TX 75032

ALSAMMAK AHMED AND
BAN AL TAIE
111 LANSHIRE DRIVE
ROCKWALL, TX 75032

ENRIGHT THOMAS & ROXANNE
111 MAYWOOD DR
ROCKWALL, TX 75032

TATE ANTHONY R
112 MAYWOOD DR
ROCKWALL, TX 75032

GUAJARDO RAUL E & JORDANNE MORROW
112 BROOKSHORE DRIVE
ROCKWALL, TX 75032

PROGRESS RESIDENTIAL BORROWER 16 LLC
113 LANSHIRE DR
ROCKWALL, TX 75032

GONZALEZ VICTOR M
113 MAYWOOD
ROCKWALL, TX 75032

HENDERSON NORMA
114 MAYWOOD DR
ROCKWALL, TX 75032

GALLOWAY STEPHEN J & GWENDOLYN R
114 BROOKSHORE DR
ROCKWALL, TX 75032

LECLERC ANDRE
114 LANSHIRE DR
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
115 LANSHIRE DR
ROCKWALL, TX 75032

ELLIS MARK AND
DENISE HENRY
115 MAYWOOD DR
ROCKWALL, TX 75032

RSB TOKEN INVESTMENTS LLC
116 MAYWOOD DR
ROCKWALL, TX 75032

WAFER CHRISTOPHER D & WILANDA L
116 BROOKSHORE DR
ROCKWALL, TX 75032

TRAN NGOC AND XUYEN HUYNH
116 LANSHIRE DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
117 LANSHIRE DR
ROCKWALL, TX 75032

LIMON MARIA ARACELY AND NORBERTO
117 MAYWOOD
ROCKWALL, TX 75032

CLARK ERIC DWAYNE & PATRICIA D
117 RUTHERFORD DR
ROCKWALL, TX 75032

PARAMOUNT LAURELS LLC
118 BROOKSHORE DR
ROCKWALL, TX 75032

VAN HEYST DAUAN N & RANDALL
118 LANSHIRE DR
ROCKWALL, TX 75032

RIDGEWAY RYAN A & HARRIS H JORGENSEN
118 MAYWOO DRIVE
ROCKWALL, TX 75032

PAGADUAN KEVIN I & DEEJAY
119 LANDSHIRE DRIVE
ROCKWALL, TX 75032

NUNEZ ARMANDO M & DELIA ANGUIANO
119 MAYWOOD
ROCKWALL, TX 75032

SOUMIE NAHNAH P
119 RUTHERFORD DR
ROCKWALL, TX 75032

LOZA FABIOLA ESTRADA
119 SOUTHLAKE DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
120 LANSHIRE DR
ROCKWALL, TX 75032

SAMMIS FLEETWOOD & MELONIE
120 MAYWOOD
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
121 RUTHERFORD DR
ROCKWALL, TX 75032

WILLIAMS LATONYA
121 BLANCHARD DRIVE
ROCKWALL, TX 75032

UKPAI OGBEYALU
121 LANSHIRE DR
ROCKWALL, TX 75032

ANDERSON AMBER
121 MAYWOOD DR
ROCKWALL, TX 75032

MERINO TROY A
122 BERKLEY DRIVE
ROCKWALL, TX 75032

MARROQUIN DOMINGO & CLAUDIA D
122 BLANCHARD DR
ROCKWALL, TX 75032

HOUSER MICKEY AND
JENNIFFER MALABOSA
122 LANSHIRE DRIVE
ROCKWALL, TX 75032

CORUJO JAMES AND JANISS
122 MAYWOOD DR
ROCKWALL, TX 75032

COZART MICHAEL AND CASSANDRA HARRIS-
123 LANSHIRE DR
ROCKWALL, TX 75032

MAREZ SARAH E AND MICHAEL E AND
CYNTHIA ANN HERRERA
123 MAYWOOD
ROCKWALL, TX 75032

JACKSON DALE E
123 RUTHERFORD DR
ROCKWALL, TX 75032

MYLES BOBBY J JR
123 SOUTHLAKE DR
ROCKWALL, TX 75032

CUELLAR JOEL A & MARTHA C
124 LANSHIRE DR
ROCKWALL, TX 75032

SANCHEZ JAYLYN MARIE
124 SEQUOIA ROAD
ROCKWALL, TX 75032

ELKINS THOMAS
125 BLANCHARD DR
ROCKWALL, TX 75032

FISHER CHARLES F JR
125 LANSHIRE DR
ROCKWALL, TX 75032

RASA GABRIEL N & MARIA C
125 SEQUOIA RD
ROCKWALL, TX 75032

NABI NABIULLAH AND SIMIN
126 BERKLEY DRIVE
ROCKWALL, TX 75032

DUNN CLAYTON F AND JILLIAN
126 BLANCHARD
ROCKWALL, TX 75087

AMH 2014-2 BORROWER LLC
127 SOUTHLAKE DR
ROCKWALL, TX 75032

FAY TERRENCE R & RENEE L
127 LANSHIRE DR
ROCKWALL, TX 75032

MARICH GARY C
128 SEQUOIA RD
ROCKWALL, TX 75032

AL BANNA WALID AHMAD
129 BLANCHARD DR
ROCKWALL, TX 75032

HERNANDEZ TERRI
129 SEQUOIA RD
ROCKWALL, TX 75032

SKYLES BRENDA RENEE AND RICHARD ERIC
HYATT
130 BERKLEY DR
ROCKWALL, TX 75032

PEMBERTON DAVID S & SABRINA
130 BLANCHARD DRIVE
ROCKWALL, TX 75032

BANKS LIDIA ELIZABETH & DARREL JAMES
131 SOUTHLAKE DRIVE
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
132 MAGNOLIA LN
ROCKWALL, TX 75032

COKELEZ KENAN
132 SEQUOIA ROAD
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
1321 UPLAND DR UNIT 6293
HOUSTON, TX 77043

AH4R PROPERTIES TWO LLC
133 BERKLEY DR
ROCKWALL, TX 75032

BUDLONG GARY C & PEGGY B P
LIVING TRUST
133 SEQUOIA RD
ROCKWALL, TX 75032

UDOFIA UKO
133 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
134 BOWIE DR
ROCKWALL, TX 75032

LAM SEAN ANDREW
SREY LAM
134 BERKLEY DR
ROCKWALL, TX 75032

BIRDSONG SERENA AND
BILLY COCHARD
134 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
135 MESQUITE CT
ROCKWALL, TX 75032

BIGGS FREDDIE L & SYLVIA L
135 SOUTHLAKE DR
ROCKWALL, TX 75032

ISYA LIMITED PARTNERSHIP
136 SEQUOIA RD
ROCKWALL, TX 75032

PORTER KRISTEN
136 MAGNOLIA LN
ROCKWALL, TX 75032

FALLS DAVID & TERRI
137 BLANCHARD DR
ROCKWALL, TX 75032

CARRIZALES ERI & LENNY
137 BOWIE DR
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
137 SEQUOIA RD
ROCKWALL, TX 75032

WESTERVELT BARBARA
137 BERKLEY DR
ROCKWALL, TX 75032

CHEN QINGSHENG & YAN FENG
138 BERKLEY DR
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
138 BLANCHARD DR
ROCKWALL, TX 75032

LACY'S INVESTMENTS ENTERPRISES LLC
138 BOWIE DR
ROCKWALL, TX 75032

FALLS DAVID AND TERRI
139 MESQUITE CT
ROCKWALL, TX 75032

YOUNG SCOTT ALLEN & VETRICA LANITA YOUNG
139 SOUTHLAKE DR
ROCKWALL, TX 75032

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
140 MAGNOLIA LN
ROCKWALL, TX 75032

PETE MICHAEL A & SHANNAN D
140 SEQUOIA RD
ROCKWALL, TX 75032

TYLER MATTHEW
141 SEQUOIA RD
ROCKWALL, TX 75032

DEDNER WANDA G
141 BERKLEY DR
ROCKWALL, TX 75032

MORGAN PAULA
141 BLANCHARD DR
ROCKWALL, TX 75032

<Null>
142 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
142 BOWIE DR
ROCKWALL, TX 75032

JOSEPH STEPHEN K & JESSY
142 BERKLEY DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
14264 FAITH DR
FRISCO, TX 75035

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
143 MESQUITE CT
ROCKWALL, TX 75032

MURPHREE APRIL L
144 MAGNOLIA LN
ROCKWALL, TX 75032

SEDLAK AMANDA MARIE
144 SEQUOIA ROAD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
145 SEQUOIA RD
ROCKWALL, TX 75032

THOMAS MAKIA S
145 BERKLEY DR
ROCKWALL, TX 75032

TATUM LANCE
145 BLANCHARD DR
ROCKWALL, TX 75032

AMH 2014-3 BORROWER LLC
146 BOWIE DR
ROCKWALL, TX 75032

GONZALEZ GRACIELA & ROLANDO
146 BERKLEY DR
ROCKWALL, TX 75032

MURPHY AUDREY LENEE ANDREWS
146 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFF
147 MESQUITE CT
ROCKWALL, TX 75032

ROVILLOS JOHN ISRAEL AMANDE AND GRACE HALIMA
148 MAGNOLIA LANE
ROCKWALL, TX 75032

FARMER BETTY K
148 SEQUOIA RD
ROCKWALL, TX 75032

MENO ROLAND A & WAYNETTE M
149 SEQUOIA RD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
15 CENTER CT
HEATH, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL COURT
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL CT
HEATH, TX 75032

BOYD SONIA B AND
MACEO R PRICE JR
150 BLANCHARD DRIVE
ROCKWALL, TX 75032

IRISH SARAH K
150 BOWIE DR
ROCKWALL, TX 75032

GARDNER EDWIN & DIANNE
152 MAGNOLIA
ROCKWALL, TX 75032

TUNNELL DAVID AND PENNY
152 SEQUOIA ROAD
ROCKWALL, TX 75032

FALLS TERRI & DAVID
153 SEQUOIA RD
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
1553 VZ COUNTY ROAD 1213
CANTON, TX 75103

CARSON MICHELE L
156 MAGNOLIA LN
ROCKWALL, TX 75032

SHAH VIREN
156 SEQUOIA
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
157 SEQUOIA RD
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
16 GUMBLE CT
HILLSBOROUGH, NJ 8844

TATE ANTHONY R
160 CROSS OAK LANE
EADS, TN 38028

ABUNDIS ROBERTO AND YADIRA
160 MAGNOLIA LANE
ROCKWALL, TX 75087

MENCHACA JENNIFER
160 SEQUOIA RD
ROCKWALL, TX 75032

SIPES RICKY W
161 SEQUOIA ROAD
ROCKWALL, TX 75032

SUAREZ MARIA J & BETSY M
164 SEQUOIA RD
ROCKWALL, TX 75032

LE THAO M AND
THAI PHAM
168 SEQUOIA ROAD
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
1850 PARKWAY PLACE SUITE 900
MARIETTA, GA 30067

LE BUU VAN
220 COTTON WOOD CT
ROCKWALL, TX 75032

SHAFFER LAURA H &
WILLIAM B WATTS
221 DARTMOUTH DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
223 DARTMOUTH DR
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
224 COTTON WOOD CT
ROCKWALL, TX 75032

WKB PARTNERS LP
225 DARTMOUTH DR
ROCKWALL, TX 75032

ARELLANO-CRUZ PAULA M AND FELIX
227 DARTMOUTH DR
ROCKWALL, TX 75032

AUSTIN TAMIKA S
229 DARTMOUTH DR
ROCKWALL, TX 75032

RODRIGUEZ ROGELIO
231 DARTMOUTH DR
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
233 DARTMOUTH DR
ROCKWALL, TX 75032

DAVIS DONNA B
235 DARTMOUTH DR
ROCKWALL, TX 75032

KIWALE THEREZIA
237 DARTMOUTH DRIVE
ROCKWALL, TX 75032

AMH 2014-2 BORROWER LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AH4R PROPERTIES TWO LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

TYLER MATTHEW
2683 POTTER ST
EUGENE, OR 97405

BUDLONG GARY C & PEGGY B P
LIVING TRUST
2920 WINAM AVE
HONOLULU, HI 96816

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
30 WINDSOR DRIVE
ROCKWALL, TX 75032

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID AND TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS TERRI & DAVID
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

520 YFLK LLC
3105 CORNELL AVENUE
DALLAS, TX 75205

WKB PARTNERS LP
463 KEYSTONE BEND
HEATH, TX 75032

CHEN QINGSHENG & YAN FENG
4715 147TH PL SE
BELLEVUE, WA 98006

LACY'S INVESTMENTS ENTERPRISES LLC
510 HIGHWATER CROSSING
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
519 I 30 #140
ROCKWALL, TX 75032

LIGHT JEFF
519 INTERSTATE 30 #140
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
637 FOREST BEND DRIVE
PLANO, TX 75025

MARICH GARY C
7822 STONEHAVEN LN
ROWLETT, TX 75089

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

AMH 2014-3 BORROWER LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

CARRIZALES ERI & LENNY
PO BOX 1244
ROCKWALL, TX 75087

RSB TOKEN INVESTMENTS LLC
PO BOX 1664
ROCKWALL, TX 75087

PROGRESS RESIDENTIAL BORROWER 16 LLC
PO BOX 4090
SCOTTSDALE, AZ 85261

HENDERSON NORMA
PO BOX 705
ROCKWALL, TX 75087

PARAMOUNT LAURELS LLC
PO BOX 786
WYLIE, TX 75098

PUBLIC NOTICE

CITY OF ROCKWALL
PLANNING AND ZONING DEPARTMENT
PHONE: (972) 771-7745
EMAIL: PLANNING@ROCKWALL.COM

Property Owner and/or Resident of the City of Rockwall:

You are hereby notified that the City of Rockwall Planning and Zoning Commission and City Council will consider the following application:

Z2022-045: SUP for Solar Panels

Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a Specific Use Permit (SUP) for Solar Panels exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

For the purpose of considering the effects of such a request, the Planning and Zoning Commission will hold a public hearing on *Tuesday, October 11, 2022 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, October 17, 2022 at 6:00 PM*. These hearings will be held in the City Council Chambers at City Hall, 385 S.
Goliad Street.

As an interested property owner, you are invited to attend these meetings. If you prefer to express your thoughts in writing please return the form to:

Bethany Ross
Rockwall Planning and Zoning Dept.
385 S. Goliad Street
Rockwall, TX 75087

You may also email your comments to the Planning Department at planning@rockwall.com. If you choose to email the Planning Department please include your name and address for identification purposes.

Your comments must be received by *Monday, October 17, 2022 at 4:00 PM* to ensure they are included in the information provided to the City Council.

Sincerely,

Ryan Miller, AICP
Director of Planning & Zoning

USE THIS QR CODE TO GO DIRECTLY TO THE WEBSITE

MORE INFORMATION ON THIS CASE CAN BE FOUND AT: https://sites.google.com/site/rockwallplanning/development/development-cases

PLEASE RETURN THE BELOW FORM

Case No. Z2022-045: SUP for Solar Panels

Please place a check mark on the appropriate line below:

☐ I am in favor of the request for the reasons listed below.

☐ I am opposed to the request for the reasons listed below.

Name:

Address:

Tex. Loc. Gov. Code, Sec. 211.006 (d) If a proposed change to a regulation or boundary is protested in accordance with this subsection, the proposed change must receive, in order to take effect, the affirmative vote of at least three-fourths of all members of the governing body. The protest must be written and signed by the owners of at least 20 percent of either: (1) the area of the lots or land covered by the proposed change; or (2) the area of the lots or land immediately adjoining the area covered by the proposed change and extending 200 feet from that area.

PLEASE SEE LOCATION MAP OF SUBJECT PROPERTY ON THE BACK OF THIS NOTICE

30 August 2022

UNIRAC

1411 Broadway Blvd. NE

Albuquerque, NM 87102

REFERENCE: Charles Fisher: 125 Lanshire Dr, Rockwall, TX 75032 USA

Solar Array Installation

To Whom It May Concern:

We have reviewed the existing structure referenced above. The purpose of the review was to evaluate its adequacy to support the proposed installation of solar panels on the roof as shown on the panel layout plan drawings. Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation.

Design Parameter

Code: International Building Code 2015 (IBC 2015)

Risk Category: II

Design wind speed: 115 MPH

Wind exposure category: B

Ground snow load: 5 PSF

Seismic design category: B

Existing Roof Structure

Roof Structure: 2"x4" rafters @24" o.c.

Roofing material: Comp Shingle

Connection to Roof

Mounting connection: One 5/16 in lag screw w/ min. 2.5 in embedment into framing at max. 72 in o.c. along rails

Two rails per row of panels, evenly spaced; panel length perpendicular to the rails not to exceed 74 in

Conclusions

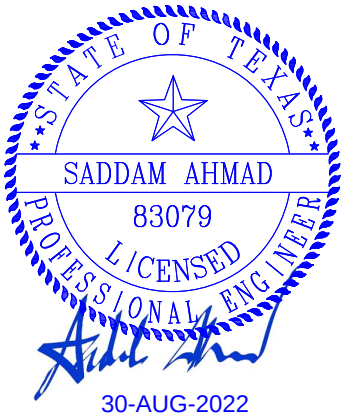
Based upon our evaluation, we conclude that the existing structure is adequate to support the proposed solar panel installation. In the area of the solar array, other live loads will not be present or will be greatly reduced (2015 IBC, Section 1607.12.5). The glass surface of the solar panels allows for a lower slope factor per ASCE 7, resulting in reduced design snow load on the panels. The stresses of the structural elements, resulting from the altered gravity loads in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

The solar array will be flush-mounted (not more than 5 in above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Regarding seismic loads, we conclude that any additional forces will be small. As per Section 1613.1, Exception-1 of the 2015 IBC, detached one- and two-family dwellings with Seismic Design Category A, B or C or located where the mapped short-period spectral response acceleration, Ss, is less than 0.4 g are exempted from seismic load. Therefore the existing lateral force resisting system can remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor must notify Engineering Alliance Inc. should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others are allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. The design of the solar panel racking (mounts, rails, etc.) and electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Engineering Alliance Inc assumes no responsibility for improper installation of the solar array.

Please feel free to call for any questions or clarifications.



30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

Prepared by

Engineering Alliance, Inc
Sugar Land, TX
Phone: 832 865 4757

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Calculations per ASCE 7-10
International Building Code 2015 (IBC 2015)

ROOF DEAD LOAD (D):

Material	Design material weight (psf)	Increase due to pitch	Material weight (psf)
Comp Shingle	2.23	1.11	2
1/2" Plywood	1.1	1.11	1
Framing	3		3
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.2	1.11	2
M, E & Misc	1.5		1.5
Total Dead Load	**10.6**		
PV Array Dead Load	**3.3**	1.11	3

ROOF LIVE LOAD (Lr):

Existing Design Roof Live Load [psf]	20	ASCE 7-10, Table 4-1
Roof Live Load With PV Array [psf]	0	2015 IBC, Section 1607.12.5

SEISMIC LOAD, (E):

Risk category:	II	Table 1.5-1
Seismic Design Category:	B	Table 11.6-2
I_p:	1	Table 1.5-2
Site Class:	D	
R_p:	1.5	Table 13.6-1
S_s:	0.103	
S_1:	0.055	
a_p:	1	Table 13.6-1
z:	1	ft
h:	1	ft
z/h:	1	
F_a:	1.6	Table 11.4-1
F_v:	2.4	Table 11.4-2
S_{MS}:	0.165	Eqs. 11.4-1
S_{M1}:	0.132	Eqs. 11.4-2
S_{DS}:	0.110	Eqs. 11.4-3
S_{D1}:	0.088	Eqs. 11.4-4

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	105	
Exposure Category:	B	Sec. 26.7.3
Risk Category:	II	Table 1.5-1
Height of Roof, h [ft]:	30	(Approximate)
Roof Slope [°]:	26	
Site Elevation [ft]:	547	
Comp/Cladding Location:	Gable/Hip Roofs, 7° < θ ≤ 27°	FIGURE 30.4-2B
Enclosure Classification:	Enclosed Buildings	
Zone 1 GCp:	0.9	(enter largest abs. value)
Zone 2 GCp:	1.7	(enter largest abs. value)
Zone 3 GCp:	2.6	(enter largest abs. value)
α:	7	Table 26.9-1
z_g [ft]	1200	Table 26.9-1
K_h:	0.70	Table 30.3-1
K_{zt}:	1	Equation 26.8-1
K_d:	0.85	Table 26.6-1
Velocity Pressure, q_h [psf]:	16.81	Equation 30.3-1
GC_{pi}	0	Table 26.11-1

PRESSURES:

$$p = q_h((GC_p)-(GC_{pi})) \quad (lb/ft^2)$$ Equation 30.9-1

Zone 1 :	15.1	psf (1.0 W)
Zone 2 :	28.6	psf (1.0 W)
Zone 3 :	43.7	psf (1.0 W)

a [ft] = 3.6

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

COMPARE WIND & SEISMIC LOADS FOR CONNECTION (1 Sq. Ft. Section)

Wind Load, W:

Wind pressure, p:	9.1	psf (Zone 1: 0.6 W from wind pressure calculation)
Height, h:	1	ft
Width, w:	1	ft
Fperp:	9.1	lb (Uplift)

Seismic Load, E:

0.7 * F_p ,min:	0.069	lb
0.7 * F_p ,max:	0.369	lb
0.7 * F_p ,vert:	0.046	lb
0.7 * F_p ,long:	0.185	lb
0.7*F_p ,perp:	0.122	lb (uplift)

Wind (uplift) Controls Connection Design

CHECK INCREASE IN OVERALL SEISMIC LOADS

SEISMIC:

Seismic Design Category:	B

As per Section 1613.1, Exception-1 of the 2015 IBC, Seismic load is Exempted.

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Lag Screw Connection

Tributary Length (in):	74
Max Tributary Width (in):	72

Capacity:

Lag Screw Size[in] :	5/16	
C_d:	1.6	NDS Table 2.3.2
Embedment[1] [in]:	2.5	
Grade:	SPF (G = 0.42)	
Capacity [lbs/in]:	205	NDS Table 12.2A
Number of Screws in tension:	1	
Prying Coefficient:	1.4	
Total Capacity [lbs]:	586	

Demand:

Zone	Pressure (0.6 Wind) (psf)	Max Tributary Width (ft)	Max. Trib. Length (ft)	Max. Trib. Area2 (ft2)	Max. Uplift Force (lbs)
Zone 1 :	6.1	6.0	3.1	18.5	112
Zone 2 :	14.1	6.0	3.1	18.5	262
Zone 3 :	23.2	6.0	3.1	18.5	430

Total Tension Force(lbs):	430

Demand< Capacity: 73.3%, OK

Notes

1. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.
2. 'Max. Trib Area' is the product of the 'Max. Tributary Width' (along the rails) and 1/2 the panel width/height (perpendicular to the rails).

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SNOW LOAD (S):

	Existing	w/ Solar Panel Array	
Roof Slope [x:12]:	5.9	5.9	
Roof Slope [°]:	26	26	
Snow Ground Load, p_g [psf]:	5	5	ASCE 7-10, Section 7.2
Surface Roughness Category:	B	B	ASCE 7-10, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-10, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-10, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-10, Table 7-3
Risk Category:	II	II	ASCE 7-10, Table 1.5-1
Importance Factor, I_s:	1	1	ASCE 7-10, Table 1.5-2
Flat Roof Snow Load, p_f [psf]:	3	3	ASCE 7-10, Equation 7.3-1
Minimum Roof Snow Load, p_m [psf]:	0	0	ASCE 7-10, Section 7.3.4
Unobstructed Slippery Surface?	NO	YES	ASCE 7-10, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-10, Section 7.4
Roof Slope Factor, C_s:	1.00	0.73	ASCE 7-10, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	3	3	ASCE 7-10, Equation 7.4-1
Design Snow Load, S [psf]:	3	3	

Summary of Loads

	Existing	With PV Array
D [psf]	11	14
Lr [psf]	20	0
S [psf]	3	3

Maximum Gravity Loads:

	Existing	With PV Array	
(D + Lr) / Cd [psf]	24	15	ASCE 7-10, Section 2.4.1
(D + S) / Cd [psf]	12	14	ASCE 7-10, Section 2.4.1

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

Maximum Gravity Load [psf]:	24	15

Ratio Proposed Loading to Current Loading: **63%** **OK**

The gravity loads and; thus, the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

PHOTOVOLTAIC ROOF MOUNT SYSTEM

57 MODULES-ROOF MOUNTED - 22.80 kWDC, 16.53 kWAC

125 LANSHIRE DR, ROCKWALL, TX 75032 USA

SYSTEM SUMMARY:

(N) 57 - HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(N) 57 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(N) 02 - JUNCTION BOX
(E) 200A MAIN SERVICE PANEL WITH (N) 150A MAIN BREAKER
(N) 100A NON FUSED AC DISCONNECT
(N) 125A LOAD CENTER

DESIGN CRITERIA:

ROOF TYPE: - COMP SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @24" O.C.
STORY: - TWO STORY
SNOW LOAD : - 5 PSF
WIND SPEED :- 115 MPH
WIND EXPOSURE:- B
EXPOSURE CATEGORY:- II

GOVERNING CODES:

2017 NATIONAL ELECTRICAL CODE (NEC)
2015 INTERNATIONAL FIRE CODE (IFC)
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
2015 INTERNATIONAL MECHANICAL CODE (IMC)

SHEET INDEX

PV-0	COVER SHEET
PV-1	SITE PLAN WITH ROOF PLAN
PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAILS
PV-4	BRANCH LAYOUT
PV-5	ELECTRICAL LINE DIAGRAM
PV-6	ELECTRICAL CALCULATION
PV-6.1	LOAD CALCULATION & PANEL SCHEDULING
PV-7	PLACARDS & WARNING LABELS
PV-8	ADDITIONAL NOTES
PV-9+	EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

A LADDER SHALL BE IN PLACE FOR INSPECTION

THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.

EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.

EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A) REGARDLESS OF VOLTAGE.

PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED

ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.

HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" PER NEC 240.24

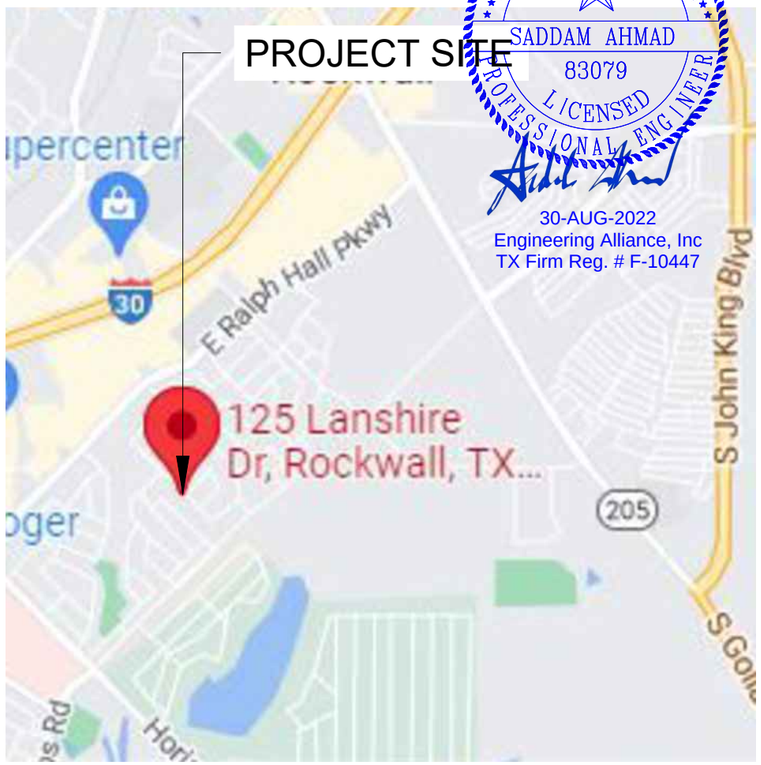
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER NEC 250.64C.
ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. NEC 690.64(B)(7)
SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

COVER SHEET

SHEET SIZE

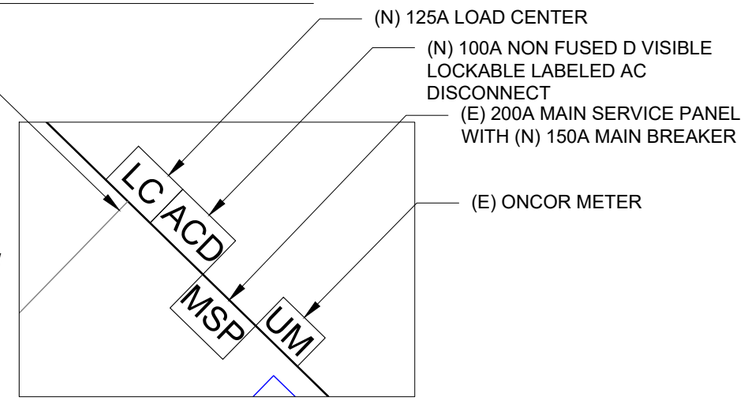
ANSI B
11" X 17"

SHEET NUMBER

PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

ENLARGED VIEW



STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 SITE PLAN WITH ROOF PLAN

SCALE: 1/16" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SITE PLAN WITH ROOF PLAN

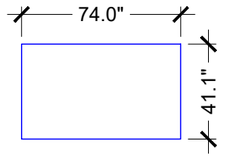
SHEET SIZE
ANSI B
11" X 17"

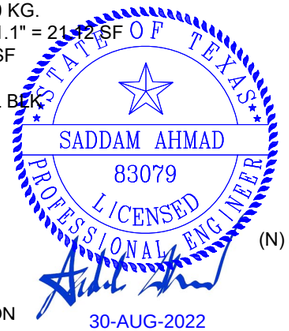
SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 57 MODULES
MODULE TYPE = HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
MODULE WEIGHT = 48.5 LBS / 22.0 KG.
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF
UNIT WEIGHT OF ARRAY = 2.30 PSF

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)





30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE:
INTERNATIONAL FIRE CODE SECTION 605.11.1.2 FOR RESIDENTIAL R-3 OCCUPANCIES AT LEAST THREE (3) FEET OF CLEARANCE ALONG THE EDGE (RAKE) OF THE ROOF TO A PANEL AND AT LEAST THREE (3) FEET FROM THE RIDGE OF THE ROOF TO A PANEL. PANELS SHALL BE AT LEAST ONE AND ONE-HALF (1-1/2) FEET FROM A VALLEY OR HIP. NO CLEARANCE IS REQUIRED AT THE EAVE.

INTERNATIONAL FIRE CODE SECTION 605.11.1.2.4 ROOFS WITH HIPS AND VALLEYS - WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY.

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
RAIL	33	ECOFASTEN CLICK RAIL 168" DARK
SPLICE	10	BND SPLICE BAR PRO SERIES DRK
MID CLAMP	74	UNIVERSAL AF MID CLAMPS
END CLAMP	80	UNIVERSAL AF END CLAMPS
ATTACHMENT	118	ECOFASTEN CLICKFIT
GROUNDING LUG	20	GROUND LUG

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

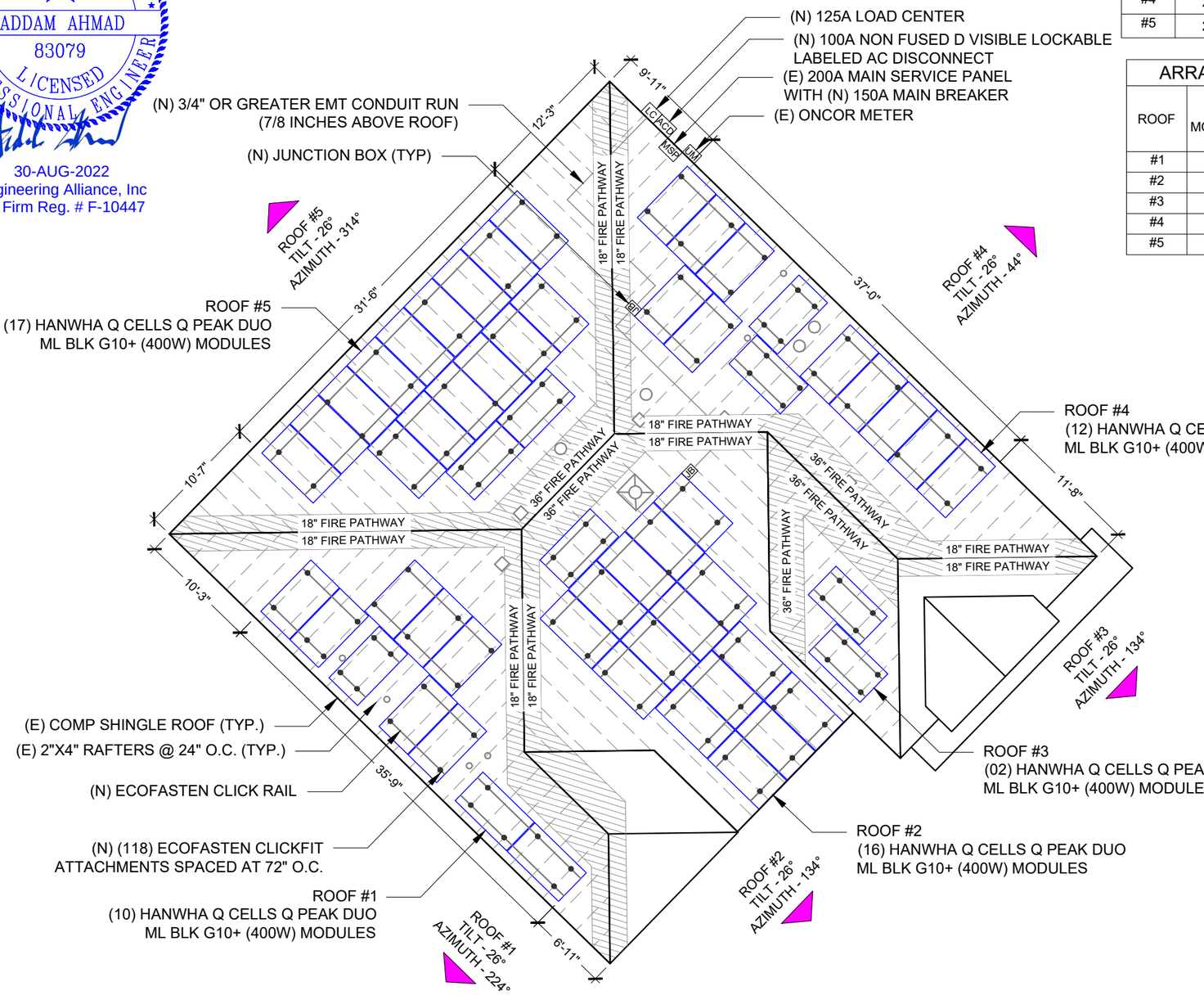
ROOF DESCRIPTION

ROOF	ROOF TYPE: ROOF TILT	ROOF TYPE: AZIMUTH	COMP SHINGLE ROOF: RAFTERS SIZE	COMP SHINGLE ROOF: RAFTERS SPACING
#1	26°	224°	2"x4"	24" O.C.
#2	26°	134°	2"x4"	24" O.C.
#3	26°	134°	2"x4"	24" O.C.
#4	26°	44°	2"x4"	24" O.C.
#5	26°	314°	2"x4"	24" O.C.

ARRAY AREA & ROOF AREA CALC'S

ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	211.21	539.16	39.17
#2	16	337.93	639.38	52.85
#3	02	42.24	189.84	22.25
#4	12	253.45	649.38	39.03
#5	17	359.05	705.06	50.93

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER



LEGEND

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- LC - LOAD CENTER
- JB - JUNCTION BOX
- CHIMNEY
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- FIRE PATHWAY

1 ROOF PLAN WITH MODULES

SCALE: 3/32" = 1'-0"

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

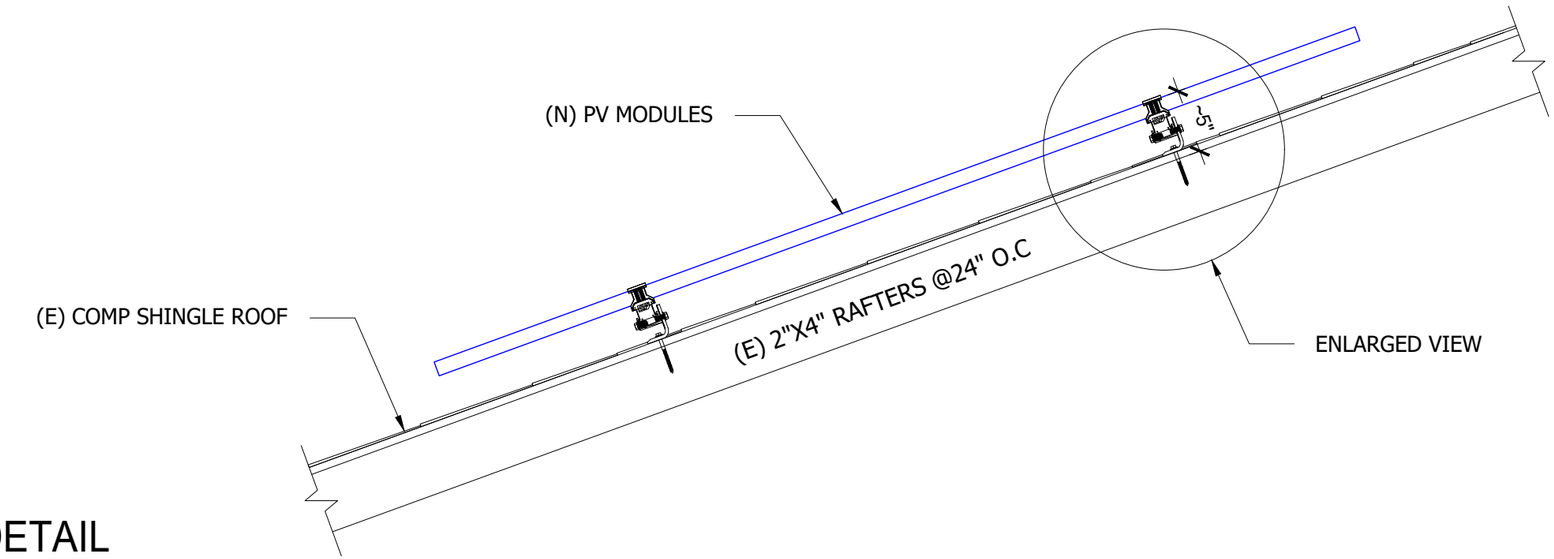
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

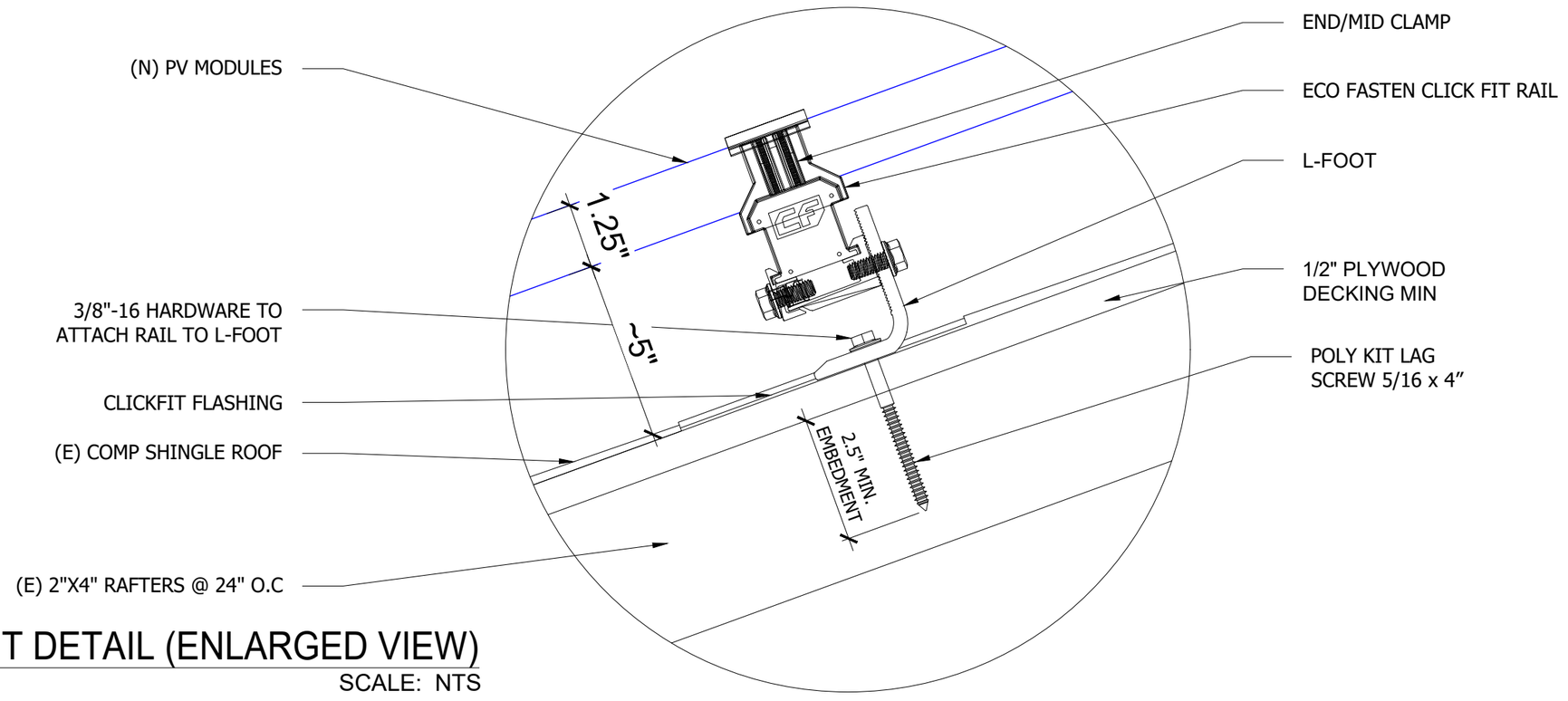
NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS(OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447



