



# 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) <sup>1</sup>
- PRELIMINARY PLAT (\$200.00 + \$15.00 ACRE) <sup>1</sup>
- FINAL PLAT (\$300.00 + \$20.00 ACRE) <sup>1</sup>
- REPLAT (\$300.00 + \$20.00 ACRE) <sup>1</sup>
- AMENDING OR MINOR PLAT (\$150.00)
- PLAT REINSTATEMENT REQUEST (\$100.00)

### SITE PLAN APPLICATION FEES:

- SITE PLAN (\$250.00 + \$20.00 ACRE) <sup>1</sup>
- AMENDED SITE PLAN/ELEVATIONS/LANDSCAPING PLAN (\$100.00)

### ZONING APPLICATION FEES:

- ZONING CHANGE (\$200.00 + \$15.00 ACRE) <sup>1</sup>
- SPECIFIC USE PERMIT (\$200.00 + \$15.00 ACRE) <sup>1 & 2</sup>
- PD DEVELOPMENT PLANS (\$200.00 + \$15.00 ACRE) <sup>1</sup>

### OTHER APPLICATION FEES:

- TREE REMOVAL (\$75.00)
- VARIANCE REQUEST/SPECIAL EXCEPTIONS (\$100.00) <sup>2</sup>

### NOTES:

<sup>1</sup>: 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.  
<sup>2</sup>: 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:

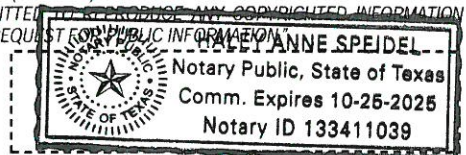
"I HEREBY CERTIFY THAT I AM THE OWNER FOR THE PURPOSE OF THIS APPLICATION; ALL INFORMATION SUBMITTED HEREIN IS TRUE AND CORRECT; AND THE APPLICATION FEE OF \$ \_\_\_\_\_ TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_. 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."

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 18 DAY OF September, 20 20.

OWNER'S SIGNATURE

*Tony Trammell*  
*Hailey B...*

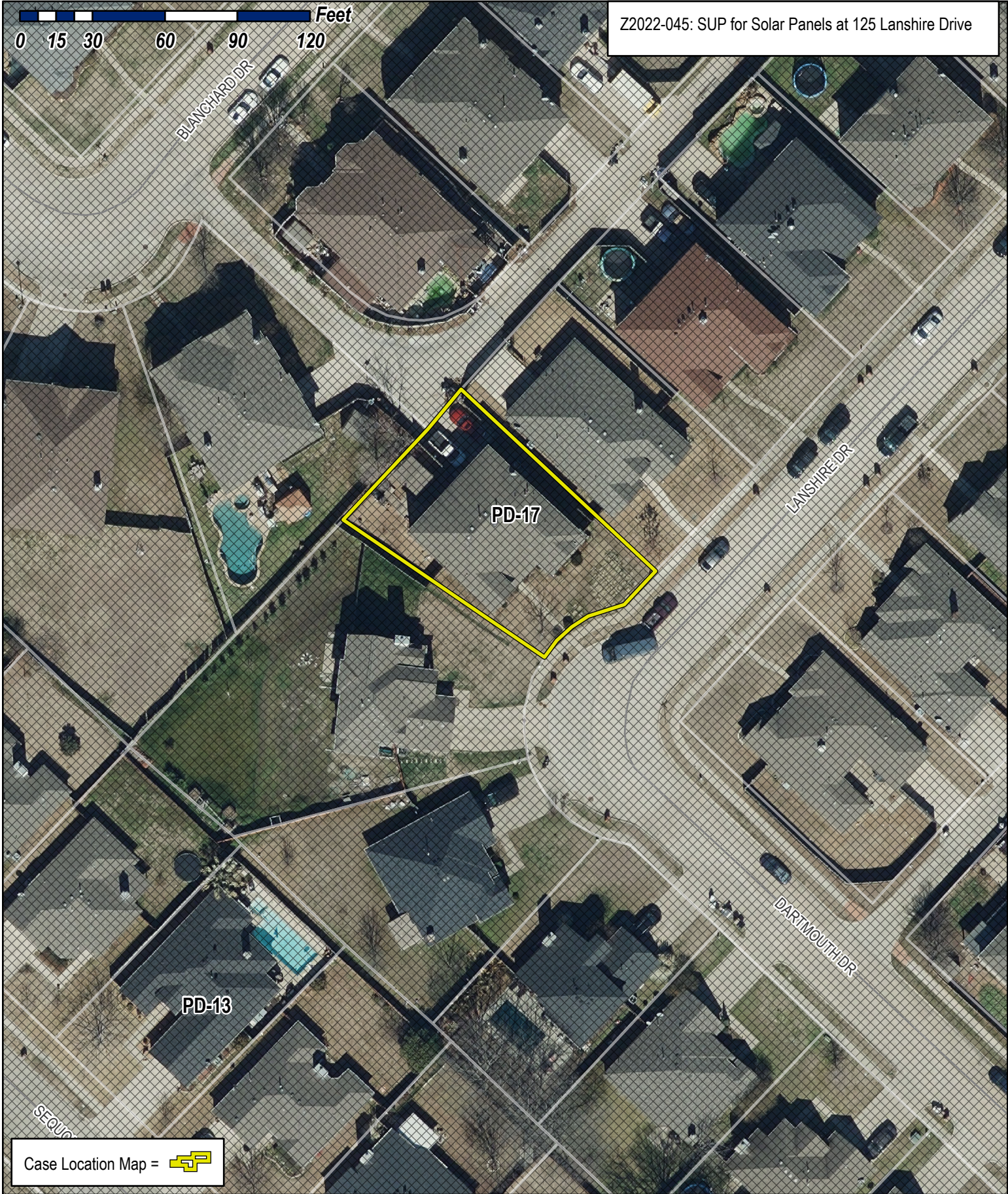
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS



MY COMMISSION EXPIRES 10/25/2020

0 15 30 60 90 120 Feet

Z2022-045: SUP for Solar Panels at 125 Lanshire Drive



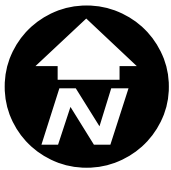
Case Location Map = 



# City of Rockwall

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

The City of Rockwall GIS maps are continually under development and therefore subject to change without notice. While we endeavor to provide timely and accurate information, we make no guarantees. The City of Rockwall makes no warranty, express or implied, including warranties of merchantability and fitness for a particular purpose. Use of the information is the sole responsibility of the user.