1 ATTACHMENT DETAIL
SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

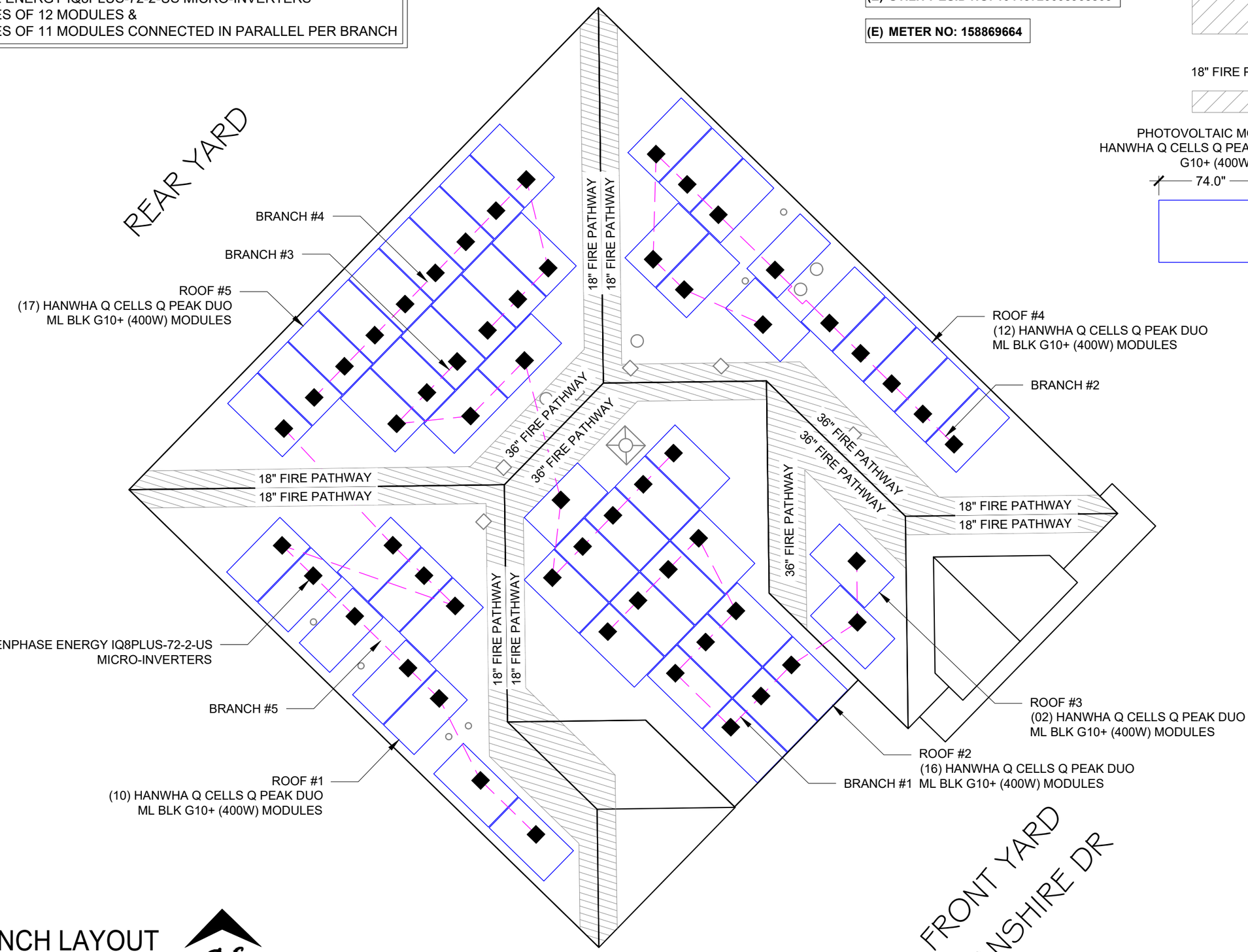
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

36" FIRE PATHWAY
3'-0"

18" FIRE PATHWAY
18"

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)
74.0"
41.1"



1 BRANCH LAYOUT

SCALE: 1/8" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

BRANCH LAYOUT

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-4

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

SYSTEM SIZE:- 57 x 400W = 22.80 kWDC
SYSTEM SIZE:- 57 x 290W = 16.53 kWAC

INTERCONNECTION
120% RULE - NEC 705.12(B)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED
150A +90A = 240A

BUSS RATING x 120%
200A x 120% = 240A

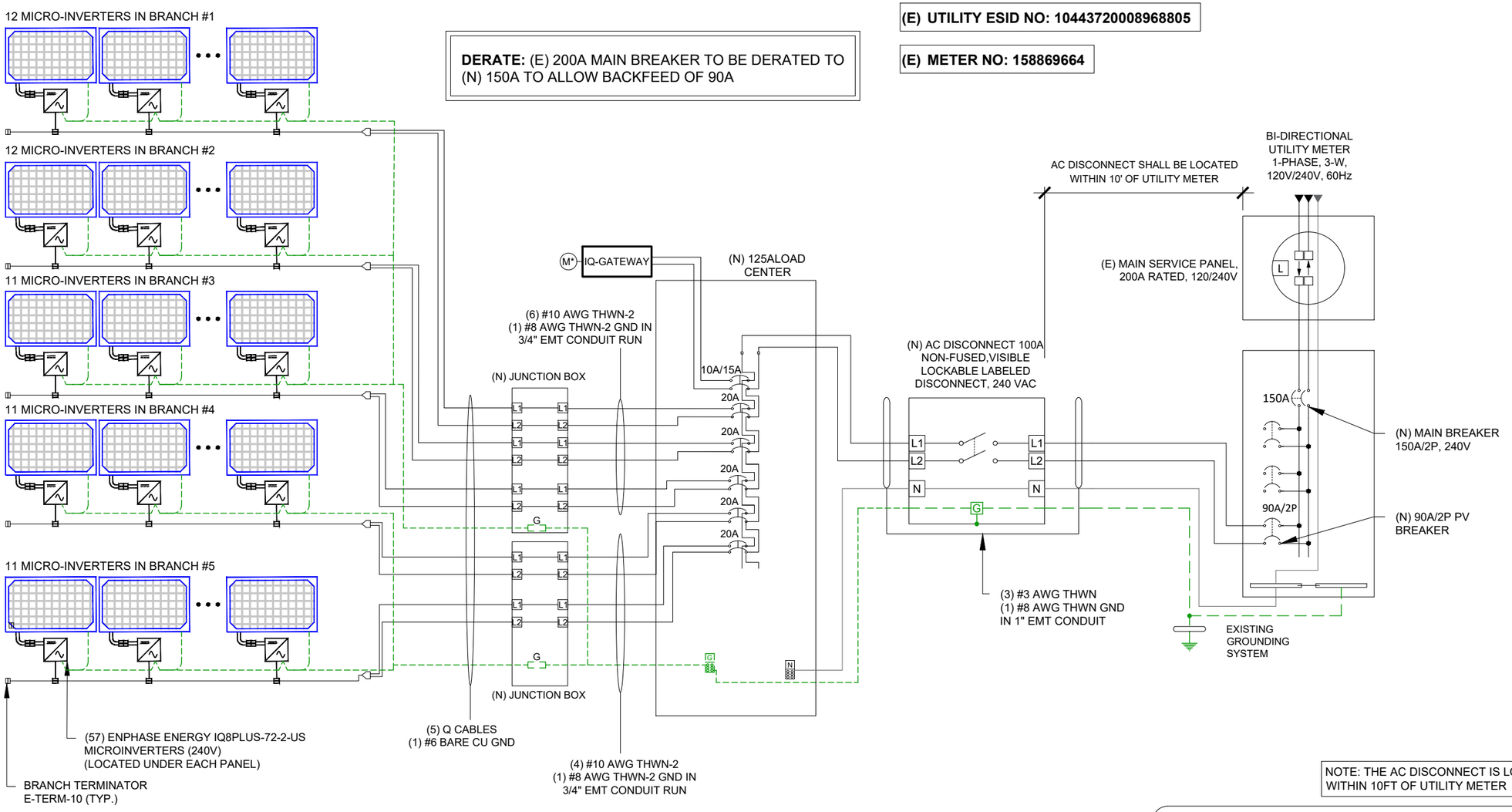
BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	57	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
INVERTER	57	ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
JUNCTION BOX	2	600V, 55A MAX, 4 INPUTS, MOUNTED ON ROOF FOR WIRE & CONDUIT TRANSITION
LOAD CENTER	1	125A PV LOAD CENTER
AC DISCONNECT	1	100A NON FUSED, VISIBLE LOCKABLE LABELED AC DISCONNECT, 240VAC, NEMA 3R, UL LISTED.

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A



NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP

WIRE RATED AND AMPACITY CALCULATED @ 90°C FOR ROOFTOP INSTALLATION AND ATTIC RUN TO INVERTER

ANY CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT. (NEC 300.6 C1, 310.8 D)

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

NOTE ON CONDUIT:
ALL CONDUIT SHALL BE EMT 3/4" IN DIAMETER UNLESS OTHERWISE STATED

PER NEC REQUIRMENTS GROUNDING CONDUCTORS SMALLER THAN 6AWG SHALL BE PROTECTED IN A CONDUIT, RACEWAY, OR ARMORED PROTECTIVE SHEATHING (NEC 250.64)

SERVICE INFO.

UTILITY PROVIDER:	ONCOR
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	(E) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 150A
MAIN SERVICE LOCATION:	NORTH-EAST
SERVICE FEED SOURCE:	UNDERGROUND

1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)MODULES
VMP	37.13
IMP	10.77
VOC	45.30
ISC	11.14
MODULE DIMENSION	74.0"L x 41.1"W x 1.26"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE ENERGY IQ8PLUS-72-2-US
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	1.21A

AMBIENT TEMPERATURE SPECS	
WEATHER STATION: DALLAS LOVE FIELD	
RECORD LOW TEMP	-8°
AMBIENT TEMP (HIGH TEMP 2%)	37°
CONDUIT HEIGHT	0.9"
ROOF TOP TEMP.	37°
CONDUCTOR TEMPERATURE RATE (ON ROOF)	90°
CONDUCTOR TEMPERATURE RATE (OFF ROOF)	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#1 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 06
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#2 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 04
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM LOAD CENTER TO INTERCONNECTION:

OF INVERTERS: 57
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.88
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(3)(a): 1.0
CIRCUIT CONDUCTOR SIZE: 3 AWG
CIRCUIT CONDUCTOR AMPACITY: 100A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X # MICRO-INVERTERS X MAX OUTPUT CURRENT =
1.25 X 1.21 X 57 = 86.21A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.88 X 1.0 X 100= 91A

RESULT SHOULD BE GREATER THAN 86.21A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

ELECTRICAL NOTES

1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

1 ELECTRICAL CALCULATION

SCALE: NTS

SOLNOVA
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2407 EAST LOOP 820 N, FORT WORTH, TX 76118
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CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

LOAD CALC RESULTS		
BUSS BAR RATING		TOTAL DEMAND
150	>	141.31

RESIDENTIAL LOAD CALULATION FOR EXISTING DWELLINGS					
3,522	SQ. FT. X 3 VA			10566	VA
2	SMALL APPLIANCE BRANCH CIRCUITS			3000	VA
1	LAUNDRY CIRCUIT (WASHER)			1500	VA
30	DRYER			5760	VA
50	N/A			9600	VA
20	MICRO-WAVE			1920	VA
20	DISPOSAL & DISHWASHER			1920	VA
20	WASHER			1920	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
TOTAL LOAD GROSS (VA)				36186	TOTAL VA
FIRST 10,000VA, VA X 100%				10000	VA
REMAINDER ABOVE 10,000 VA X 40%				10474.4	VA
TOTAL LOAD NET (VA)				20474.4	VA
TOTAL LOAD (AMPS) (VA/240V)				85.3	AMPS
AIR CONDITIONING LOADS					
30	1-A/C MIN. CIRCUIT AMPS			5760	VA
40	2-A/C MIN. CIRCUIT AMPS			7680	VA
	3-A/C MIN. CIRCUIT AMPS			0	VA
	4-A/C MIN. CIRCUIT AMPS			0	VA
	SUB POOL MIN. CIRCUIT AMPS			0	VA
	AHU VA (Breaker Amps X Volts X 80%)			0	
TOTAL A/C LOAD (VA)				13440	TOTAL VA
TOTAL LOAD (AMPS) (VA/240V)				56	AMPS
TOTAL DEMAND (AMPS)				141.3	AMPS

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

120% RULE: BACKFEED	
BUSSBAR RATING	200
NEW MAIN BREAKER	150
120% RULE: BACKFEED	120
PV OCPD	90

LOAD CALC RESULTS		
BUSSBAR RATING		TOTAL DEMAND
150	>	141.31

PANEL SCHEDULE

EXISTING PANEL			ALTERED PANEL		
Circuit	#	OCP AMP	Circuit	#	OCP AMP
MAIN BREAKER 200			NEW MAIN BREAKER 150		
DRYER	1	30	DRYER	1	30
N/A	2	50	N/A	2	50
DRYER	3	30	DRYER	3	30
N/A	4	50	N/A	4	50
AC	5	30	AC	5	30
N/A	6	20	N/A	6	20
AC	7	30	AC	7	30
N/A	8	20	N/A	8	20
GFI	9	20	GFI	9	20
N/A	10	20	N/A	10	20
REFRIGERATOR	11	20	REFRIGERATOR	11	20
MICROWAVE	12	20	MICROWAVE	12	20
BATH GFI	13	20	BATH GFI	13	20
MASTER BEDROOM	14	20	MASTER BEDROOM	14	20
GARAGE GFI	15	20	GARAGE GFI	15	20
N/A	16	20	N/A	16	20
LIVING ROOM& DINING LIGHTS	17	20	LIVING ROOM& DINING LIGHTS	17	20
FRONT & BACK LIGHTS	18	20	FRONT & BACK LIGHTS	18	20
WASHER	19	20	WASHER	19	20
FRONT BED & BACK BED LIGHTS	20	20	FRONT BED & BACK BED LIGHTS	20	20
GAME ROOM & MOVIE SMOKES	21	20	GAME ROOM & MOVIE SMOKES	21	20
AC	22	40	AC	22	40
GARAGE/ MASTER BATH/POWER BATH	23	20	GARAGE/ MASTER BATH/POWER BATH	23	20
AC	24	40	AC	24	40
NOOK PLUGS/COOK PLUGS	25	20	NOOK PLUGS/COOK PLUGS	25	20
EMPTY	26	EMPTY	EMPTY	26	EMPTY
DISPOSAL& DISHWASHER	27	20	DISPOSAL& DISHWASHER	27	20
EMPTY	28	EMPTY	EMPTY	28	EMPTY
EMPTY	29	EMPTY	EMPTY	29	EMPTY
EMPTY	30	EMPTY	EMPTY	30	EMPTY
EMPTY	31	EMPTY	EMPTY	31	EMPTY
EMPTY	32	EMPTY	EMPTY	32	EMPTY
EMPTY	33	EMPTY	EMPTY	33	EMPTY
EMPTY	34	EMPTY	EMPTY	34	EMPTY
EMPTY	35	EMPTY	EMPTY	35	EMPTY
EMPTY	36	EMPTY	EMPTY	36	EMPTY
EMPTY	37	EMPTY	EMPTY	37	EMPTY
EMPTY	38	EMPTY	EMPTY	38	EMPTY
EMPTY	39	EMPTY	PV BREAKER	39	90
EMPTY	40	EMPTY	PV BREAKER	40	90

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APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

LOAD CALCULATION& PANEL SCHEDULING

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-6.1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP
(PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 68.97 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
(PER CODE: NEC 705.12 (B)(2)(3)(B)

WARNING:PHOTOVOLTAIC POWER SOURCE

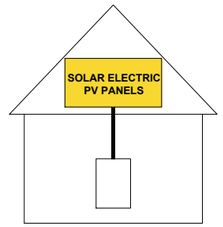
LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY

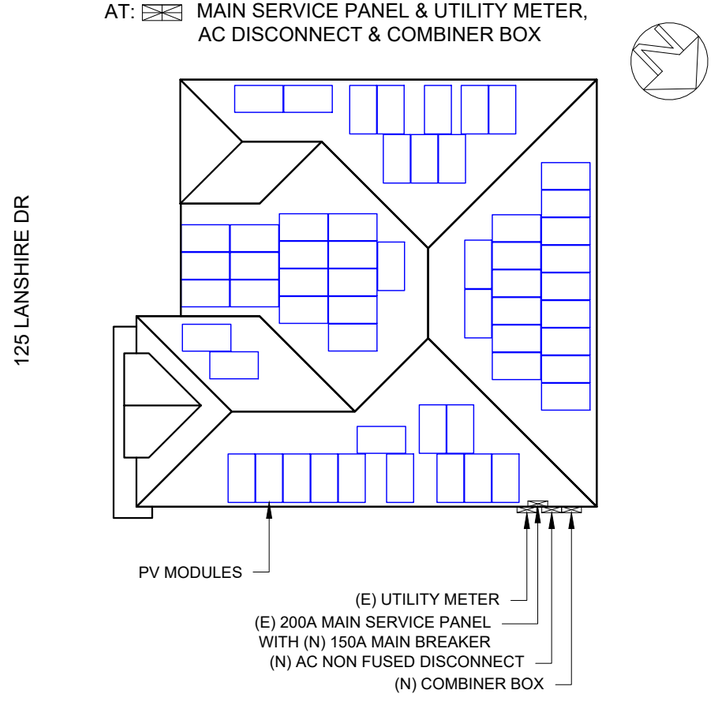


LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

CAUTION !

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

AT: MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & COMBINER BOX



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CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.

2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.

3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT.

4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).

5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.

6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.

7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

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APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

Quality Controlled PV
TÜVRheinland CERTIFIED
www.tuv.com ID 1111232615

ASSEMBLED IN THE USA

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

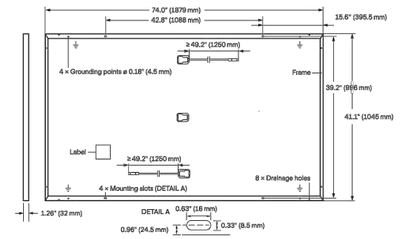
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (–) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

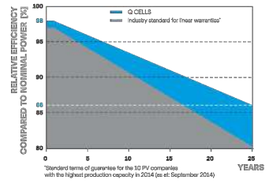


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP} [W]	385	390	395	400	405
Minimum	Short Circuit Current[1]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
Minimum	Open Circuit Voltage[1]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
Minimum	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
Minimum	Voltage at MPP	V_{MPP} [V]	36.36	36.62	36.88	37.13	37.39
Minimum	Efficiency[1]	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	288.8	292.6	296.3	300.1	303.8
Minimum	Short Circuit Current	I_{SC} [A]	8.90	8.92	8.95	8.97	9.00
Minimum	Open Circuit Voltage	V_{OC} [V]	42.62	42.65	42.69	42.72	42.76
Minimum	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
Minimum	Voltage at MPP	V_{MPP} [V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

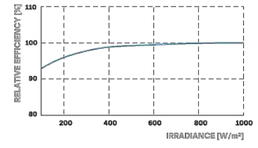
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS						
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.34	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells),

C Certified US UL 61730

CE

TÜVRheinland CERTIFIED www.tuv.com ID 1111232077

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

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2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

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CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

ENPHASE.

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.
** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility
(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

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SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
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SHEET NUMBER

PV-10

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

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SHEET NAME
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ANSI B
11" X 17"

SHEET NUMBER
PV-11

Data Sheet
Enphase Q Cable Accessories
Region: INDIA

Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

To learn more about Enphase offerings, visit **enphase.com/in**

ENPHASE.

Enphase Q Cable Accessories

Q CABLE SPECIFICATIONS	
Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60332-1-2

Q CABLE TYPES / ORDERING OPTIONS

Model Number	Max Nominal Voltage	Ampacity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

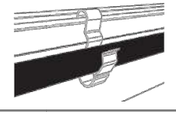
ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (male)	Q-CONN-3P-10M	Make connections using three-phase cable
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (single-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Disconnect tool	Q-DISC-3P-10	Disconnect tool for three-phase Field wireable connectors
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator (single-phase)	Q-TERM-R-10	Terminator cap for unused single-phase cable ends
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused three-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	DC adaptor to MC4 (max voltage 100 VDC)

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10))

SEALING CAPS
Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)
Three-phase model (Q-DISC-3P-10)



CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)

To learn more about Enphase offerings, visit **enphase.com/in**

2018-11-26

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

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SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

EcoFasten®
For Installers. By Installers.

CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

ClickFit is one of the fastest installing rail-based systems in the industry. Thanks to its Click-In rail assembly, the rails can be connected to any of EcoFasten's composition shingle, tile, and metal roof mounts in seconds without the need for fasteners or tools. The ClickFit system is made of robust materials such as aluminum and coated steel, to ensure corrosion-resistance and longevity. ClickFit conforms to UL 2703 and has been tested in extreme weather conditions including wind, fire, and snow.

FEATURES & BENEFITS

- Pre-installed rail fastening bolt
- Fully integrated bonding
- Click-On Mid & End Clamps
- Compatible with a variety of EcoFasten roof attachments

FAST INSTALLING SYSTEM FEATURING CLICK-IN RAIL ASSEMBLY

ROOF TYPE — Composition Shingle, Tile, Metal

RACKING — Rail-Based

ATTACHMENT — Structural-Attach Direct-Attach

WATER TIGHT TECHNOLOGY

25 YEAR WARRANTY

ECOFASTENSOLAR.COM

CLICKFIT

INTERNAL SPLICE

Tool-free bonded internal Splice installs in seconds.

MID CLAMP

Click-on mid clamp features integrated bonding pins and fits module frames sized 30-50mm.

CF MLPE MOUNT

Attach Module Level Power Electronics to the top of the rail.

END CLAMP

Click-on end clamp fits module frames sized 30-50mm.

END CAP

The slide-on end caps allow the end clamps to be accurately positioned on the rail in seconds, while providing an aesthetically pleasing, finished install.

RAIL

The ClickFit rail clicks into our proprietary composition shingle & tile L-foot and is tightened in place with a pre-installed bolt.

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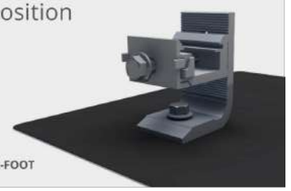
ANSI B
11" X 17"

SHEET NUMBER
PV-13

COMPOSITION SHINGLE

Combine the versatile ClickFit L-Foot with the watertight GF-1 flashing for a fast installation on composition shingle roofs.



GF-1 FLASHING & L-FOOT

TILE ROOFS

Use the adjustable ClickFit Tile Hook for attaching the ClickFit system to tile roofs. Works with Flat, S, and W tile profiles.

CLICKFIT TILE HOOK

STANDING SEAM METAL ROOFS

Combine the ClickFit L-Foot with SimpleBlock®-U for a fast installation on standing seam metal roofs.

SIMPLEBLOCK-U

ECOFASTENSOLAR.COM

SOLNOVA

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SHEET NAME

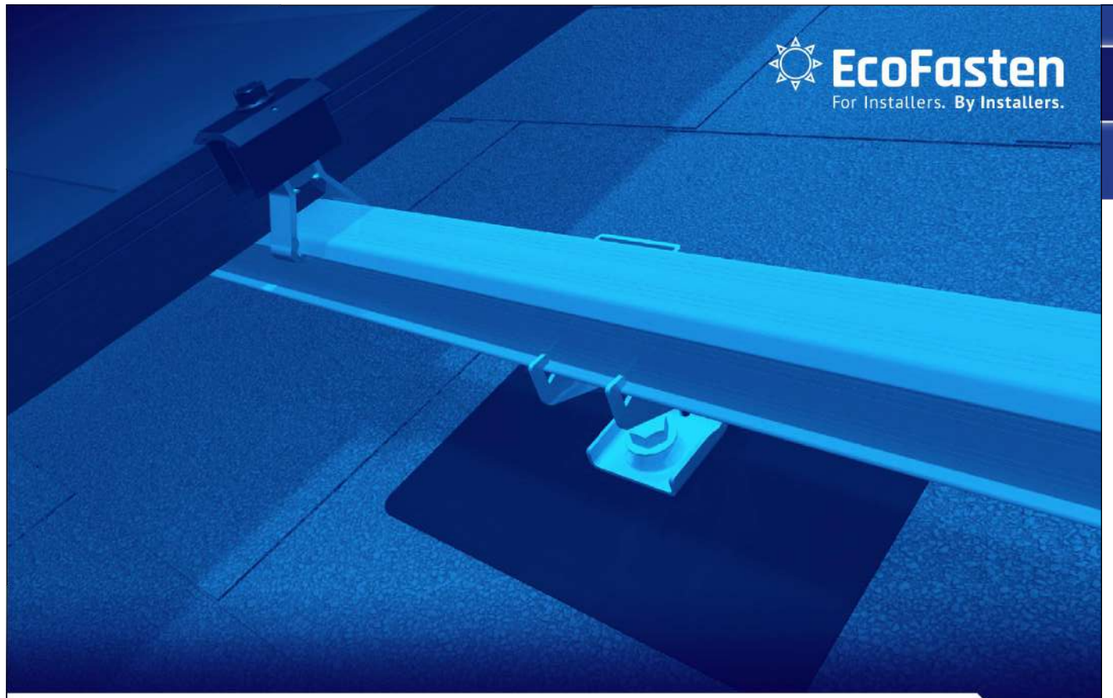
SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14



CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

INSTALLATION GUIDE

REVISION DATE: 04/09/21	VERSION: v2.4

ECOFASTENSOLAR.COM

MANUFACTURER	LIST OF UL2703 APPROVED MODULES
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72, 72H, or 72DH
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where "YY" can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HH2, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45, and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40, and 42mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, G5/SC, G5/TS, BLK-G5, BLK-G5/SC, BLK-G5/TS, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6/SC, G6/TS, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G6+/AC, BLK-G6+/SC, BLK-G6/TS, G6+/TS, BLK-G6+/TS, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, L-G8.3, L-G8.3/BFF, ML-G9, BLK ML-G9, ML-G9+, BLK ML-G9+, XL-G9, XL-G9.2 or XL-G9.3
Heliene	Heliene modules with 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "A" can be blank, HomePV, or Bifacial
HT-SAAE	HT-SAAE modules with 35 and 40 mm frames HTyy-156Z-xxx Where "yy" can be 60 or 72, "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C

MODULES

SOLNOVA
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SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

Engineering Alliance, Inc

https://www.eng-alliance.com

27-June-2022

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87101
Tel: 505 242 6411

Attn.: Engineering Department

Subject: Engineering Certification for the Unirac SOLARMOUNT Flush Rail System to Support Photovoltaic Panels.

The Unirac SOLARMOUNT Flush-to-Roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof.

We have reviewed the SOLARMOUNT system, a proprietary mounting system constructed from modular parts which are intended for rooftop installation of solar photovoltaic (PV) panels; and have reviewed the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the SOLARMOUNT rails (SM LIGHT rail, SM STANDARD rail, and SM HEAVY DUTY rail) with Standard and Pro Series hardware. All information, data and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. ASCE/SEI 7-05, 7-10, 7-16 Minimum Design Loads for Buildings and Other Structures
2. International Building Code, 2006-2021 Edition w/ Provisions from SEAOC PV-2 2017
3. International Residential Code, 2006- 2021 Edition w/ Provisions from SEAOC PV-2 2017
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
5. Aluminum Design Manual, 2015 & 2020 Edition

Following are typical specifications to meet the above code requirements:

Design Criteria:
Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

For Houston, TX:
Basic Wind Speed ASD Minimum 110 mph to 147 mph (3-sec gust ASCE 7-05 for IRC)
Basic Wind Speed LRFD Minimum 142 mph to 190 mph (Vult ASCE 7-10 for IBC)

Attachment Spacing: Per U-Builder 2.0 Engineering report.

Cantilever: The maximum cantilever length is L/3, where "L" is the span noted in the U-Builder 2.0 online Tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel
Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation

Installation Orientation: See SOLARMOUNT Rail Flush Installation Guide.

4603 April Meadow Way, Sugar Land, TX 77479. Ph: 832 865 4757

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-16

CITY OF ROCKWALL

ORDINANCE NO. 22-XX

SPECIFIC USE PERMIT NO. S-XXX

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, AMENDING THE UNIFIED DEVELOPMENT CODE (UDC) [*ORDINANCE NO. 20-02*] OF THE CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS, AS PREVIOUSLY AMENDED, SO AS TO GRANT A SPECIFIC USE PERMIT (SUP) TO ALLOW *SOLAR PANELS* ON A 0.1947-ACRE PARCEL OF LAND IDENTIFIED AS LOT 20, BLOCK D, LYNDEN PARK ESTATES ADDITION, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS; AND MORE SPECIFICALLY DEPICTED AND DESCRIBED AND DEPICTED IN *EXHIBIT 'A'* OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS ($2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels Exceeding 1,000 SF of Coverage on a Residential Home* situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive and being more specifically described and depicted in *Exhibit 'A'* of this ordinance, which herein after shall be referred to as the *Subject Property* and incorporated by reference herein; and

WHEREAS, the Planning and Zoning Commission of the City of Rockwall and the governing body of the City of Rockwall, in compliance with the laws of the State of Texas and the ordinances of the City of Rockwall, have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally, and to all persons interested in and situated in the affected area and in the vicinity thereof, the governing body in the exercise of its legislative discretion has concluded that the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall should be amended as follows:

NOW, THEREFORE, **BE IT ORDAINED** by the City Council of the City of Rockwall, Texas;

SECTION 1. That the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall, as heretofore amended, be and the same is hereby amended so as to grant a Specific Use Permit (SUP) allow for *Solar Panels Exceeding 1,000 SF of Coverage on a Residential Home* within Planned Development District 17 (PD-17) as stipulated by Subsection 01.01, *Use of Land and Buildings*, of Article 04, *Permissible Uses*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*] on the *Subject Property*; and,

SECTION 2. That the Specific Use Permit (SUP) shall be subject to the requirements set forth in Subsection 02.03(K)(7) of Article 04, *Permissible Uses*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*] *-- as heretofore amended and as may be amended in the future --*,

and with the following conditions:

2.1. OPERATIONAL CONDITIONS

The following conditions pertain to the operation of *Solar Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'*.

(2) All mechanical equipment (*e.g. micro inverters*) and batteries shall be completely screened from the adjacent properties and rights-of-way.

2.2 COMPLIANCE

Approval of this ordinance in accordance with Subsection 02.02, *Specific Use Permits (SUP)* of Article 11, *Development Applications and Review Procedures,* of the Unified Development Code (UDC) will require the *Subject Property* to comply with the following:

1) Upon obtaining a *Building Permit*, should the property owner subject to these guidelines of this ordinance fail to meet the minimum operational requirements set forth herein and outlined in the Unified Development Code (UDC), the City may (*after proper notice*) initiate proceedings to revoke the Specific Use Permit (SUP) in accordance with Subsection 02.02(F), *Revocation*, of Article 11, *Development Applications and Revision Procedures*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*].

SECTION 3. That the official zoning map of the City be corrected to reflect the changes in zoning described herein.

SECTION 4. That all ordinances of the City of Rockwall in conflict with the provisions of this ordinance be, and the same are hereby repealed to the extent of that conflict.

SECTION 5. Any person, firm, or corporation violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a penalty of fine not to exceed the sum of *TWO THOUSAND DOLLARS ($2,000.00)* for each offence and each and every day such offense shall continue shall be deemed to constitute a separate offense.

SECTION 6. If any section or provision of this ordinance or the application of that section or provision to any person, firm, corporation, situation or circumstance is for any reason judged invalid, the adjudication shall not affect any other section or provision of this ordinance or the application of any other section or provision to any other person, firm, corporation, situation or circumstance, and the City Council declares that it would have adopted the valid portions and applications of the ordinance without the invalid parts and to this end the provisions of this ordinance shall remain in full force and effect.

SECTION 7. That this ordinance shall take effect immediately from and after its passage.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THIS THE 7th DAY OF NOVEMBER, 2022.

Kevin Fowler, *Mayor*

ATTEST:

Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

Frank J. Garza, *City Attorney*

1st Reading: *October 17, 2022*

2nd Reading: *November 7, 2022*

Exhibit 'A'
Zoning Exhibit

Address: *125 Lanshire*
Legal Description: *Lot 20, Block D, Lynden Park Estates*

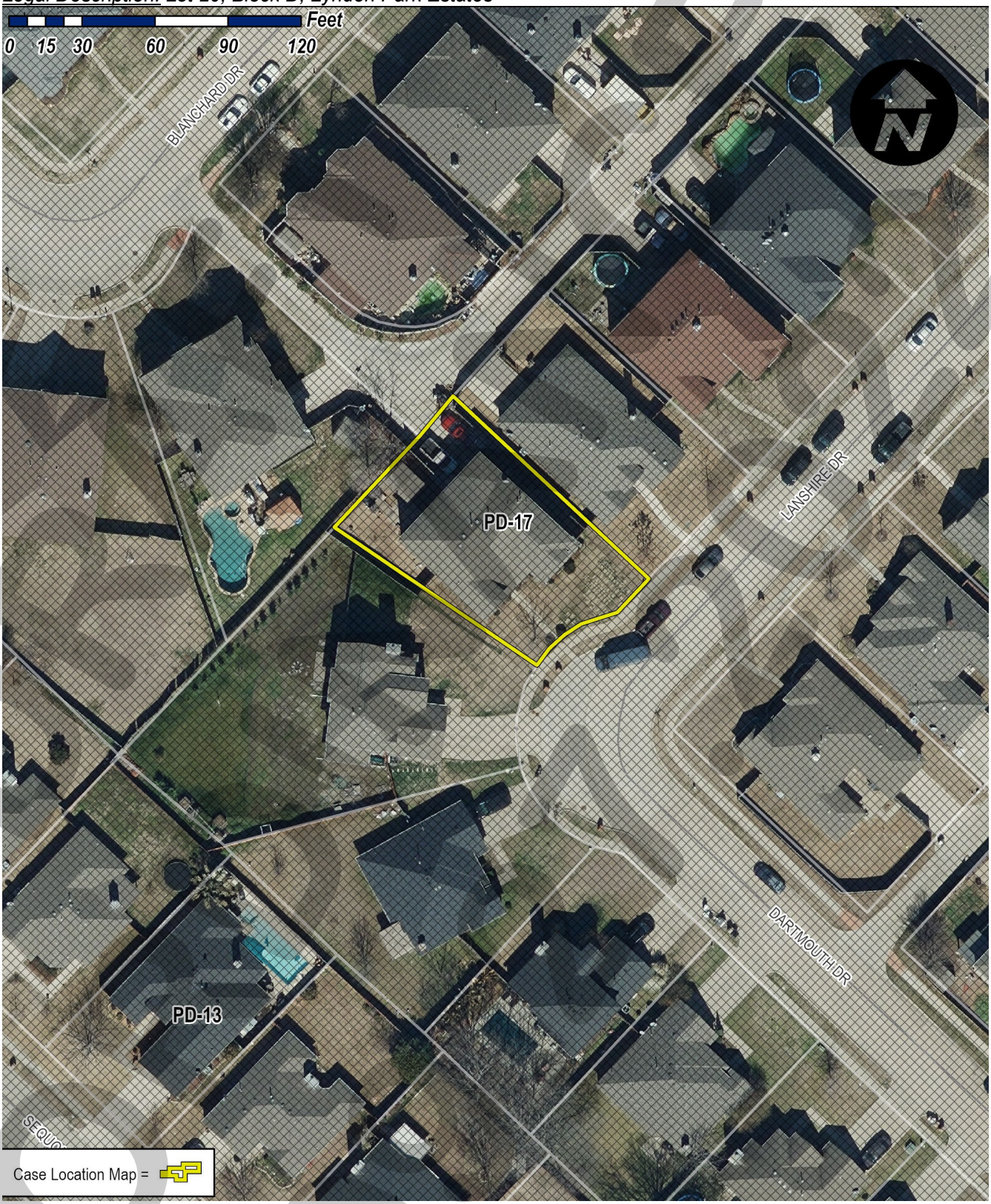
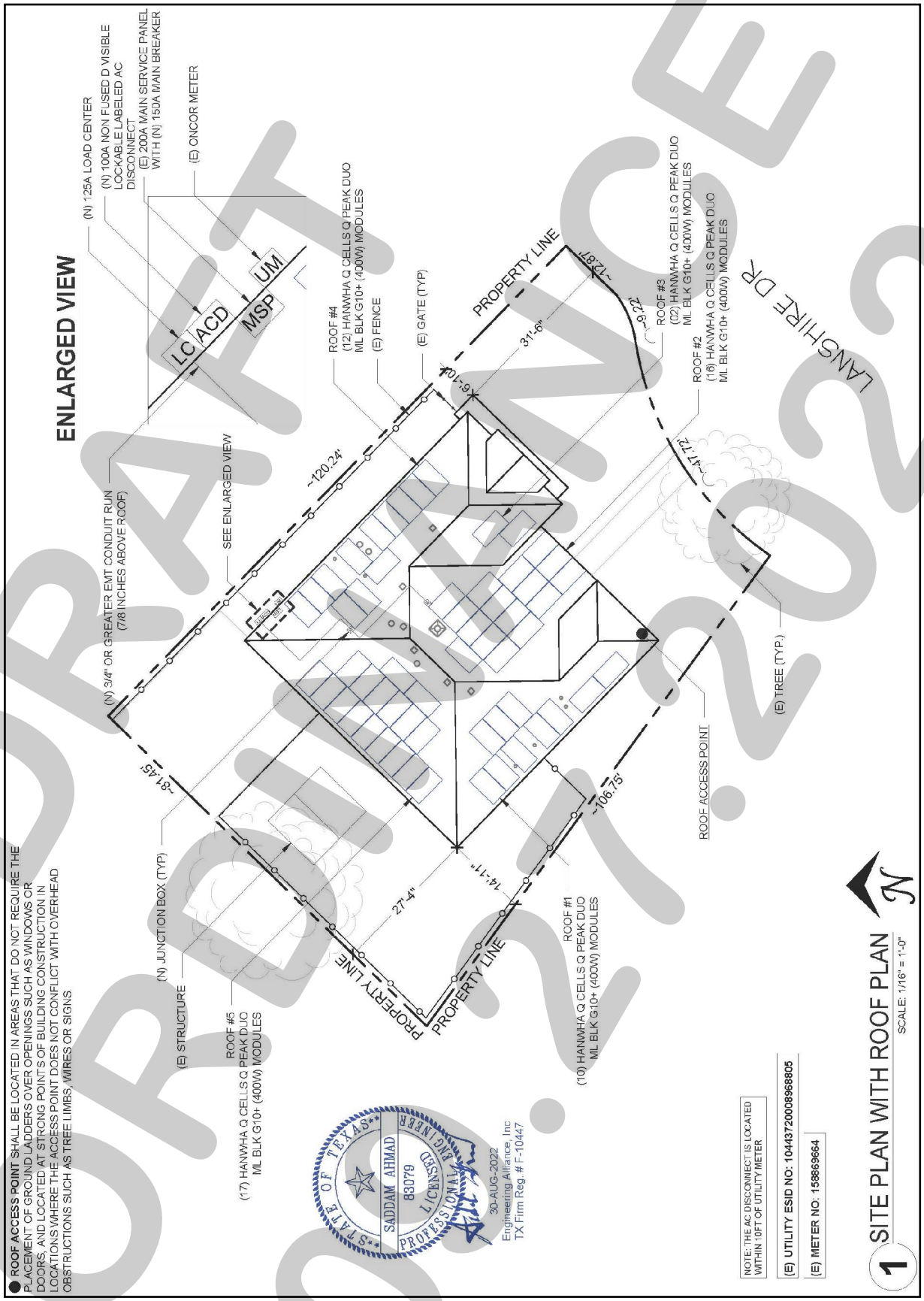


Exhibit 'B'
Roof Plan Elevations



CITY OF ROCKWALL

PLANNING AND ZONING CASE MEMO

PLANNING AND ZONING DEPARTMENT
385 S. GOLIAD STREET • ROCKWALL, TX 75087
PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO:	Planning and Zoning Commission
DATE:	October 11, 2022
APPLICANT:	Tony Trammel
CASE NUMBER:	Z2022-045; *Specific Use Permit (SUP) for Solar Panels for 125 Lanshire Drive*

SUMMARY

Hold a public hearing to a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels* exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

BACKGROUND

The subject property was annexed on May 19, 1986 by *Ordinance No. 86-37* [*Case No. A1986-005*]. At the time of annexation, the subject property was a portion of a larger 103.79-acre tract of land (*i.e. Tract 2 of the E.P. Gaines Chisum Survey, Abstract No. 64*), and was zoned Agricultural (AG) District. On December 4, 1995, the subject property was rezoned to Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses. On December 28, 2001, the subject property was platted as Lot 20, Block D, Lynden Park, Phase 3 Addition as part of *Case No. PZ2001-076-01*. According to the Rockwall Central Appraisal District (RCAD), the existing 3,522 SF single-family home situated on the subject property was built in 2005.

PURPOSE

The applicant is requesting the approval of a Specific Use Permit (SUP) for *Solar Panels* exceeding 1,000 SF of coverage on an existing single-family residential home situated on the subject property.

ADJACENT LAND USES AND ACCESS

The subject property is located at 125 Lanshire Drive. The land uses adjacent to the subject property are as follows:

North: Directly north of the subject property is Lynden Park Estates, Phase 2 Addition, which was established on December 22, 2000 and consists of 104 single-family residential lots. Beyond this is Lynden Park Estates, Phase 1B Addition, which was established on August 4, 1997 and consists of 27 single-family residential lots. North of this is Lynden Park Estates, Phase 1A Addition, which was also established on June 10, 1997 and consists of 70 single-family residential lots. All of the Lynden Park Estates Subdivision is zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses. Beyond this is W. Ralph Hall Parkway, which is classified as an M4D (*i.e. major collector, four [4] lane, divided roadway*) on the City's Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan.

South: Directly south of the subject property is the continuation of Lynden Park Estates, Phase 3 Addition. Beyond this is Tubbs Road, which is classified as an M4U (*i.e. major collector, four [4] lane, undivided roadway*) on the City's Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan. Beyond this is Rockwall Lake Estates, Phase 1 Addition, which was established on June 15, 1956 and is zoned Planned Development District 75 (PD-75).

East: Directly east of the subject property is Lynden Park Estates, Phase 4 Addition, which was established on January 5, 2005 and consists of 94 single-family residential lots. This area is zoned Planned Development District 17 (PD-17) for Single-Family 7 (SF-7) District land uses. Beyond this is a 90.50-acre vacant tract of land, which is a part

of a larger 140.50-acre tract of land (*i.e. Tract 3 of the G Wells Survey, Abstract No. 219*), which is zoned Agricultural (AG) District.

West: Directly west of the subject property is the Windmill Ridge Estates Subdivision, which was established on September 9, 1962 and consists of 551 single-family residential lots. Beyond this is Horizon Road (*i.e. FM 3097*), which is classified as a TXDOT4D (*i.e. Texas Department of Transportation, four [4] lane, divided roadway*) on the City's Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan.

MAP 1: LOCATION MAP
YELLOW: SUBJECT PROPERTY

CHARACTERISTICS OF THE REQUEST

The applicant has requested a Specific Use Permit (SUP) for the purpose of installing solar panels that will exceeding 1,000 SF of coverage on the existing single-family home. Specifically, the applicant is proposing to install 57 solar panels that will cover 1,150 SF of the 2,722 SF roof.

CONFORMANCE TO THE CITY'S CODES

Article 13, *Definitions*, of the Unified Development Code (UDC) defines *Solar Energy Collector Panels and Systems* as "(a) ground or building-mounted solar collection system consisting of solar photovoltaic cells, panels, or arrays and related equipment that relies upon solar radiation as an energy source for collection, inversion, storage, and distribution of solar energy for electricity generation, and that supplies electrical power independently of an electrical production and distribution network." The conditional land use standards for *Solar Energy Collector Panels and Systems* are defined in Subsection 02.03(K)(7) of Article 04, *Permissible Uses*, of the UDC. This section states that "(i)n residential zoning districts, the total coverage area of solar energy collector panels shall not exceed 1,000 SF on a single lot." That section goes on to state that "(a)ny solar energy collector panels or systems not meeting these requirements, or any installation of solar energy systems as the principal use on the property, shall require approval of a Specific Use Permit (SUP)." In this case, the applicant has proposed adding 1,150 SF of solar panels to the existing single-family home, exceeding the 1,000 SF limit by 150 SF. Based on this the applicant's request requires the approval of a Specific Use Permit (SUP).

STAFF ANALYSIS

The applicant's request appears to be in conformance with the majority of the City's requirements regarding *Solar Energy Collector Panels and Systems* however, the Unified Development Code (UDC) does not provide many regulations regarding this land use other than roof square footage. Staff is of the opinion that the original intent for these regulations was to limit visibility of the solar panels from public rights-of-way and adjacent properties. For the purpose of comparing the proposed solar panels for the subject to the solar panels constructed on existing single-family housing located adjacent to or in the vicinity of the *subject property*, staff has provided photos and an analysis of properties on Brookshore, Burkwood, Haven Ridge, Mapleridge, Rutherford, Pendleton, and Sycamore Drives below. Through the process of analyzing the adjacent properties, staff found that a majority of the solar panels surface area is less than 1,000 SF with the exception of one (1) property, which approved in 2018 with 1,025 SF of coverage at 140 Brookshore Drive. Staff also observed that the majority of the solar panels on these properties were installed on the side or rear of the roofs with the exception of three (3) homes which utilized the front part of the roof. In this case, the applicant is proposing 18 solar panels in the front part of the house, which may be visible from Lanshire Drive as shown in *Figure 1*. With all this being said the approval of a Specific Use Permit (SUP) and the operational conditions contained in the Specific Use Permit (SUP) ordinance are a discretionary decision for the City Council pending a recommendation from the Planning and Zoning Commission.

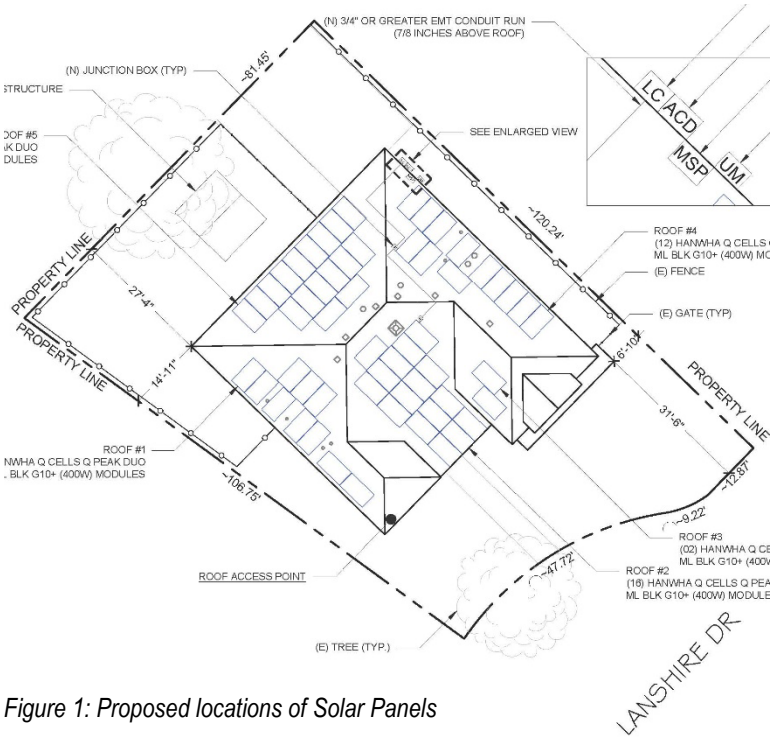
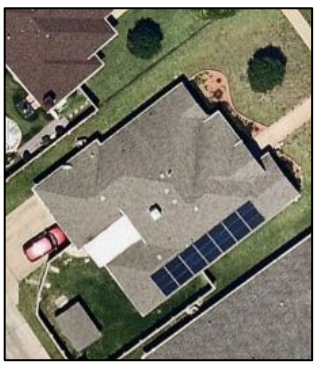


Figure 1: Proposed locations of Solar Panels

Address	*Surface Area of Solar Panels (SF)*	*Year Installed*
144 Haven Ridge Drive	478	2015
709 Pendleton Drive	372	2015
3829 Sycamore Lane	451	2017
140 Brookshore Drive	1,025	2018
102 Brookshore Drive	471	2019
117 Rutherford Drive	288	2019
106 Brookshore Drive	360	2021
206 Burkwood Drive	422	2021



709 Pendelton Drive

211 Mapleridge Drive

3829 Sycamore Lane

140 Brookshore Drive

102 Brookshore Drive

117 Rutherford Drive

106 Brookshore Drive

206 Burkwood Drive

NOTIFICATIONS

On September 20, 2022, staff mailed 162 notices to property owners and occupants within 500-feet of the subject property. Staff also sent a notice to the Lynden Park Homeowner's Association (HOA), which was the only HOA or Neighborhood Organization within 1,500-feet of the subject property participating in the Neighborhood Notification Program. Additionally, staff posted a sign on the subject property, and advertised the public hearings in the Rockwall Herald Banner as required by the Unified Development Code (UDC). At the time this report was written, staff has received one notice in favor of the applicant's request and none in opposition of the applicant's request.

CONDITIONS OF APPROVAL

If the Planning and Zoning Commission chooses to recommend approval of the applicant's request for a *Specific Use Permit (SUP)* for Solar *Panels,* then staff would propose the following conditions of approval:

(1) The applicant shall be responsible for maintaining compliance with the operational conditions contained in the *Specific Use Permit (SUP)* ordinance and which are detailed as follows:

(a) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'* of the Ordinance.

(b) All mechanical equipment (*e.g. micro inverters*) and batteries shall be completely screened from the adjacent properties and rights-of-way.

(2) Any construction resulting from the approval of this *Specific Use Permit (SUP)* shall conform to the requirements set forth by the Unified Development Code (UDC), the International Building Code (IBC), the Rockwall Municipal Code of Ordinances, city adopted engineering and fire codes and with all other applicable regulatory requirements administered and/or enforced by the state and federal government.

DEVELOPMENT APPLICATION

City of Rockwall
Planning and Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087

STAFF USE ONLY

PLANNING & ZONING CASE NO.

NOTE: *THE APPLICATION IS NOT CONSIDERED ACCEPTED BY THE CITY UNTIL THE PLANNING DIRECTOR AND CITY ENGINEER HAVE SIGNED BELOW.*

DIRECTOR OF PLANNING:

CITY ENGINEER:

PLEASE CHECK THE APPROPRIATE BOX BELOW TO INDICATE THE TYPE OF DEVELOPMENT REQUEST [SELECT ONLY ONE BOX]:

PLATTING APPLICATION FEES:
- ☐ MASTER PLAT ($100.00 + $15.00 ACRE) [1]
- ☐ PRELIMINARY PLAT ($200.00 + $15.00 ACRE) [1]
- ☐ FINAL PLAT ($300.00 + $20.00 ACRE) [1]
- ☐ REPLAT ($300.00 + $20.00 ACRE) [1]
- ☐ AMENDING OR MINOR PLAT ($150.00)
- ☐ PLAT REINSTATEMENT REQUEST ($100.00)

SITE PLAN APPLICATION FEES:
- ☐ SITE PLAN ($250.00 + $20.00 ACRE) [1]
- ☐ AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING PLAN ($100.00)

ZONING APPLICATION FEES:
- ☐ ZONING CHANGE ($200.00 + $15.00 ACRE) [1]
- ☑ SPECIFIC USE PERMIT ($200.00 + $15.00 ACRE) [1 & 2]
- ☐ PD DEVELOPMENT PLANS ($200.00 + $15.00 ACRE) [1]

OTHER APPLICATION FEES:
- ☐ TREE REMOVAL ($75.00)
- ☐ VARIANCE REQUEST/SPECIAL EXCEPTIONS ($100.00) [2]

NOTES:
[1]: IN DETERMINING THE FEE, PLEASE USE THE EXACT ACREAGE WHEN MULTIPLYING BY THE PER ACRE AMOUNT. FOR REQUESTS ON LESS THAN ONE ACRE, ROUND UP TO ONE (1) ACRE.
[2]: A ***$1,000.00*** FEE WILL BE ADDED TO THE APPLICATION FEE FOR ANY REQUEST THAT INVOLVES CONSTRUCTION WITHOUT OR NOT IN COMPLIANCE TO AN APPROVED BUILDING PERMIT.

PROPERTY INFORMATION [PLEASE PRINT]

ADDRESS	125 Lanshire Dr. Rockwall,TX 75032		
SUBDIVISION		LOT	BLOCK
GENERAL LOCATION			

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING		CURRENT USE	
PROPOSED ZONING		PROPOSED USE	Roof Mounted PV System
ACREAGE	LOTS [CURRENT]	LOTS [PROPOSED]	

☐ ***SITE PLANS AND PLATS:*** *BY CHECKING THIS BOX YOU ACKNOWLEDGE THAT DUE TO THE PASSAGE OF HB3167 THE CITY NO LONGER HAS FLEXIBILITY WITH REGARD TO ITS APPROVAL PROCESS, AND FAILURE TO ADDRESS ANY OF STAFF'S COMMENTS BY THE DATE PROVIDED ON THE DEVELOPMENT CALENDAR WILL RESULT IN THE DENIAL OF YOUR CASE.*

OWNER/APPLICANT/AGENT INFORMATION [PLEASE PRINT/CHECK THE PRIMARY CONTACT/ORIGINAL SIGNATURES ARE REQUIRED]

☐ OWNER		☑ APPLICANT	Tony Trammell
CONTACT PERSON		CONTACT PERSON	Tony Trammell
ADDRESS		ADDRESS	2407 E Loop 820 N
CITY, STATE & ZIP		CITY, STATE & ZIP	Fort Worth, TX 76118
PHONE		PHONE	817-616-3152
E-MAIL		E-MAIL	tx.permits@gosolnova.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Tony Trammell [OWNER] THE UNDERSIGNED, WHO STATED THE INFORMATION ON THIS APPLICATION TO BE TRUE AND CERTIFIED THE FOLLOWING:

"I HEREBY CERTIFY THAT I AM THE OWNER FOR THE PURPOSE OF THIS APPLICATION; ALL INFORMATION SUBMITTED HEREIN IS TRUE AND CORRECT; AND THE APPLICATION FEE OF $_____, TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE _____ DAY OF _____, 20___. BY SIGNING THIS APPLICATION, I AGREE THAT THE CITY OF ROCKWALL (I.E. "CITY") IS AUTHORIZED AND PERMITTED TO PROVIDE INFORMATION CONTAINED WITHIN THIS APPLICATION TO THE PUBLIC. THE CITY IS ALSO AUTHORIZED AND PERMITTED TO REPRODUCE ANY COPYRIGHTED INFORMATION SUBMITTED IN CONJUNCTION WITH THIS APPLICATION, IF SUCH REPRODUCTION IS ASSOCIATED OR IN RESPONSE TO A REQUEST FOR PUBLIC INFORMATION."

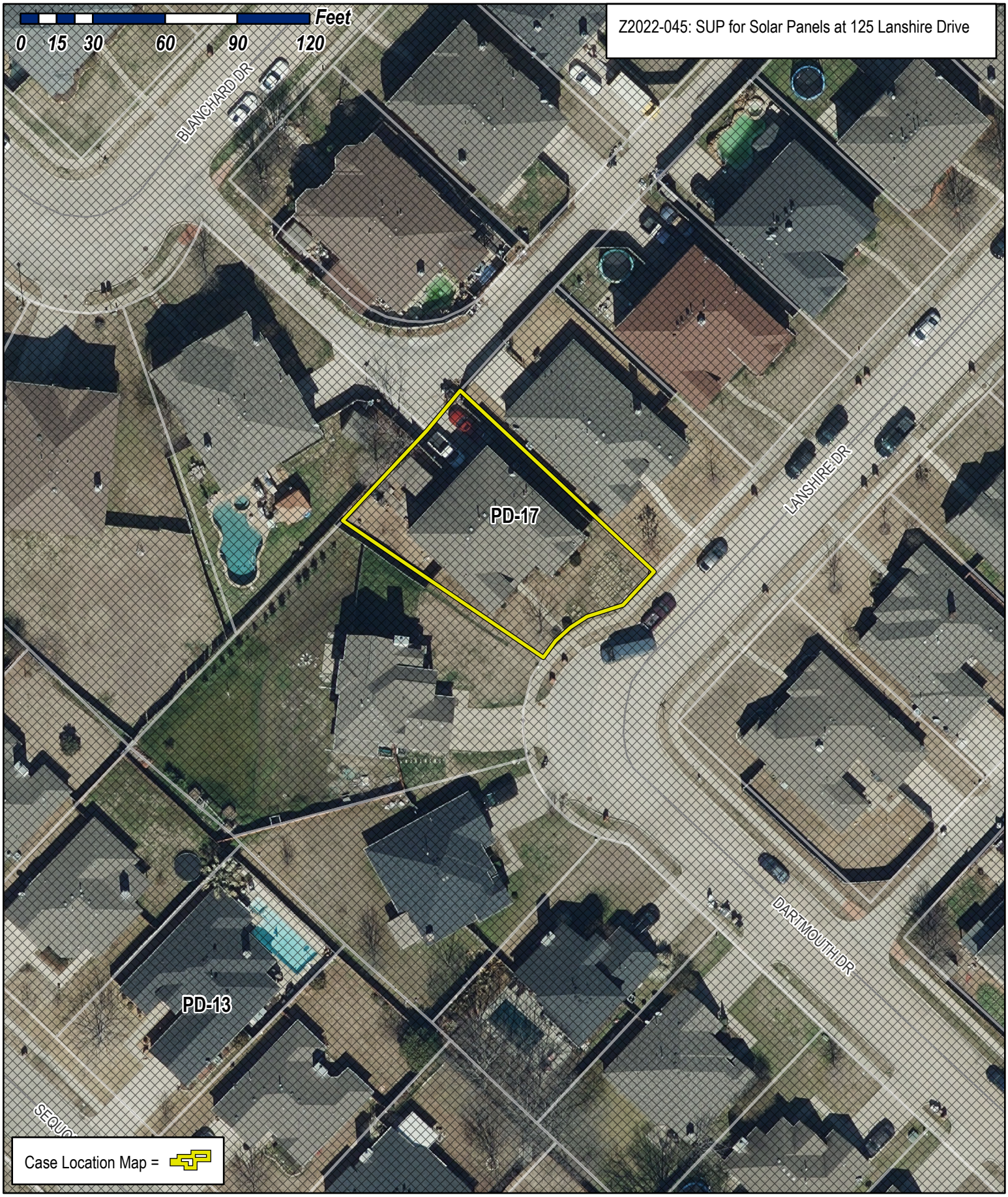
HALEY ANNE SPEIDEL
Notary Public, State of Texas
Comm. Expires 10-25-2025
Notary ID 133411039

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* September, 20 20.

OWNER'S SIGNATURE Tony Trammell

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS Haley Speidel

MY COMMISSION EXPIRES 10/25/2020



City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75032
(P): (972) 771-7745
(W): www.rockwall.com

City of Rockwall

Planning & Zoning Department
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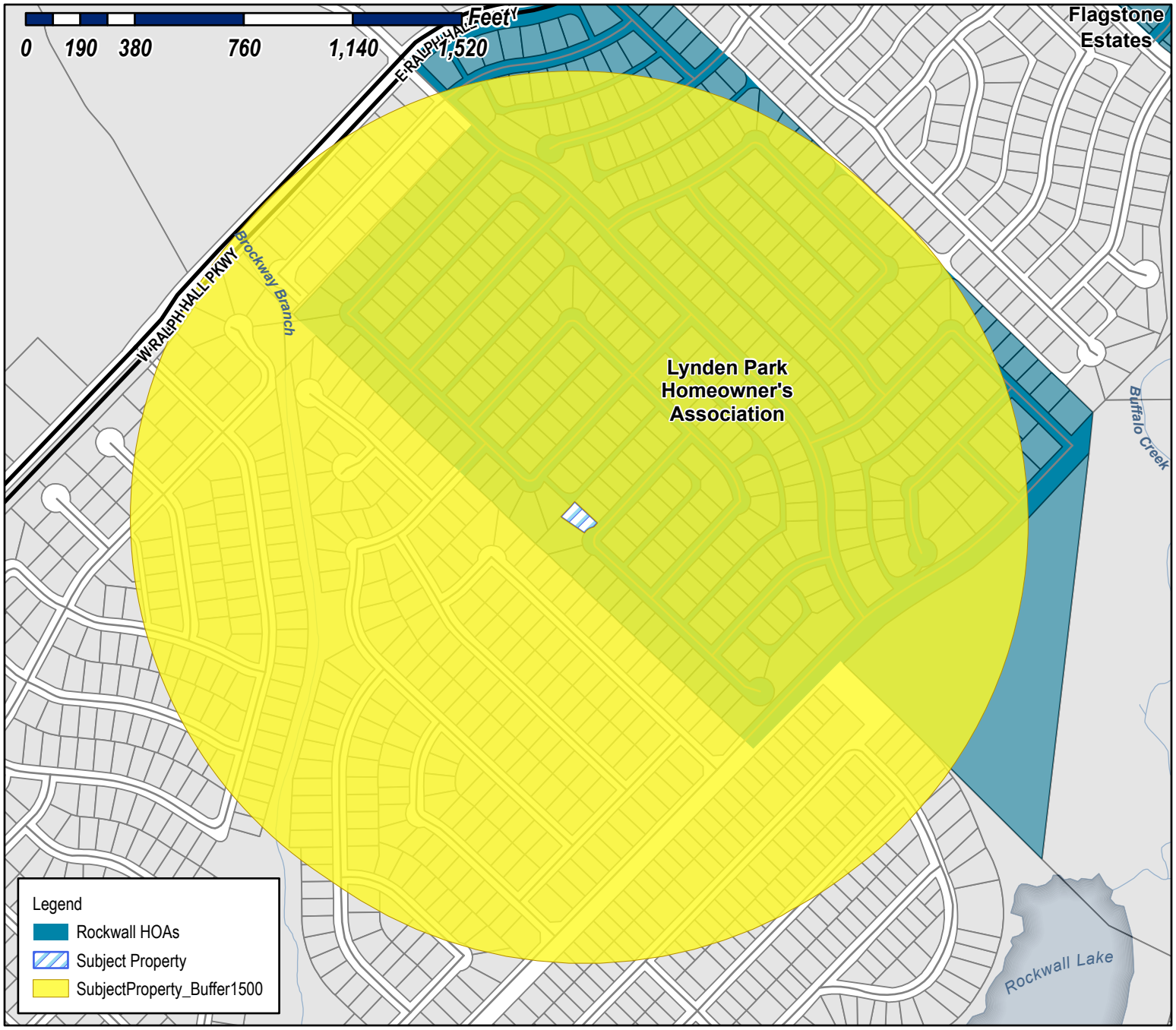
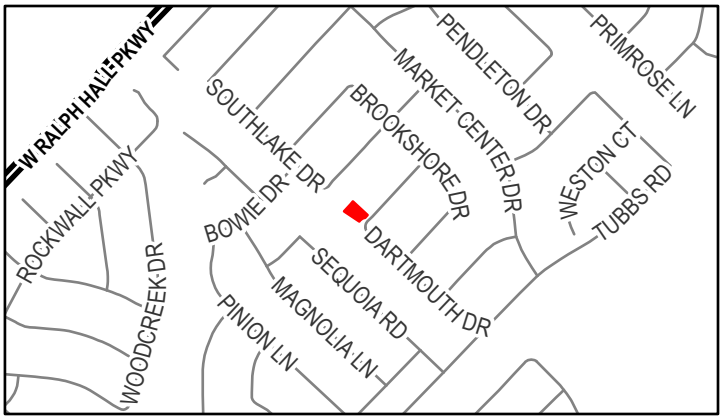


Case Number: Z2022-045
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Planned Development District 17 (PD-17)
Case Address: 125 Lanshire Drive

Date Saved: 9/16/2022
For Questions on this Case Call (972) 771-7745



Miller, Ryan

From: Gamez, Angelica
Sent: Tuesday, September 20, 2022 10:15 AM
Cc: Miller, Ryan; Ross, Bethany; Lee, Henry
Subject: Neighborhood Notification Program [Z2022-045]
Attachments: Public Notice Z2022-045.pdf; HOA Map Z2022-045.pdf

HOA/Neighborhood Association Representative:

Per your participation in the *Neighborhood Notification Program*, you are receiving this notice to inform your organization that a zoning case has been filed with the City of Rockwall that is located within 1,500-feet of the boundaries of your neighborhood. As the contact listed for your organization, you are encouraged to share this information with the residents of your subdivision. Please find the attached map detailing the property requesting to be rezoned in relation to your subdivision boundaries. Additionally, below is the summary of the zoning case that will be published in the Rockwall Herald Banner on *September 23, 2022*. The Planning and Zoning Commission will hold a public hearing on *Tuesday, October 11, 2022 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, October 17, 2022 at 6:00 PM*. Both hearings will take place at 6:00 PM at City Hall, 385 S. Goliad, Rockwall, TX 75087.

All interested parties are encouraged to submit public comments via email to Planning@rockwall.com at least 30 minutes in advance of the meeting. Please include your name, address, and the case number your comments are referring to. These comments will be read into the record during each of the public hearings. Additional information on all current development cases can be found on the City's website: https://sites.google.com/site/rockwallplanning/development/development-cases.

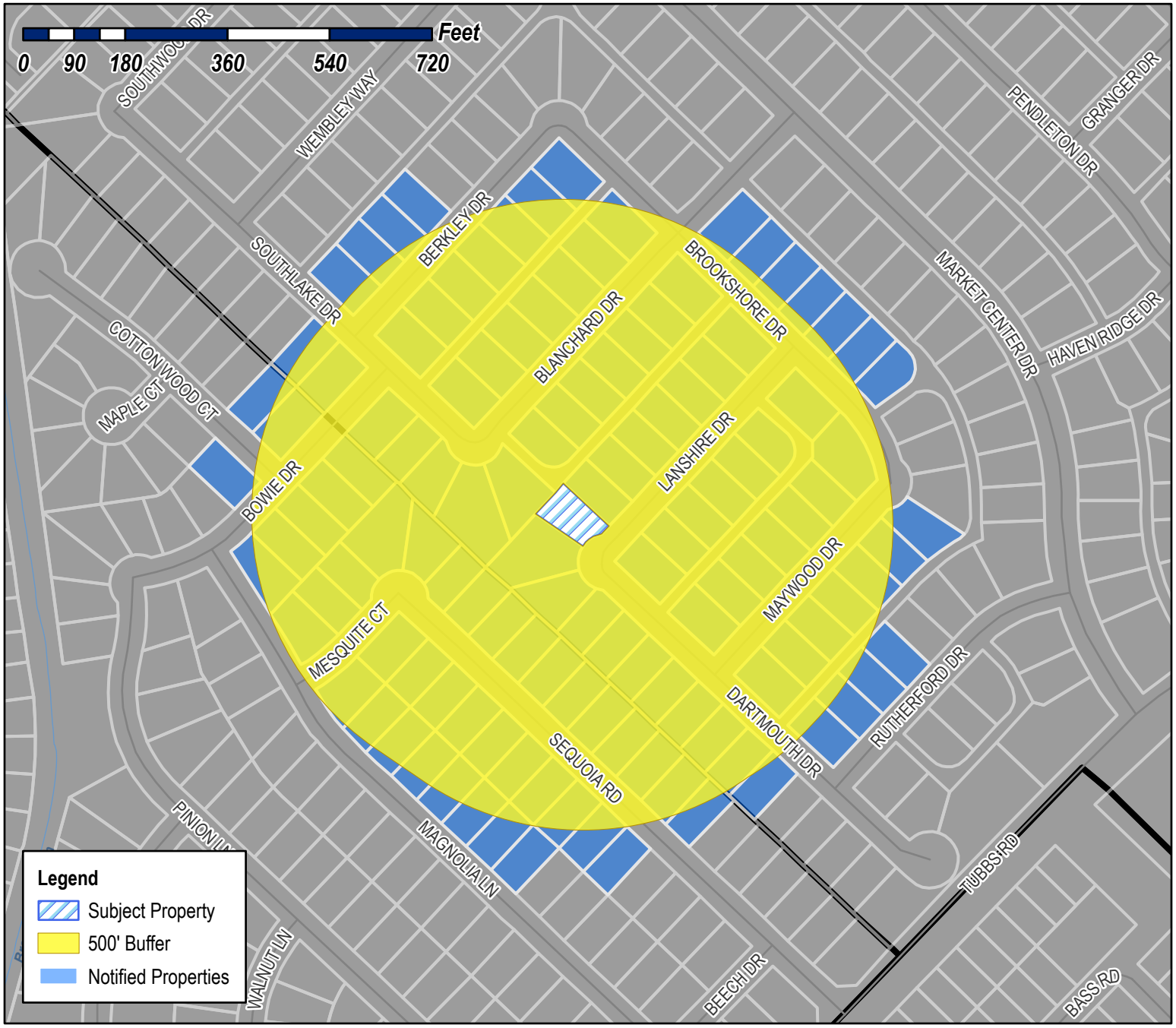
Z2022-045: SUP for Solar Panels
Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels* exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

Thank you,

Angelica Guevara
Planning & Zoning Coordinator
City of Rockwall
972.771.7745 Office
972.772.6438 Direct
http://www.rockwall.com/planning/

City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com



Case Number: Z2022-045
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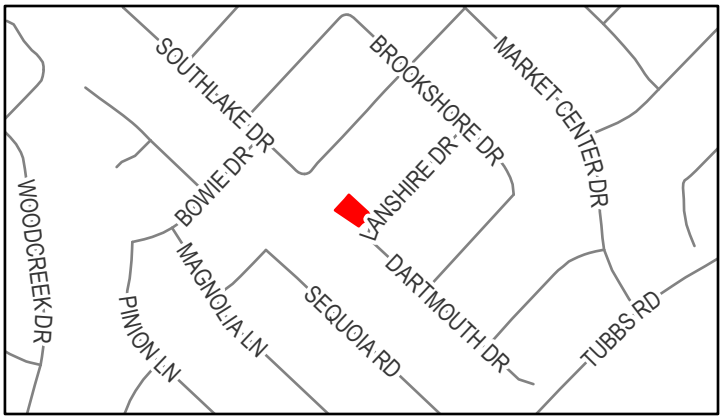
Case Address: 125 Lanshire Drive

Date Saved: 9/16/2022
For Questions on this Case Call (972) 771-7745



ISYA LIMITED PARTNERSHIP
1018 MOUNT AUBURN
DALLAS, TX 75223

CAMPBELL FLORENCE I
106 BROOKSHORE DR
ROCKWALL, TX 75032

STARNES CHARLES O & LORRAINE K
108 BROOKSHORE DR
ROCKWALL, TX 75032

520 YFLK LLC
110 BROOKSHORE DR
ROCKWALL, TX 75032

OFFILL ROBERT L & CRYSTAL J
110 LANSHIRE DR
ROCKWALL, TX 75032

DELIZ CRYSTAL D
110 MAYWOOD DRIVE
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
111 LANSHIRE DR
ROCKWALL, TX 75032

ALSAMMAK AHMED AND
BAN AL TAIE
111 LANSHIRE DRIVE
ROCKWALL, TX 75032

ENRIGHT THOMAS & ROXANNE
111 MAYWOOD DR
ROCKWALL, TX 75032

TATE ANTHONY R
112 MAYWOOD DR
ROCKWALL, TX 75032

GUAJARDO RAUL E & JORDANNE MORROW
112 BROOKSHORE DRIVE
ROCKWALL, TX 75032

PROGRESS RESIDENTIAL BORROWER 16 LLC
113 LANSHIRE DR
ROCKWALL, TX 75032

GONZALEZ VICTOR M
113 MAYWOOD
ROCKWALL, TX 75032

HENDERSON NORMA
114 MAYWOOD DR
ROCKWALL, TX 75032

GALLOWAY STEPHEN J & GWENDOLYN R
114 BROOKSHORE DR
ROCKWALL, TX 75032

LECLERC ANDRE
114 LANSHIRE DR
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
115 LANSHIRE DR
ROCKWALL, TX 75032

ELLIS MARK AND
DENISE HENRY
115 MAYWOOD DR
ROCKWALL, TX 75032

RSB TOKEN INVESTMENTS LLC
116 MAYWOOD DR
ROCKWALL, TX 75032

WAFER CHRISTOPHER D & WILANDA L
116 BROOKSHORE DR
ROCKWALL, TX 75032

TRAN NGOC AND XUYEN HUYNH
116 LANSHIRE DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
117 LANSHIRE DR
ROCKWALL, TX 75032

LIMON MARIA ARACELY AND NORBERTO
117 MAYWOOD
ROCKWALL, TX 75032

CLARK ERIC DWAYNE & PATRICIA D
117 RUTHERFORD DR
ROCKWALL, TX 75032

PARAMOUNT LAURELS LLC
118 BROOKSHORE DR
ROCKWALL, TX 75032

VAN HEYST DAUAN N & RANDALL
118 LANSHIRE DR
ROCKWALL, TX 75032

RIDGEWAY RYAN A & HARRIS H JORGENSEN
118 MAYWOO DRIVE
ROCKWALL, TX 75032

PAGADUAN KEVIN I & DEEJAY
119 LANDSHIRE DRIVE
ROCKWALL, TX 75032

NUNEZ ARMANDO M & DELIA ANGUIANO
119 MAYWOOD
ROCKWALL, TX 75032

SOUMIE NAHNAH P
119 RUTHERFORD DR
ROCKWALL, TX 75032

LOZA FABIOLA ESTRADA
119 SOUTHLAKE DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
120 LANSHIRE DR
ROCKWALL, TX 75032

SAMMIS FLEETWOOD & MELONIE
120 MAYWOOD
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
121 RUTHERFORD DR
ROCKWALL, TX 75032

WILLIAMS LATONYA
121 BLANCHARD DRIVE
ROCKWALL, TX 75032

UKPAI OGBEYALU
121 LANSHIRE DR
ROCKWALL, TX 75032

ANDERSON AMBER
121 MAYWOOD DR
ROCKWALL, TX 75032

MERINO TROY A
122 BERKLEY DRIVE
ROCKWALL, TX 75032

MARROQUIN DOMINGO & CLAUDIA D
122 BLANCHARD DR
ROCKWALL, TX 75032

HOUSER MICKEY AND
JENNIFFER MALABOSA
122 LANSHIRE DRIVE
ROCKWALL, TX 75032

CORUJO JAMES AND JANISS
122 MAYWOOD DR
ROCKWALL, TX 75032

COZART MICHAEL AND CASSANDRA HARRIS-
123 LANSHIRE DR
ROCKWALL, TX 75032

MAREZ SARAH E AND MICHAEL E AND
CYNTHIA ANN HERRERA
123 MAYWOOD
ROCKWALL, TX 75032

JACKSON DALE E
123 RUTHERFORD DR
ROCKWALL, TX 75032

MYLES BOBBY J JR
123 SOUTHLAKE DR
ROCKWALL, TX 75032

CUELLAR JOEL A & MARTHA C
124 LANSHIRE DR
ROCKWALL, TX 75032

SANCHEZ JAYLYN MARIE
124 SEQUOIA ROAD
ROCKWALL, TX 75032

ELKINS THOMAS
125 BLANCHARD DR
ROCKWALL, TX 75032

FISHER CHARLES F JR
125 LANSHIRE DR
ROCKWALL, TX 75032

RASA GABRIEL N & MARIA C
125 SEQUOIA RD
ROCKWALL, TX 75032

NABI NABIULLAH AND SIMIN
126 BERKLEY DRIVE
ROCKWALL, TX 75032

DUNN CLAYTON F AND JILLIAN
126 BLANCHARD
ROCKWALL, TX 75087

AMH 2014-2 BORROWER LLC
127 SOUTHLAKE DR
ROCKWALL, TX 75032

FAY TERRENCE R & RENEE L
127 LANSHIRE DR
ROCKWALL, TX 75032

MARICH GARY C
128 SEQUOIA RD
ROCKWALL, TX 75032

AL BANNA WALID AHMAD
129 BLANCHARD DR
ROCKWALL, TX 75032

HERNANDEZ TERRI
129 SEQUOIA RD
ROCKWALL, TX 75032

SKYLES BRENDA RENEE AND RICHARD ERIC
HYATT
130 BERKLEY DR
ROCKWALL, TX 75032

PEMBERTON DAVID S & SABRINA
130 BLANCHARD DRIVE
ROCKWALL, TX 75032

BANKS LIDIA ELIZABETH & DARREL JAMES
131 SOUTHLAKE DRIVE
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
132 MAGNOLIA LN
ROCKWALL, TX 75032

COKELEZ KENAN
132 SEQUOIA ROAD
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
1321 UPLAND DR UNIT 6293
HOUSTON, TX 77043

AH4R PROPERTIES TWO LLC
133 BERKLEY DR
ROCKWALL, TX 75032

BUDLONG GARY C & PEGGY B P
LIVING TRUST
133 SEQUOIA RD
ROCKWALL, TX 75032

UDOFIA UKO
133 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
134 BOWIE DR
ROCKWALL, TX 75032

LAM SEAN ANDREW
SREY LAM
134 BERKLEY DR
ROCKWALL, TX 75032

BIRDSONG SERENA AND
BILLY COCHARD
134 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
135 MESQUITE CT
ROCKWALL, TX 75032

BIGGS FREDDIE L & SYLVIA L
135 SOUTHLAKE DR
ROCKWALL, TX 75032

ISYA LIMITED PARTNERSHIP
136 SEQUOIA RD
ROCKWALL, TX 75032

PORTER KRISTEN
136 MAGNOLIA LN
ROCKWALL, TX 75032

FALLS DAVID & TERRI
137 BLANCHARD DR
ROCKWALL, TX 75032

CARRIZALES ERI & LENNY
137 BOWIE DR
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
137 SEQUOIA RD
ROCKWALL, TX 75032

WESTERVELT BARBARA
137 BERKLEY DR
ROCKWALL, TX 75032

CHEN QINGSHENG & YAN FENG
138 BERKLEY DR
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
138 BLANCHARD DR
ROCKWALL, TX 75032

LACY'S INVESTMENTS ENTERPRISES LLC
138 BOWIE DR
ROCKWALL, TX 75032

FALLS DAVID AND TERRI
139 MESQUITE CT
ROCKWALL, TX 75032

YOUNG SCOTT ALLEN & VETRICA LANITA YOUNG
139 SOUTHLAKE DR
ROCKWALL, TX 75032

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
140 MAGNOLIA LN
ROCKWALL, TX 75032

PETE MICHAEL A & SHANNAN D
140 SEQUOIA RD
ROCKWALL, TX 75032

TYLER MATTHEW
141 SEQUOIA RD
ROCKWALL, TX 75032

DEDNER WANDA G
141 BERKLEY DR
ROCKWALL, TX 75032

MORGAN PAULA
141 BLANCHARD DR
ROCKWALL, TX 75032

<Null>
142 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
142 BOWIE DR
ROCKWALL, TX 75032

JOSEPH STEPHEN K & JESSY
142 BERKLEY DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
14264 FAITH DR
FRISCO, TX 75035

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
143 MESQUITE CT
ROCKWALL, TX 75032

MURPHREE APRIL L
144 MAGNOLIA LN
ROCKWALL, TX 75032

SEDLAK AMANDA MARIE
144 SEQUOIA ROAD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
145 SEQUOIA RD
ROCKWALL, TX 75032

THOMAS MAKIA S
145 BERKLEY DR
ROCKWALL, TX 75032

TATUM LANCE
145 BLANCHARD DR
ROCKWALL, TX 75032

AMH 2014-3 BORROWER LLC
146 BOWIE DR
ROCKWALL, TX 75032

GONZALEZ GRACIELA & ROLANDO
146 BERKLEY DR
ROCKWALL, TX 75032

MURPHY AUDREY LENEE ANDREWS
146 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFF
147 MESQUITE CT
ROCKWALL, TX 75032

ROVILLOS JOHN ISRAEL AMANDE AND GRACE HALIMA
148 MAGNOLIA LANE
ROCKWALL, TX 75032

FARMER BETTY K
148 SEQUOIA RD
ROCKWALL, TX 75032

MENO ROLAND A & WAYNETTE M
149 SEQUOIA RD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
15 CENTER CT
HEATH, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL COURT
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL CT
HEATH, TX 75032

BOYD SONIA B AND
MACEO R PRICE JR
150 BLANCHARD DRIVE
ROCKWALL, TX 75032

IRISH SARAH K
150 BOWIE DR
ROCKWALL, TX 75032

GARDNER EDWIN & DIANNE
152 MAGNOLIA
ROCKWALL, TX 75032

TUNNELL DAVID AND PENNY
152 SEQUOIA ROAD
ROCKWALL, TX 75032

FALLS TERRI & DAVID
153 SEQUOIA RD
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
1553 VZ COUNTY ROAD 1213
CANTON, TX 75103

CARSON MICHELE L
156 MAGNOLIA LN
ROCKWALL, TX 75032

SHAH VIREN
156 SEQUOIA
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
157 SEQUOIA RD
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
16 GUMBLE CT
HILLSBOROUGH, NJ 8844

TATE ANTHONY R
160 CROSS OAK LANE
EADS, TN 38028

ABUNDIS ROBERTO AND YADIRA
160 MAGNOLIA LANE
ROCKWALL, TX 75087

MENCHACA JENNIFER
160 SEQUOIA RD
ROCKWALL, TX 75032

SIPES RICKY W
161 SEQUOIA ROAD
ROCKWALL, TX 75032

SUAREZ MARIA J & BETSY M
164 SEQUOIA RD
ROCKWALL, TX 75032

LE THAO M AND
THAI PHAM
168 SEQUOIA ROAD
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
1850 PARKWAY PLACE SUITE 900
MARIETTA, GA 30067

LE BUU VAN
220 COTTON WOOD CT
ROCKWALL, TX 75032

SHAFFER LAURA H &
WILLIAM B WATTS
221 DARTMOUTH DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
223 DARTMOUTH DR
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
224 COTTON WOOD CT
ROCKWALL, TX 75032

WKB PARTNERS LP
225 DARTMOUTH DR
ROCKWALL, TX 75032

ARELLANO-CRUZ PAULA M AND FELIX
227 DARTMOUTH DR
ROCKWALL, TX 75032

AUSTIN TAMIKA S
229 DARTMOUTH DR
ROCKWALL, TX 75032

RODRIGUEZ ROGELIO
231 DARTMOUTH DR
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
233 DARTMOUTH DR
ROCKWALL, TX 75032

DAVIS DONNA B
235 DARTMOUTH DR
ROCKWALL, TX 75032

KIWALE THEREZIA
237 DARTMOUTH DRIVE
ROCKWALL, TX 75032

AMH 2014-2 BORROWER LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AH4R PROPERTIES TWO LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

TYLER MATTHEW
2683 POTTER ST
EUGENE, OR 97405

BUDLONG GARY C & PEGGY B P
LIVING TRUST
2920 WINAM AVE
HONOLULU, HI 96816

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
30 WINDSOR DRIVE
ROCKWALL, TX 75032

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID AND TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS TERRI & DAVID
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

520 YFLK LLC
3105 CORNELL AVENUE
DALLAS, TX 75205

WKB PARTNERS LP
463 KEYSTONE BEND
HEATH, TX 75032

CHEN QINGSHENG & YAN FENG
4715 147TH PL SE
BELLEVUE, WA 98006

LACY'S INVESTMENTS ENTERPRISES LLC
510 HIGHWATER CROSSING
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
519 I 30 #140
ROCKWALL, TX 75032

LIGHT JEFF
519 INTERSTATE 30 #140
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
637 FOREST BEND DRIVE
PLANO, TX 75025

MARICH GARY C
7822 STONEHAVEN LN
ROWLETT, TX 75089

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

AMH 2014-3 BORROWER LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

CARRIZALES ERI & LENNY
PO BOX 1244
ROCKWALL, TX 75087

RSB TOKEN INVESTMENTS LLC
PO BOX 1664
ROCKWALL, TX 75087

PROGRESS RESIDENTIAL BORROWER 16 LLC
PO BOX 4090
SCOTTSDALE, AZ 85261

HENDERSON NORMA
PO BOX 705
ROCKWALL, TX 75087

PARAMOUNT LAURELS LLC
PO BOX 786
WYLIE, TX 75098

PUBLIC NOTICE

CITY OF ROCKWALL
PLANNING AND ZONING DEPARTMENT
PHONE: (972) 771-7745
EMAIL: PLANNING@ROCKWALL.COM

Property Owner and/or Resident of the City of Rockwall:

You are hereby notified that the City of Rockwall Planning and Zoning Commission and City Council will consider the following application:

Z2022-045: SUP for Solar Panels

Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a Specific Use Permit (SUP) for Solar Panels exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

For the purpose of considering the effects of such a request, the Planning and Zoning Commission will hold a public hearing on *Tuesday, October 11, 2022 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, October 17, 2022 at 6:00 PM*. These hearings will be held in the City Council Chambers at City Hall, 385 S.
Goliad Street.