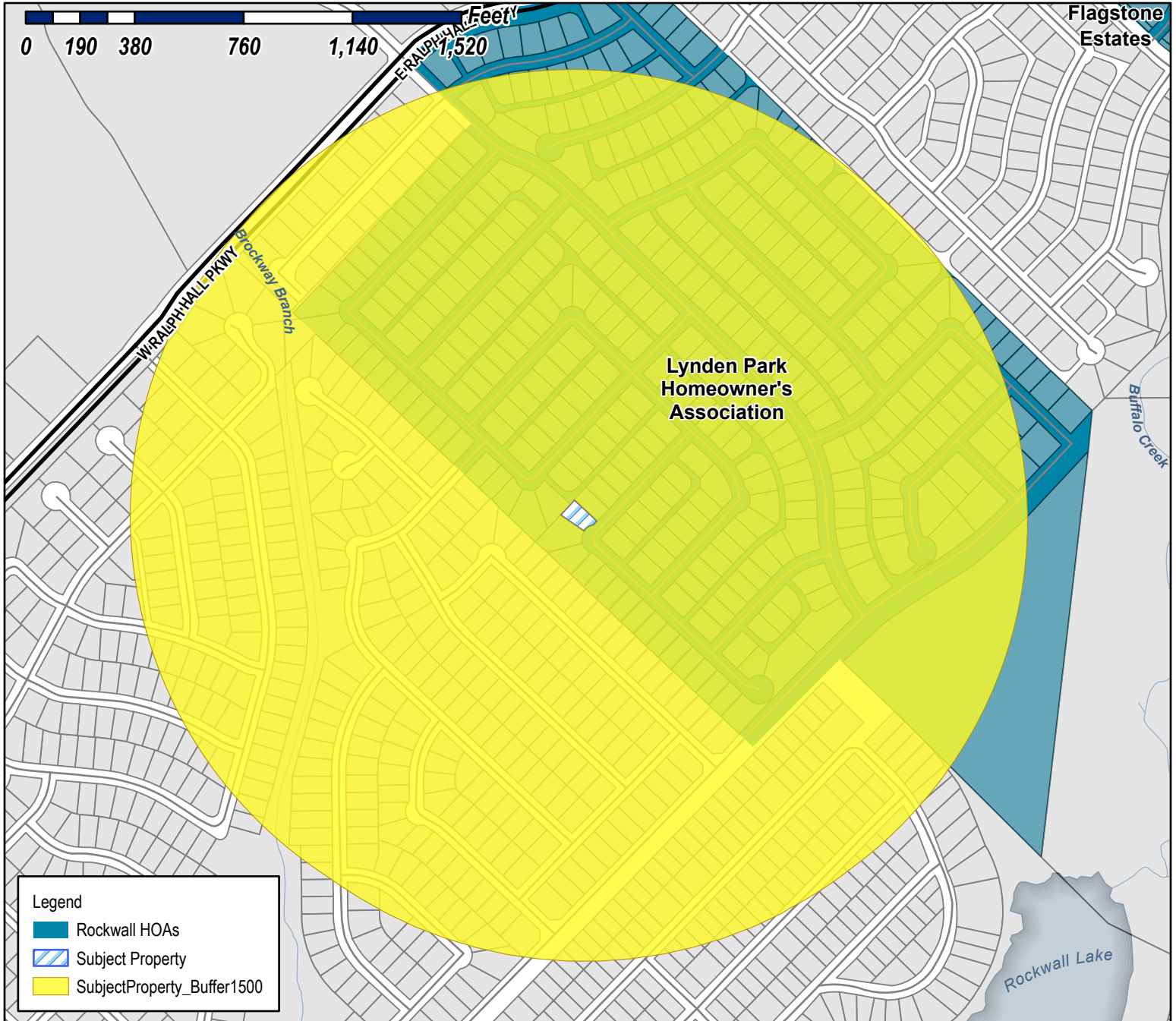




# City of Rockwall

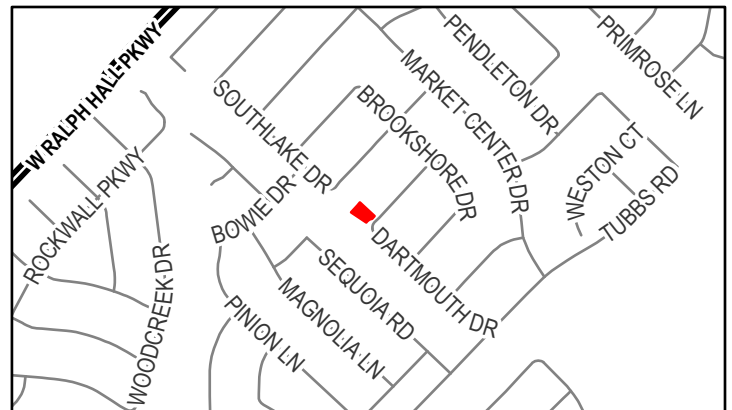
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Rockwall, Texas 75087  
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**Case Number:** Z2022-045  
**Case Name:** SUP for Solar Panels  
**Case Type:** Zoning  
**Zoning:** Planned Development District 17 (PD-17)  
**Case Address:** 125 Lanshire Drive

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

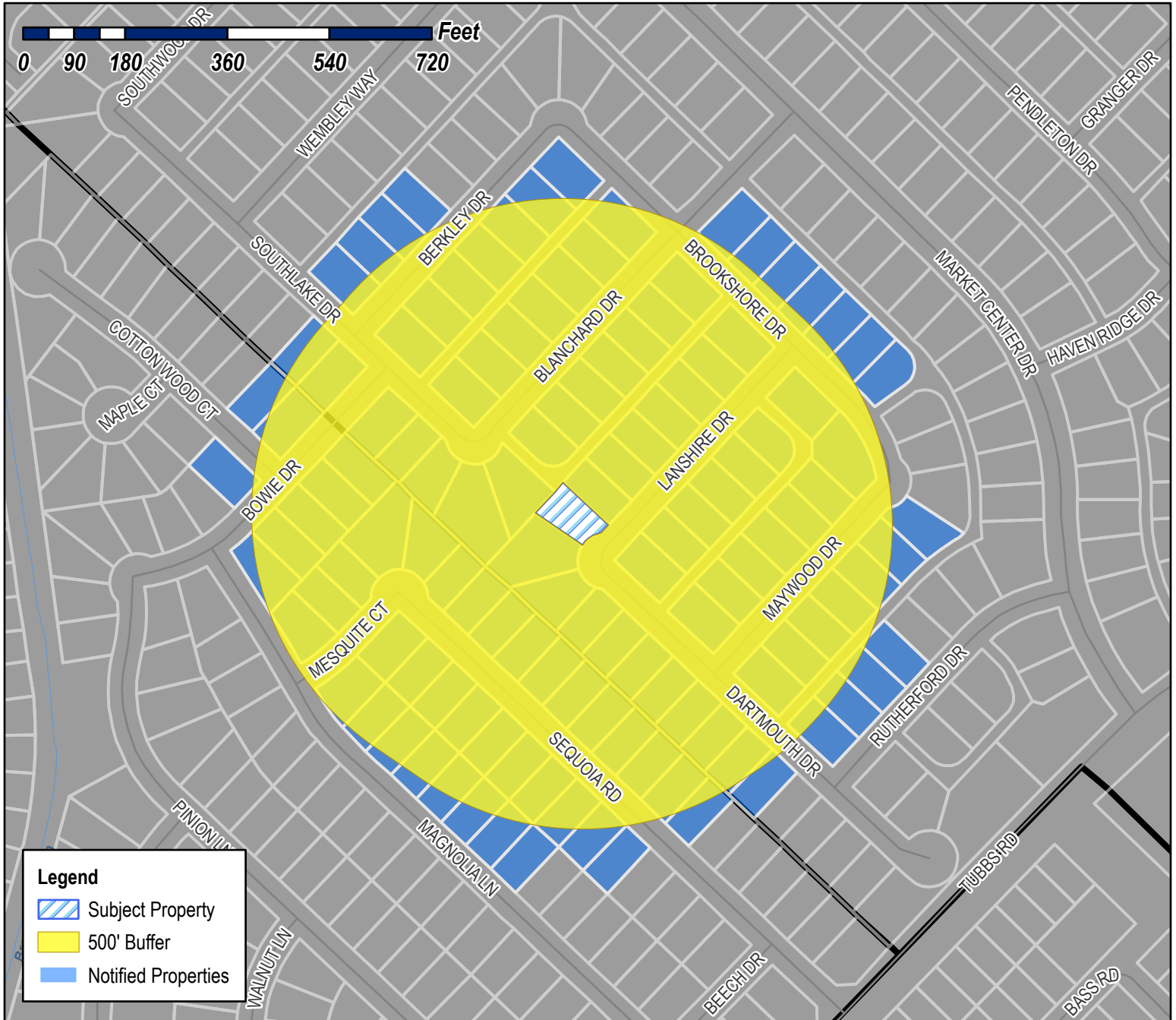




# City of Rockwall

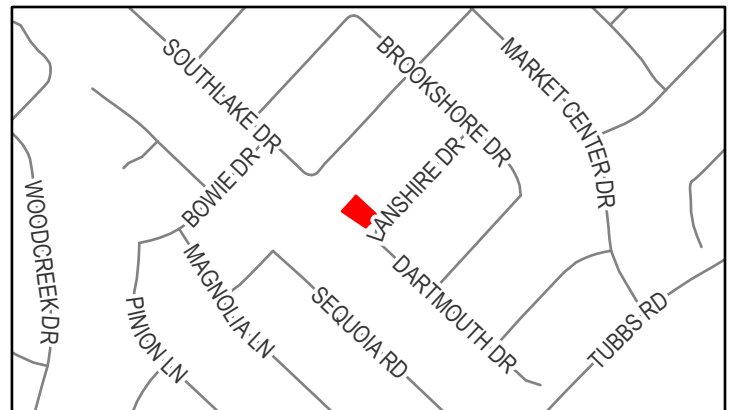
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ISYA LIMITED PARTNERSHIP  
1018 MOUNT AUBURN  
DALLAS, TX 75223

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 MAYWOOD 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 LENEY 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

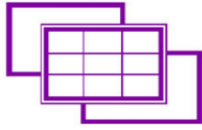
CARRIZALES ERI & LENNY  
PO BOX 1244  
ROCKWALL, TX 75087

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

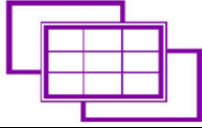
**Connection to Roof**

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,  $S_s$ , is less than 0.4 g are exempted from seismic load. Therefore the existing lateral force resisting system can remain unaltered.