As an interested property owner, you are invited to attend these meetings. If you prefer to express your thoughts in writing please return the form to:

Bethany Ross
Rockwall Planning and Zoning Dept.
385 S. Goliad Street
Rockwall, TX 75087

You may also email your comments to the Planning Department at planning@rockwall.com. If you choose to email the Planning Department please include your name and address for identification purposes.

Your comments must be received by *Monday, October 17, 2022 at 4:00 PM* to ensure they are included in the information provided to the City Council.

Sincerely,

Ryan Miller, AICP
Director of Planning & Zoning

USE THIS QR CODE TO GO DIRECTLY TO THE WEBSITE

MORE INFORMATION ON THIS CASE CAN BE FOUND AT: https://sites.google.com/site/rockwallplanning/development/development-cases

PLEASE RETURN THE BELOW FORM

Case No. Z2022-045: SUP for Solar Panels

Please place a check mark on the appropriate line below:

☐ I am in favor of the request for the reasons listed below.

☐ I am opposed to the request for the reasons listed below.

Name:

Address:

Tex. Loc. Gov. Code, Sec. 211.006 (d) If a proposed change to a regulation or boundary is protested in accordance with this subsection, the proposed change must receive, in order to take effect, the affirmative vote of at least three-fourths of all members of the governing body. The protest must be written and signed by the owners of at least 20 percent of either: (1) the area of the lots or land covered by the proposed change; or (2) the area of the lots or land immediately adjoining the area covered by the proposed change and extending 200 feet from that area.

PLEASE SEE LOCATION MAP OF SUBJECT PROPERTY ON THE BACK OF THIS NOTICE

PUBLIC NOTICE

CITY OF ROCKWALL
PLANNING AND ZONING DEPARTMENT
PHONE: (972) 771-7745
EMAIL: PLANNING@ROCKWALL.COM

Property Owner and/or Resident of the City of Rockwall:

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Sincerely,

Ryan Miller, AICP
Director of Planning & Zoning

USE THIS QR CODE TO GO DIRECTLY TO THE WEBSITE

MORE INFORMATION ON THIS CASE CAN BE FOUND AT: https://sites.google.com/site/rockwallplanning/development/development-cases

PLEASE RETURN THE BELOW FORM

Case No. Z2022-045: SUP for Solar Panels

Please place a check mark on the appropriate line below:

☒ I am in favor of the request for the reasons listed below.

☐ I am opposed to the request for the reasons listed below.

The property owner should be allowed to generate power onsite using solar panels.

Name: Matthew Tyler

Address: 141 Sequoia Rd.

Tex. Loc. Gov. Code, Sec. 211.006 (d) If a proposed change to a regulation or boundary is protested in accordance with this subsection, the proposed change must receive, in order to take effect, the affirmative vote of at least three-fourths of all members of the governing body. The protest must be written and signed by the owners of at least 20 percent of either: (1) the area of the lots or land covered by the proposed change; or (2) the area of the lots or land immediately adjoining the area covered by the proposed change and extending 200 feet from that area.

PLEASE SEE LOCATION MAP OF SUBJECT PROPERTY ON THE BACK OF THIS NOTICE

30 August 2022

UNIRAC

1411 Broadway Blvd. NE

Albuquerque, NM 87102

REFERENCE: Charles Fisher: 125 Lanshire Dr, Rockwall, TX 75032 USA

Solar Array Installation

To Whom It May Concern:

We have reviewed the existing structure referenced above. The purpose of the review was to evaluate its adequacy to support the proposed installation of solar panels on the roof as shown on the panel layout plan drawings. Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation.

Design Parameter

Code: International Building Code 2015 (IBC 2015)

Risk Category: II

Design wind speed: 115 MPH

Wind exposure category: B

Ground snow load: 5 PSF

Seismic design category: B

Existing Roof Structure

Roof Structure: 2"x4" rafters @24" o.c.

Roofing material: Comp Shingle

Connection to Roof

Mounting connection: One 5/16 in lag screw w/ min. 2.5 in embedment into framing at max. 72 in o.c. along rails

Two rails per row of panels, evenly spaced; panel length perpendicular to the rails not to exceed 74 in

Conclusions

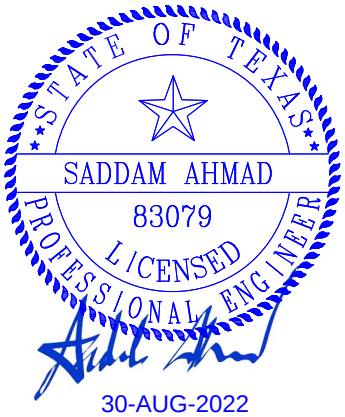
Based upon our evaluation, we conclude that the existing structure is adequate to support the proposed solar panel installation. In the area of the solar array, other live loads will not be present or will be greatly reduced (2015 IBC, Section 1607.12.5). The glass surface of the solar panels allows for a lower slope factor per ASCE 7, resulting in reduced design snow load on the panels. The stresses of the structural elements, resulting from the altered gravity loads in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

The solar array will be flush-mounted (not more than 5 in above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Regarding seismic loads, we conclude that any additional forces will be small. As per Section 1613.1, Exception-1 of the 2015 IBC, detached one- and two-family dwellings with Seismic Design Category A, B or C or located where the mapped short-period spectral response acceleration, Ss, is less than 0.4 g are exempted from seismic load. Therefore the existing lateral force resisting system can remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor must notify Engineering Alliance Inc. should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others are allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. The design of the solar panel racking (mounts, rails, etc.) and electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Engineering Alliance Inc assumes no responsibility for improper installation of the solar array.

Please feel free to call for any questions or clarifications.



30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

Prepared by

Engineering Alliance, Inc
Sugar Land, TX
Phone: 832 865 4757

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Calculations per ASCE 7-10
International Building Code 2015 (IBC 2015)

ROOF DEAD LOAD (D):

Material	Design material weight (psf)	Increase due to pitch	Material weight (psf)
Comp Shingle	2.23	1.11	2
1/2" Plywood	1.1	1.11	1
Framing	3		3
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.2	1.11	2
M, E & Misc	1.5		1.5
Total Dead Load	**10.6**		
PV Array Dead Load	**3.3**	1.11	3

ROOF LIVE LOAD (Lr):

Existing Design Roof Live Load [psf]	20	ASCE 7-10, Table 4-1
Roof Live Load With PV Array [psf]	0	2015 IBC, Section 1607.12.5

SEISMIC LOAD, (E):

Risk category:	II	Table 1.5-1
Seismic Design Category:	B	Table 11.6-2
I_p:	1	Table 1.5-2
Site Class:	D	
R_p:	1.5	Table 13.6-1
S_s:	0.103	
S_1:	0.055	
a_p:	1	Table 13.6-1
z:	1	ft
h:	1	ft
z/h:	1	
F_a:	1.6	Table 11.4-1
F_v:	2.4	Table 11.4-2
S_{MS}:	0.165	Eqs. 11.4-1
S_{M1}:	0.132	Eqs. 11.4-2
S_{DS}:	0.110	Eqs. 11.4-3
S_{D1}:	0.088	Eqs. 11.4-4

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	105	
Exposure Category:	B	Sec. 26.7.3
Risk Category:	II	Table 1.5-1
Height of Roof, h [ft]:	30	(Approximate)
Roof Slope [°]:	26	
Site Elevation [ft]:	547	
Comp/Cladding Location:	Gable/Hip Roofs, 7° < θ ≤ 27°	FIGURE 30.4-2B
Enclosure Classification:	Enclosed Buildings	
Zone 1 GCp:	0.9	(enter largest abs. value)
Zone 2 GCp:	1.7	(enter largest abs. value)
Zone 3 GCp:	2.6	(enter largest abs. value)
α:	7	Table 26.9-1
z_g [ft]	1200	Table 26.9-1
K_h:	0.70	Table 30.3-1
K_{zt}:	1	Equation 26.8-1
K_d:	0.85	Table 26.6-1
Velocity Pressure, q_h [psf]:	16.81	Equation 30.3-1
GC_{pi}	0	Table 26.11-1

PRESSURES:

$$p = q_h((GC_p)-(GC_{pi})) \quad (lb/ft^2)$$ Equation 30.9-1

Zone 1 :	15.1	psf (1.0 W)
Zone 2 :	28.6	psf (1.0 W)
Zone 3 :	43.7	psf (1.0 W)

a [ft] = 3.6

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

COMPARE WIND & SEISMIC LOADS FOR CONNECTION (1 Sq. Ft. Section)

Wind Load, W:

Wind pressure, p:	9.1	psf (Zone 1: 0.6 W from wind pressure calculation)
Height, h:	1	ft
Width, w:	1	ft
Fperp:	9.1	lb (Uplift)

Seismic Load, E:

0.7 * F_p ,min:	0.069	lb
0.7 * F_p ,max:	0.369	lb
0.7 * F_p ,vert:	0.046	lb
0.7 * F_p ,long:	0.185	lb
0.7*F_p ,perp:	0.122	lb (uplift)

Wind (uplift) Controls Connection Design

CHECK INCREASE IN OVERALL SEISMIC LOADS

SEISMIC:

Seismic Design Category:	B

As per Section 1613.1, Exception-1 of the 2015 IBC, Seismic load is Exempted.

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Lag Screw Connection

Tributary Length (in):	74
Max Tributary Width (in):	72

Capacity:

Lag Screw Size[in] :	5/16	
C_d:	1.6	NDS Table 2.3.2
Embedment[1] [in]:	2.5	
Grade:	SPF (G = 0.42)	
Capacity [lbs/in]:	205	NDS Table 12.2A
Number of Screws in tension:	1	
Prying Coefficient:	1.4	
Total Capacity [lbs]:	586	

Demand:

Zone	Pressure (0.6 Wind) (psf)	Max Tributary Width (ft)	Max. Trib. Length (ft)	Max. Trib. Area2 (ft2)	Max. Uplift Force (lbs)
Zone 1 :	6.1	6.0	3.1	18.5	112
Zone 2 :	14.1	6.0	3.1	18.5	262
Zone 3 :	23.2	6.0	3.1	18.5	430

Total Tension Force(lbs):	430

Demand< Capacity: 73.3%, OK

Notes

1. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.
2. 'Max. Trib Area' is the product of the 'Max. Tributary Width' (along the rails) and 1/2 the panel width/height (perpendicular to the rails).

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SNOW LOAD (S):

	Existing	w/ Solar Panel Array	
Roof Slope [x:12]:	5.9	5.9	
Roof Slope [°]:	26	26	
Snow Ground Load, p_g [psf]:	5	5	ASCE 7-10, Section 7.2
Surface Roughness Category:	B	B	ASCE 7-10, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-10, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-10, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-10, Table 7-3
Risk Category:	II	II	ASCE 7-10, Table 1.5-1
Importance Factor, I_s:	1	1	ASCE 7-10, Table 1.5-2
Flat Roof Snow Load, p_f [psf]:	3	3	ASCE 7-10, Equation 7.3-1
Minimum Roof Snow Load, p_m [psf]:	0	0	ASCE 7-10, Section 7.3.4
Unobstructed Slippery Surface?	NO	YES	ASCE 7-10, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-10, Section 7.4
Roof Slope Factor, C_s:	1.00	0.73	ASCE 7-10, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	3	3	ASCE 7-10, Equation 7.4-1
Design Snow Load, S [psf]:	3	3	

Summary of Loads

	Existing	With PV Array
D [psf]	11	14
Lr [psf]	20	0
S [psf]	3	3

Maximum Gravity Loads:

	Existing	With PV Array	
(D + Lr) / Cd [psf]	24	15	ASCE 7-10, Section 2.4.1
(D + S) / Cd [psf]	12	14	ASCE 7-10, Section 2.4.1

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

Maximum Gravity Load [psf]:	24	15

Ratio Proposed Loading to Current Loading: **63%** **OK**

The gravity loads and; thus, the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

PHOTOVOLTAIC ROOF MOUNT SYSTEM

57 MODULES-ROOF MOUNTED - 22.80 kWDC, 16.53 kWAC

125 LANSHIRE DR, ROCKWALL, TX 75032 USA

SYSTEM SUMMARY:

(N) 57 - HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(N) 57 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(N) 02 - JUNCTION BOX
(E) 200A MAIN SERVICE PANEL WITH (N) 150A MAIN BREAKER
(N) 100A NON FUSED AC DISCONNECT
(N) 125A LOAD CENTER

DESIGN CRITERIA:

ROOF TYPE: - COMP SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @24" O.C.
STORY: - TWO STORY
SNOW LOAD : - 5 PSF
WIND SPEED :- 115 MPH
WIND EXPOSURE:- B
EXPOSURE CATEGORY:- II

GOVERNING CODES:

2017 NATIONAL ELECTRICAL CODE (NEC)
2015 INTERNATIONAL FIRE CODE (IFC)
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
2015 INTERNATIONAL MECHANICAL CODE (IMC)

SHEET INDEX

PV-0	COVER SHEET
PV-1	SITE PLAN WITH ROOF PLAN
PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAILS
PV-4	BRANCH LAYOUT
PV-5	ELECTRICAL LINE DIAGRAM
PV-6	ELECTRICAL CALCULATION
PV-6.1	LOAD CALCULATION & PANEL SCHEDULING
PV-7	PLACARDS & WARNING LABELS
PV-8	ADDITIONAL NOTES
PV-9+	EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

A LADDER SHALL BE IN PLACE FOR INSPECTION

THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.

EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.

EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A) REGARDLESS OF VOLTAGE.

PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED

ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.

HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" PER NEC 240.24

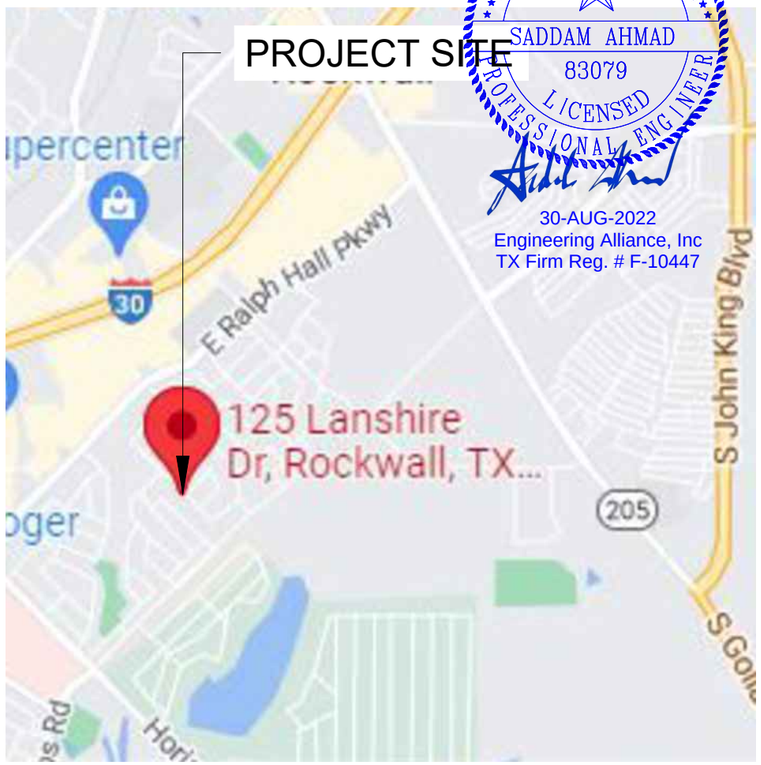
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER NEC 250.64C.
ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. NEC 690.64(B)(7)
SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

COVER SHEET

SHEET SIZE

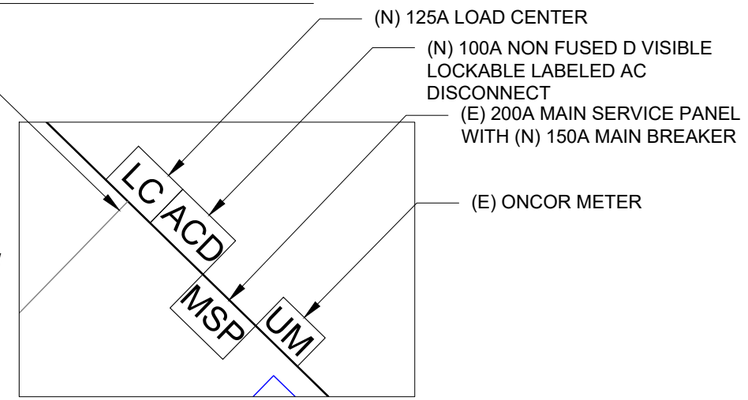
ANSI B
11" X 17"

SHEET NUMBER

PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

ENLARGED VIEW



STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 SITE PLAN WITH ROOF PLAN

SCALE: 1/16" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SITE PLAN WITH ROOF PLAN

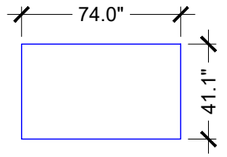
SHEET SIZE
ANSI B
11" X 17"

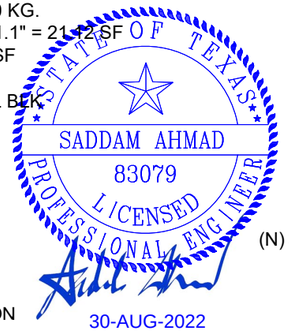
SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 57 MODULES
MODULE TYPE = HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
MODULE WEIGHT = 48.5 LBS / 22.0 KG.
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF
UNIT WEIGHT OF ARRAY = 2.30 PSF

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)





30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE:
INTERNATIONAL FIRE CODE SECTION 605.11.1.2 FOR RESIDENTIAL R-3 OCCUPANCIES AT LEAST THREE (3) FEET OF CLEARANCE ALONG THE EDGE (RAKE) OF THE ROOF TO A PANEL AND AT LEAST THREE (3) FEET FROM THE RIDGE OF THE ROOF TO A PANEL. PANELS SHALL BE AT LEAST ONE AND ONE-HALF (1-1/2) FEET FROM A VALLEY OR HIP. NO CLEARANCE IS REQUIRED AT THE EAVE.

INTERNATIONAL FIRE CODE SECTION 605.11.1.2.4 ROOFS WITH HIPS AND VALLEYS - WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY.

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
RAIL	33	ECOFASTEN CLICK RAIL 168" DARK
SPLICE	10	BND SPLICE BAR PRO SERIES DRK
MID CLAMP	74	UNIVERSAL AF MID CLAMPS
END CLAMP	80	UNIVERSAL AF END CLAMPS
ATTACHMENT	118	ECOFASTEN CLICKFIT
GROUNDING LUG	20	GROUND LUG

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

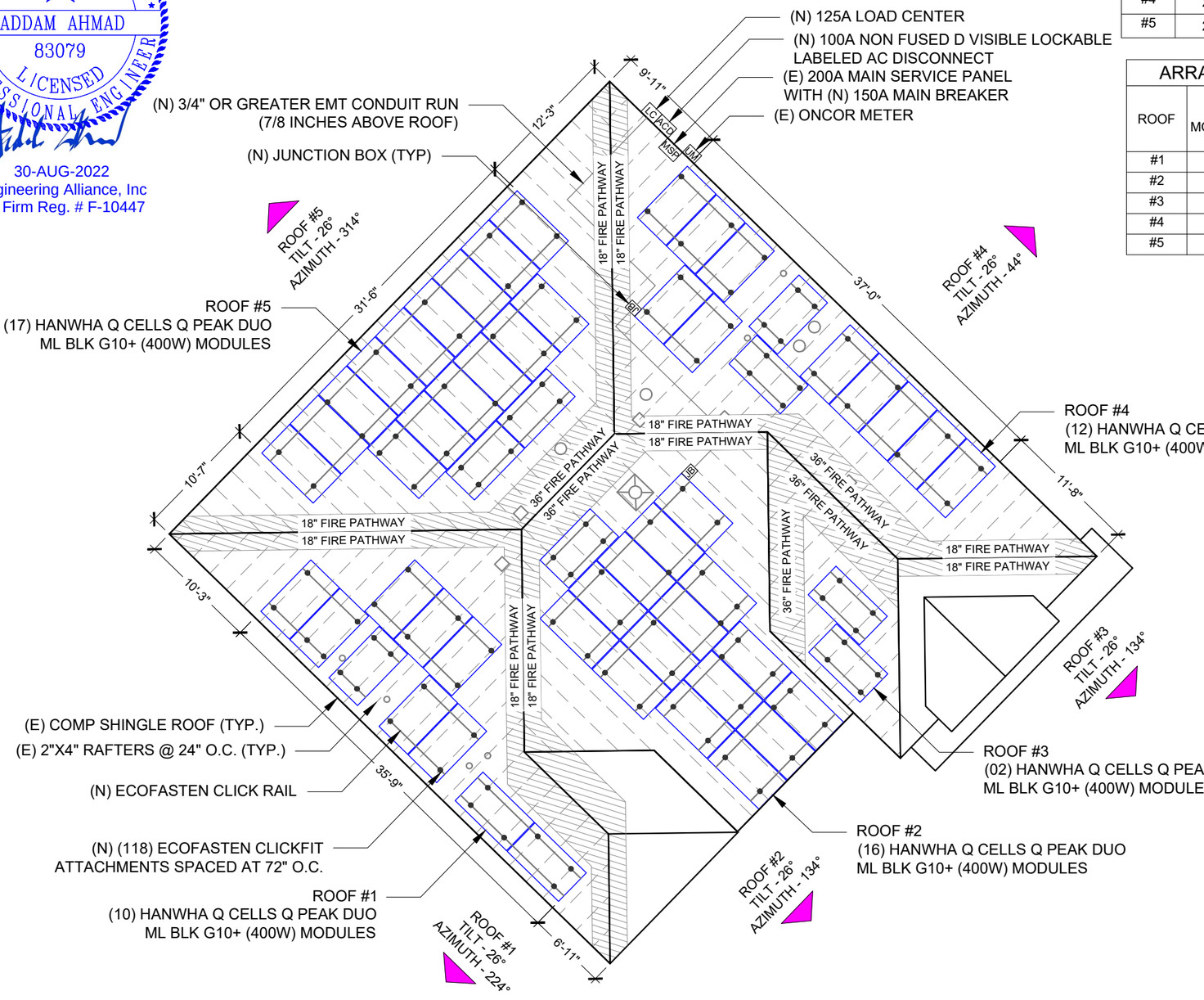
ROOF DESCRIPTION

ROOF	ROOF TYPE: ROOF TILT	ROOF TYPE: AZIMUTH	COMP SHINGLE ROOF: RAFTERS SIZE	COMP SHINGLE ROOF: RAFTERS SPACING
#1	26°	224°	2"x4"	24" O.C.
#2	26°	134°	2"x4"	24" O.C.
#3	26°	134°	2"x4"	24" O.C.
#4	26°	44°	2"x4"	24" O.C.
#5	26°	314°	2"x4"	24" O.C.

ARRAY AREA & ROOF AREA CALC'S

ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	211.21	539.16	39.17
#2	16	337.93	639.38	52.85
#3	02	42.24	189.84	22.25
#4	12	253.45	649.38	39.03
#5	17	359.05	705.06	50.93

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER



LEGEND

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- LC - LOAD CENTER
- JB - JUNCTION BOX
- CHIMNEY
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- FIRE PATHWAY

1 ROOF PLAN WITH MODULES

SCALE: 3/32" = 1'-0"

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

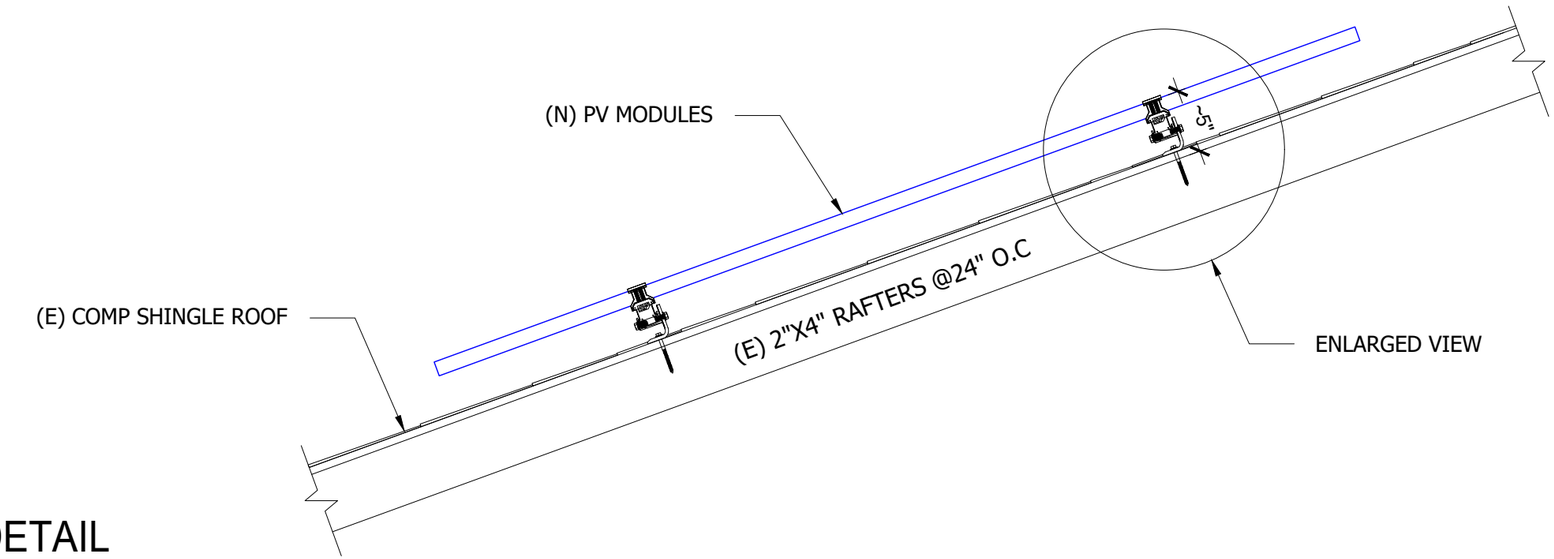
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

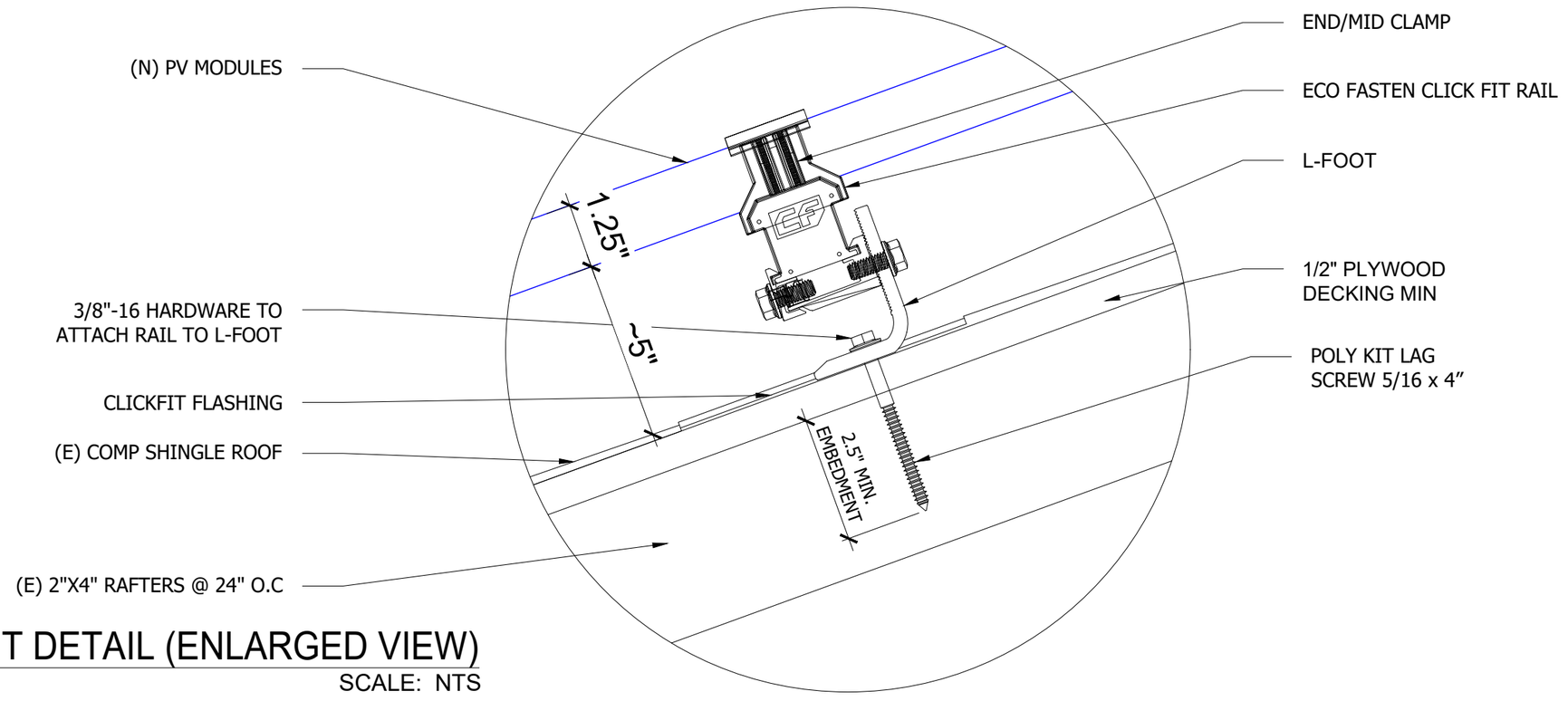
NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS(OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447



1 ATTACHMENT DETAIL
SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

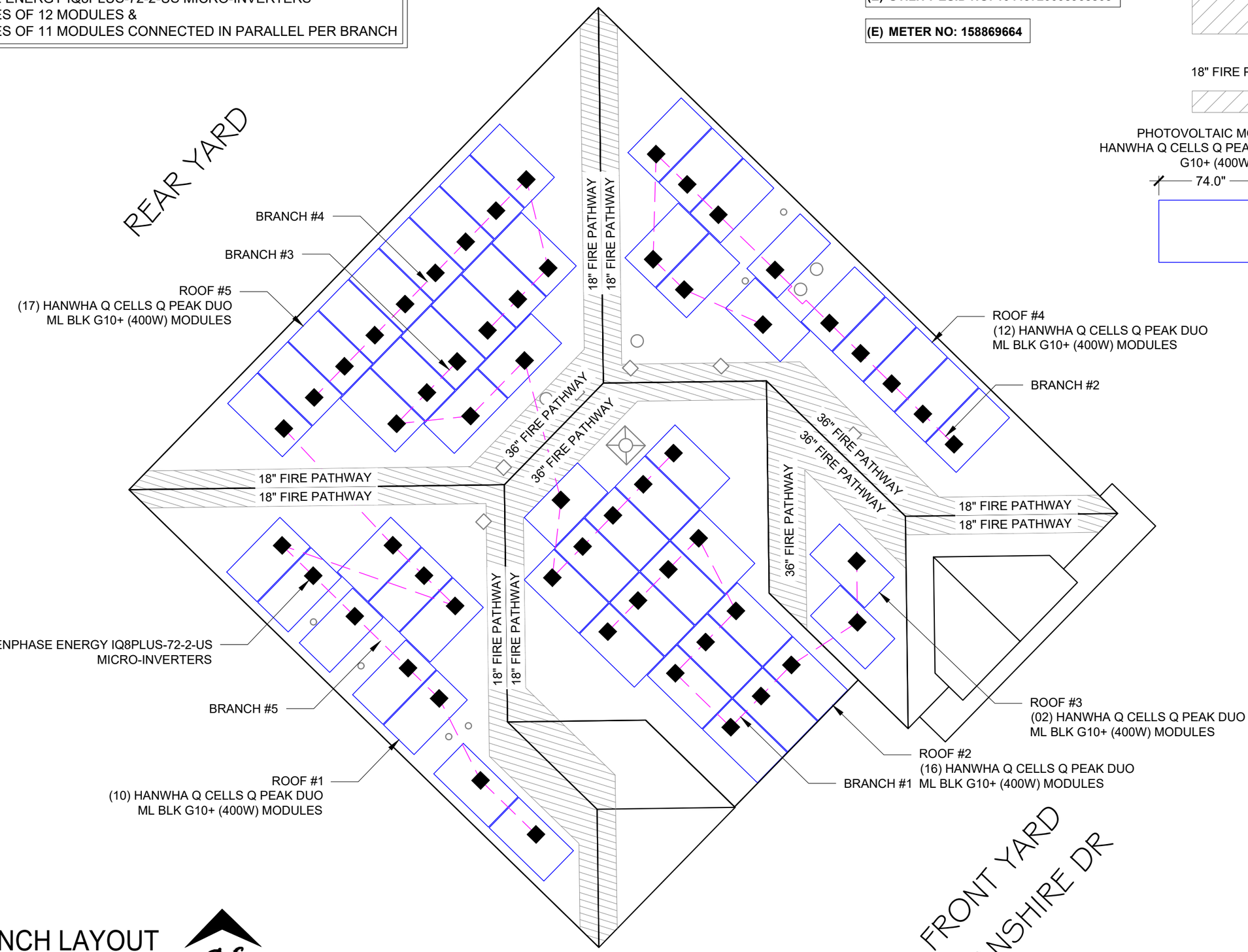
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

36" FIRE PATHWAY
3'-0"

18" FIRE PATHWAY
18"

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)
74.0"
41.1"



1 BRANCH LAYOUT

SCALE: 1/8" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

BRANCH LAYOUT

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-4

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

SYSTEM SIZE:- 57 x 400W = 22.80 kWDC
SYSTEM SIZE:- 57 x 290W = 16.53 kWAC

INTERCONNECTION
120% RULE - NEC 705.12(B)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED
150A +90A = 240A

BUSS RATING x 120%
200A x 120% = 240A

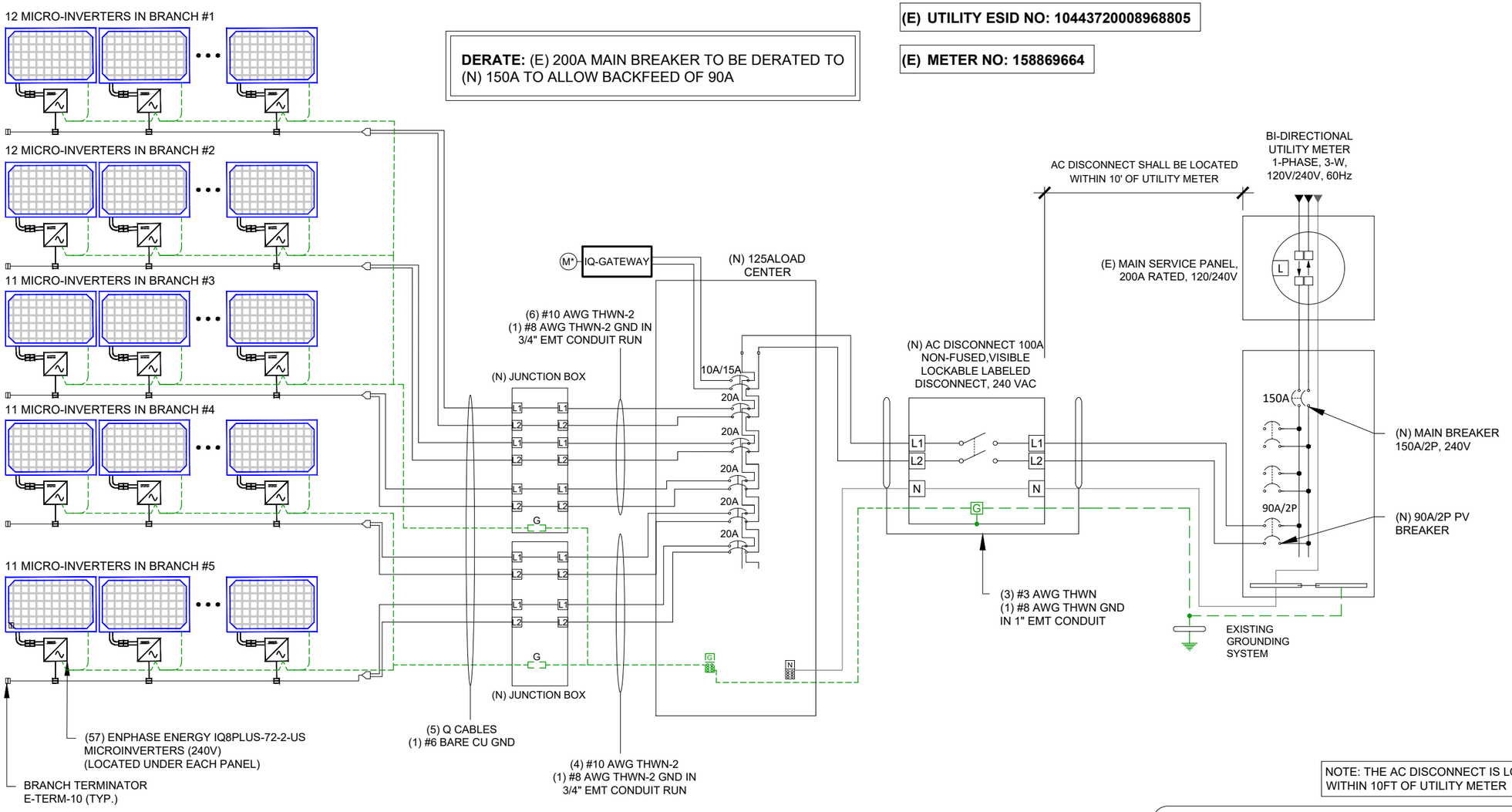
BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	57	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
INVERTER	57	ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
JUNCTION BOX	2	600V, 55A MAX, 4 INPUTS, MOUNTED ON ROOF FOR WIRE & CONDUIT TRANSITION
LOAD CENTER	1	125A PV LOAD CENTER
AC DISCONNECT	1	100A NON FUSED, VISIBLE LOCKABLE LABELED AC DISCONNECT, 240VAC, NEMA 3R, UL LISTED.

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A



NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP

WIRE RATED AND AMPACITY CALCULATED @ 90°C FOR ROOFTOP INSTALLATION AND ATTIC RUN TO INVERTER

ANY CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT. (NEC 300.6 C1, 310.8 D)

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

NOTE ON CONDUIT:
ALL CONDUIT SHALL BE EMT 3/4" IN DIAMETER UNLESS OTHERWISE STATED

PER NEC REQUIRMENTS GROUNDING CONDUCTORS SMALLER THAN 6AWG SHALL BE PROTECTED IN A CONDUIT, RACEWAY, OR ARMORED PROTECTIVE SHEATHING (NEC 250.64)

SERVICE INFO.