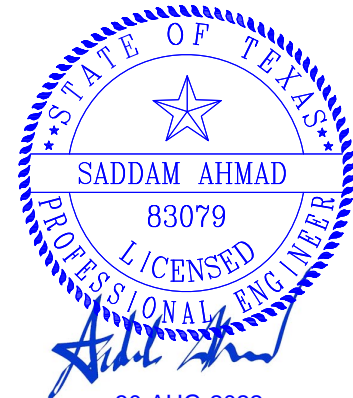
**Limitations**

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.

Prepared by

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



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



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):**

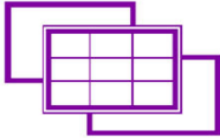
Material	Design material weight (psf)	Increase due to pitch	Material weight (psf)
Comp Shingle	2.23	1.11	2
1/2" Plywood	1.1	1.11	1
Framing	3		3
Insulation	0.5		0.5
1/2" Gypsum Clg.	2.2	1.11	2
M, E & Misc	1.5		1.5
<b>Total Dead Load</b>	<b>10.6</b>		
<b>PV Array Dead Load</b>	<b>3.3</b>	1.11	3

**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, $7^\circ < \theta \leq 27^\circ$	FIGURE 30.4-2B
Enclosure Classification:	Enclosed Buildings	
Zone 1 GC <sub>p</sub> :	0.9	(enter largest abs. value)
Zone 2 GC <sub>p</sub> :	1.7	(enter largest abs. value)
Zone 3 GC <sub>p</sub> :	2.6	(enter largest abs. value)
α:	7	Table 26.9-1
z <sub>g</sub> [ft]:	1200	Table 26.9-1
K <sub>h</sub> :	0.70	Table 30.3-1
K <sub>zt</sub> :	1	Equation 26.8-1
K <sub>d</sub> :	0.85	Table 26.6-1
Velocity Pressure, q <sub>h</sub> [psf]:	16.81	Equation 30.3-1
GC <sub>pi</sub> :	0	Table 26.11-1

**PRESSURES:**

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

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
F <sub>perp</sub> :	9.1	lb (Uplift)

#### Seismic Load, E:

0.7 * F <sub>p,min</sub> :	0.069	lb
0.7 * F <sub>p,max</sub> :	0.369	lb
0.7 * F <sub>p,vert</sub> :	0.046	lb
0.7 * F <sub>p,long</sub> :	0.185	lb
0.7 * F <sub>p,perp</sub> :	0.122	lb (uplift)

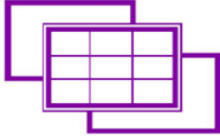
#### **Wind (uplift) Controls Connection Design**

### **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	NDS Table 2.3.2
$C_d$ :	1.6	
Embedment <sup>1</sup> [in]:	2.5	NDS Table 12.2A
Grade:	SPF (G = 0.42)	
Capacity [lbs/in]:	205	
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

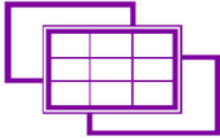
Total Tension Force(lbs):	430
---------------------------	-----

**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



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

*Regan George*

## 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

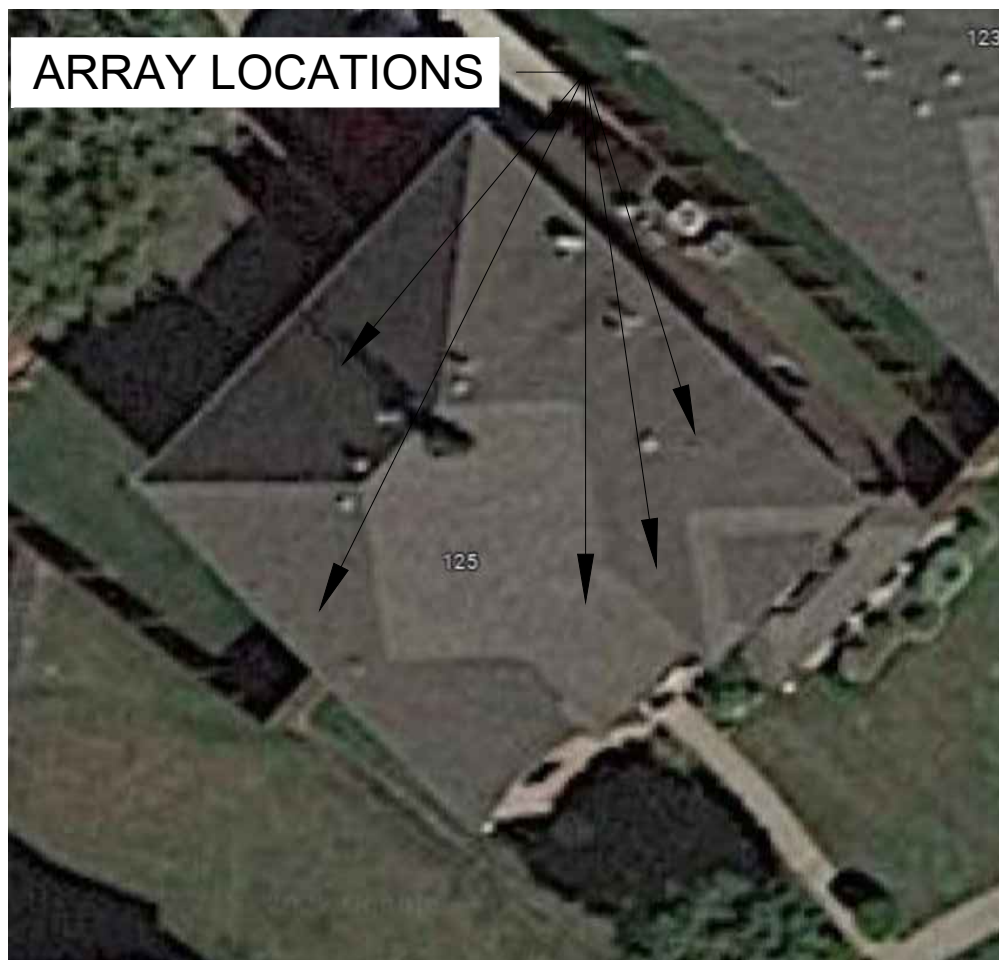
THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER NEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT 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.