UTILITY PROVIDER:	ONCOR
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	(E) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 150A
MAIN SERVICE LOCATION:	NORTH-EAST
SERVICE FEED SOURCE:	UNDERGROUND

1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)MODULES
VMP	37.13
IMP	10.77
VOC	45.30
ISC	11.14
MODULE DIMENSION	74.0"L x 41.1"W x 1.26"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE ENERGY IQ8PLUS-72-2-US
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	1.21A

AMBIENT TEMPERATURE SPECS	
WEATHER STATION: DALLAS LOVE FIELD	
RECORD LOW TEMP	-8°
AMBIENT TEMP (HIGH TEMP 2%)	37°
CONDUIT HEIGHT	0.9"
ROOF TOP TEMP.	37°
CONDUCTOR TEMPERATURE RATE (ON ROOF)	90°
CONDUCTOR TEMPERATURE RATE (OFF ROOF)	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#1 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 06
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#2 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 04
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM LOAD CENTER TO INTERCONNECTION:

OF INVERTERS: 57
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.88
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(3)(a): 1.0
CIRCUIT CONDUCTOR SIZE: 3 AWG
CIRCUIT CONDUCTOR AMPACITY: 100A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X # MICRO-INVERTERS X MAX OUTPUT CURRENT =
1.25 X 1.21 X 57 = 86.21A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.88 X 1.0 X 100= 91A

RESULT SHOULD BE GREATER THAN 86.21A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

ELECTRICAL NOTES

1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

1 ELECTRICAL CALCULATION

SCALE: NTS

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

LOAD CALC RESULTS		
BUSS BAR RATING		TOTAL DEMAND
150	>	141.31

RESIDENTIAL LOAD CALULATION FOR EXISTING DWELLINGS					
3,522	SQ. FT. X 3 VA			10566	VA
2	SMALL APPLIANCE BRANCH CIRCUITS			3000	VA
1	LAUNDRY CIRCUIT (WASHER)			1500	VA
30	DRYER			5760	VA
50	N/A			9600	VA
20	MICRO-WAVE			1920	VA
20	DISPOSAL & DISHWASHER			1920	VA
20	WASHER			1920	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
TOTAL LOAD GROSS (VA)				36186	TOTAL VA
FIRST 10,000VA, VA X 100%				10000	VA
REMAINDER ABOVE 10,000 VA X 40%				10474.4	VA
TOTAL LOAD NET (VA)				20474.4	VA
TOTAL LOAD (AMPS) (VA/240V)				85.3	AMPS
AIR CONDITIONING LOADS					
30	1-A/C MIN. CIRCUIT AMPS			5760	VA
40	2-A/C MIN. CIRCUIT AMPS			7680	VA
	3-A/C MIN. CIRCUIT AMPS			0	VA
	4-A/C MIN. CIRCUIT AMPS			0	VA
	SUB POOL MIN. CIRCUIT AMPS			0	VA
	AHU VA (Breaker Amps X Volts X 80%)			0	
TOTAL A/C LOAD (VA)				13440	TOTAL VA
TOTAL LOAD (AMPS) (VA/240V)				56	AMPS
TOTAL DEMAND (AMPS)				141.3	AMPS

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

120% RULE: BACKFEED	
BUSSBAR RATING	200
NEW MAIN BREAKER	150
120% RULE: BACKFEED	120
PV OCPD	90

LOAD CALC RESULTS		
BUSSBAR RATING		TOTAL DEMAND
150	>	141.31

PANEL SCHEDULE

EXISTING PANEL			ALTERED PANEL		
Circuit	#	OCP AMP	Circuit	#	OCP AMP
MAIN BREAKER 200			NEW MAIN BREAKER 150		
DRYER	1	30	DRYER	1	30
N/A	2	50	N/A	2	50
DRYER	3	30	DRYER	3	30
N/A	4	50	N/A	4	50
AC	5	30	AC	5	30
N/A	6	20	N/A	6	20
AC	7	30	AC	7	30
N/A	8	20	N/A	8	20
GFI	9	20	GFI	9	20
N/A	10	20	N/A	10	20
REFRIGERATOR	11	20	REFRIGERATOR	11	20
MICROWAVE	12	20	MICROWAVE	12	20
BATH GFI	13	20	BATH GFI	13	20
MASTER BEDROOM	14	20	MASTER BEDROOM	14	20
GARAGE GFI	15	20	GARAGE GFI	15	20
N/A	16	20	N/A	16	20
LIVING ROOM& DINING LIGHTS	17	20	LIVING ROOM& DINING LIGHTS	17	20
FRONT & BACK LIGHTS	18	20	FRONT & BACK LIGHTS	18	20
WASHER	19	20	WASHER	19	20
FRONT BED & BACK BED LIGHTS	20	20	FRONT BED & BACK BED LIGHTS	20	20
GAME ROOM & MOVIE SMOKES	21	20	GAME ROOM & MOVIE SMOKES	21	20
AC	22	40	AC	22	40
GARAGE/ MASTER BATH/POWER BATH	23	20	GARAGE/ MASTER BATH/POWER BATH	23	20
AC	24	40	AC	24	40
NOOK PLUGS/COOK PLUGS	25	20	NOOK PLUGS/COOK PLUGS	25	20
EMPTY	26	EMPTY	EMPTY	26	EMPTY
DISPOSAL& DISHWASHER	27	20	DISPOSAL& DISHWASHER	27	20
EMPTY	28	EMPTY	EMPTY	28	EMPTY
EMPTY	29	EMPTY	EMPTY	29	EMPTY
EMPTY	30	EMPTY	EMPTY	30	EMPTY
EMPTY	31	EMPTY	EMPTY	31	EMPTY
EMPTY	32	EMPTY	EMPTY	32	EMPTY
EMPTY	33	EMPTY	EMPTY	33	EMPTY
EMPTY	34	EMPTY	EMPTY	34	EMPTY
EMPTY	35	EMPTY	EMPTY	35	EMPTY
EMPTY	36	EMPTY	EMPTY	36	EMPTY
EMPTY	37	EMPTY	EMPTY	37	EMPTY
EMPTY	38	EMPTY	EMPTY	38	EMPTY
EMPTY	39	EMPTY	PV BREAKER	39	90
EMPTY	40	EMPTY	PV BREAKER	40	90

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2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

LOAD CALCULATION& PANEL SCHEDULING

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-6.1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP
(PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 68.97 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
(PER CODE: NEC 705.12 (B)(2)(3)(B)

WARNING:PHOTOVOLTAIC POWER SOURCE

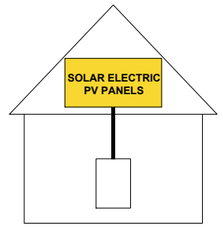
LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY

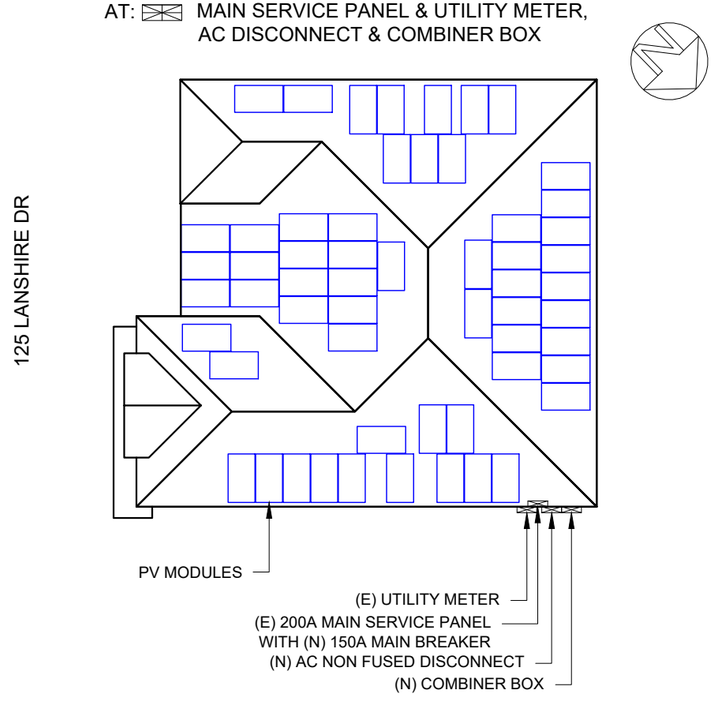


LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

CAUTION !

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

AT: MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & COMBINER BOX



SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.

2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.

3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT.

4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).

5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.

6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.

7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

SOLNOVA
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LICENSE NO.#: 35151

Regan George

VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

Quality Controlled PV
TÜVRheinland CERTIFIED
www.tuv.com ID 1111232615

ASSEMBLED IN THE USA

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

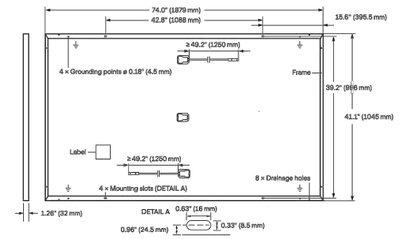
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (–) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

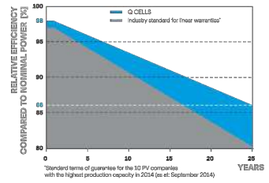


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP} [W]	385	390	395	400	405
Minimum	Short Circuit Current[1]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
Minimum	Open Circuit Voltage[1]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
Minimum	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
Minimum	Voltage at MPP	V_{MPP} [V]	36.36	36.62	36.88	37.13	37.39
Minimum	Efficiency[1]	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	288.8	292.6	296.3	300.1	303.8
Minimum	Short Circuit Current	I_{SC} [A]	8.90	8.92	8.95	8.97	9.00
Minimum	Open Circuit Voltage	V_{OC} [V]	42.62	42.65	42.69	42.72	42.76
Minimum	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
Minimum	Voltage at MPP	V_{MPP} [V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

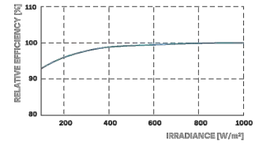
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS						
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.34	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells),

C Certified US UL 61730

CE

TÜVRheinland CERTIFIED www.tuv.com ID 1111232077

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

ENPHASE.

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.
** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility
(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

Data Sheet
Enphase Q Cable Accessories
Region: INDIA

Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

To learn more about Enphase offerings, visit **enphase.com/in**

ENPHASE.

Enphase Q Cable Accessories

Q CABLE SPECIFICATIONS	
Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60332-1-2

Q CABLE TYPES / ORDERING OPTIONS

Model Number	Max Nominal Voltage	Ampacity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

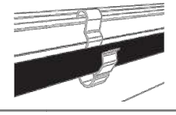
ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (male)	Q-CONN-3P-10M	Make connections using three-phase cable
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (single-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Disconnect tool	Q-DISC-3P-10	Disconnect tool for three-phase Field wireable connectors
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator (single-phase)	Q-TERM-R-10	Terminator cap for unused single-phase cable ends
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused three-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	DC adaptor to MC4 (max voltage 100 VDC)

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10))

SEALING CAPS
Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)
Three-phase model (Q-DISC-3P-10)



CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)

To learn more about Enphase offerings, visit **enphase.com/in**

2018-11-26

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

EcoFasten®
For Installers. By Installers.

CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

ClickFit is one of the fastest installing rail-based systems in the industry. Thanks to its Click-In rail assembly, the rails can be connected to any of EcoFasten's composition shingle, tile, and metal roof mounts in seconds without the need for fasteners or tools. The ClickFit system is made of robust materials such as aluminum and coated steel, to ensure corrosion-resistance and longevity. ClickFit conforms to UL 2703 and has been tested in extreme weather conditions including wind, fire, and snow.

FEATURES & BENEFITS

- Pre-installed rail fastening bolt
- Fully integrated bonding
- Click-On Mid & End Clamps
- Compatible with a variety of EcoFasten roof attachments

FAST INSTALLING SYSTEM FEATURING CLICK-IN RAIL ASSEMBLY

ROOF TYPE — Composition Shingle, Tile, Metal

RACKING — Rail-Based

ATTACHMENT — Structural-Attach Direct-Attach

WATER TIGHT TECHNOLOGY

25 YEAR WARRANTY

ECOFASTENSOLAR.COM

CLICKFIT

INTERNAL SPLICE

Tool-free bonded internal Splice installs in seconds.

MID CLAMP

Click-on mid clamp features integrated bonding pins and fits module frames sized 30-50mm.

CF MLPE MOUNT

Attach Module Level Power Electronics to the top of the rail.

END CLAMP

Click-on end clamp fits module frames sized 30-50mm.

END CAP

The slide-on end caps allow the end clamps to be accurately positioned on the rail in seconds, while providing an aesthetically pleasing, finished install.

RAIL

The ClickFit rail clicks into our proprietary composition shingle & tile L-foot and is tightened in place with a pre-installed bolt.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
DESCRIPTION	DATE	REV
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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

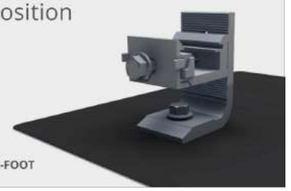
SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-13

COMPOSITION SHINGLE

Combine the versatile ClickFit L-Foot with the watertight GF-1 flashing for a fast installation on composition shingle roofs.



GF-1 FLASHING & L-FOOT

TILE ROOFS

Use the adjustable ClickFit Tile Hook for attaching the ClickFit system to tile roofs. Works with Flat, S, and W tile profiles.

CLICKFIT TILE HOOK

STANDING SEAM METAL ROOFS

Combine the ClickFit L-Foot with SimpleBlock®-U for a fast installation on standing seam metal roofs.

SIMPLEBLOCK-U

ECOFASTENSOLAR.COM

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

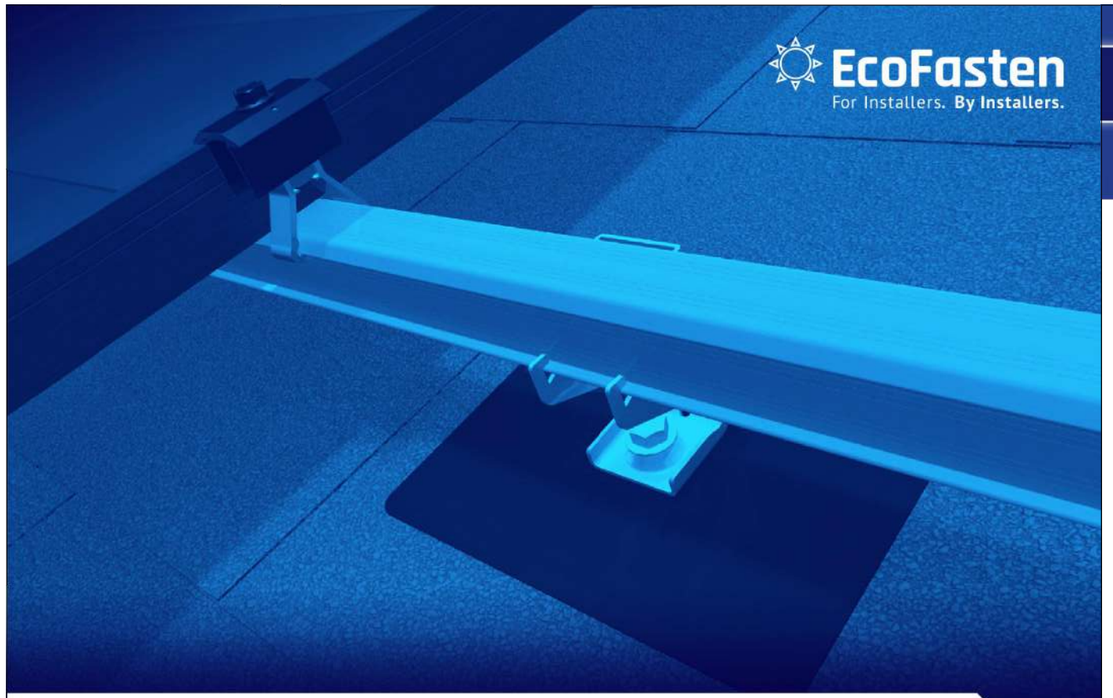
SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14



CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

INSTALLATION GUIDE

REVISION DATE: 04/09/21	VERSION: v2.4

ECOFASTENSOLAR.COM

MANUFACTURER	LIST OF UL2703 APPROVED MODULES
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72, 72H, or 72DH
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where "YY" can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HH2, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45, and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40, and 42mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, G5/SC, G5/TS, BLK-G5, BLK-G5/SC, BLK-G5/TS, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6/SC, G6/TS, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G6+/AC, BLK-G6+/SC, BLK-G6/TS, G6+/TS, BLK-G6+/TS, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, L-G8.3, L-G8.3/BFF, ML-G9, BLK ML-G9, ML-G9+, BLK ML-G9+, XL-G9, XL-G9.2 or XL-G9.3
Heliene	Heliene modules with 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "A" can be blank, HomePV, or Bifacial
HT-SAAE	HT-SAAE modules with 35 and 40 mm frames HTyy-156Z-xxx Where "yy" can be 60 or 72, "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C

MODULES

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

Engineering Alliance, Inc

https://www.eng-alliance.com

27-June-2022

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87101
Tel: 505 242 6411

Attn.: Engineering Department

Subject: Engineering Certification for the Unirac SOLARMOUNT Flush Rail System to Support Photovoltaic Panels.

The Unirac SOLARMOUNT Flush-to-Roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof.

We have reviewed the SOLARMOUNT system, a proprietary mounting system constructed from modular parts which are intended for rooftop installation of solar photovoltaic (PV) panels; and have reviewed the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the SOLARMOUNT rails (SM LIGHT rail, SM STANDARD rail, and SM HEAVY DUTY rail) with Standard and Pro Series hardware. All information, data and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. ASCE/SEI 7-05, 7-10, 7-16 Minimum Design Loads for Buildings and Other Structures
2. International Building Code, 2006-2021 Edition w/ Provisions from SEAOC PV-2 2017
3. International Residential Code, 2006- 2021 Edition w/ Provisions from SEAOC PV-2 2017
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
5. Aluminum Design Manual, 2015 & 2020 Edition

Following are typical specifications to meet the above code requirements:

Design Criteria:
Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

For Houston, TX:
Basic Wind Speed ASD Minimum 110 mph to 147 mph (3-sec gust ASCE 7-05 for IRC)
Basic Wind Speed LRFD Minimum 142 mph to 190 mph (Vult ASCE 7-10 for IBC)

Attachment Spacing: Per U-Builder 2.0 Engineering report.

Cantilever: The maximum cantilever length is L/3, where "L" is the span noted in the U-Builder 2.0 online Tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel
Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation

Installation Orientation: See SOLARMOUNT Rail Flush Installation Guide.

4603 April Meadow Way, Sugar Land, TX 77479. Ph: 832 865 4757

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
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CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-16

CITY OF ROCKWALL

ORDINANCE NO. 22-XX

SPECIFIC USE PERMIT NO. S-XXX

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, AMENDING THE UNIFIED DEVELOPMENT CODE (UDC) [*ORDINANCE NO. 20-02*] OF THE CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS, AS PREVIOUSLY AMENDED, SO AS TO GRANT A SPECIFIC USE PERMIT (SUP) TO ALLOW *SOLAR PANELS* ON A 0.1947-ACRE PARCEL OF LAND IDENTIFIED AS LOT 20, BLOCK D, LYNDEN PARK ESTATES ADDITION, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS; AND MORE SPECIFICALLY DEPICTED AND DESCRIBED AND DEPICTED IN *EXHIBIT 'A'* OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS ($2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels Exceeding 1,000 SF of Coverage on a Residential Home* situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive and being more specifically described and depicted in *Exhibit 'A'* of this ordinance, which herein after shall be referred to as the *Subject Property* and incorporated by reference herein; and

WHEREAS, the Planning and Zoning Commission of the City of Rockwall and the governing body of the City of Rockwall, in compliance with the laws of the State of Texas and the ordinances of the City of Rockwall, have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally, and to all persons interested in and situated in the affected area and in the vicinity thereof, the governing body in the exercise of its legislative discretion has concluded that the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall should be amended as follows:

NOW, THEREFORE, **BE IT ORDAINED** by the City Council of the City of Rockwall, Texas;

SECTION 1. That the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall, as heretofore amended, be and the same is hereby amended so as to grant a Specific Use Permit (SUP) allow for *Solar Panels Exceeding 1,000 SF of Coverage on a Residential Home* within Planned Development District 17 (PD-17) as stipulated by Subsection 01.01, *Use of Land and Buildings*, of Article 04, *Permissible Uses*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*] on the *Subject Property*; and,

SECTION 2. That the Specific Use Permit (SUP) shall be subject to the requirements set forth in Subsection 02.03(K)(7) of Article 04, *Permissible Uses*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*] -- *as heretofore amended and as may be amended in the future* --,

and with the following conditions:

2.1. OPERATIONAL CONDITIONS

The following conditions pertain to the operation of *Solar Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'*.

(2) All mechanical equipment (*e.g. micro inverters*) and batteries shall be completely screened from the adjacent properties and rights-of-way.

2.2 COMPLIANCE

Approval of this ordinance in accordance with Subsection 02.02, *Specific Use Permits (SUP)* of Article 11, *Development Applications and Review Procedures,* of the Unified Development Code (UDC) will require the *Subject Property* to comply with the following:

1) Upon obtaining a *Building Permit*, should the property owner subject to these guidelines of this ordinance fail to meet the minimum operational requirements set forth herein and outlined in the Unified Development Code (UDC), the City may (*after proper notice*) initiate proceedings to revoke the Specific Use Permit (SUP) in accordance with Subsection 02.02(F), *Revocation*, of Article 11, *Development Applications and Revision Procedures*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*].

SECTION 3. That the official zoning map of the City be corrected to reflect the changes in zoning described herein.

SECTION 4. That all ordinances of the City of Rockwall in conflict with the provisions of this ordinance be, and the same are hereby repealed to the extent of that conflict.

SECTION 5. Any person, firm, or corporation violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a penalty of fine not to exceed the sum of *TWO THOUSAND DOLLARS ($2,000.00)* for each offence and each and every day such offense shall continue shall be deemed to constitute a separate offense.

SECTION 6. If any section or provision of this ordinance or the application of that section or provision to any person, firm, corporation, situation or circumstance is for any reason judged invalid, the adjudication shall not affect any other section or provision of this ordinance or the application of any other section or provision to any other person, firm, corporation, situation or circumstance, and the City Council declares that it would have adopted the valid portions and applications of the ordinance without the invalid parts and to this end the provisions of this ordinance shall remain in full force and effect.

SECTION 7. That this ordinance shall take effect immediately from and after its passage.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THIS THE 7th DAY OF NOVEMBER, 2022.

Kevin Fowler, *Mayor*

ATTEST:

Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

Frank J. Garza, *City Attorney*

1st Reading: *October 17, 2022*

2nd Reading: *November 7, 2022*

Exhibit 'A'
Zoning Exhibit

Address: *125 Lanshire*
Legal Description: *Lot 20, Block D, Lynden Park Estates*

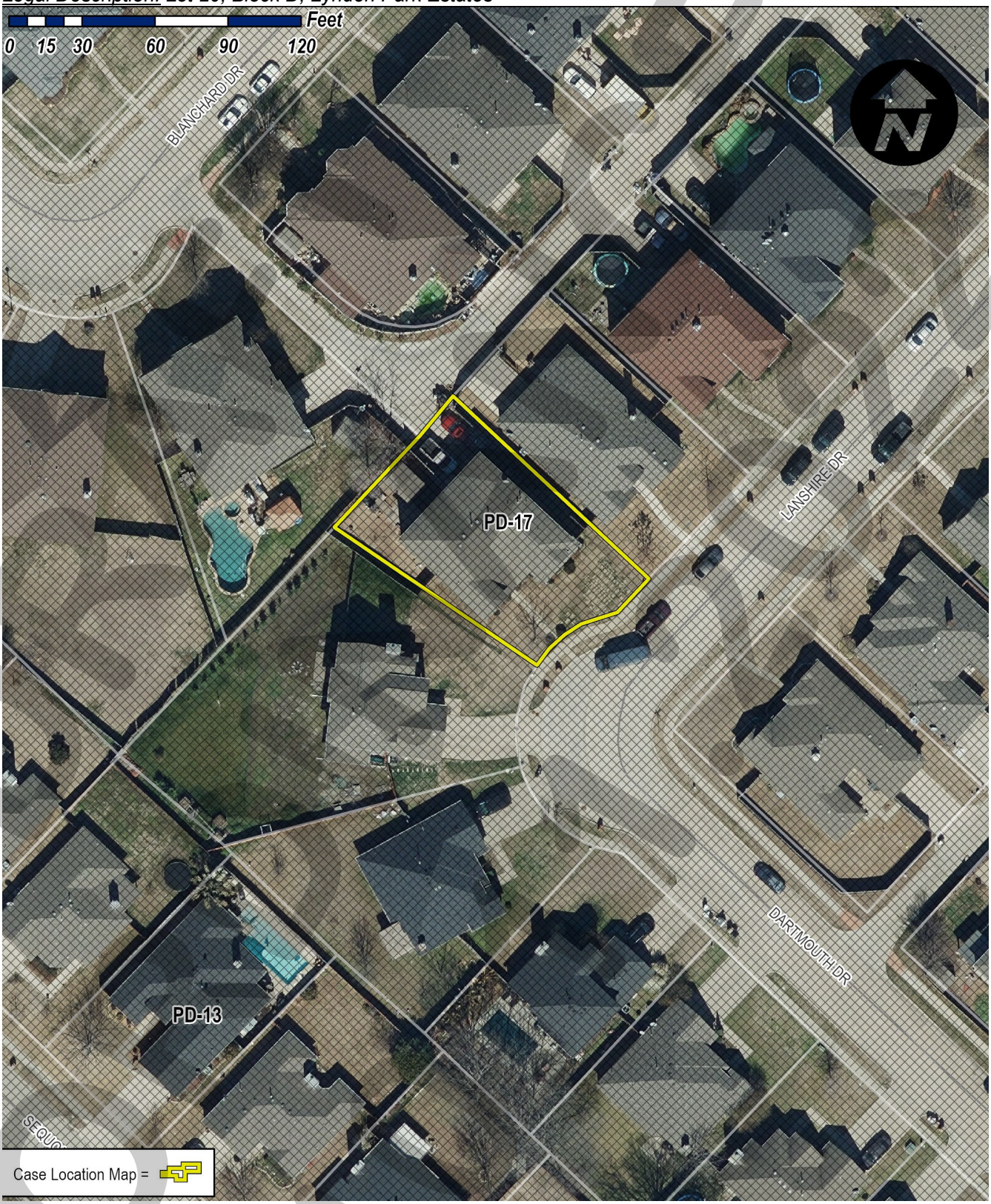
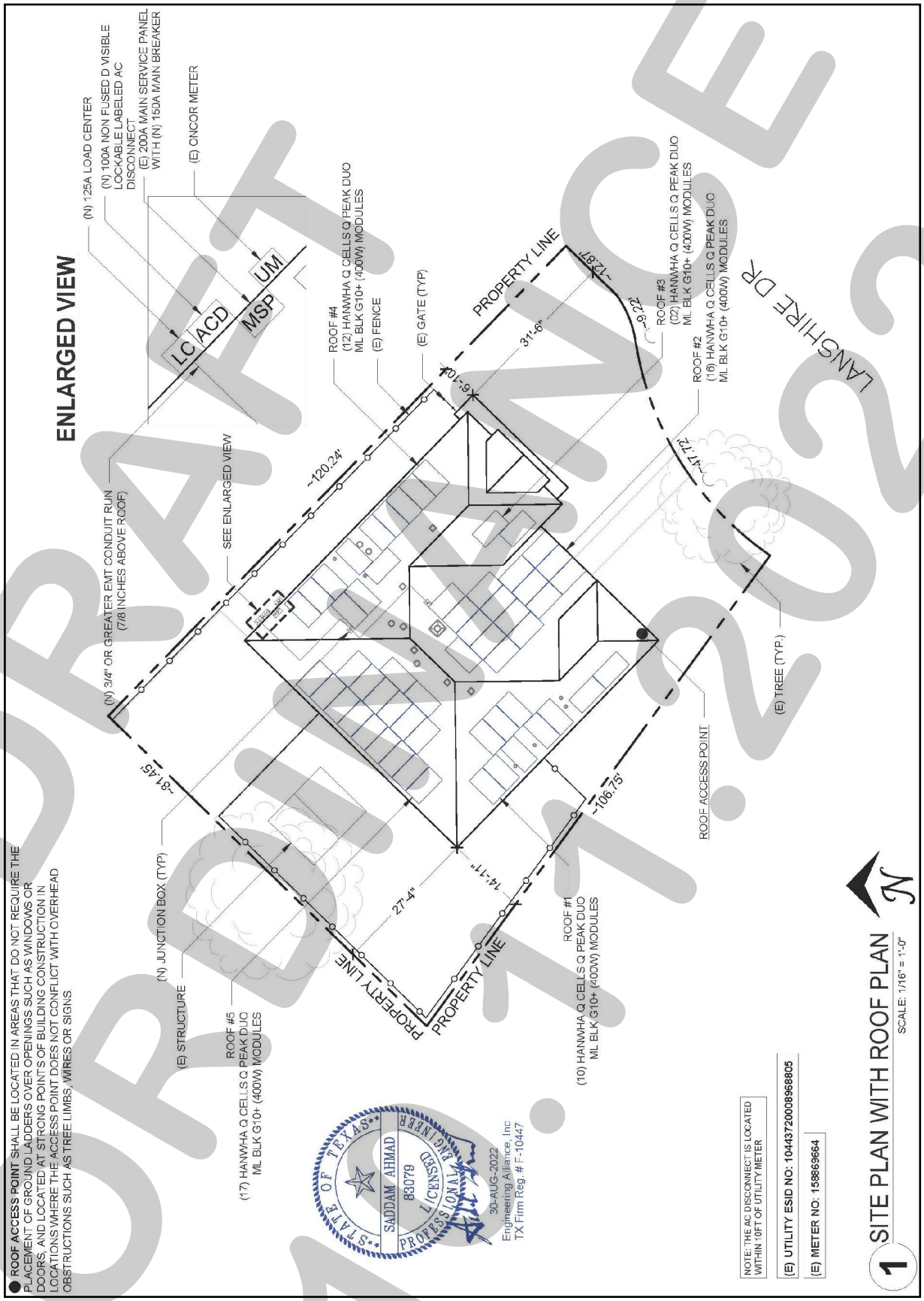


Exhibit 'B'
Roof Plan Elevations



CITY OF ROCKWALL

CITY COUNCIL CASE MEMO

PLANNING AND ZONING DEPARTMENT
385 S. GOLIAD STREET • ROCKWALL, TX 75087
PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO:	Mayor and City Council
DATE:	October 17, 2022
APPLICANT:	Tony Trammel
CASE NUMBER:	Z2022-045; *Specific Use Permit (SUP) for Solar Panels for 125 Lanshire Drive*

SUMMARY

Hold a public hearing to a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels* exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

BACKGROUND

The subject property was annexed on May 19, 1986 by *Ordinance No. 86-37* [*Case No. A1986-005*]. At the time of annexation, the subject property was a portion of a larger 103.79-acre tract of land (*i.e. Tract 2 of the E.P. Gaines Chisum Survey, Abstract No. 64*), and was zoned Agricultural (AG) District. On December 4, 1995, the subject property was rezoned to Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses. On December 28, 2001, the subject property was platted as Lot 20, Block D, Lynden Park, Phase 3 Addition as part of *Case No. PZ2001-076-01*. According to the Rockwall Central Appraisal District (RCAD), the existing 3,522 SF single-family home situated on the subject property was built in 2005.

PURPOSE

The applicant is requesting the approval of a Specific Use Permit (SUP) for *Solar Panels* exceeding 1,000 SF of coverage on an existing single-family residential home situated on the subject property.

ADJACENT LAND USES AND ACCESS

The subject property is located at 125 Lanshire Drive. The land uses adjacent to the subject property are as follows:

North: Directly north of the subject property is Lynden Park Estates, Phase 2 Addition, which was established on December 22, 2000 and consists of 104 single-family residential lots. Beyond this is Lynden Park Estates, Phase 1B Addition, which was established on August 4, 1997 and consists of 27 single-family residential lots. North of this is Lynden Park Estates, Phase 1A Addition, which was also established on June 10, 1997 and consists of 70 single-family residential lots. All of the Lynden Park Estates Subdivision is zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses. Beyond this is W. Ralph Hall Parkway, which is classified as an M4D (*i.e. major collector, four [4] lane, divided roadway*) on the City's Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan.

South: Directly south of the subject property is the continuation of Lynden Park Estates, Phase 3 Addition. Beyond this is Tubbs Road, which is classified as an M4U (*i.e. major collector, four [4] lane, undivided roadway*) on the City's Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan. Beyond this is Rockwall Lake Estates, Phase 1 Addition, which was established on June 15, 1956 and is zoned Planned Development District 75 (PD-75).

East: Directly east of the subject property is Lynden Park Estates, Phase 4 Addition, which was established on January 5, 2005 and consists of 94 single-family residential lots. This area is zoned Planned Development District 17 (PD-17) for Single-Family 7 (SF-7) District land uses. Beyond this is a 90.50-acre vacant tract of land, which is a part

of a larger 140.50-acre tract of land (*i.e. Tract 3 of the G Wells Survey, Abstract No. 219*), which is zoned Agricultural (AG) District.

West: Directly west of the subject property is the Windmill Ridge Estates Subdivision, which was established on September 9, 1962 and consists of 551 single-family residential lots. Beyond this is Horizon Road (*i.e. FM 3097*), which is classified as a TXDOT4D (*i.e. Texas Department of Transportation, four [4] lane, divided roadway*) on the City's Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan.

MAP 1: LOCATION MAP
YELLOW: SUBJECT PROPERTY

CHARACTERISTICS OF THE REQUEST

The applicant has requested a Specific Use Permit (SUP) for the purpose of installing solar panels that will exceeding 1,000 SF of coverage on the existing single-family home. Specifically, the applicant is proposing to install 57 solar panels that will cover 1,150 SF of the 2,722 SF roof.

CONFORMANCE TO THE CITY'S CODES

Article 13, *Definitions*, of the Unified Development Code (UDC) defines *Solar Energy Collector Panels and Systems* as "(a) ground or building-mounted solar collection system consisting of solar photovoltaic cells, panels, or arrays and related equipment that relies upon solar radiation as an energy source for collection, inversion, storage, and distribution of solar energy for electricity generation, and that supplies electrical power independently of an electrical production and distribution network." The conditional land use standards for *Solar Energy Collector Panels and Systems* are defined in Subsection 02.03(K)(7) of Article 04, *Permissible Uses*, of the UDC. This section states that "(i)n residential zoning districts, the total coverage area of solar energy collector panels shall not exceed 1,000 SF on a single lot." That section goes on to state that "(a)ny solar energy collector panels or systems not meeting these requirements, or any installation of solar energy systems as the principal use on the property, shall require approval of a Specific Use Permit (SUP)." In this case, the applicant has proposed adding 1,150 SF of solar panels to the existing single-family home, exceeding the 1,000 SF limit by 150 SF. Based on this the applicant's request requires the approval of a Specific Use Permit (SUP).

STAFF ANALYSIS

The applicant's request appears to be in conformance with the majority of the City's requirements regarding *Solar Energy Collector Panels and Systems* however, the Unified Development Code (UDC) does not provide many regulations regarding this land use other than roof square footage. Staff is of the opinion that the original intent for these regulations was to limit visibility of the solar panels from public rights-of-way and adjacent properties. For the purpose of comparing the proposed solar panels for the subject to the solar panels constructed on existing single-family housing located adjacent to or in the vicinity of the *subject property*, staff has provided photos and an analysis of properties on Brookshore, Burkwood, Haven Ridge, Mapleridge, Rutherford, Pendleton, and Sycamore Drives below. Through the process of analyzing the adjacent properties, staff found that a majority of the solar panels surface area is less than 1,000 SF with the exception of one (1) property, which approved in 2018 with 1,025 SF of coverage at 140 Brookshore Drive. Staff also observed that the majority of the solar panels on these properties were installed on the side or rear of the roofs with the exception of three (3) homes which utilized the front part of the roof. In this case, the applicant is proposing 18 solar panels in the front part of the house, which may be visible from Lanshire Drive as shown in *Figure 1*. With all this being said the approval of a Specific Use Permit (SUP) and the operational conditions contained in the Specific Use Permit (SUP) ordinance are a discretionary decision for the City Council.

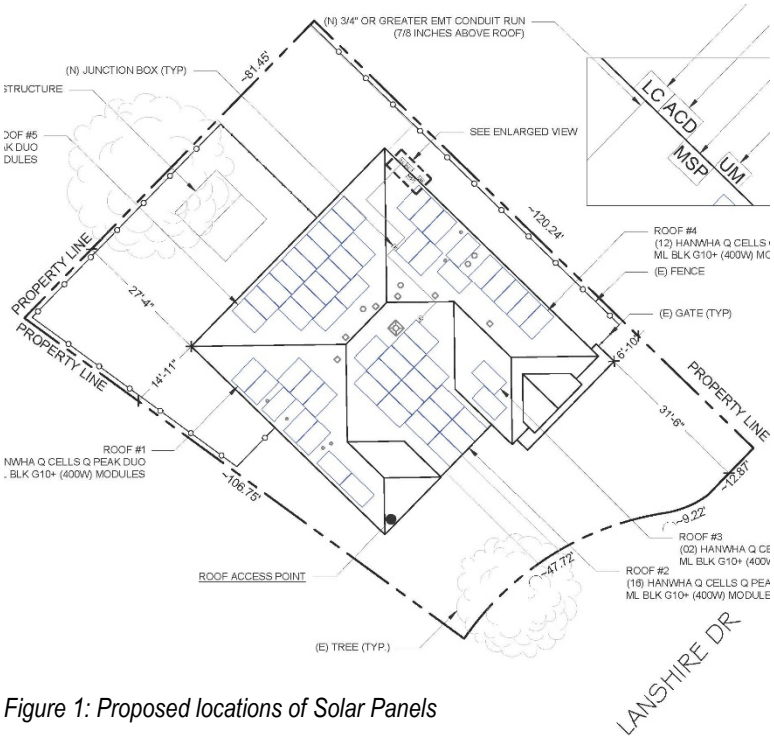
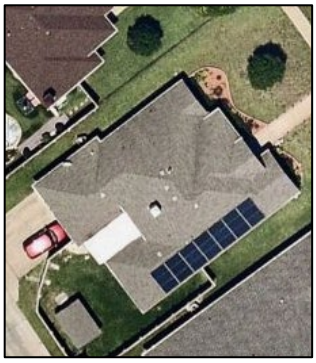


Figure 1: Proposed locations of Solar Panels

Address	*Surface Area of Solar Panels (SF)*	*Year Installed*
144 Haven Ridge Drive	478	2015
709 Pendleton Drive	372	2015
3829 Sycamore Lane	451	2017
140 Brookshore Drive	1,025	2018
102 Brookshore Drive	471	2019
117 Rutherford Drive	288	2019
106 Brookshore Drive	360	2021
206 Burkwood Drive	422	2021



709 Pendelton Drive

211 Mapleridge Drive

3829 Sycamore Lane

140 Brookshore Drive

102 Brookshore Drive

117 Rutherford Drive

106 Brookshore Drive

206 Burkwood Drive

NOTIFICATIONS

On September 20, 2022, staff mailed 162 notices to property owners and occupants within 500-feet of the subject property. Staff also sent a notice to the Lynden Park Homeowner's Association (HOA), which was the only HOA or Neighborhood Organization within 1,500-feet of the subject property participating in the Neighborhood Notification Program. Additionally, staff posted a sign on the subject property, and advertised the public hearings in the Rockwall Herald Banner as required by the Unified Development Code (UDC). At the time this report was written, staff has received one notice in favor of the applicant's request and none in opposition of the applicant's request.

CONDITIONS OF APPROVAL

If the City Council chooses to approve the applicant's request for a *Specific Use Permit (SUP)* for Solar *Panels,* then staff would propose the following conditions of approval:

(1) The applicant shall be responsible for maintaining compliance with the operational conditions contained in the *Specific Use Permit (SUP)* ordinance and which are detailed as follows:

  (a) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'* of the Ordinance.

  (b) All mechanical equipment (*e.g. micro inverters*) and batteries shall be completely screened from the adjacent properties and rights-of-way.

(2) Any construction resulting from the approval of this *Specific Use Permit (SUP)* shall conform to the requirements set forth by the Unified Development Code (UDC), the International Building Code (IBC), the Rockwall Municipal Code of Ordinances, city adopted engineering and fire codes and with all other applicable regulatory requirements administered and/or enforced by the state and federal government.

PLANNING AND ZONING COMMISSION

On October 11, 2022, the Planning and Zoning Commission approved a motion to recommend approval of the *Specific Use Permit* by a vote of 5-0, with Commissioners Womble and Deckard absent.

DEVELOPMENT APPLICATION

City of Rockwall
Planning and Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087

STAFF USE ONLY

PLANNING & ZONING CASE NO.

NOTE: *THE APPLICATION IS NOT CONSIDERED ACCEPTED BY THE CITY UNTIL THE PLANNING DIRECTOR AND CITY ENGINEER HAVE SIGNED BELOW.*

DIRECTOR OF PLANNING:

CITY ENGINEER:

PLEASE CHECK THE APPROPRIATE BOX BELOW TO INDICATE THE TYPE OF DEVELOPMENT REQUEST [SELECT ONLY ONE BOX]:

PLATTING APPLICATION FEES:
- ☐ MASTER PLAT ($100.00 + $15.00 ACRE) [1]
- ☐ PRELIMINARY PLAT ($200.00 + $15.00 ACRE) [1]
- ☐ FINAL PLAT ($300.00 + $20.00 ACRE) [1]
- ☐ REPLAT ($300.00 + $20.00 ACRE) [1]
- ☐ AMENDING OR MINOR PLAT ($150.00)
- ☐ PLAT REINSTATEMENT REQUEST ($100.00)

SITE PLAN APPLICATION FEES:
- ☐ SITE PLAN ($250.00 + $20.00 ACRE) [1]
- ☐ AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING PLAN ($100.00)

ZONING APPLICATION FEES:
- ☐ ZONING CHANGE ($200.00 + $15.00 ACRE) [1]
- ☑ SPECIFIC USE PERMIT ($200.00 + $15.00 ACRE) [1 & 2]
- ☐ PD DEVELOPMENT PLANS ($200.00 + $15.00 ACRE) [1]

OTHER APPLICATION FEES:
- ☐ TREE REMOVAL ($75.00)
- ☐ VARIANCE REQUEST/SPECIAL EXCEPTIONS ($100.00) [2]

NOTES:
[1]: IN DETERMINING THE FEE, PLEASE USE THE EXACT ACREAGE WHEN MULTIPLYING BY THE PER ACRE AMOUNT. FOR REQUESTS ON LESS THAN ONE ACRE, ROUND UP TO ONE (1) ACRE.
[2]: A ***$1,000.00*** FEE WILL BE ADDED TO THE APPLICATION FEE FOR ANY REQUEST THAT INVOLVES CONSTRUCTION WITHOUT OR NOT IN COMPLIANCE TO AN APPROVED BUILDING PERMIT.