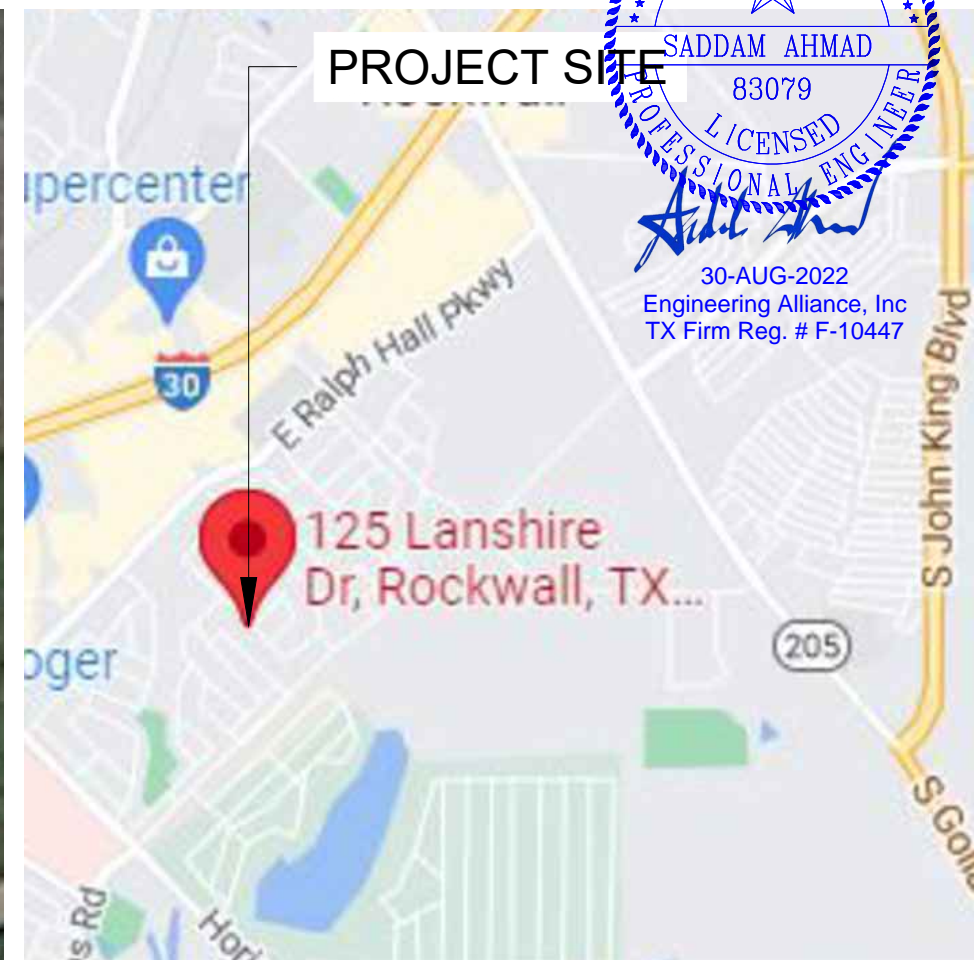
**DERATE:** (E) 200A MAIN BREAKER TO BE DERATED TO (N) 150A TO ALLOW BACKFEED OF 90A

(E) UTILITY ESID NO: 10443720008968805

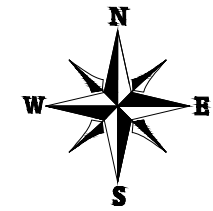
(E) METER NO: 158869664



1 | AERIAL PHOTO  
PV-0 | SCALE: NTS



2 | VICINITY MAP  
PV-0 | SCALE: NTS



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

PROJECT NAME  
**CHARLES FISHER  
125 LANSHIRE DR,  
ROCKWALL, TX 75032 USA  
APN# 4334000D002000R  
UTILITY: ONCOR  
AHJ: CITY OF ROCKWALL**

SHEET NAME  
**COVER SHEET**

SHEET SIZE  
**ANSI B  
11" X 17"**

SHEET NUMBER  
**PV-0**

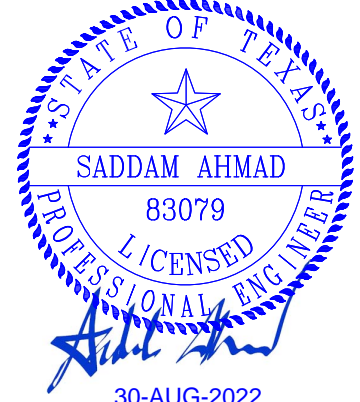
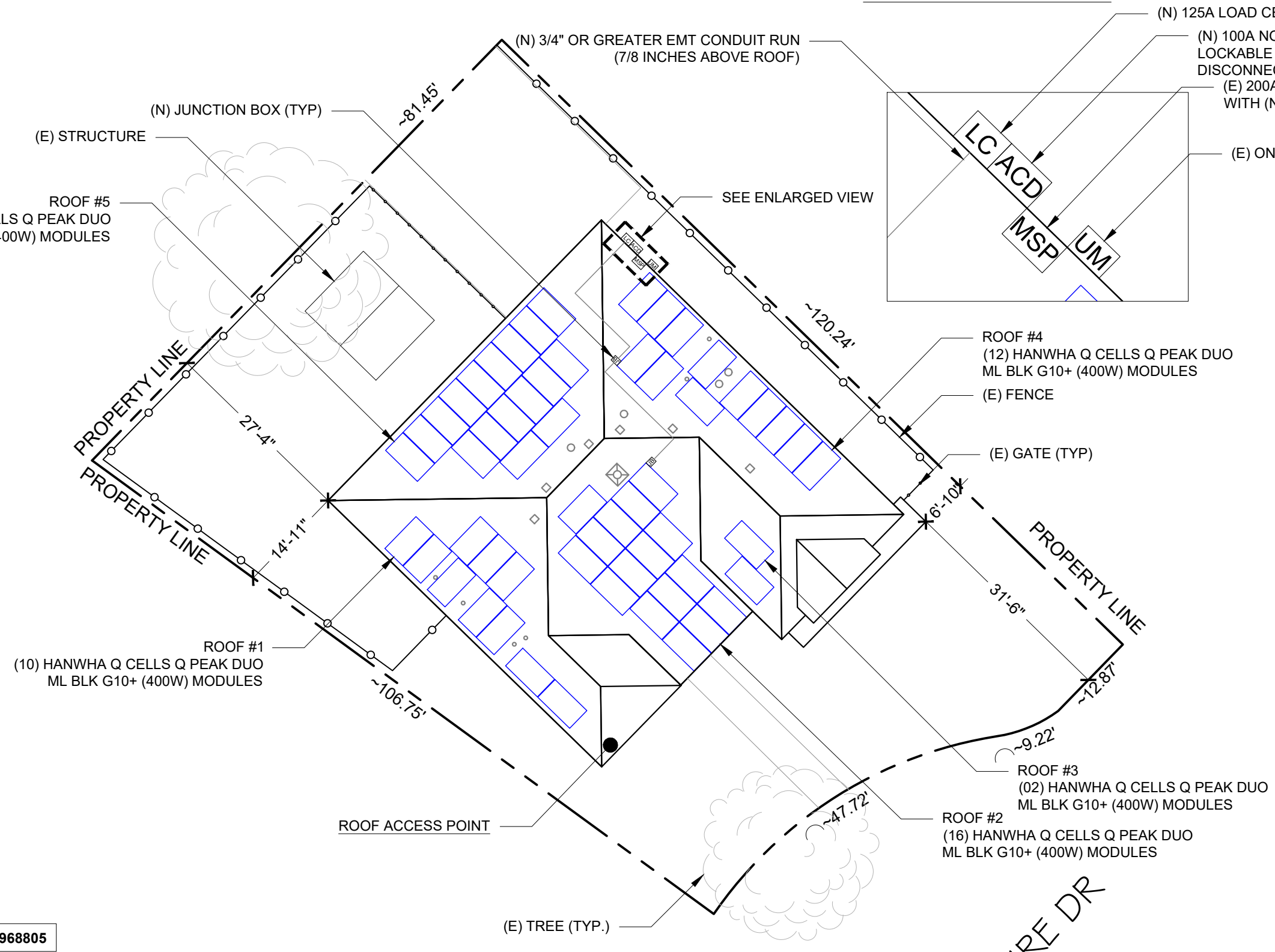
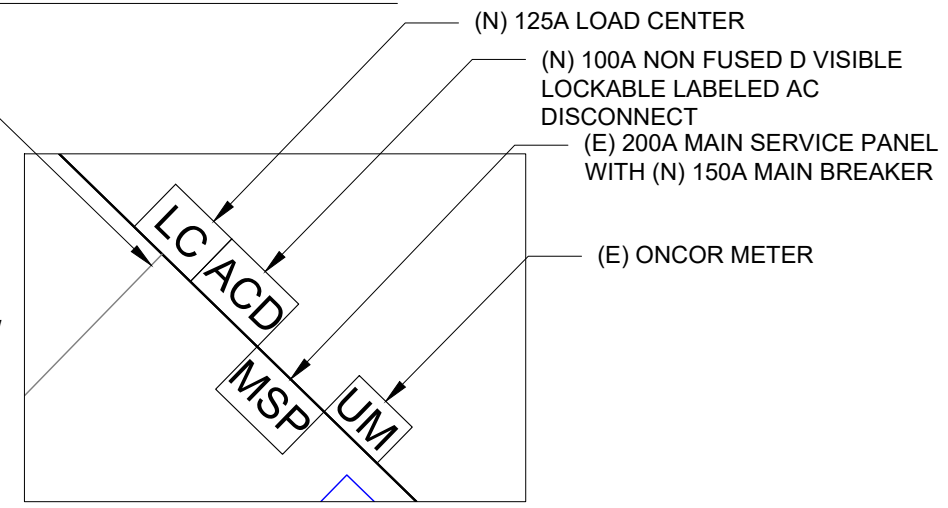
● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES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