PROPERTY INFORMATION [PLEASE PRINT]

ADDRESS	125 Lanshire Dr. Rockwall,TX 75032		
SUBDIVISION		LOT	BLOCK
GENERAL LOCATION			

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING		CURRENT USE	
PROPOSED ZONING		PROPOSED USE	Roof Mounted PV System
ACREAGE	LOTS [CURRENT]	LOTS [PROPOSED]	

☐ ***SITE PLANS AND PLATS:*** *BY CHECKING THIS BOX YOU ACKNOWLEDGE THAT DUE TO THE PASSAGE OF HB3167 THE CITY NO LONGER HAS FLEXIBILITY WITH REGARD TO ITS APPROVAL PROCESS, AND FAILURE TO ADDRESS ANY OF STAFF'S COMMENTS BY THE DATE PROVIDED ON THE DEVELOPMENT CALENDAR WILL RESULT IN THE DENIAL OF YOUR CASE.*

OWNER/APPLICANT/AGENT INFORMATION [PLEASE PRINT/CHECK THE PRIMARY CONTACT/ORIGINAL SIGNATURES ARE REQUIRED]

☐ OWNER		☑ APPLICANT	Tony Trammell
CONTACT PERSON		CONTACT PERSON	Tony Trammell
ADDRESS		ADDRESS	2407 E Loop 820 N
CITY, STATE & ZIP		CITY, STATE & ZIP	Fort Worth, TX 76118
PHONE		PHONE	817-616-3152
E-MAIL		E-MAIL	tx.permits@gosolnova.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Tony Trammell [OWNER] THE UNDERSIGNED, WHO STATED THE INFORMATION ON THIS APPLICATION TO BE TRUE AND CERTIFIED THE FOLLOWING:

"I HEREBY CERTIFY THAT I AM THE OWNER FOR THE PURPOSE OF THIS APPLICATION; ALL INFORMATION SUBMITTED HEREIN IS TRUE AND CORRECT; AND THE APPLICATION FEE OF $_____, TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE _____ DAY OF _____, 20___. BY SIGNING THIS APPLICATION, I AGREE THAT THE CITY OF ROCKWALL (I.E. "CITY") IS AUTHORIZED AND PERMITTED TO PROVIDE INFORMATION CONTAINED WITHIN THIS APPLICATION TO THE PUBLIC. THE CITY IS ALSO AUTHORIZED AND PERMITTED TO REPRODUCE ANY COPYRIGHTED INFORMATION SUBMITTED IN CONJUNCTION WITH THIS APPLICATION, IF SUCH REPRODUCTION IS ASSOCIATED OR IN RESPONSE TO A REQUEST FOR PUBLIC INFORMATION."

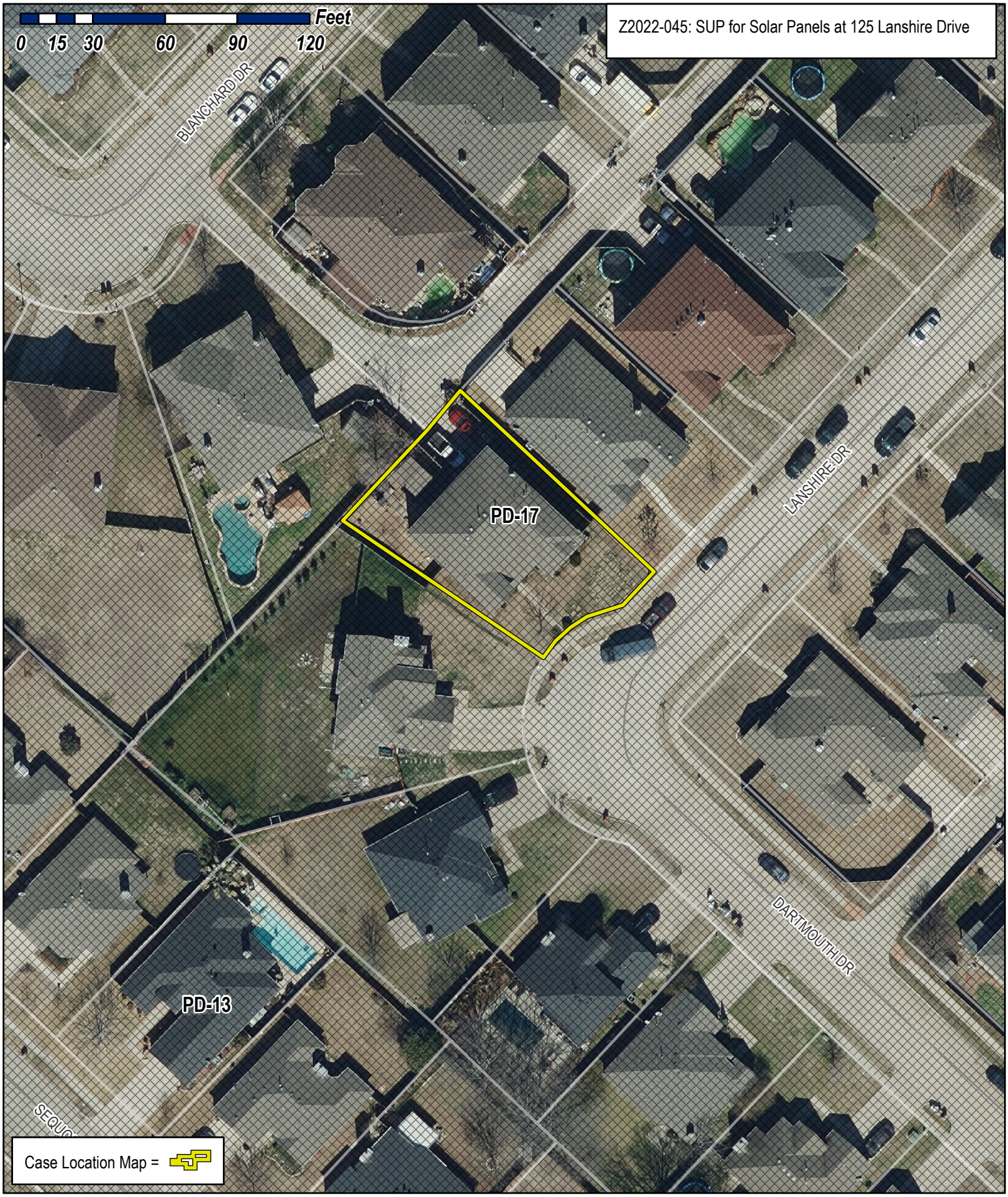
HALEY ANNE SPEIDEL
Notary Public, State of Texas
Comm. Expires 10-25-2025
Notary ID 133411039

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* September, 20 20.

OWNER'S SIGNATURE Tony Trammell

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS Haley Speidel

MY COMMISSION EXPIRES 10/25/2020



City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75032
(P): (972) 771-7745
(W): www.rockwall.com

City of Rockwall

Planning & Zoning Department
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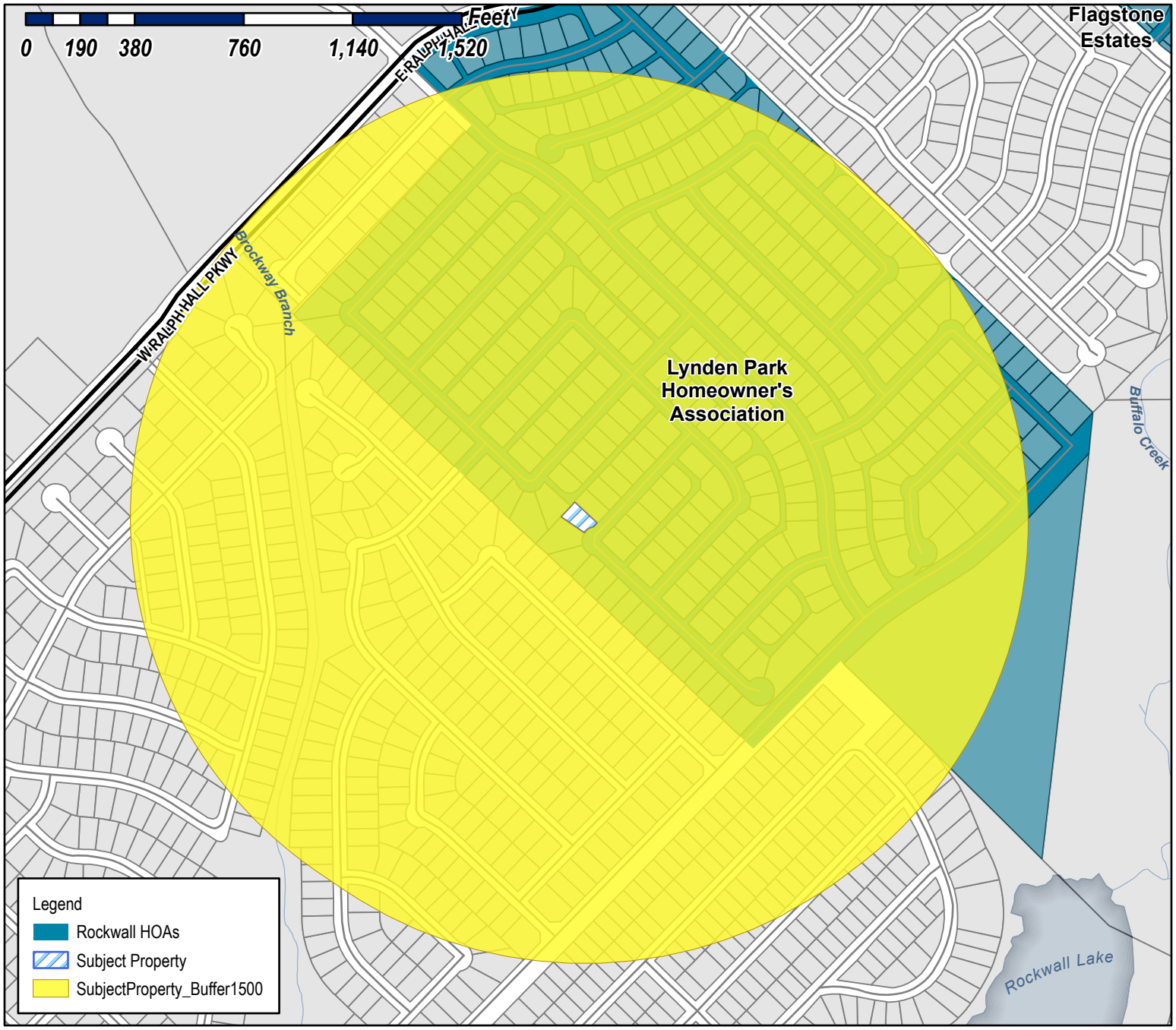
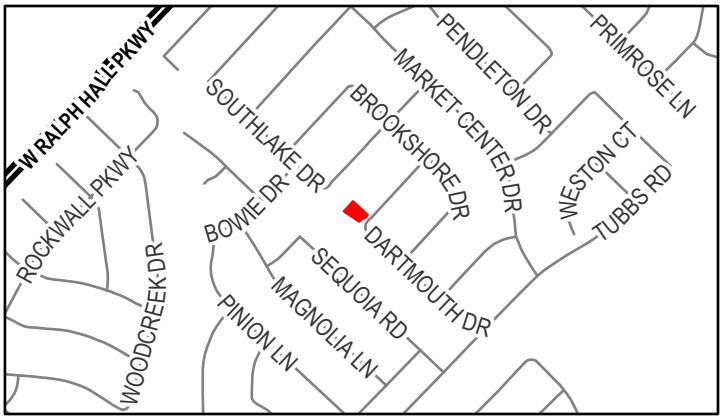


Case Number: Z2022-045
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Planned Development District 17 (PD-17)
Case Address: 125 Lanshire Drive

Date Saved: 9/16/2022
For Questions on this Case Call (972) 771-7745



Miller, Ryan

From: Gamez, Angelica
Sent: Tuesday, September 20, 2022 10:15 AM
Cc: Miller, Ryan; Ross, Bethany; Lee, Henry
Subject: Neighborhood Notification Program [Z2022-045]
Attachments: Public Notice Z2022-045.pdf; HOA Map Z2022-045.pdf

HOA/Neighborhood Association Representative:

Per your participation in the *Neighborhood Notification Program*, you are receiving this notice to inform your organization that a zoning case has been filed with the City of Rockwall that is located within 1,500-feet of the boundaries of your neighborhood. As the contact listed for your organization, you are encouraged to share this information with the residents of your subdivision. Please find the attached map detailing the property requesting to be rezoned in relation to your subdivision boundaries. Additionally, below is the summary of the zoning case that will be published in the Rockwall Herald Banner on *September 23, 2022*. The Planning and Zoning Commission will hold a public hearing on *Tuesday, October 11, 2022 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, October 17, 2022 at 6:00 PM*. Both hearings will take place at 6:00 PM at City Hall, 385 S. Goliad, Rockwall, TX 75087.

All interested parties are encouraged to submit public comments via email to Planning@rockwall.com at least 30 minutes in advance of the meeting. Please include your name, address, and the case number your comments are referring to. These comments will be read into the record during each of the public hearings. Additional information on all current development cases can be found on the City's website: https://sites.google.com/site/rockwallplanning/development/development-cases.

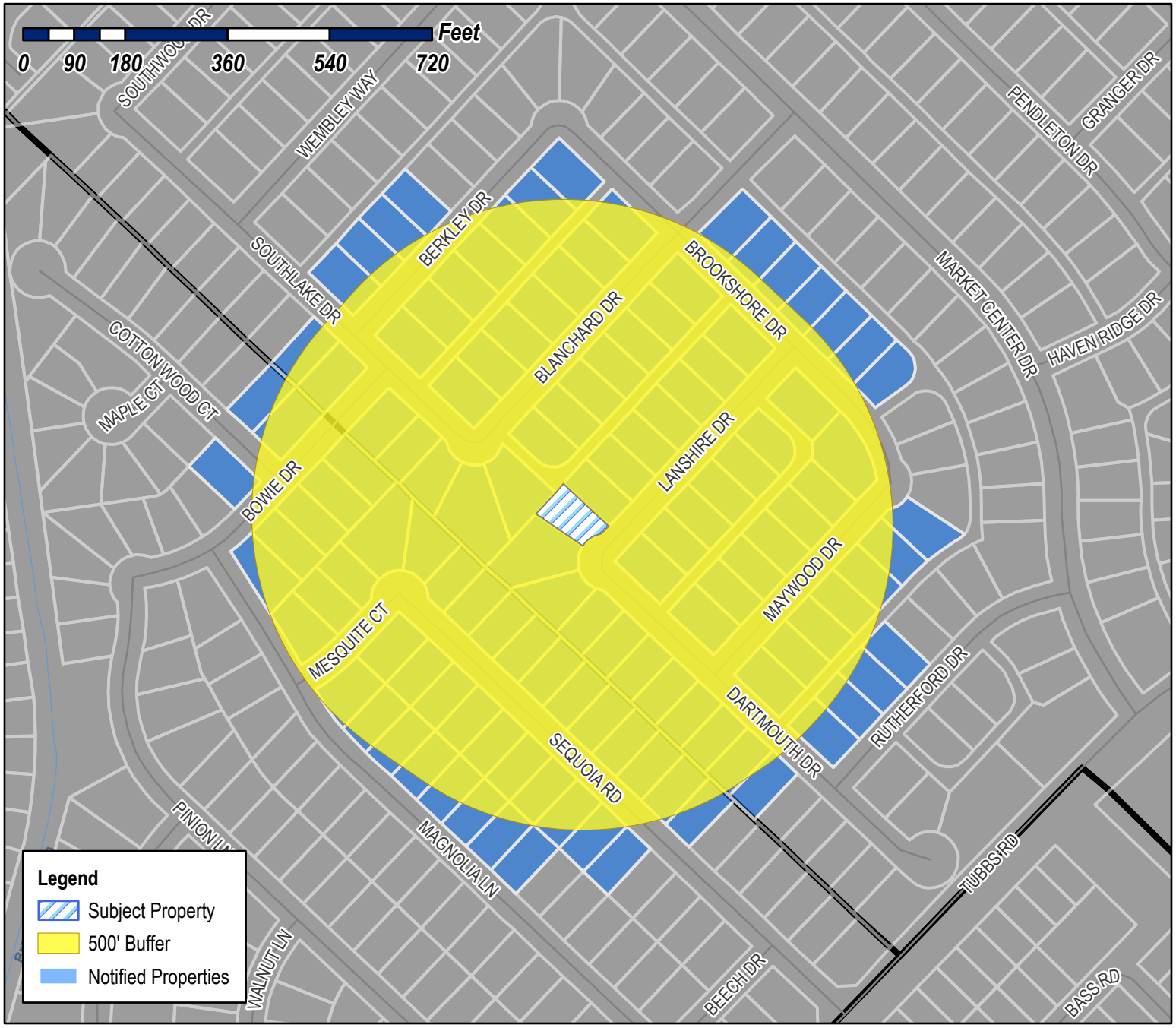
Z2022-045: SUP for Solar Panels
Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels* exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

Thank you,

Angelica Guevara
Planning & Zoning Coordinator
City of Rockwall
972.771.7745 Office
972.772.6438 Direct
http://www.rockwall.com/planning/

City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com



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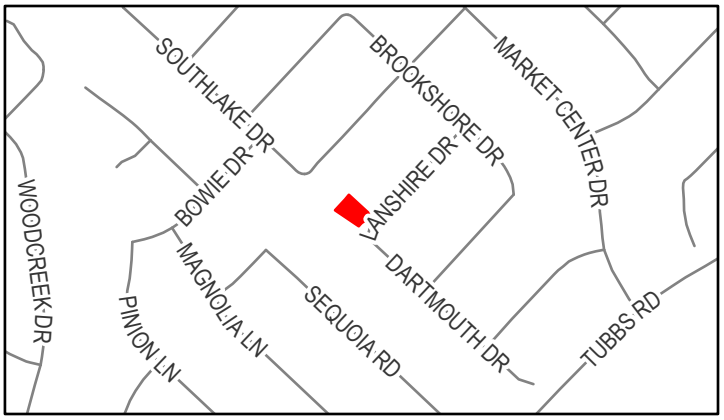

ISYA LIMITED PARTNERSHIP
1018 MOUNT AUBURN
DALLAS, TX 75223

CAMPBELL FLORENCE I
106 BROOKSHORE DR
ROCKWALL, TX 75032

STARNES CHARLES O & LORRAINE K
108 BROOKSHORE DR
ROCKWALL, TX 75032

520 YFLK LLC
110 BROOKSHORE DR
ROCKWALL, TX 75032

OFFILL ROBERT L & CRYSTAL J
110 LANSHIRE DR
ROCKWALL, TX 75032

DELIZ CRYSTAL D
110 MAYWOOD DRIVE
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
111 LANSHIRE DR
ROCKWALL, TX 75032

ALSAMMAK AHMED AND
BAN AL TAIE
111 LANSHIRE DRIVE
ROCKWALL, TX 75032

ENRIGHT THOMAS & ROXANNE
111 MAYWOOD DR
ROCKWALL, TX 75032

TATE ANTHONY R
112 MAYWOOD DR
ROCKWALL, TX 75032

GUAJARDO RAUL E & JORDANNE MORROW
112 BROOKSHORE DRIVE
ROCKWALL, TX 75032

PROGRESS RESIDENTIAL BORROWER 16 LLC
113 LANSHIRE DR
ROCKWALL, TX 75032

GONZALEZ VICTOR M
113 MAYWOOD
ROCKWALL, TX 75032

HENDERSON NORMA
114 MAYWOOD DR
ROCKWALL, TX 75032

GALLOWAY STEPHEN J & GWENDOLYN R
114 BROOKSHORE DR
ROCKWALL, TX 75032

LECLERC ANDRE
114 LANSHIRE DR
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
115 LANSHIRE DR
ROCKWALL, TX 75032

ELLIS MARK AND
DENISE HENRY
115 MAYWOOD DR
ROCKWALL, TX 75032

RSB TOKEN INVESTMENTS LLC
116 MAYWOOD DR
ROCKWALL, TX 75032

WAFER CHRISTOPHER D & WILANDA L
116 BROOKSHORE DR
ROCKWALL, TX 75032

TRAN NGOC AND XUYEN HUYNH
116 LANSHIRE DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
117 LANSHIRE DR
ROCKWALL, TX 75032

LIMON MARIA ARACELY AND NORBERTO
117 MAYWOOD
ROCKWALL, TX 75032

CLARK ERIC DWAYNE & PATRICIA D
117 RUTHERFORD DR
ROCKWALL, TX 75032

PARAMOUNT LAURELS LLC
118 BROOKSHORE DR
ROCKWALL, TX 75032

VAN HEYST DAUAN N & RANDALL
118 LANSHIRE DR
ROCKWALL, TX 75032

RIDGEWAY RYAN A & HARRIS H JORGENSEN
118 MAYWOO DRIVE
ROCKWALL, TX 75032

PAGADUAN KEVIN I & DEEJAY
119 LANDSHIRE DRIVE
ROCKWALL, TX 75032

NUNEZ ARMANDO M & DELIA ANGUIANO
119 MAYWOOD
ROCKWALL, TX 75032

SOUMIE NAHNAH P
119 RUTHERFORD DR
ROCKWALL, TX 75032

LOZA FABIOLA ESTRADA
119 SOUTHLAKE DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
120 LANSHIRE DR
ROCKWALL, TX 75032

SAMMIS FLEETWOOD & MELONIE
120 MAYWOOD
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
121 RUTHERFORD DR
ROCKWALL, TX 75032

WILLIAMS LATONYA
121 BLANCHARD DRIVE
ROCKWALL, TX 75032

UKPAI OGBEYALU
121 LANSHIRE DR
ROCKWALL, TX 75032

ANDERSON AMBER
121 MAYWOOD DR
ROCKWALL, TX 75032

MERINO TROY A
122 BERKLEY DRIVE
ROCKWALL, TX 75032

MARROQUIN DOMINGO & CLAUDIA D
122 BLANCHARD DR
ROCKWALL, TX 75032

HOUSER MICKEY AND
JENNIFFER MALABOSA
122 LANSHIRE DRIVE
ROCKWALL, TX 75032

CORUJO JAMES AND JANISS
122 MAYWOOD DR
ROCKWALL, TX 75032

COZART MICHAEL AND CASSANDRA HARRIS-
123 LANSHIRE DR
ROCKWALL, TX 75032

MAREZ SARAH E AND MICHAEL E AND
CYNTHIA ANN HERRERA
123 MAYWOOD
ROCKWALL, TX 75032

JACKSON DALE E
123 RUTHERFORD DR
ROCKWALL, TX 75032

MYLES BOBBY J JR
123 SOUTHLAKE DR
ROCKWALL, TX 75032

CUELLAR JOEL A & MARTHA C
124 LANSHIRE DR
ROCKWALL, TX 75032

SANCHEZ JAYLYN MARIE
124 SEQUOIA ROAD
ROCKWALL, TX 75032

ELKINS THOMAS
125 BLANCHARD DR
ROCKWALL, TX 75032

FISHER CHARLES F JR
125 LANSHIRE DR
ROCKWALL, TX 75032

RASA GABRIEL N & MARIA C
125 SEQUOIA RD
ROCKWALL, TX 75032

NABI NABIULLAH AND SIMIN
126 BERKLEY DRIVE
ROCKWALL, TX 75032

DUNN CLAYTON F AND JILLIAN
126 BLANCHARD
ROCKWALL, TX 75087

AMH 2014-2 BORROWER LLC
127 SOUTHLAKE DR
ROCKWALL, TX 75032

FAY TERRENCE R & RENEE L
127 LANSHIRE DR
ROCKWALL, TX 75032

MARICH GARY C
128 SEQUOIA RD
ROCKWALL, TX 75032

AL BANNA WALID AHMAD
129 BLANCHARD DR
ROCKWALL, TX 75032

HERNANDEZ TERRI
129 SEQUOIA RD
ROCKWALL, TX 75032

SKYLES BRENDA RENEE AND RICHARD ERIC
HYATT
130 BERKLEY DR
ROCKWALL, TX 75032

PEMBERTON DAVID S & SABRINA
130 BLANCHARD DRIVE
ROCKWALL, TX 75032

BANKS LIDIA ELIZABETH & DARREL JAMES
131 SOUTHLAKE DRIVE
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
132 MAGNOLIA LN
ROCKWALL, TX 75032

COKELEZ KENAN
132 SEQUOIA ROAD
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
1321 UPLAND DR UNIT 6293
HOUSTON, TX 77043

AH4R PROPERTIES TWO LLC
133 BERKLEY DR
ROCKWALL, TX 75032

BUDLONG GARY C & PEGGY B P
LIVING TRUST
133 SEQUOIA RD
ROCKWALL, TX 75032

UDOFIA UKO
133 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
134 BOWIE DR
ROCKWALL, TX 75032

LAM SEAN ANDREW
SREY LAM
134 BERKLEY DR
ROCKWALL, TX 75032

BIRDSONG SERENA AND
BILLY COCHARD
134 BLANCHARD DR
ROCKWALL, TX 75032

FALLS DAVID & TERRI
135 MESQUITE CT
ROCKWALL, TX 75032

BIGGS FREDDIE L & SYLVIA L
135 SOUTHLAKE DR
ROCKWALL, TX 75032

ISYA LIMITED PARTNERSHIP
136 SEQUOIA RD
ROCKWALL, TX 75032

PORTER KRISTEN
136 MAGNOLIA LN
ROCKWALL, TX 75032

FALLS DAVID & TERRI
137 BLANCHARD DR
ROCKWALL, TX 75032

CARRIZALES ERI & LENNY
137 BOWIE DR
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
137 SEQUOIA RD
ROCKWALL, TX 75032

WESTERVELT BARBARA
137 BERKLEY DR
ROCKWALL, TX 75032

CHEN QINGSHENG & YAN FENG
138 BERKLEY DR
ROCKWALL, TX 75032

PROPERTY RENAISSANCE INVESTMENTS LLC
138 BLANCHARD DR
ROCKWALL, TX 75032

LACY'S INVESTMENTS ENTERPRISES LLC
138 BOWIE DR
ROCKWALL, TX 75032

FALLS DAVID AND TERRI
139 MESQUITE CT
ROCKWALL, TX 75032

YOUNG SCOTT ALLEN & VETRICA LANITA YOUNG
139 SOUTHLAKE DR
ROCKWALL, TX 75032

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
140 MAGNOLIA LN
ROCKWALL, TX 75032

PETE MICHAEL A & SHANNAN D
140 SEQUOIA RD
ROCKWALL, TX 75032

TYLER MATTHEW
141 SEQUOIA RD
ROCKWALL, TX 75032

DEDNER WANDA G
141 BERKLEY DR
ROCKWALL, TX 75032

MORGAN PAULA
141 BLANCHARD DR
ROCKWALL, TX 75032

<Null>
142 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
142 BOWIE DR
ROCKWALL, TX 75032

JOSEPH STEPHEN K & JESSY
142 BERKLEY DR
ROCKWALL, TX 75032

NGUYEN VINH AND GINA
14264 FAITH DR
FRISCO, TX 75035

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
143 MESQUITE CT
ROCKWALL, TX 75032

MURPHREE APRIL L
144 MAGNOLIA LN
ROCKWALL, TX 75032

SEDLAK AMANDA MARIE
144 SEQUOIA ROAD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
145 SEQUOIA RD
ROCKWALL, TX 75032

THOMAS MAKIA S
145 BERKLEY DR
ROCKWALL, TX 75032

TATUM LANCE
145 BLANCHARD DR
ROCKWALL, TX 75032

AMH 2014-3 BORROWER LLC
146 BOWIE DR
ROCKWALL, TX 75032

GONZALEZ GRACIELA & ROLANDO
146 BERKLEY DR
ROCKWALL, TX 75032

MURPHY AUDREY LENEE ANDREWS
146 BLANCHARD DR
ROCKWALL, TX 75032

LIGHT JEFF
147 MESQUITE CT
ROCKWALL, TX 75032

ROVILLOS JOHN ISRAEL AMANDE AND GRACE HALIMA
148 MAGNOLIA LANE
ROCKWALL, TX 75032

FARMER BETTY K
148 SEQUOIA RD
ROCKWALL, TX 75032

MENO ROLAND A & WAYNETTE M
149 SEQUOIA RD
ROCKWALL, TX 75032

AMBLER ASSOCIATES INC
15 CENTER CT
HEATH, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL COURT
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
15 KESTREL CT
HEATH, TX 75032

BOYD SONIA B AND
MACEO R PRICE JR
150 BLANCHARD DRIVE
ROCKWALL, TX 75032

IRISH SARAH K
150 BOWIE DR
ROCKWALL, TX 75032

GARDNER EDWIN & DIANNE
152 MAGNOLIA
ROCKWALL, TX 75032

TUNNELL DAVID AND PENNY
152 SEQUOIA ROAD
ROCKWALL, TX 75032

FALLS TERRI & DAVID
153 SEQUOIA RD
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
1553 VZ COUNTY ROAD 1213
CANTON, TX 75103

CARSON MICHELE L
156 MAGNOLIA LN
ROCKWALL, TX 75032

SHAH VIREN
156 SEQUOIA
ROCKWALL, TX 75032

CARLSON KEVIN R & NATALIE L
157 SEQUOIA RD
ROCKWALL, TX 75032

BOYLE HEBRON VICTORIA
16 GUMBLE CT
HILLSBOROUGH, NJ 8844

TATE ANTHONY R
160 CROSS OAK LANE
EADS, TN 38028

ABUNDIS ROBERTO AND YADIRA
160 MAGNOLIA LANE
ROCKWALL, TX 75087

MENCHACA JENNIFER
160 SEQUOIA RD
ROCKWALL, TX 75032

SIPES RICKY W
161 SEQUOIA ROAD
ROCKWALL, TX 75032

SUAREZ MARIA J & BETSY M
164 SEQUOIA RD
ROCKWALL, TX 75032

LE THAO M AND
THAI PHAM
168 SEQUOIA ROAD
ROCKWALL, TX 75032

FKH SFR PROPCO B-HLD, LP
C/O FIRST KEY HOMES LLC
1850 PARKWAY PLACE SUITE 900
MARIETTA, GA 30067

LE BUU VAN
220 COTTON WOOD CT
ROCKWALL, TX 75032

SHAFFER LAURA H &
WILLIAM B WATTS
221 DARTMOUTH DR
ROCKWALL, TX 75032

AMERICAN RESIDENTIAL LEASING COMPANY LLC
223 DARTMOUTH DR
ROCKWALL, TX 75032

PARNES DROR & ALEXANDRA
224 COTTON WOOD CT
ROCKWALL, TX 75032

WKB PARTNERS LP
225 DARTMOUTH DR
ROCKWALL, TX 75032

ARELLANO-CRUZ PAULA M AND FELIX
227 DARTMOUTH DR
ROCKWALL, TX 75032

AUSTIN TAMIKA S
229 DARTMOUTH DR
ROCKWALL, TX 75032

RODRIGUEZ ROGELIO
231 DARTMOUTH DR
ROCKWALL, TX 75032

ALSAMMAK PROPERTIES LLC- SERIES 3
233 DARTMOUTH DR
ROCKWALL, TX 75032

DAVIS DONNA B
235 DARTMOUTH DR
ROCKWALL, TX 75032

KIWALE THEREZIA
237 DARTMOUTH DRIVE
ROCKWALL, TX 75032

AMH 2014-2 BORROWER LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AH4R PROPERTIES TWO LLC
23975 PARK SORRENTO SUITE 300
CALABASAS, CA 91302

TYLER MATTHEW
2683 POTTER ST
EUGENE, OR 97405

BUDLONG GARY C & PEGGY B P
LIVING TRUST
2920 WINAM AVE
HONOLULU, HI 96816

POPLAR HILLS LLC SERIES C- 140 MAGNOLIA DR
30 WINDSOR DRIVE
ROCKWALL, TX 75032

ESTATE OF CHARLES W FALLS
DAVID CHARLES FALLS, EXECUTOR
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID AND TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS TERRI & DAVID
309 ROOKERY CT
MARCO ISLAND, FL 34145

FALLS DAVID & TERRI
309 ROOKERY CT
MARCO ISLAND, FL 34145

520 YFLK LLC
3105 CORNELL AVENUE
DALLAS, TX 75205

WKB PARTNERS LP
463 KEYSTONE BEND
HEATH, TX 75032

CHEN QINGSHENG & YAN FENG
4715 147TH PL SE
BELLEVUE, WA 98006

LACY'S INVESTMENTS ENTERPRISES LLC
510 HIGHWATER CROSSING
ROCKWALL, TX 75032

LIGHT JEFFREY A AND LEIGH ANN
519 I 30 #140
ROCKWALL, TX 75032

LIGHT JEFF
519 INTERSTATE 30 #140
ROCKWALL, TX 75032

GJD REAL ESTATE LLC- 121 RUTHERFORD SERIES
637 FOREST BEND DRIVE
PLANO, TX 75025

MARICH GARY C
7822 STONEHAVEN LN
ROWLETT, TX 75089

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

AMH 2014-3 BORROWER LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO SUITE 300
CALABASAS, CA 91302

AMERICAN RESIDENTIAL LEASING COMPANY LLC
ATTN: PROPERTY TAX DEPARTMENT 23975
PARK SORRENTO, SUITE 300
CALABASAS, CA 91302

CARRIZALES ERI & LENNY
PO BOX 1244
ROCKWALL, TX 75087

RSB TOKEN INVESTMENTS LLC
PO BOX 1664
ROCKWALL, TX 75087

PROGRESS RESIDENTIAL BORROWER 16 LLC
PO BOX 4090
SCOTTSDALE, AZ 85261

HENDERSON NORMA
PO BOX 705
ROCKWALL, TX 75087

PARAMOUNT LAURELS LLC
PO BOX 786
WYLIE, TX 75098

PUBLIC NOTICE

CITY OF ROCKWALL
PLANNING AND ZONING DEPARTMENT
PHONE: (972) 771-7745
EMAIL: PLANNING@ROCKWALL.COM

Property Owner and/or Resident of the City of Rockwall:

You are hereby notified that the City of Rockwall Planning and Zoning Commission and City Council will consider the following application:

Z2022-045: SUP for Solar Panels

Hold a public hearing to discuss and consider a request by Tony Trammel for the approval of a Specific Use Permit (SUP) for Solar Panels exceeding 1,000 SF of coverage on a residential home situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive, and take any action necessary.

For the purpose of considering the effects of such a request, the Planning and Zoning Commission will hold a public hearing on *Tuesday, October 11, 2022 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, October 17, 2022 at 6:00 PM*. These hearings will be held in the City Council Chambers at City Hall, 385 S.
Goliad Street.

As an interested property owner, you are invited to attend these meetings. If you prefer to express your thoughts in writing please return the form to:

Bethany Ross
Rockwall Planning and Zoning Dept.
385 S. Goliad Street
Rockwall, TX 75087

You may also email your comments to the Planning Department at planning@rockwall.com. If you choose to email the Planning Department please include your name and address for identification purposes.

Your comments must be received by *Monday, October 17, 2022 at 4:00 PM* to ensure they are included in the information provided to the City Council.

Sincerely,

Ryan Miller, AICP
Director of Planning & Zoning

USE THIS QR CODE TO GO DIRECTLY TO THE WEBSITE

MORE INFORMATION ON THIS CASE CAN BE FOUND AT: https://sites.google.com/site/rockwallplanning/development/development-cases

PLEASE RETURN THE BELOW FORM

Case No. Z2022-045: SUP for Solar Panels

Please place a check mark on the appropriate line below:

☐ I am in favor of the request for the reasons listed below.

☐ I am opposed to the request for the reasons listed below.

Name:

Address:

Tex. Loc. Gov. Code, Sec. 211.006 (d) If a proposed change to a regulation or boundary is protested in accordance with this subsection, the proposed change must receive, in order to take effect, the affirmative vote of at least three-fourths of all members of the governing body. The protest must be written and signed by the owners of at least 20 percent of either: (1) the area of the lots or land covered by the proposed change; or (2) the area of the lots or land immediately adjoining the area covered by the proposed change and extending 200 feet from that area.

PLEASE SEE LOCATION MAP OF SUBJECT PROPERTY ON THE BACK OF THIS NOTICE

PUBLIC NOTICE

CITY OF ROCKWALL
PLANNING AND ZONING DEPARTMENT
PHONE: (972) 771-7745
EMAIL: PLANNING@ROCKWALL.COM

Property Owner and/or Resident of the City of Rockwall:

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Sincerely,

Ryan Miller, AICP
Director of Planning & Zoning

USE THIS QR CODE TO GO DIRECTLY TO THE ~~WEBSITE~~

MORE INFORMATION ON THIS CASE CAN BE FOUND AT: https://sites.google.com/site/rockwallplanning/development/development-cases

PLEASE RETURN THE BELOW FORM

Case No. Z2022-045: SUP for Solar Panels

Please place a check mark on the appropriate line below:

☒ I am in favor of the request for the reasons listed below.

☐ I am opposed to the request for the reasons listed below.

The property owner should be allowed to generate power onsite using solar panels.

Name: Matthew Tyler

Address: 141 Sequoia Rd.

Tex. Loc. Gov. Code, Sec. 211.006 (d) If a proposed change to a regulation or boundary is protested in accordance with this subsection, the proposed change must receive, in order to take effect, the affirmative vote of at least three-fourths of all members of the governing body. The protest must be written and signed by the owners of at least 20 percent of either: (1) the area of the lots or land covered by the proposed change; or (2) the area of the lots or land immediately adjoining the area covered by the proposed change and extending 200 feet from that area.

PLEASE SEE LOCATION MAP OF SUBJECT PROPERTY ON THE BACK OF THIS NOTICE

30 August 2022

UNIRAC

1411 Broadway Blvd. NE

Albuquerque, NM 87102

REFERENCE: Charles Fisher: 125 Lanshire Dr, Rockwall, TX 75032 USA

Solar Array Installation

To Whom It May Concern:

We have reviewed the existing structure referenced above. The purpose of the review was to evaluate its adequacy to support the proposed installation of solar panels on the roof as shown on the panel layout plan drawings. Based upon our review, we conclude that the existing structure is adequate to support the proposed solar panel installation.

Design Parameter

Code: International Building Code 2015 (IBC 2015)

Risk Category: II

Design wind speed: 115 MPH

Wind exposure category: B

Ground snow load: 5 PSF

Seismic design category: B

Existing Roof Structure

Roof Structure: 2"x4" rafters @24" o.c.

Roofing material: Comp Shingle

Connection to Roof

Mounting connection: One 5/16 in lag screw w/ min. 2.5 in embedment into framing at max. 72 in o.c. along rails

Two rails per row of panels, evenly spaced; panel length perpendicular to the rails not to exceed 74 in

Conclusions

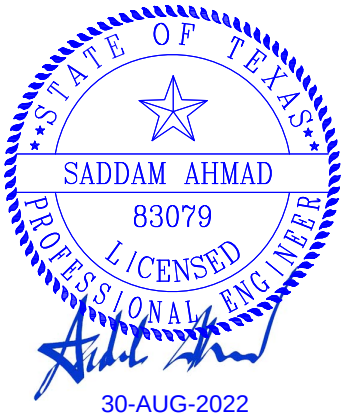
Based upon our evaluation, we conclude that the existing structure is adequate to support the proposed solar panel installation. In the area of the solar array, other live loads will not be present or will be greatly reduced (2015 IBC, Section 1607.12.5). The glass surface of the solar panels allows for a lower slope factor per ASCE 7, resulting in reduced design snow load on the panels. The stresses of the structural elements, resulting from the altered gravity loads in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

The solar array will be flush-mounted (not more than 5 in above the roof surface) and parallel to the roof surface. Thus, we conclude that any additional wind loading on the structure related to the addition of the proposed solar array is negligible. The attached calculations verify the capacity of the connections of the solar array to the existing roof against wind (uplift), the governing load case. Regarding seismic loads, we conclude that any additional forces will be small. As per Section 1613.1, Exception-1 of the 2015 IBC, detached one- and two-family dwellings with Seismic Design Category A, B or C or located where the mapped short-period spectral response acceleration, Ss, is less than 0.4 g are exempted from seismic load. Therefore the existing lateral force resisting system can remain unaltered.

Limitations

Installation of the solar panels must be performed in accordance with manufacturer recommendations. All work performed must be in accordance with accepted industry-wide methods and applicable safety standards. The contractor must notify Engineering Alliance Inc. should any damage, deterioration or discrepancies between the as-built condition of the structure and the condition described in this letter be found. Connections to existing roof framing must be staggered, except at array ends, so as not to overload any existing structural member. The use of solar panel support span tables provided by others are allowed only where the building type, site conditions, site-specific design parameters, and solar panel configuration match the description of the span tables. The design of the solar panel racking (mounts, rails, etc.) and electrical engineering is the responsibility of others. Waterproofing around the roof penetrations is the responsibility of others. Engineering Alliance Inc assumes no responsibility for improper installation of the solar array.

Please feel free to call for any questions or clarifications.