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

*Regan George*

### ENLARGED VIEW



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"



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

PROJECT NAME  
**CHARLES FISHER  
125 LANSHIRE DR,  
ROCKWALL, TX 75032 USA  
APN# 4334000D002000R  
UTILITY: ONCOR  
AHJ: CITY OF ROCKWALL**

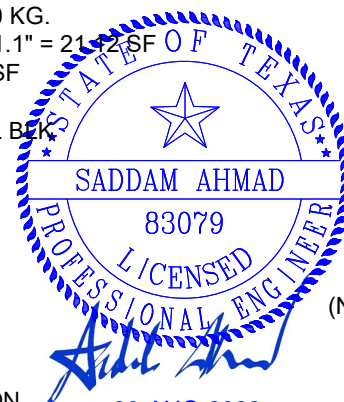
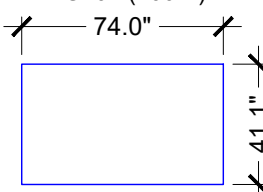
SHEET NAME  
**SITE PLAN WITH  
ROOF PLAN**

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" = 21.2 SF  
 UNIT WEIGHT OF ARRAY = 2.30 PSF  
 PHOTOVOLTAIC MODULES  
 HANWHA Q CELLS Q PEAK DUO ML BLK G10+ (400W)



**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 HIP 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

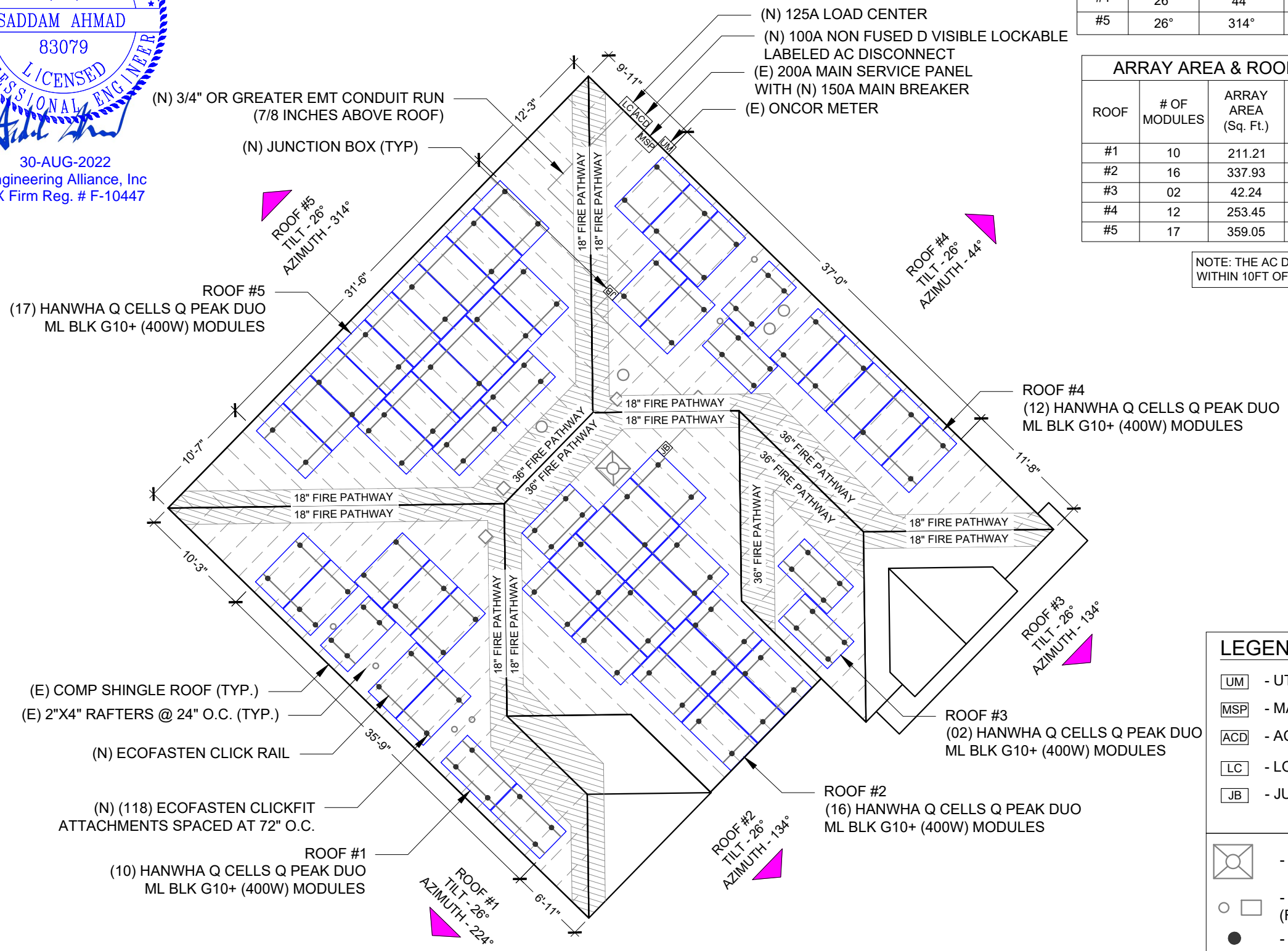
### ROOF DESCRIPTION

ROOF	ROOF TYPE		COMP SHINGLE ROOF	
	ROOF TILT	AZIMUTH	RAFTERS SIZE	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



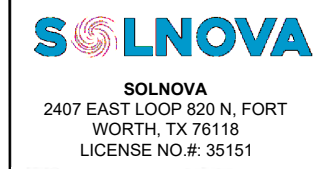
### LEGEND

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

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

# 1 ROOF PLAN WITH MODULES

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



*Regan George*

### VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME  
**CHARLES FISHER**  
 125 LANSHIRE DR,  
 ROCKWALL, TX 75032 USA  
 APN# 4334000D002000R  
 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

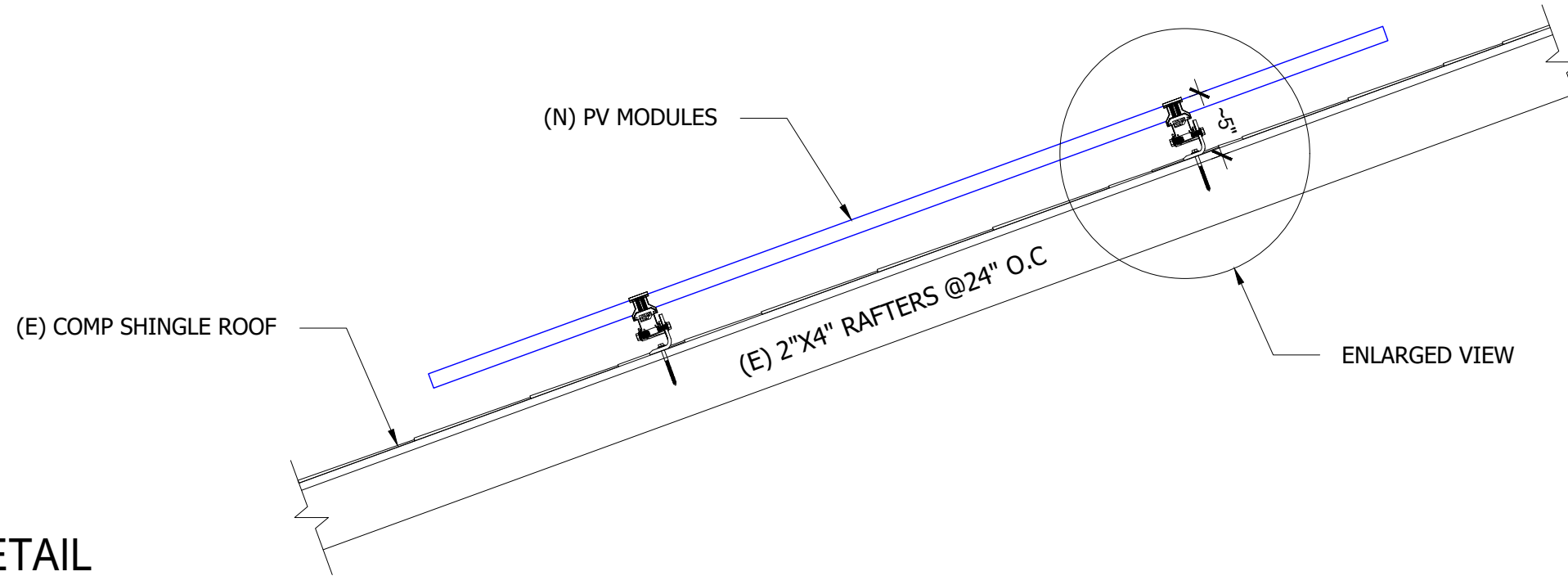


**NOTE:** ACTUAL ROOF CONDITIONS AND RAFTERS(OR SEAM) LOCATIONS MAY VARY. INSTALL PER MANUFACTURER(S) INSTALLATION GUIDELINES AND ENGINEERED SPANS FOR ATTACHMENTS

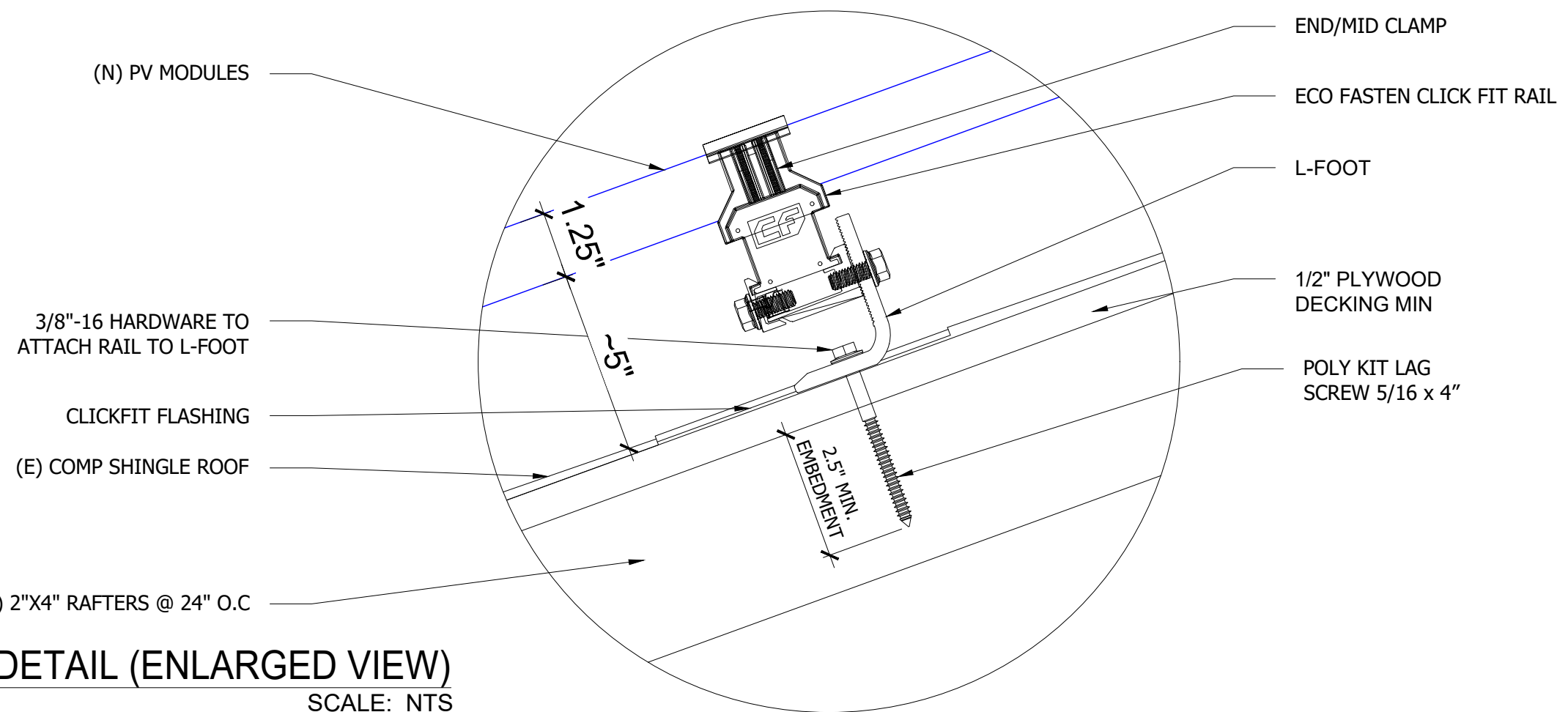


SOLNOVA  
2407 EAST LOOP 820 N, FORT WORTH, TX 76118  
LICENSE NO.#: 35151

*Regan George*



**1** ATTACHMENT DETAIL  
SCALE: NTS



**2** ATTACHMENT DETAIL (ENLARGED VIEW)  
SCALE: NTS

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

PROJECT NAME

CHARLES FISHER  
125 LANSHIRE DR,  
ROCKWALL, TX 75032 USA  
APN# 4334000D002000R  
UTILITY: ONCOR  
AHJ: CITY OF ROCKWALL

SHEET NAME  
ATTACHMENT  
DETAIL

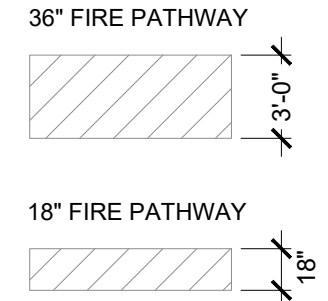
SHEET SIZE  
ANSI B  
11" X 17"

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



SOLNOVA  
 2407 EAST LOOP 820 N, FORT WORTH, TX 76118  
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VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME

CHARLES FISHER  
 125 LANSHIRE DR,  
 ROCKWALL, TX 75032 USA  
 APN# 4334000D002000R  
 UTILITY: ONCOR  
 AHJ: CITY OF ROCKWALL