30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

Prepared by

Engineering Alliance, Inc
Sugar Land, TX
Phone: 832 865 4757

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Calculations per ASCE 7-10
International Building Code 2015 (IBC 2015)

ROOF DEAD LOAD (D):

Material	Design material weight (psf)	Increase due to pitch	Material weight (psf)
Comp Shingle	2.23	1.11	2
1/2" Plywood	1.1	1.11	1
Framing	3		3
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.2	1.11	2
M, E & Misc	1.5		1.5
Total Dead Load	**10.6**		
PV Array Dead Load	**3.3**	1.11	3

ROOF LIVE LOAD (Lr):

Existing Design Roof Live Load [psf]	20	ASCE 7-10, Table 4-1
Roof Live Load With PV Array [psf]	0	2015 IBC, Section 1607.12.5

SEISMIC LOAD, (E):

Risk category:	II	Table 1.5-1
Seismic Design Category:	B	Table 11.6-2
I_p:	1	Table 1.5-2
Site Class:	D	
R_p:	1.5	Table 13.6-1
S_s:	0.103	
S_1:	0.055	
a_p:	1	Table 13.6-1
z:	1	ft
h:	1	ft
z/h:	1	
F_a:	1.6	Table 11.4-1
F_v:	2.4	Table 11.4-2
S_{MS}:	0.165	Eqs. 11.4-1
S_{M1}:	0.132	Eqs. 11.4-2
S_{DS}:	0.110	Eqs. 11.4-3
S_{D1}:	0.088	Eqs. 11.4-4

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SITE-SPECIFIC WIND PARAMETERS:

Basic Wind Speed [mph]:	105	
Exposure Category:	B	Sec. 26.7.3
Risk Category:	II	Table 1.5-1
Height of Roof, h [ft]:	30	(Approximate)
Roof Slope [°]:	26	
Site Elevation [ft]:	547	
Comp/Cladding Location:	Gable/Hip Roofs, 7° < θ ≤ 27°	FIGURE 30.4-2B
Enclosure Classification:	Enclosed Buildings	
Zone 1 GCp:	0.9	(enter largest abs. value)
Zone 2 GCp:	1.7	(enter largest abs. value)
Zone 3 GCp:	2.6	(enter largest abs. value)
α:	7	Table 26.9-1
z_g [ft]	1200	Table 26.9-1
K_h:	0.70	Table 30.3-1
K_{zt}:	1	Equation 26.8-1
K_d:	0.85	Table 26.6-1
Velocity Pressure, q_h [psf]:	16.81	Equation 30.3-1
GC_{pi}	0	Table 26.11-1

PRESSURES:

$$p = q_h((GC_p)-(GC_{pi})) \quad (lb/ft^2)$$ Equation 30.9-1

Zone 1 :	15.1	psf (1.0 W)
Zone 2 :	28.6	psf (1.0 W)
Zone 3 :	43.7	psf (1.0 W)

a [ft] = 3.6

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

COMPARE WIND & SEISMIC LOADS FOR CONNECTION (1 Sq. Ft. Section)

Wind Load, W:

Wind pressure, p:	9.1	psf (Zone 1: 0.6 W from wind pressure calculation)
Height, h:	1	ft
Width, w:	1	ft
Fperp:	9.1	lb (Uplift)

Seismic Load, E:

0.7 * F_p ,min:	0.069	lb
0.7 * F_p ,max:	0.369	lb
0.7 * F_p ,vert:	0.046	lb
0.7 * F_p ,long:	0.185	lb
0.7*F_p ,perp:	0.122	lb (uplift)

Wind (uplift) Controls Connection Design

CHECK INCREASE IN OVERALL SEISMIC LOADS

SEISMIC:

Seismic Design Category:	B

As per Section 1613.1, Exception-1 of the 2015 IBC, Seismic load is Exempted.

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

Lag Screw Connection

Tributary Length (in):	74
Max Tributary Width (in):	72

Capacity:

Lag Screw Size[in] :	5/16	
C_d:	1.6	NDS Table 2.3.2
Embedment[1] [in]:	2.5	
Grade:	SPF (G = 0.42)	
Capacity [lbs/in]:	205	NDS Table 12.2A
Number of Screws in tension:	1	
Prying Coefficient:	1.4	
Total Capacity [lbs]:	586	

Demand:

Zone	Pressure (0.6 Wind) (psf)	Max Tributary Width (ft)	Max. Trib. Length (ft)	Max. Trib. Area2 (ft2)	Max. Uplift Force (lbs)
Zone 1 :	6.1	6.0	3.1	18.5	112
Zone 2 :	14.1	6.0	3.1	18.5	262
Zone 3 :	23.2	6.0	3.1	18.5	430

Total Tension Force(lbs):	430

Demand< Capacity: 73.3%, OK

Notes

1. Embedment is measured from the top of the framing member to the beginning of the tapered tip of the lag screw. Embedment in sheathing or other material is not effective. The length of the tapered tip is not part of the embedment length.
2. 'Max. Trib Area' is the product of the 'Max. Tributary Width' (along the rails) and 1/2 the panel width/height (perpendicular to the rails).

Engineering Alliance, Inc

Project:	Charles Fisher		
Location:	125 Lanshire Dr, Rockwall, TX 75032 USA		
Designer:	**SA**	Date:	30 August 2022

SNOW LOAD (S):

	Existing	w/ Solar Panel Array	
Roof Slope [x:12]:	5.9	5.9	
Roof Slope [°]:	26	26	
Snow Ground Load, p_g [psf]:	5	5	ASCE 7-10, Section 7.2
Surface Roughness Category:	B	B	ASCE 7-10, Table 7-2
Exposure of Roof:	Fully Exposed	Fully Exposed	ASCE 7-10, Table 7-2
Exposure Factor, C_e:	0.9	0.9	ASCE 7-10, Table 7-2
Thermal Factor, C_t:	1.1	1.1	ASCE 7-10, Table 7-3
Risk Category:	II	II	ASCE 7-10, Table 1.5-1
Importance Factor, I_s:	1	1	ASCE 7-10, Table 1.5-2
Flat Roof Snow Load, p_f [psf]:	3	3	ASCE 7-10, Equation 7.3-1
Minimum Roof Snow Load, p_m [psf]:	0	0	ASCE 7-10, Section 7.3.4
Unobstructed Slippery Surface?	NO	YES	ASCE 7-10, Section 7.4
Slope Factor Figure:	Figure 7-2b	Figure 7-2b	ASCE 7-10, Section 7.4
Roof Slope Factor, C_s:	1.00	0.73	ASCE 7-10, Figure 7-2
Sloped Roof Snow Load, p_s [psf]:	3	3	ASCE 7-10, Equation 7.4-1
Design Snow Load, S [psf]:	3	3	

Summary of Loads

	Existing	With PV Array
D [psf]	11	14
Lr [psf]	20	0
S [psf]	3	3

Maximum Gravity Loads:

	Existing	With PV Array	
(D + Lr) / Cd [psf]	24	15	ASCE 7-10, Section 2.4.1
(D + S) / Cd [psf]	12	14	ASCE 7-10, Section 2.4.1

(Cd = Load Duration Factor = 0.9 for D, 1.15 for S, and 1.25 for Lr)

Maximum Gravity Load [psf]:	24	15

Ratio Proposed Loading to Current Loading: **63%** **OK**

The gravity loads and; thus, the stresses of the structural elements, in the area of the solar array are either decreased or increased by no more than 5%. Therefore, the requirements of Section 403.3 of the 2015 IEBC are met and the structure is permitted to remain unaltered.

PHOTOVOLTAIC ROOF MOUNT SYSTEM

57 MODULES-ROOF MOUNTED - 22.80 kWDC, 16.53 kWAC

125 LANSHIRE DR, ROCKWALL, TX 75032 USA

SYSTEM SUMMARY:

(N) 57 - HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(N) 57 - ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(N) 02 - JUNCTION BOX
(E) 200A MAIN SERVICE PANEL WITH (N) 150A MAIN BREAKER
(N) 100A NON FUSED AC DISCONNECT
(N) 125A LOAD CENTER

DESIGN CRITERIA:

ROOF TYPE: - COMP SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @24" O.C.
STORY: - TWO STORY
SNOW LOAD : - 5 PSF
WIND SPEED :- 115 MPH
WIND EXPOSURE:- B
EXPOSURE CATEGORY:- II

GOVERNING CODES:

2017 NATIONAL ELECTRICAL CODE (NEC)
2015 INTERNATIONAL FIRE CODE (IFC)
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
2015 INTERNATIONAL MECHANICAL CODE (IMC)

SHEET INDEX

PV-0	COVER SHEET
PV-1	SITE PLAN WITH ROOF PLAN
PV-2	ROOF PLAN WITH MODULES
PV-3	ATTACHMENT DETAILS
PV-4	BRANCH LAYOUT
PV-5	ELECTRICAL LINE DIAGRAM
PV-6	ELECTRICAL CALCULATION
PV-6.1	LOAD CALCULATION & PANEL SCHEDULING
PV-7	PLACARDS & WARNING LABELS
PV-8	ADDITIONAL NOTES
PV-9+	EQUIPMENT SPEC SHEETS

CONSTRUCTION NOTE:

A LADDER SHALL BE IN PLACE FOR INSPECTION

THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY GRID INTERACTIVE SYSTEM
A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 690-47 AND 250-50 THROUGH 60 250-166 SHALL BE PROVIDED PER NEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #8 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE OR A COMPLETE GROUND.

EACH MODULE WILL BE GROUNDED USING THE SUPPLIED GROUNDING POINTS IDENTIFIED BY THE MANUFACTURER.

EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENT, AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.138(A) REGARDLESS OF VOLTAGE.

PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED

ALL SIGNAGE WILL BE INSTALLED AS REQUIRED BY AND 2020 NEC.

HEIGHT OF INTEGRATED AC/DC DISCONNECT SHALL NOT EXCEED 6' 7" PER NEC 240.24

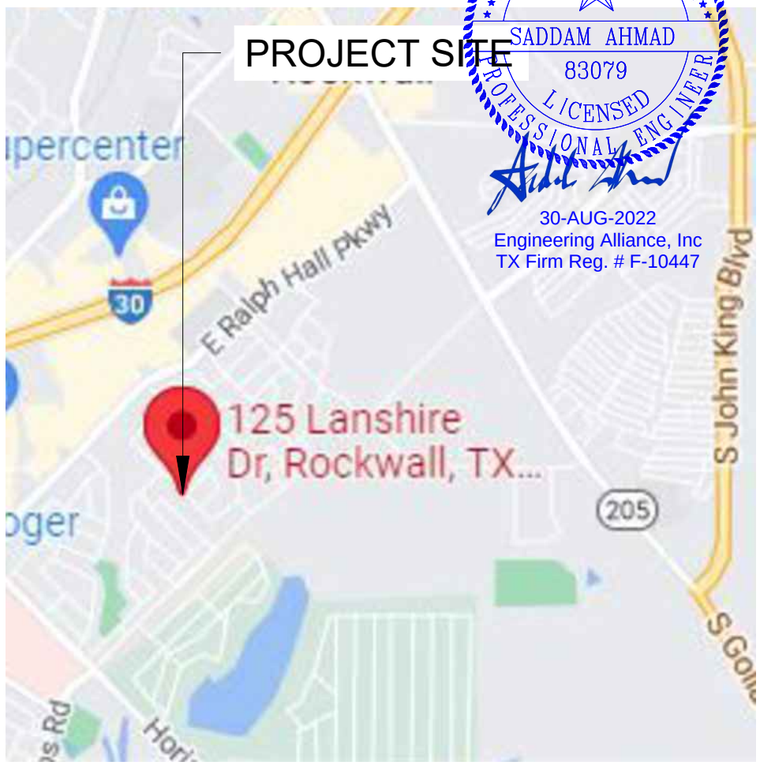
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER NEC 250.64C.
ALL EXTERIOR CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACES.
THE PV CONNECTION IN THE PANEL BOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. NEC 690.64(B)(7)
SITE CONDITIONS SHALL PREVAIL IF NO SCALE IS GIVEN. DRAWINGS ARE NOT NECESSARILY TO SCALE. ALL DIMENSIONS SHALL BE VERIFIED BY SUBCONTRACTOR UPON COMMENCEMENT OF CONSTRUCTION.

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

COVER SHEET

SHEET SIZE

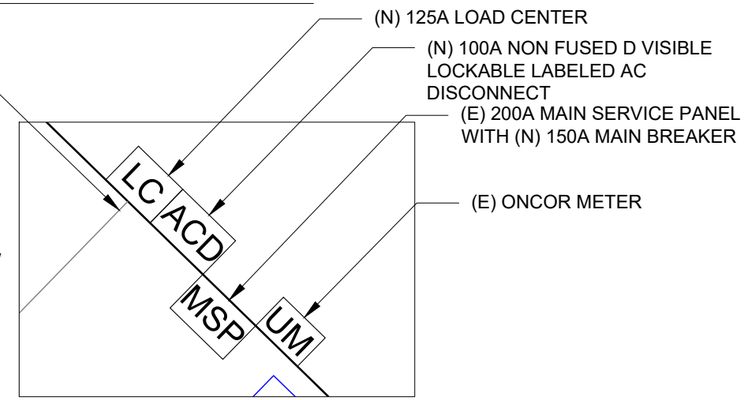
ANSI B
11" X 17"

SHEET NUMBER

PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.

ENLARGED VIEW



STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

1 SITE PLAN WITH ROOF PLAN

SCALE: 1/16" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SITE PLAN WITH ROOF PLAN

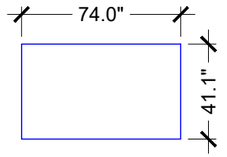
SHEET SIZE
ANSI B
11" X 17"

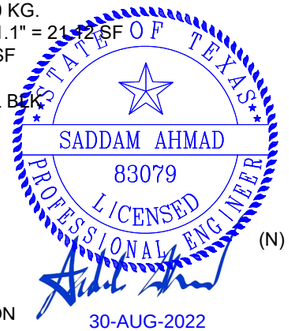
SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 57 MODULES
MODULE TYPE = HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
MODULE WEIGHT = 48.5 LBS / 22.0 KG.
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF
UNIT WEIGHT OF ARRAY = 2.30 PSF

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)





30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447

NOTE:
INTERNATIONAL FIRE CODE SECTION 605.11.1.2 FOR RESIDENTIAL R-3 OCCUPANCIES AT LEAST THREE (3) FEET OF CLEARANCE ALONG THE EDGE (RAKE) OF THE ROOF TO A PANEL AND AT LEAST THREE (3) FEET FROM THE RIDGE OF THE ROOF TO A PANEL. PANELS SHALL BE AT LEAST ONE AND ONE-HALF (1-1/2) FEET FROM A VALLEY OR HIP. NO CLEARANCE IS REQUIRED AT THE EAVE.

INTERNATIONAL FIRE CODE SECTION 605.11.1.2.4 ROOFS WITH HIPS AND VALLEYS - WHERE PANELS ARE TO BE LOCATED ON ONLY ONE SIDE OF A HIP OR VALLEY THAT IS OF EQUAL LENGTH, THE PANELS SHALL BE PERMITTED TO BE PLACED DIRECTLY ADJACENT TO THE HIP OR VALLEY.

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

PLUMBING VENTS, SKYLIGHTS AND MECHANICAL VENTS SHALL NOT BE COVERED, MOVED, RE-ROUTED OR RE-LOCATED.

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
RAIL	33	ECOFASTEN CLICK RAIL 168" DARK
SPLICE	10	BND SPLICE BAR PRO SERIES DRK
MID CLAMP	74	UNIVERSAL AF MID CLAMPS
END CLAMP	80	UNIVERSAL AF END CLAMPS
ATTACHMENT	118	ECOFASTEN CLICKFIT
GROUNDING LUG	20	GROUND LUG

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

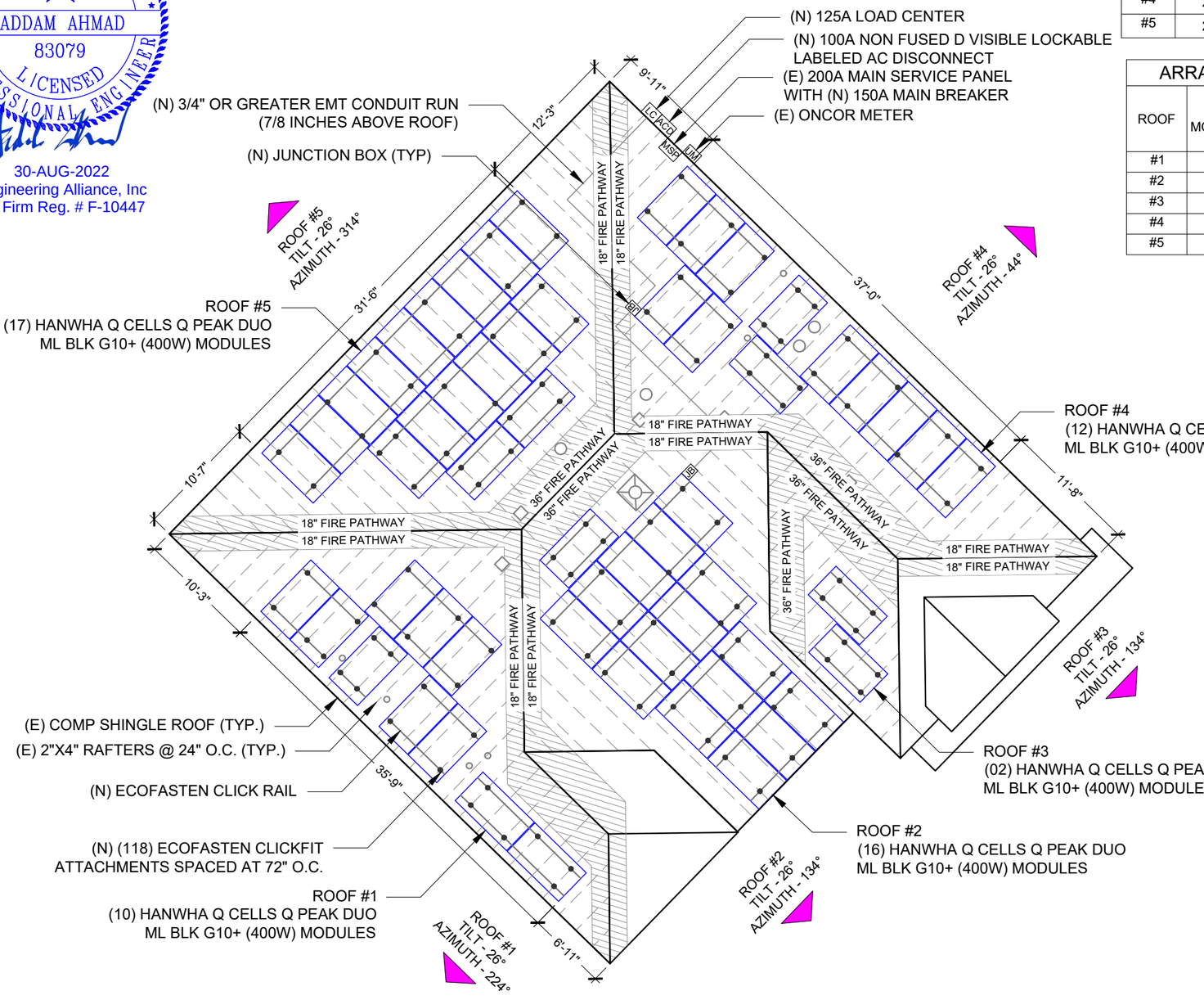
ROOF DESCRIPTION

ROOF	ROOF TYPE: ROOF TILT	ROOF TYPE: AZIMUTH	COMP SHINGLE ROOF: RAFTERS SIZE	COMP SHINGLE ROOF: RAFTERS SPACING
#1	26°	224°	2"x4"	24" O.C.
#2	26°	134°	2"x4"	24" O.C.
#3	26°	134°	2"x4"	24" O.C.
#4	26°	44°	2"x4"	24" O.C.
#5	26°	314°	2"x4"	24" O.C.

ARRAY AREA & ROOF AREA CALC'S

ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	10	211.21	539.16	39.17
#2	16	337.93	639.38	52.85
#3	02	42.24	189.84	22.25
#4	12	253.45	649.38	39.03
#5	17	359.05	705.06	50.93

NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER



LEGEND

- UM - UTILITY METER
- MSP - MAIN SERVICE PANEL
- ACD - AC DISCONNECT
- LC - LOAD CENTER
- JB - JUNCTION BOX
- CHIMNEY
- VENT, ATTIC FAN (ROOF OBSTRUCTION)
- ROOF ATTACHMENT
- RAFTERS
- CONDUIT
- FIRE PATHWAY

1 ROOF PLAN WITH MODULES

SCALE: 3/32" = 1'-0"

NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS (OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ROOF PLAN WITH MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

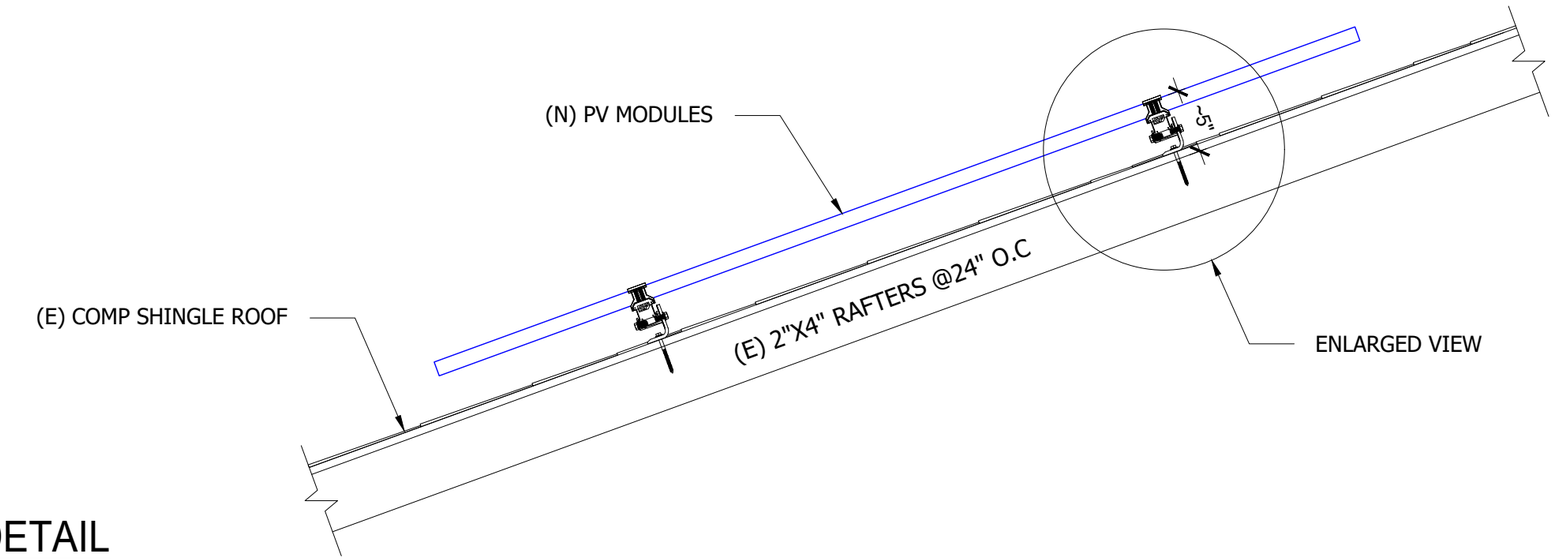
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

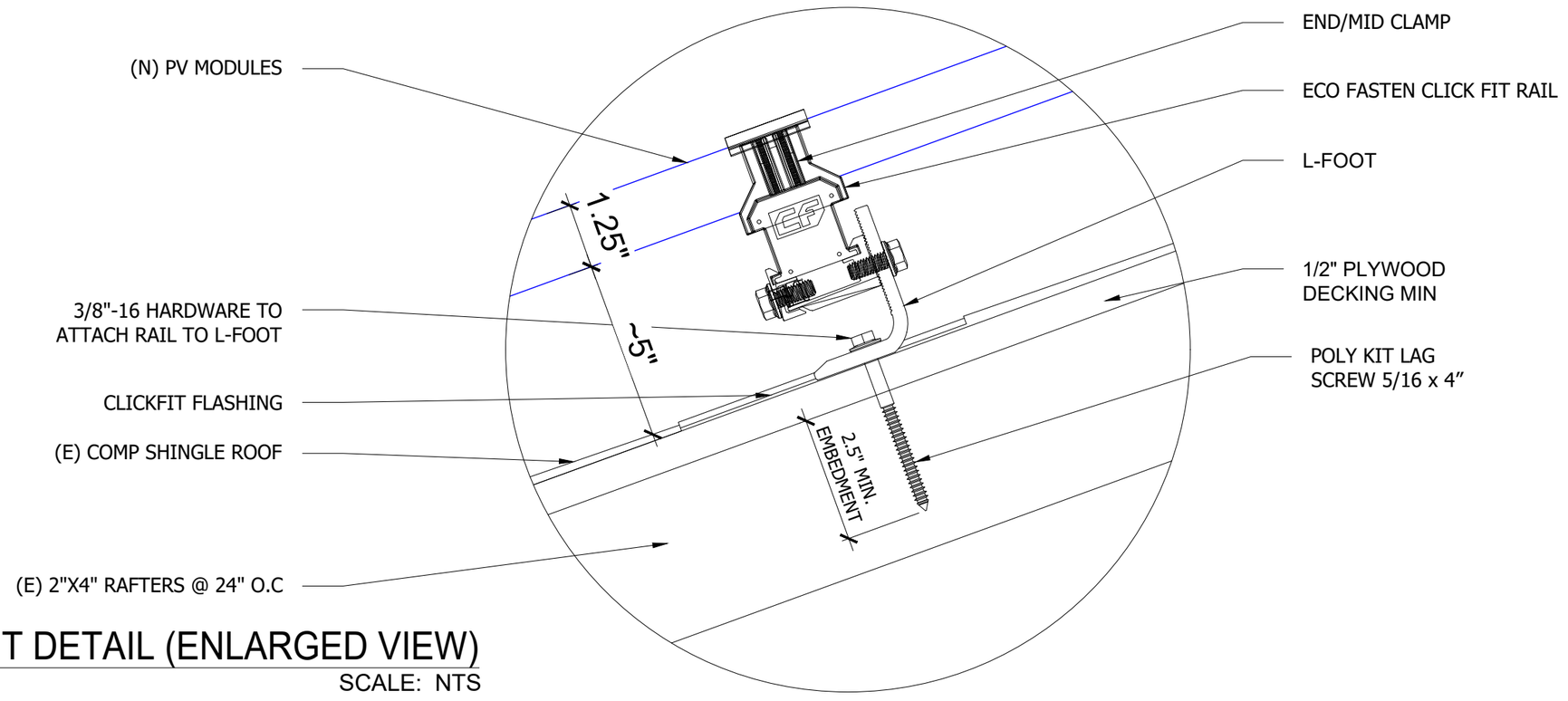
NOTE: ACTUAL ROOF CONDITIONS AND RAFTERS(OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

STATE OF TEXAS
SADDAM AHMAD
83079
LICENSED
PROFESSIONAL ENGINEER

30-AUG-2022
Engineering Alliance, Inc
TX Firm Reg. # F-10447



1 ATTACHMENT DETAIL
SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)
SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

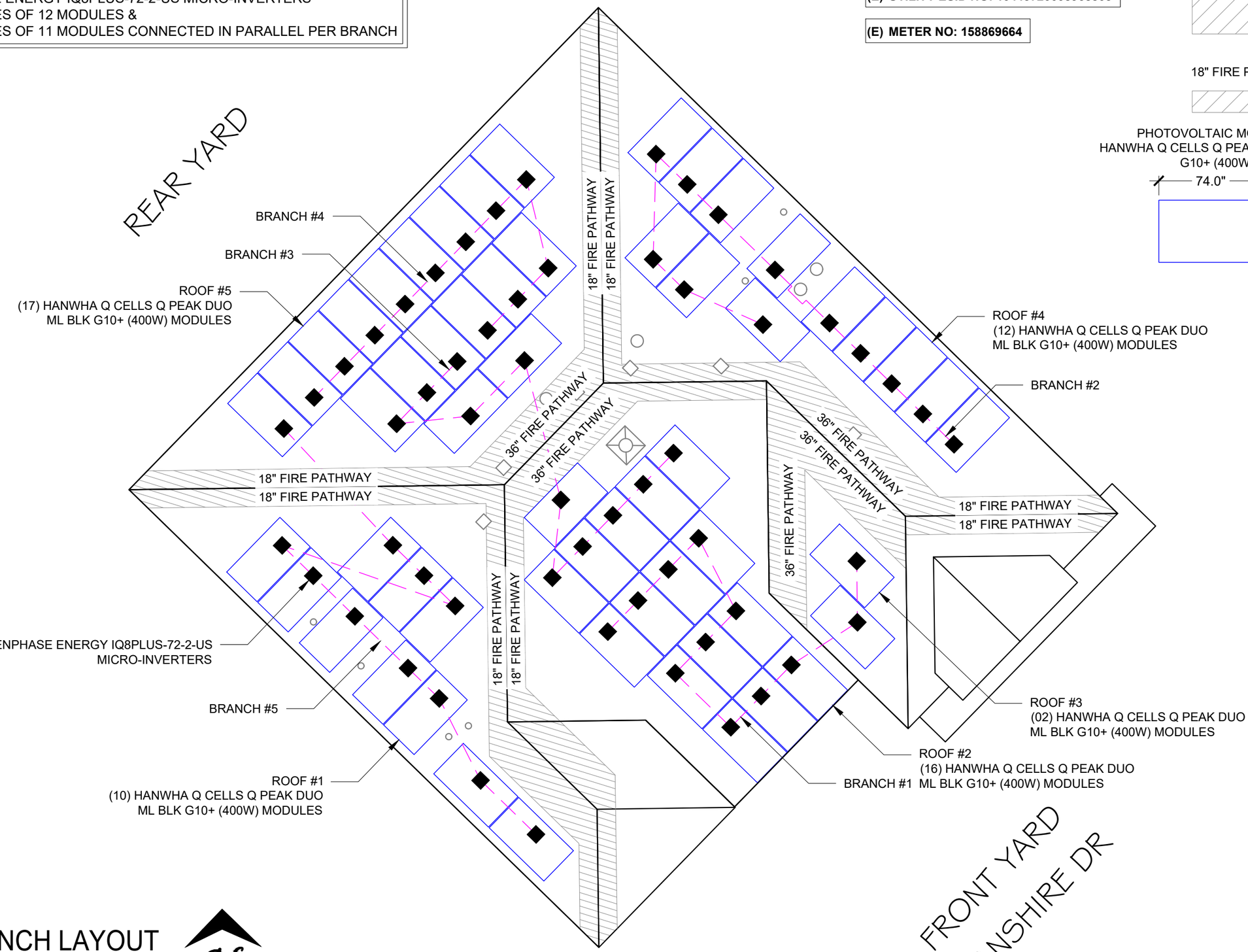
(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

36" FIRE PATHWAY
3'-0"

18" FIRE PATHWAY
18"

PHOTOVOLTAIC MODULES
HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)
74.0"
41.1"



1 BRANCH LAYOUT

SCALE: 1/8" = 1'-0"

N

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

BRANCH LAYOUT

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-4

(57) HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
(02) BRANCHES OF 12 MODULES &
(03) BRANCHES OF 11 MODULES CONNECTED IN PARALLEL PER BRANCH

SYSTEM SIZE:- 57 x 400W = 22.80 kWDC
SYSTEM SIZE:- 57 x 290W = 16.53 kWAC

INTERCONNECTION
120% RULE - NEC 705.12(B)(2)(3)(b)

UTILITY FEED + SOLAR BACKFEED
150A +90A = 240A

BUSS RATING x 120%
200A x 120% = 240A

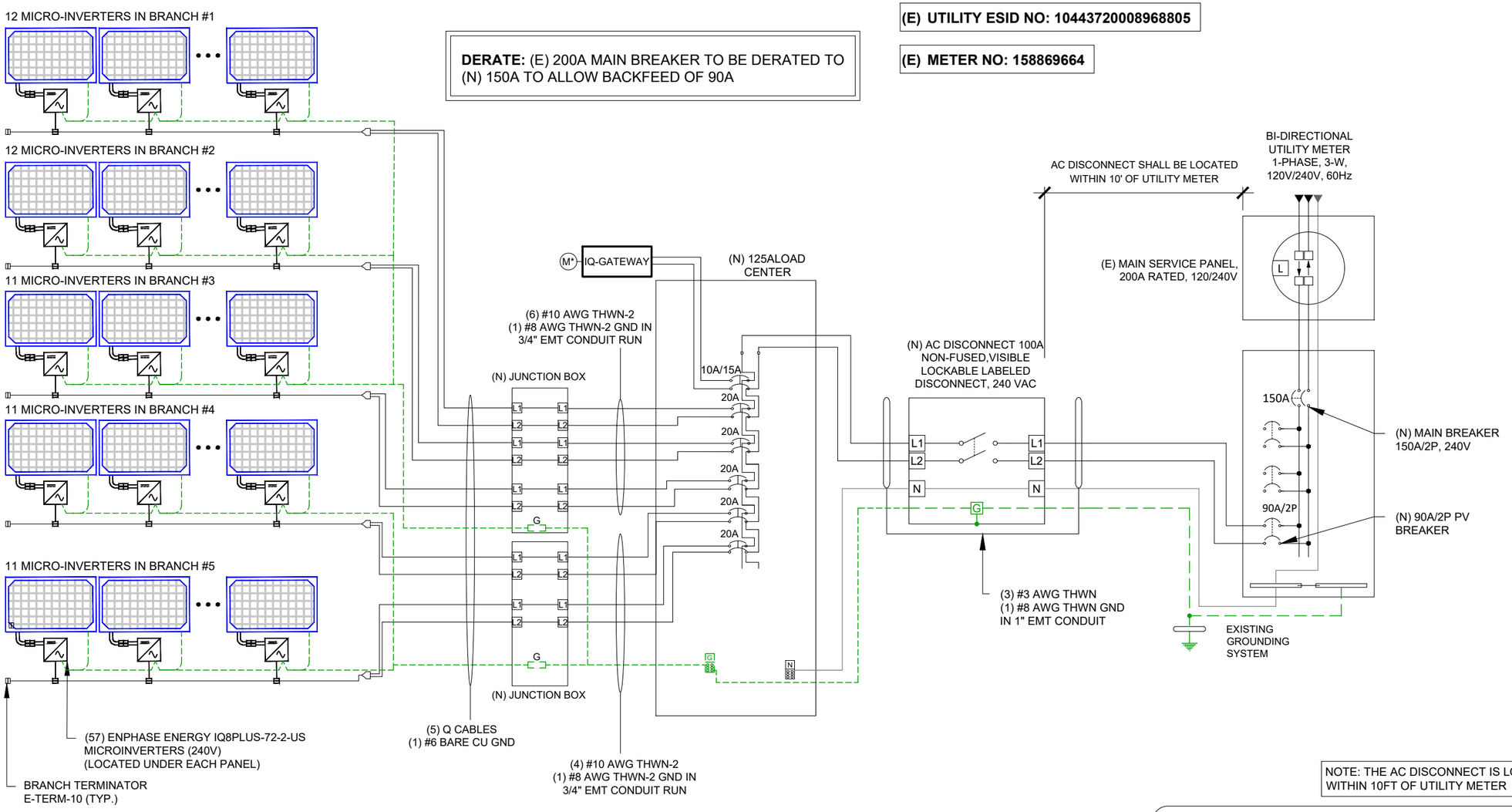
BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	57	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W) MODULES
INVERTER	57	ENPHASE ENERGY IQ8PLUS-72-2-US MICRO-INVERTERS
JUNCTION BOX	2	600V, 55A MAX, 4 INPUTS, MOUNTED ON ROOF FOR WIRE & CONDUIT TRANSITION
LOAD CENTER	1	125A PV LOAD CENTER
AC DISCONNECT	1	100A NON FUSED, VISIBLE LOCKABLE LABELED AC DISCONNECT, 240VAC, NEMA 3R, UL LISTED.

(E) UTILITY ESID NO: 10443720008968805

(E) METER NO: 158869664

DERATE: (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A



NOTE: THE AC DISCONNECT IS LOCATED WITHIN 10FT OF UTILITY METER

THE WORKING CLEARANCES AROUND THE EXISTING ELECTRICAL EQUIPMENT AS WELL AS THE NEW ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.

ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP

WIRE RATED AND AMPACITY CALCULATED @ 90°C FOR ROOFTOP INSTALLATION AND ATTIC RUN TO INVERTER

ANY CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT. (NEC 300.6 C1, 310.8 D)

GAS METER LOCATED IN PROXIMITY OF THE PV INSTALLATION, LOAD CENTER, AND/OR DISCONNECTS. DISCONNECTS SHALL BE LOCATED IN COMPLIANCE WITH UTILITY AND THE AHJ (AUTHORITY HAVING JURISDICTION). PV INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES.

NOTE ON CONDUIT:
ALL CONDUIT SHALL BE EMT 3/4" IN DIAMETER UNLESS OTHERWISE STATED

PER NEC REQUIRMENTS GROUNDING CONDUCTORS SMALLER THAN 6AWG SHALL BE PROTECTED IN A CONDUIT, RACEWAY, OR ARMORED PROTECTIVE SHEATHING (NEC 250.64)

SERVICE INFO.

UTILITY PROVIDER:	ONCOR
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	(E) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 150A
MAIN SERVICE LOCATION:	NORTH-EAST
SERVICE FEED SOURCE:	UNDERGROUND

1 ELECTRICAL LINE DIAGRAM

SCALE: NTS

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL LINE DIAGRAM

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL #	HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)MODULES
VMP	37.13
IMP	10.77
VOC	45.30
ISC	11.14
MODULE DIMENSION	74.0"L x 41.1"W x 1.26"D (In Inch)

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL #	ENPHASE ENERGY IQ8PLUS-72-2-US
NOMINAL OUTPUT VOLTAGE	240 VAC
NOMINAL OUTPUT CURRENT	1.21A

AMBIENT TEMPERATURE SPECS	
WEATHER STATION: DALLAS LOVE FIELD	
RECORD LOW TEMP	-8°
AMBIENT TEMP (HIGH TEMP 2%)	37°
CONDUIT HEIGHT	0.9"
ROOF TOP TEMP.	37°
CONDUCTOR TEMPERATURE RATE (ON ROOF)	90°
CONDUCTOR TEMPERATURE RATE (OFF ROOF)	75°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.27%/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
.80	4-6
.70	7-9
.50	10-20

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#1 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 06
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM JUNCTION BOX#2 TO LOAD CENTER:

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.91
OF CURRENT CARRYING CONDUCTORS: 04
CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a): 0.80
CIRCUIT CONDUCTOR SIZE: 10 AWG
CIRCUIT CONDUCTOR AMPACITY: 40A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X # MICRO-INVERTERS (MAX. BRANCH LENGTH) X MAX OUTPUT CURRENT
1.25 X 12 X 1.21A = 18.15A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC TABLE 310.15(B)(2)(a)
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.91 X 0.80 X 40 = 29.12A

RESULT SHOULD BE GREATER THAN 18.15A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

AC CONDUCTOR AMPACITY CALCULATIONS: FROM LOAD CENTER TO INTERCONNECTION:

OF INVERTERS: 57
EXPECTED WIRE TEMP (°C): 37°
TEMP CORRECTION PER TABLE 310.15(B)(2)(a): 0.88
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL PER NEC 310.15(B)(3)(a): 1.0
CIRCUIT CONDUCTOR SIZE: 3 AWG
CIRCUIT CONDUCTOR AMPACITY: 100A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(B):
1.25 X # MICRO-INVERTERS X MAX OUTPUT CURRENT =
1.25 X 1.21 X 57 = 86.21A

DERATED AMPACITY OF CIRCUIT CONDUCTORS PER NEC TABLE 310.16:
TEMP CORR. PER NEC TABLE 310.15(B)(2)(a) X
CONDUIT FILL CORR. PER NEC 310.15(B)(3)(a) X
CIRCUIT CONDUCTOR AMPACITY =
0.88 X 1.0 X 100= 91A

RESULT SHOULD BE GREATER THAN 86.21A OTHERWISE LESS THE ENTRY FOR CIRCUIT CONDUCTOR SIZE AND AMPACITY

ELECTRICAL NOTES

1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

1 ELECTRICAL CALCULATION

SCALE: NTS

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
ELECTRICAL CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

LOAD CALC RESULTS		
BUSS BAR RATING		TOTAL DEMAND
150	>	141.31

RESIDENTIAL LOAD CALULATION FOR EXISTING DWELLINGS					
3,522	SQ. FT. X 3 VA			10566	VA
2	SMALL APPLIANCE BRANCH CIRCUITS			3000	VA
1	LAUNDRY CIRCUIT (WASHER)			1500	VA
30	DRYER			5760	VA
50	N/A			9600	VA
20	MICRO-WAVE			1920	VA
20	DISPOSAL & DISHWASHER			1920	VA
20	WASHER			1920	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
				0	VA
TOTAL LOAD GROSS (VA)				36186	TOTAL VA
FIRST 10,000VA, VA X 100%				10000	VA
REMAINDER ABOVE 10,000 VA X 40%				10474.4	VA
TOTAL LOAD NET (VA)				20474.4	VA
TOTAL LOAD (AMPS) (VA/240V)				85.3	AMPS
AIR CONDITIONING LOADS					
30	1-A/C MIN. CIRCUIT AMPS			5760	VA
40	2-A/C MIN. CIRCUIT AMPS			7680	VA
	3-A/C MIN. CIRCUIT AMPS			0	VA
	4-A/C MIN. CIRCUIT AMPS			0	VA
	SUB POOL MIN. CIRCUIT AMPS			0	VA
	AHU VA (Breaker Amps X Volts X 80%)			0	
TOTAL A/C LOAD (VA)				13440	TOTAL VA
TOTAL LOAD (AMPS) (VA/240V)				56	AMPS
TOTAL DEMAND (AMPS)				141.3	AMPS

PHOTOVOLATIAC SYSTEM MAIN PANEL ALTERATION FOR:
charles fisher 125 Lanshire Dr Rockwall, TX, 75032 USA

120% RULE: BACKFEED	
BUSSBAR RATING	200
NEW MAIN BREAKER	150
120% RULE: BACKFEED	120
PV OCPD	90

LOAD CALC RESULTS		
BUSSBAR RATING		TOTAL DEMAND
150	>	141.31

PANEL SCHEDULE

EXISTING PANEL			ALTERED PANEL		
Circuit	#	OCP AMP	Circuit	#	OCP AMP
MAIN BREAKER 200			NEW MAIN BREAKER 150		
DRYER	1	30	DRYER	1	30
N/A	2	50	N/A	2	50
DRYER	3	30	DRYER	3	30
N/A	4	50	N/A	4	50
AC	5	30	AC	5	30
N/A	6	20	N/A	6	20
AC	7	30	AC	7	30
N/A	8	20	N/A	8	20
GFI	9	20	GFI	9	20
N/A	10	20	N/A	10	20
REFRIGERATOR	11	20	REFRIGERATOR	11	20
MICROWAVE	12	20	MICROWAVE	12	20
BATH GFI	13	20	BATH GFI	13	20
MASTER BEDROOM	14	20	MASTER BEDROOM	14	20
GARAGE GFI	15	20	GARAGE GFI	15	20
N/A	16	20	N/A	16	20
LIVING ROOM& DINING LIGHTS	17	20	LIVING ROOM& DINING LIGHTS	17	20
FRONT & BACK LIGHTS	18	20	FRONT & BACK LIGHTS	18	20
WASHER	19	20	WASHER	19	20
FRONT BED & BACK BED LIGHTS	20	20	FRONT BED & BACK BED LIGHTS	20	20
GAME ROOM & MOVIE SMOKES	21	20	GAME ROOM & MOVIE SMOKES	21	20
AC	22	40	AC	22	40
GARAGE/ MASTER BATH/POWER BATH	23	20	GARAGE/ MASTER BATH/POWER BATH	23	20
AC	24	40	AC	24	40
NOOK PLUGS/COOK PLUGS	25	20	NOOK PLUGS/COOK PLUGS	25	20
EMPTY	26	EMPTY	EMPTY	26	EMPTY
DISPOSAL& DISHWASHER	27	20	DISPOSAL& DISHWASHER	27	20
EMPTY	28	EMPTY	EMPTY	28	EMPTY
EMPTY	29	EMPTY	EMPTY	29	EMPTY
EMPTY	30	EMPTY	EMPTY	30	EMPTY
EMPTY	31	EMPTY	EMPTY	31	EMPTY
EMPTY	32	EMPTY	EMPTY	32	EMPTY
EMPTY	33	EMPTY	EMPTY	33	EMPTY
EMPTY	34	EMPTY	EMPTY	34	EMPTY
EMPTY	35	EMPTY	EMPTY	35	EMPTY
EMPTY	36	EMPTY	EMPTY	36	EMPTY
EMPTY	37	EMPTY	EMPTY	37	EMPTY
EMPTY	38	EMPTY	EMPTY	38	EMPTY
EMPTY	39	EMPTY	PV BREAKER	39	90
EMPTY	40	EMPTY	PV BREAKER	40	90

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

LOAD CALCULATION& PANEL SCHEDULING

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-6.1

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
AC & DC DISCONNECT AND SUB PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION:
MSP
(PER CODE: NEC 690.13 (F), NEC 705.12(B)(3-4) & NEC 690.59)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 68.97 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

LABEL LOCATION:
SERVICE PANEL IF SUM OF BREAKERS EXCEEDS PANEL RATING
(PER CODE: NEC 705.12 (B)(2)(3)(B)

WARNING:PHOTOVOLTAIC POWER SOURCE

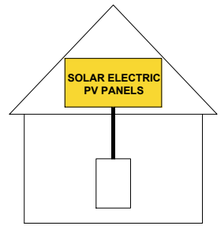
LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY

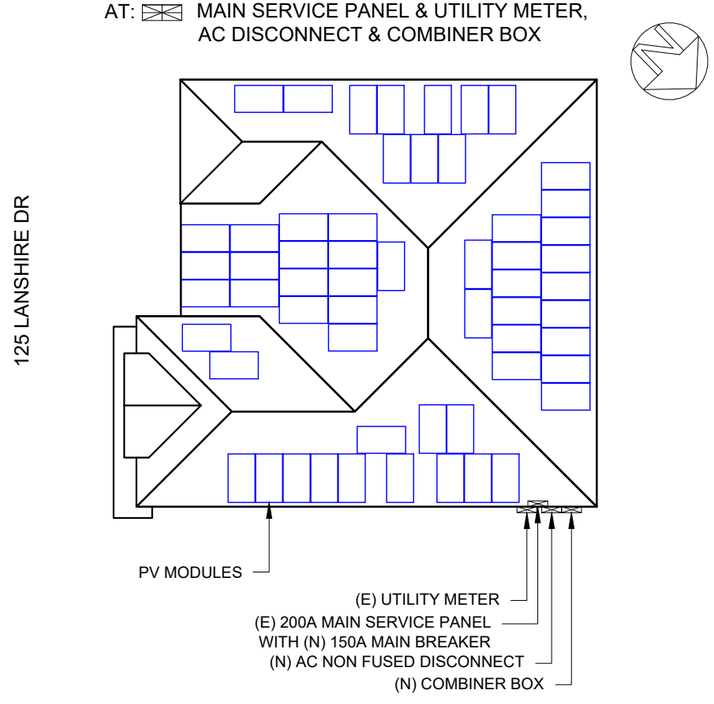


LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

CAUTION !

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN

AT: MAIN SERVICE PANEL & UTILITY METER, AC DISCONNECT & COMBINER BOX



SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

1. EACH MODULE TO BE GROUNDED USING THE SUPPLIED CONNECTION POINT PER MANUFACTURER'S REQUIREMENTS. ALL SOLAR MODULES, EQUIPMENT, AND METALLIC COMPONENTS ARE TO BE BONDED. IF THE EXISTING GROUNDING ELECTRODE SYSTEM CAN NOT BE VERIFIED OR IS ONLY METALLIC WATER PIPING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A SUPPLEMENTAL GROUNDING ELECTRODE.

2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF NATIONAL ELECTRICAL CODE. LABEL SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED IN A CONTRASTING COLOR TO THE PLAQUE. PLAQUE SHALL BE UV RESISTANT IF EXPOSED TO SUNLIGHT.

3. DC CONDUCTORS SHALL BE RUN IN EMT AND SHALL BE LABELED, "CAUTION DC CIRCUIT" OR EQUIV. EVERY 5 FT.

4. EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A).

5. CONFIRM LINE SIDE VOLTAGE AT ELECTRIC UTILITY SERVICE PRIOR TO CONNECTING INVERTER. VERIFY SERVICE VOLTAGE IS WITHIN INVERTER VOLTAGE OPERATIONAL RANGE.

6. OUTDOOR EQUIPMENT SHALL BE NEMA-3R RATED OR BETTER.

7. ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

8. ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE, AND FOR ROOF-MOUNTED SYSTEMS, WIRING MUST BE PERMANENTLY AND COMPLETELY HELP OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

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VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

ADDITIONAL NOTES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-8

powered by Q.ANTUM DUO Z

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

Quality Controlled PV
TÜVRheinland CERTIFIED
www.tuv.com ID 1111232615

ASSEMBLED IN THE USA

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

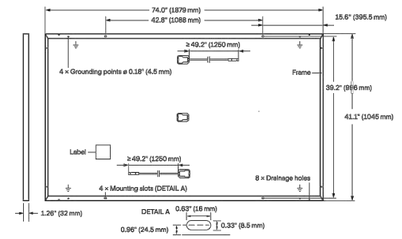
Rooftop arrays on residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥49.2 in (1250 mm), (–) ≥49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

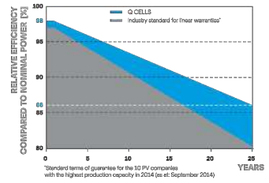


ELECTRICAL CHARACTERISTICS

POWER CLASS			385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP} [W]	385	390	395	400	405
Minimum	Short Circuit Current[1]	I_{SC} [A]	11.04	11.07	11.10	11.14	11.17
Minimum	Open Circuit Voltage[1]	V_{OC} [V]	45.19	45.23	45.27	45.30	45.34
Minimum	Current at MPP	I_{MPP} [A]	10.59	10.65	10.71	10.77	10.83
Minimum	Voltage at MPP	V_{MPP} [V]	36.36	36.62	36.88	37.13	37.39
Minimum	Efficiency[1]	η [%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP} [W]	288.8	292.6	296.3	300.1	303.8
Minimum	Short Circuit Current	I_{SC} [A]	8.90	8.92	8.95	8.97	9.00
Minimum	Open Circuit Voltage	V_{OC} [V]	42.62	42.65	42.69	42.72	42.76
Minimum	Current at MPP	I_{MPP} [A]	8.35	8.41	8.46	8.51	8.57
Minimum	Voltage at MPP	V_{MPP} [V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

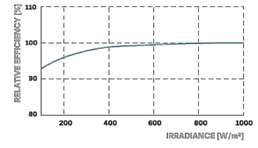
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS						
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.34	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells),

C Certified US UL 61730

CE

TÜVRheinland CERTIFIED www.tuv.com ID 1111232077

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

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PROJECT NAME

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UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-9

ENPHASE.

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

IQ8SP-DS-0002-01-EN-US-2022-03-17

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

* Only when installed with IQ System Controller 2, meets UL 1741.
** IQ8 and IQ8Plus supports split phase, 240V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current[2] [module Isc]	A	15	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8-60-2-US**	**IQ8PLUS-72-2-US**
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range[3]	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit[4]		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) No enforced DC/AC ratio. See the compatibility calculator at https://link.enphase.com/module-compatibility
(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8SP-DS-0002-01-EN-US-2022-03-17

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Envoy breaker	10A or 15A rating GE/Siemens/Eaton included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-11

Data Sheet
Enphase Q Cable Accessories
Region: INDIA

Enphase Q Cable and Accessories

The **Enphase Q Cable™** and accessories are part of the sixth generation Enphase IQ System™. These products provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- Four-wire (three-phase) option also available
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

To learn more about Enphase offerings, visit **enphase.com/in**

ENPHASE.

Enphase Q Cable Accessories

Q CABLE SPECIFICATIONS	
Voltage rating	600V (connector rating up to 250 V)
Cable temperature rating	90° C wet/dry
UV exposure rating	EN ISO 492-2
Environmental protection rating	IEC 60529 IP67
Compliance	RoHS, OIL RES I, CE, UV resistant
Cable insulator rating	H07BQ-F
Flame rating	IEC 60332-1-2

Q CABLE TYPES / ORDERING OPTIONS

Model Number	Max Nominal Voltage	Ampacity Rating	Connector Spacing	PV Module Orientation	Connector Count per Box
Q-25-10-240 (single-phase)	250 VAC	25 A	1.3 m	Portrait	240
Q-25-17-240 (single-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	240
Q-25-20-200 (single-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	200
Q-25-10-3P-200 (three-phase)	250 VAC	25 A	1.3 m	Portrait	200
Q-25-17-3P-160 (three-phase)	250 VAC	25 A	2.0 m	Landscape (60-cell)	160
Q-25-20-3P-160 (three-phase)	250 VAC	25 A	2.3 m	Landscape (72-cell)	160

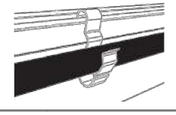
ENPHASE Q CABLE ACCESSORIES

Name	Model Number	Description
Raw Q Cable (single-phase)	Q-25-RAW-300	300 meters cable with no connectors
Raw Q Cable (three-phase)	Q-25-RAW-3P-300	300 meters cable with no connectors
Field-wireable connector (male)	Q-CONN-R-10M	Make connections using single-phase cable
Field-wireable connector (male)	Q-CONN-3P-10M	Make connections using three-phase cable
Field-wireable connector (female)	Q-CONN-R-10F	Make connections from any Q Cable (single-phase) open connector
Field-wireable connector (female)	Q-CONN-3P-10F	Make connections from any Q Cable (three-phase) open connector
Cable Clip	ET-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Disconnect tool	Q-DISC-3P-10	Disconnect tool for three-phase Field wireable connectors
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator (single-phase)	Q-TERM-R-10	Terminator cap for unused single-phase cable ends
Terminator (three-phase)	Q-TERM-3P-10	Terminator cap for unused three-phase cable ends
Replacement DC Adaptor (MC4)	Q-DCC-2-INT	DC adaptor to MC4 (max voltage 100 VDC)

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-R-10 / Q-TERM-3P-10))

SEALING CAPS
Sealing caps for unused cable connections, sold in packs of ten (Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)
Three-phase model (Q-DISC-3P-10)



CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (ET-CLIP-100)

To learn more about Enphase offerings, visit **enphase.com/in**

2018-11-26

ENPHASE.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

EcoFasten®
For Installers. By Installers.

CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

ClickFit is one of the fastest installing rail-based systems in the industry. Thanks to its Click-In rail assembly, the rails can be connected to any of EcoFasten's composition shingle, tile, and metal roof mounts in seconds without the need for fasteners or tools. The ClickFit system is made of robust materials such as aluminum and coated steel, to ensure corrosion-resistance and longevity. ClickFit conforms to UL 2703 and has been tested in extreme weather conditions including wind, fire, and snow.

FEATURES & BENEFITS

- Pre-installed rail fastening bolt
- Fully integrated bonding
- Click-On Mid & End Clamps
- Compatible with a variety of EcoFasten roof attachments

FAST INSTALLING SYSTEM FEATURING CLICK-IN RAIL ASSEMBLY

ROOF TYPE — Composition Shingle, Tile, Metal

RACKING — Rail-Based

ATTACHMENT — Structural-Attach Direct-Attach

WATER TIGHT TECHNOLOGY

25 YEAR WARRANTY

ECOFASTENSOLAR.COM

CLICKFIT

INTERNAL SPLICE

Tool-free bonded internal Splice installs in seconds.

MID CLAMP

Click-on mid clamp features integrated bonding pins and fits module frames sized 30-50mm.

CF MLPE MOUNT

Attach Module Level Power Electronics to the top of the rail.

END CLAMP

Click-on end clamp fits module frames sized 30-50mm.

END CAP

The slide-on end caps allow the end clamps to be accurately positioned on the rail in seconds, while providing an aesthetically pleasing, finished install.

RAIL

The ClickFit rail clicks into our proprietary composition shingle & tile L-foot and is tightened in place with a pre-installed bolt.

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION		
DESCRIPTION	DATE	REV
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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

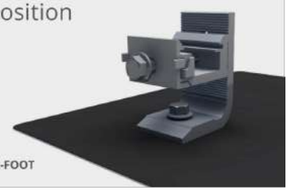
SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-13

COMPOSITION SHINGLE

Combine the versatile ClickFit L-Foot with the watertight GF-1 flashing for a fast installation on composition shingle roofs.



GF-1 FLASHING & L-FOOT

TILE ROOFS

Use the adjustable ClickFit Tile Hook for attaching the ClickFit system to tile roofs. Works with Flat, S, and W tile profiles.

CLICKFIT TILE HOOK

STANDING SEAM METAL ROOFS

Combine the ClickFit L-Foot with SimpleBlock®-U for a fast installation on standing seam metal roofs.

SIMPLEBLOCK-U

ECOFASTENSOLAR.COM

SOLNOVA

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151

Regan George

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

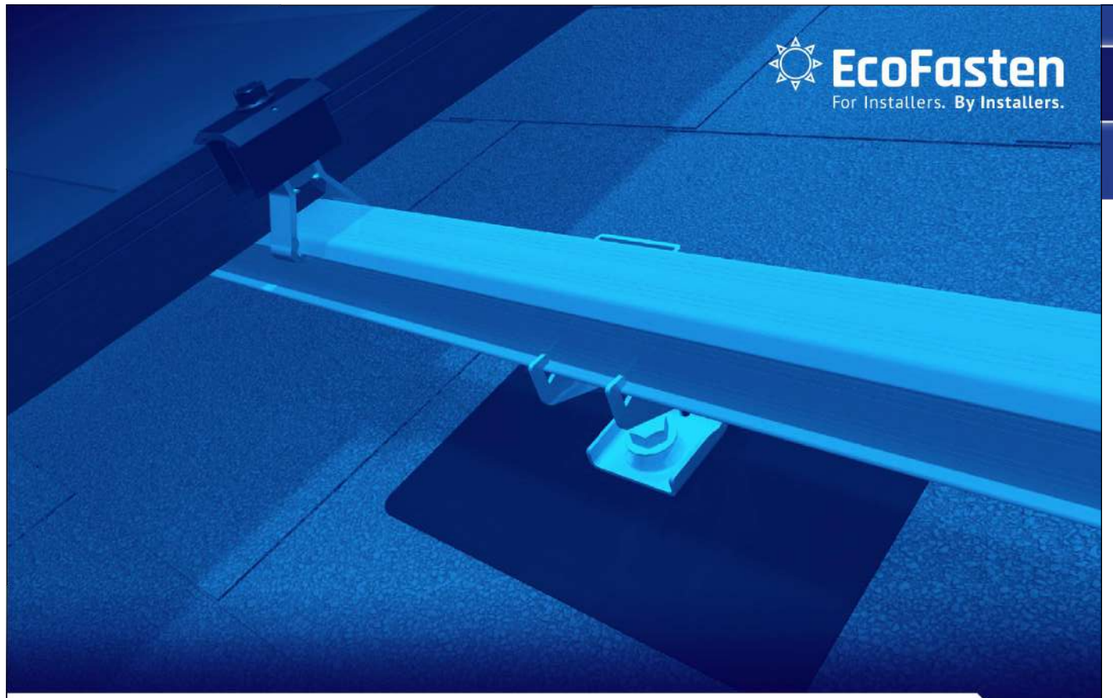
SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-14



CLICKFIT®

COMPLETE RAIL-BASED RACKING SYSTEM

INSTALLATION GUIDE

REVISION DATE: 04/09/21	VERSION: v2.4

ECOFASTENSOLAR.COM

MANUFACTURER	LIST OF UL2703 APPROVED MODULES
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where "a" can be M or P; "b" can be 3 or 6; and "YY" can be 60, 72, 72H, or 72DH
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where "YY" can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where "YY" can be PB, PD, PE, TB, TD, UB, UD, or UE; and "zz" can be AH2, AN1, AN3, AN4, HH2, HV1, or JH2
Hanwha Solar	Hanwha Solar modules with 40, 45, and 50 mm frames HSLaaP6-YY-1-xxxZ Where "aa" can be either 60 or 72; "YY" can be PA or PB; and "Z" can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40, and 42mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, G5/SC, G5/TS, BLK-G5, BLK-G5/SC, BLK-G5/TS, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6/SC, G6/TS, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G6+/AC, BLK-G6+/SC, BLK-G6/TS, G6+/TS, BLK-G6+/TS, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, L-G8.3, L-G8.3/BFF, ML-G9, BLK ML-G9, ML-G9+, BLK ML-G9+, XL-G9, XL-G9.2 or XL-G9.3
Heliene	Heliene modules with 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, or 96; "ZZ" can be M, P, or MBLK; and "A" can be blank, HomePV, or Bifacial
HT-SAAE	HT-SAAE modules with 35 and 40 mm frames HTyy-156Z-xxx Where "yy" can be 60 or 72, "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C

MODULES

SOLNOVA
SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

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PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 4334000D0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-15

Engineering Alliance, Inc

https://www.eng-alliance.com

27-June-2022

Unirac
1411 Broadway Blvd. NE
Albuquerque, NM 87101
Tel: 505 242 6411

Attn.: Engineering Department

Subject: Engineering Certification for the Unirac SOLARMOUNT Flush Rail System to Support Photovoltaic Panels.

The Unirac SOLARMOUNT Flush-to-Roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof.

We have reviewed the SOLARMOUNT system, a proprietary mounting system constructed from modular parts which are intended for rooftop installation of solar photovoltaic (PV) panels; and have reviewed the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the SOLARMOUNT rails (SM LIGHT rail, SM STANDARD rail, and SM HEAVY DUTY rail) with Standard and Pro Series hardware. All information, data and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. ASCE/SEI 7-05, 7-10, 7-16 Minimum Design Loads for Buildings and Other Structures
2. International Building Code, 2006-2021 Edition w/ Provisions from SEAOC PV-2 2017
3. International Residential Code, 2006- 2021 Edition w/ Provisions from SEAOC PV-2 2017
4. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES
5. Aluminum Design Manual, 2015 & 2020 Edition

Following are typical specifications to meet the above code requirements:

Design Criteria:
Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0 - 45 (degrees)
Exposure Category = B, C & D

For Houston, TX:
Basic Wind Speed ASD Minimum 110 mph to 147 mph (3-sec gust ASCE 7-05 for IRC)
Basic Wind Speed LRFD Minimum 142 mph to 190 mph (Vult ASCE 7-10 for IBC)

Attachment Spacing: Per U-Builder 2.0 Engineering report.

Cantilever: The maximum cantilever length is L/3, where "L" is the span noted in the U-Builder 2.0 online Tool.

Clearance: 2" to 10" clear from top of roof to top of PV panel
Tolerance(s): 1.0" tolerance for any specified dimension in this report is allowed for installation

Installation Orientation: See SOLARMOUNT Rail Flush Installation Guide.

4603 April Meadow Way, Sugar Land, TX 77479. Ph: 832 865 4757

SOLNOVA
2407 EAST LOOP 820 N, FORT WORTH, TX 76118
LICENSE NO.#: 35151
Regan George

VERSION

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INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER
125 LANSHIRE DR,
ROCKWALL, TX 75032 USA
APN# 433400OD0020000R
UTILITY: ONCOR
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-16

CITY OF ROCKWALL

ORDINANCE NO. 22-XX

SPECIFIC USE PERMIT NO. S-XXX

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, AMENDING THE UNIFIED DEVELOPMENT CODE (UDC) [*ORDINANCE NO. 20-02*] OF THE CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS, AS PREVIOUSLY AMENDED, SO AS TO GRANT A SPECIFIC USE PERMIT (SUP) TO ALLOW *SOLAR PANELS* ON A 0.1947-ACRE PARCEL OF LAND IDENTIFIED AS LOT 20, BLOCK D, LYNDEN PARK ESTATES ADDITION, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS; AND MORE SPECIFICALLY DEPICTED AND DESCRIBED AND DEPICTED IN *EXHIBIT 'A'* OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS ($2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received a request by Tony Trammel for the approval of a *Specific Use Permit (SUP)* for *Solar Panels Exceeding 1,000 SF of Coverage on a Residential Home* situated on a 0.1947-acre parcel of land identified as Lot 20, Block D, Lynden Park Estates Subdivision, Phase 3, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 17 (PD-17) for Single Family 7 (SF-7) District land uses, addressed as 125 Lanshire Drive and being more specifically described and depicted in *Exhibit 'A'* of this ordinance, which herein after shall be referred to as the *Subject Property* and incorporated by reference herein; and

WHEREAS, the Planning and Zoning Commission of the City of Rockwall and the governing body of the City of Rockwall, in compliance with the laws of the State of Texas and the ordinances of the City of Rockwall, have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally, and to all persons interested in and situated in the affected area and in the vicinity thereof, the governing body in the exercise of its legislative discretion has concluded that the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall should be amended as follows:

NOW, THEREFORE, **BE IT ORDAINED** by the City Council of the City of Rockwall, Texas;

SECTION 1. That the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall, as heretofore amended, be and the same is hereby amended so as to grant a Specific Use Permit (SUP) allow for *Solar Panels Exceeding 1,000 SF of Coverage on a Residential Home* within Planned Development District 17 (PD-17) as stipulated by Subsection 01.01, *Use of Land and Buildings*, of Article 04, *Permissible Uses*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*] on the *Subject Property*; and,

SECTION 2. That the Specific Use Permit (SUP) shall be subject to the requirements set forth in Subsection 02.03(K)(7) of Article 04, *Permissible Uses*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*] -- *as heretofore amended and as may be amended in the future* --,

and with the following conditions:

2.1. OPERATIONAL CONDITIONS

The following conditions pertain to the operation of *Solar Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'*.

(2) All mechanical equipment (*e.g. micro inverters*) and batteries shall be completely screened from the adjacent properties and rights-of-way.

2.2 COMPLIANCE

Approval of this ordinance in accordance with Subsection 02.02, *Specific Use Permits (SUP)* of Article 11, *Development Applications and Review Procedures,* of the Unified Development Code (UDC) will require the *Subject Property* to comply with the following:

1) Upon obtaining a *Building Permit*, should the property owner subject to these guidelines of this ordinance fail to meet the minimum operational requirements set forth herein and outlined in the Unified Development Code (UDC), the City may (*after proper notice*) initiate proceedings to revoke the Specific Use Permit (SUP) in accordance with Subsection 02.02(F), *Revocation*, of Article 11, *Development Applications and Revision Procedures*, of the Unified Development Code (UDC) [*Ordinance No. 20-02*].

SECTION 3. That the official zoning map of the City be corrected to reflect the changes in zoning described herein.

SECTION 4. That all ordinances of the City of Rockwall in conflict with the provisions of this ordinance be, and the same are hereby repealed to the extent of that conflict.

SECTION 5. Any person, firm, or corporation violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a penalty of fine not to exceed the sum of *TWO THOUSAND DOLLARS ($2,000.00)* for each offence and each and every day such offense shall continue shall be deemed to constitute a separate offense.

SECTION 6. If any section or provision of this ordinance or the application of that section or provision to any person, firm, corporation, situation or circumstance is for any reason judged invalid, the adjudication shall not affect any other section or provision of this ordinance or the application of any other section or provision to any other person, firm, corporation, situation or circumstance, and the City Council declares that it would have adopted the valid portions and applications of the ordinance without the invalid parts and to this end the provisions of this ordinance shall remain in full force and effect.

SECTION 7. That this ordinance shall take effect immediately from and after its passage.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THIS THE 7th DAY OF NOVEMBER, 2022.

Kevin Fowler, *Mayor*

ATTEST:

Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

Frank J. Garza, *City Attorney*

1st Reading: *October 17, 2022*

2nd Reading: *November 7, 2022*

Exhibit 'A'
Zoning Exhibit

Address: *125 Lanshire*
Legal Description: *Lot 20, Block D, Lynden Park Estates*

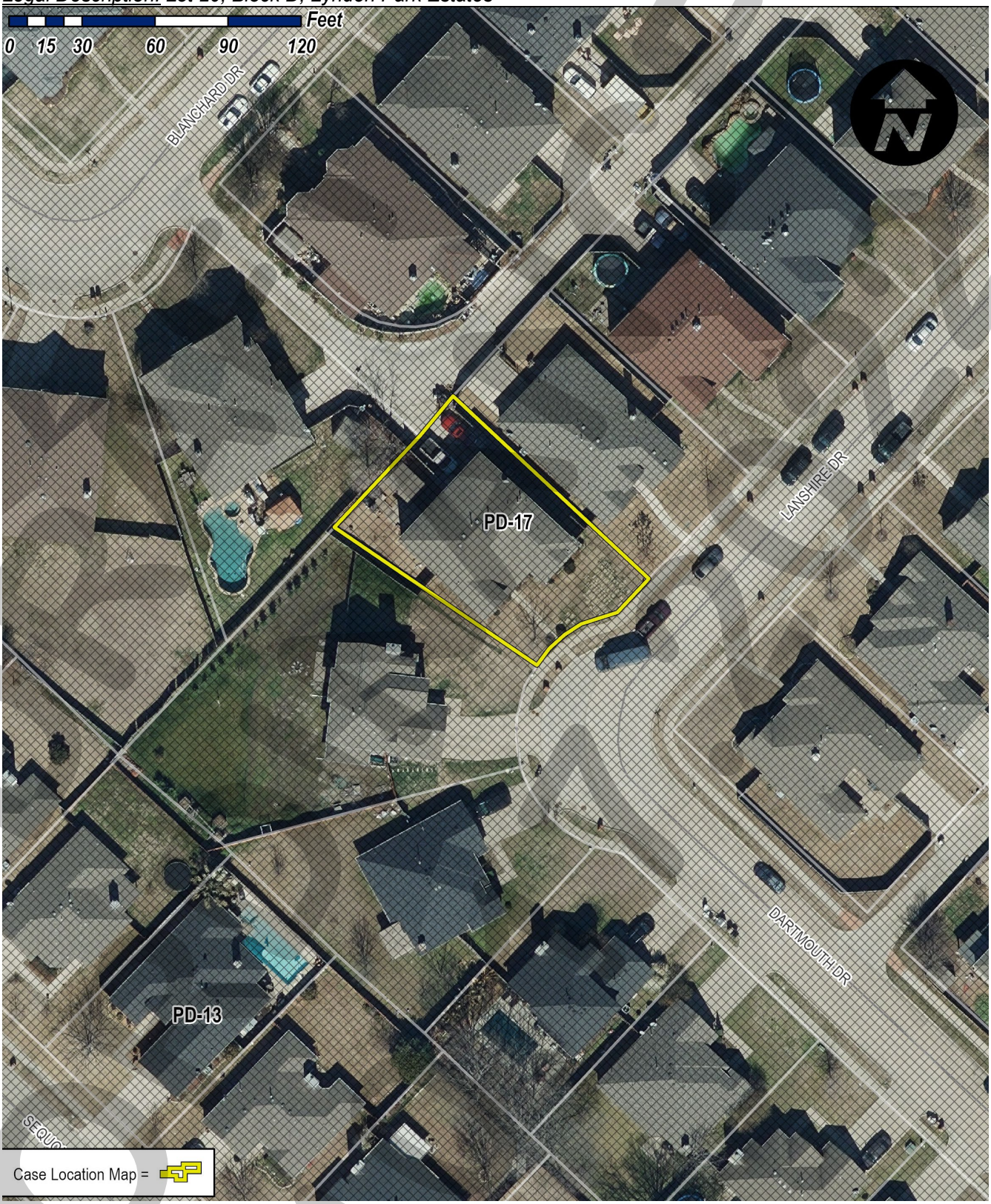
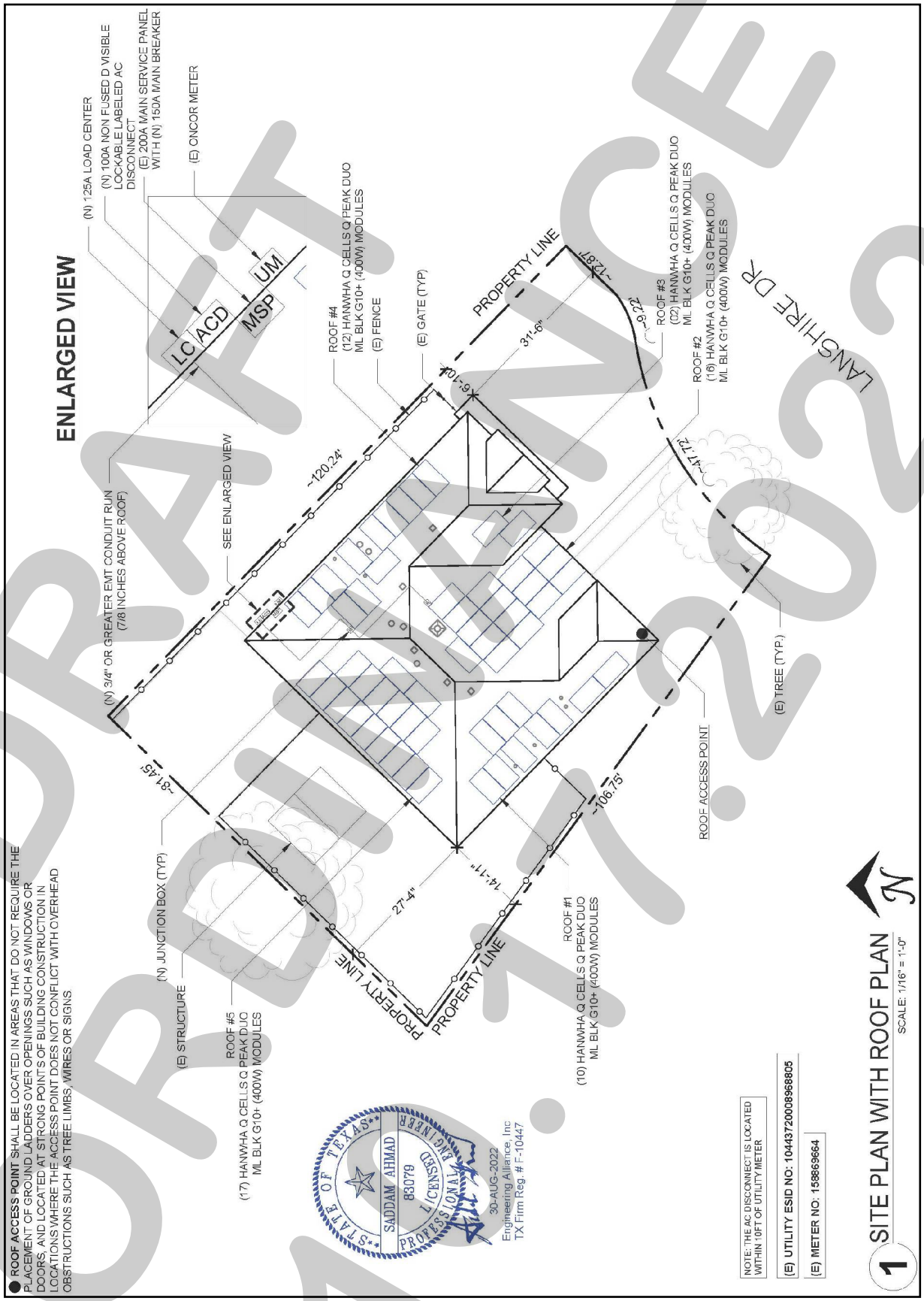


Exhibit 'B'
Roof Plan Elevations



November 7, 2022

TO: Tony Trammel
2407 E Loop 820 N
Fort Worth, TX 76118

FROM: Bethany Ross
City of Rockwall Planning and Zoning Department
385 S. Goliad Street
Rockwall, TX 75087

SUBJECT: Z2022-045; *Specific Use Permit (SUP) For Solar Panels exceeding 1000 SF*

Tony:

This letter serves to notify you that the above referenced zoning case that you submitted for consideration by the City of Rockwall was approved by the City Council on November 7, 2022. The following is a record of all recommendations, voting records and conditions of approval:

Conditions of Approval

(1) The applicant shall be responsible for maintaining compliance with the operational conditions contained in the *Specific Use Permit (SUP)* ordinance and which are detailed as follows:

(a) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'* of the Ordinance.

(b) All mechanical equipment (*e.g. micro inverters*) and batteries shall be completely screened from the adjacent properties and rights-of-way.

(2) Any construction resulting from the approval of this *Specific Use Permit (SUP)* shall conform to the requirements set forth by the Unified Development Code (UDC), the International Building Code (IBC), the Rockwall Municipal Code of Ordinances, city adopted engineering and fire codes and with all other applicable regulatory requirements administered and/or enforced by the state and federal government.

Planning and Zoning Commission

On October 11, 2022, the Planning and Zoning Commission approved a motion to recommend approval of the *Specific Use Permit (SUP)* by a vote of 5-0, with Commissioner Womble, and Deckard absent.

City Council

On October 17, 2022, the City Council approved a motion to approve the *Specific Use Permit (SUP)* with the conditions of approval by a vote of 5-2, with Council Members Daniels and Moeller dissenting.

On November 7, 2022, the City Council approved a motion to approve the *Specific Use Permit (SUP)* with the conditions of approval by a vote of 5-2, with Council Members Daniels and Moeller dissenting.

Included with this letter is a copy of Ordinance No. 22-56 S-289, which is the regulating ordinance adopted with the City Council's approval of this case. Should you have any questions or concerns regarding your zoning case, please feel free to contact me a (972) 772-6488.

Sincerely,

Bethany Ross

Bethany Ross
Planner

CITY OF ROCKWALL

ORDINANCE NO. 22-56

SPECIFIC USE PERMIT NO. S-289

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, AMENDING THE UNIFIED DEVELOPMENT CODE (UDC) [*ORDINANCE NO. 20-02*] OF THE CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS, AS PREVIOUSLY AMENDED, SO AS TO GRANT A SPECIFIC USE PERMIT (SUP) TO ALLOW *SOLAR PANELS* ON A 0.1947-ACRE PARCEL OF LAND IDENTIFIED AS LOT 20, BLOCK D, LYNDEN PARK ESTATES ADDITION, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS; AND MORE SPECIFICALLY DEPICTED AND DESCRIBED IN *EXHIBIT 'A'* OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS ($2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

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WHEREAS, the Planning and Zoning Commission of the City of Rockwall and the governing body of the City of Rockwall, in compliance with the laws of the State of Texas and the ordinances of the City of Rockwall, have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally, and to all persons interested in and situated in the affected area and in the vicinity thereof, the governing body in the exercise of its legislative discretion has concluded that the Unified Development Code (UDC) [*Ordinance No. 20-02*] of the City of Rockwall should be amended as follows:

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(1) 57 solar panels covering a maximum of 1,150 SF shall be permitted to be attached to the roof as shown on the roof plan elevations depicted in *Exhibit 'B'*.

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2.2 COMPLIANCE

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Kevin Fowler, Mayor

ATTEST:

Kristy Teague, City Secretary

APPROVED AS TO FORM:

Frank J. Garza, City Attorney

1st Reading: October 17, 2022

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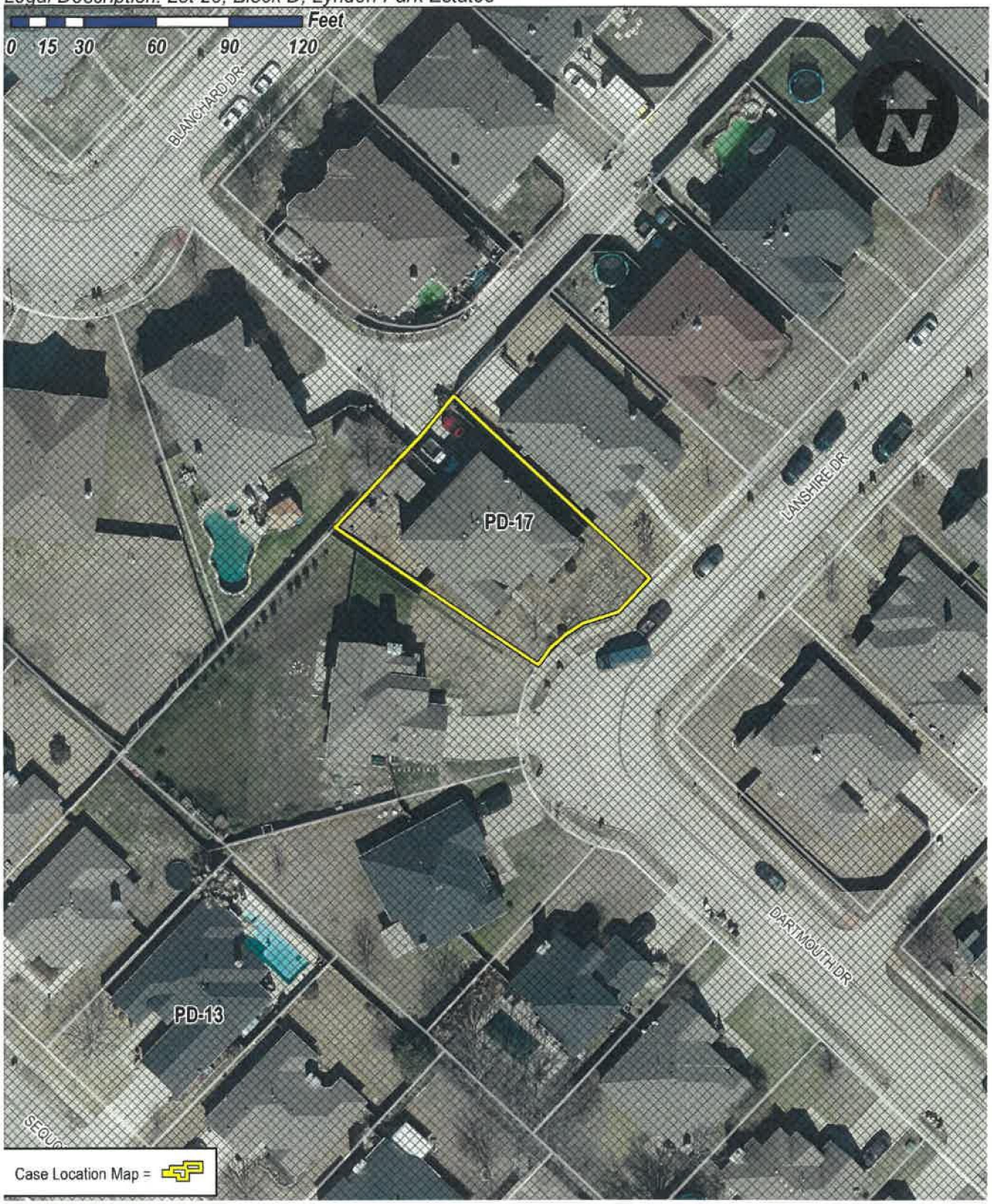

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