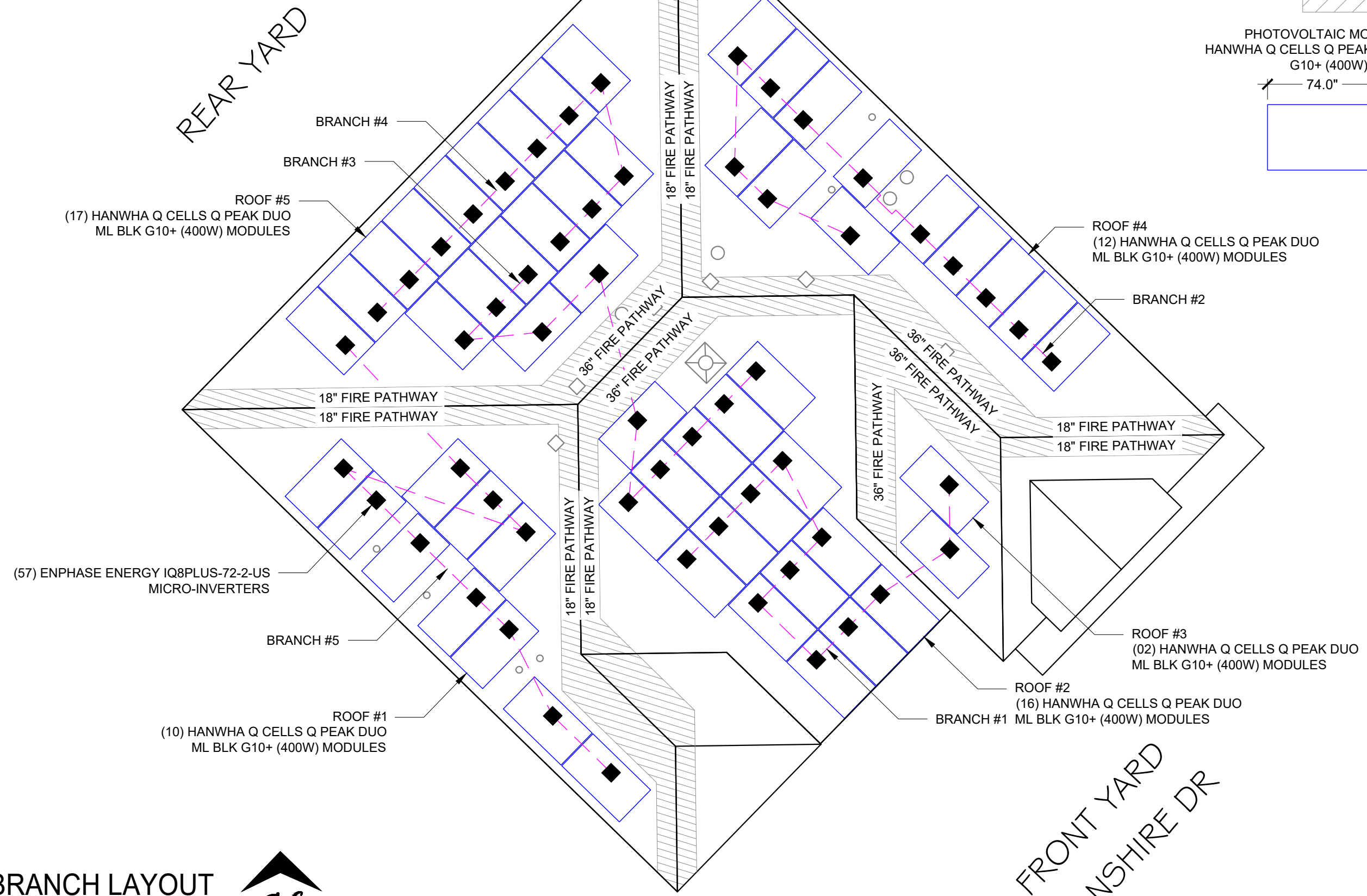
SHEET NAME  
 BRANCH LAYOUT

SHEET SIZE  
 ANSI B  
 11" X 17"

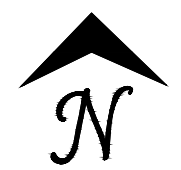
SHEET NUMBER  
 PV-4

REAR YARD

FRONT YARD  
 LANSHIRE DR



**1** BRANCH LAYOUT  
 SCALE: 1/8" = 1'-0"



(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.



SOLNOVA  
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**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**

ELECTRICAL LINE DIAGRAM

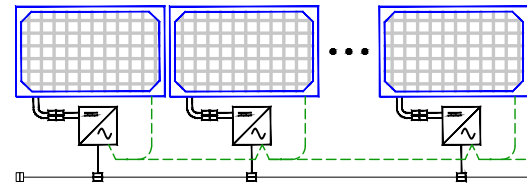
**SHEET SIZE**

ANSI B  
 11" X 17"

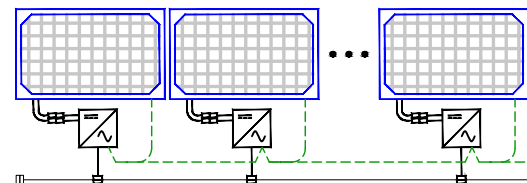
**SHEET NUMBER**

PV-5

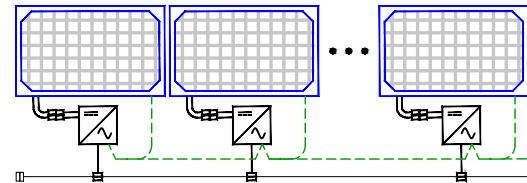
12 MICRO-INVERTERS IN BRANCH #1



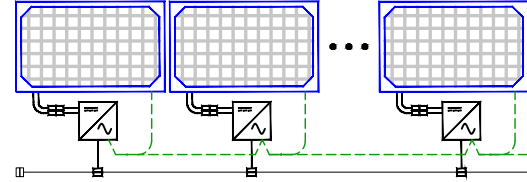
12 MICRO-INVERTERS IN BRANCH #2



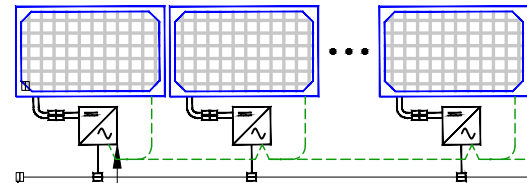
11 MICRO-INVERTERS IN BRANCH #3



11 MICRO-INVERTERS IN BRANCH #4



11 MICRO-INVERTERS IN BRANCH #5



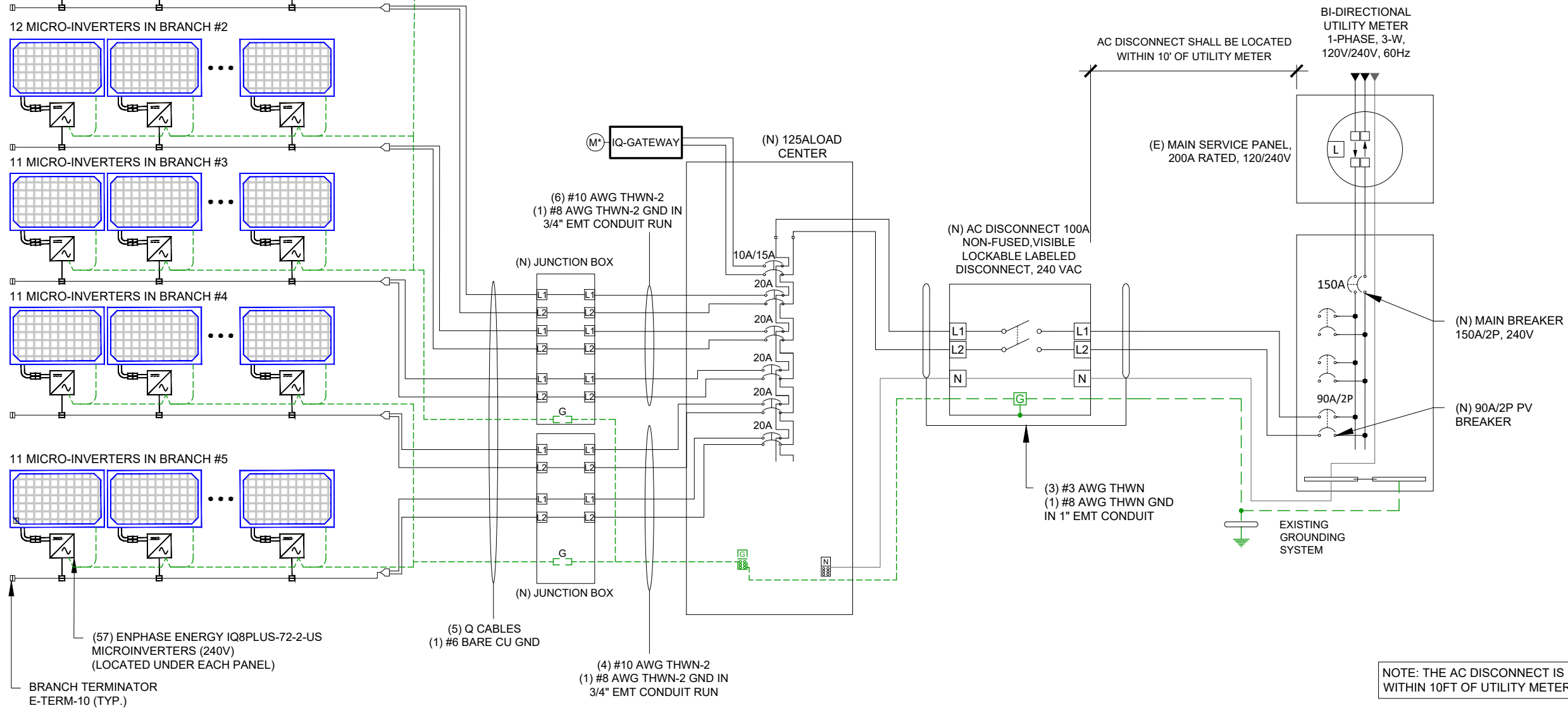
(57) ENPHASE ENERGY IQ8PLUS-72-2-US MICROINVERTERS (240V) (LOCATED UNDER EACH PANEL)

BRANCH TERMINATOR E-TERM-10 (TYP.)

**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



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.

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

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

ROOM FOR EQUIPMENT WITHIN 5 FEET FROM MSP

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

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

**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

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



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# 4334000D002000R  
 UTILITY: ONCOR  
 AHJ: CITY OF ROCKWALL

SHEET NAME  
 ELECTRICAL CALCULATION

SHEET SIZE  
 ANSI B  
 11" X 17"

SHEET NUMBER  
 PV-6

**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 ILSKO GBL-4DBT LAY-IN LUG.
- 10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

**1** ELECTRICAL CALCULATION  
 SCALE: NTS





**⚠ 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**

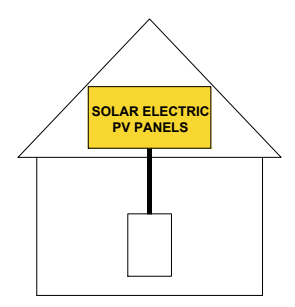
LABEL LOCATION:  
 CONDUIT, COMBINER BOX  
 (PER CODE: NEC 690.31(G)(3))

**MAIN PHOTOVOLTAIC SYSTEM DISCONNECT**

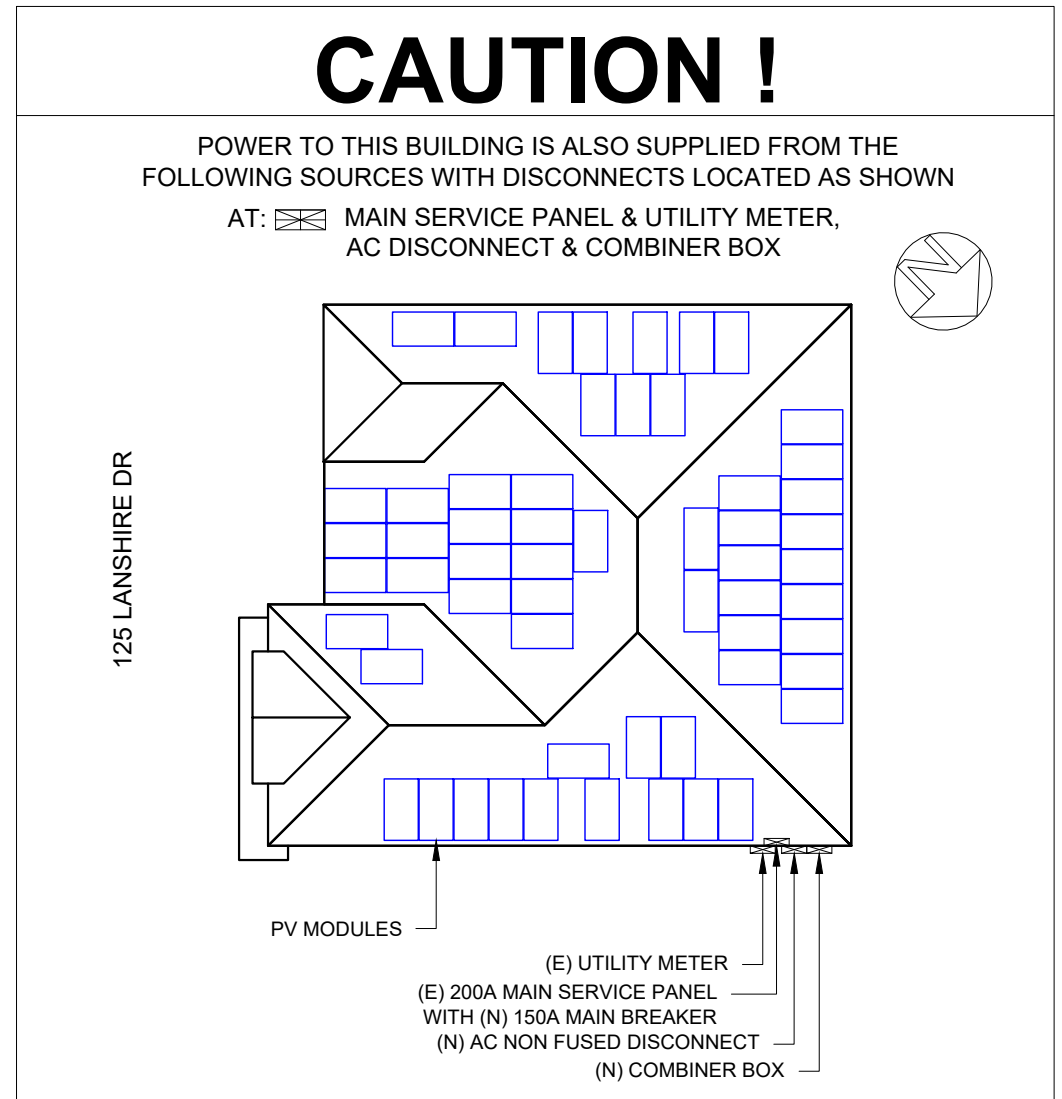
LABEL LOCATION:  
 MAIN SERVICE DISCONNECT / UTILITY METER  
 (PER CODE: NEC 690.13(B))

**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))



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

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PROJECT NAME  
 CHARLES FISHER  
 125 LANSHIRE DR,  
 ROCKWALL, TX 75032 USA  
 APN# 4334000D002000R  
 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 HELD OFF OF THE ROOF SURFACE. NEC 110.2 - 110.4 / 300.4



SOLNOVA  
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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



### 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<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q<sup>TM</sup>.



### 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<sup>2</sup>.

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



6 BUSBAR CELL TECHNOLOGY

12 BUSBAR CELL TECHNOLOGY

### THE IDEAL SOLUTION FOR:



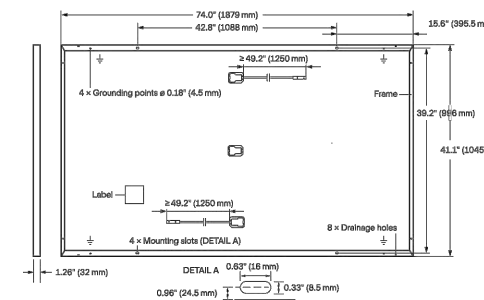
Rooftop arrays on residential buildings

Engineered in Germany



### 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 mm <sup>2</sup> Solar cable; (+) ≥ 49.2 in (1250 mm), (-) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

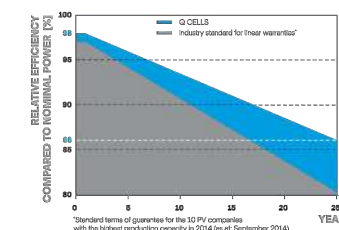


### ELECTRICAL CHARACTERISTICS

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

<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3%; I<sub>SC</sub>, V<sub>OC</sub> ± 5% at STC: 1000 W/m<sup>2</sup>, 25 ± 2°C, AM 1.5 according to IEC 60904-3 • <sup>2</sup> 800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

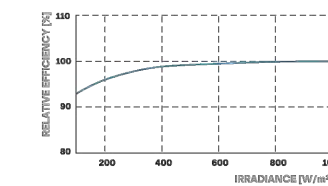
### Q CELLS PERFORMANCE WARRANTY



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/m<sup>2</sup>)

### TEMPERATURE COEFFICIENTS

Temperature Coefficient of I <sub>SC</sub>	α [%/K]	+0.04	Temperature Coefficient of V <sub>OC</sub>	β [%/K]	-0.27
Temperature Coefficient of P <sub>MPP</sub>	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°F]	109 ± 5.4 (43 ± 3°C)

### PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>sys</sub> [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 <sup>3</sup> [lbs/ft <sup>2</sup> ]	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 <sup>3</sup> [lbs/ft <sup>2</sup> ]	113 (5400 Pa) / 84 (4000 Pa)		

<sup>3</sup> 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).



### 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
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**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

Specifications subject to technical changes © Q CELLS Q.PEAK DUO BLK ML-G10+ 385-405 DA\_2022-02\_Rev01\_NA



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# 4334000D002000R  
UTILITY: ONCOR  
AHJ: CITY OF ROCKWALL

### SHEET NAME

SPEC SHEETS

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-9



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.



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.



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

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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 <sup>1</sup>	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 <sup>2</sup> [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 <sup>3</sup>	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 <sup>4</sup>		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/IEE1547, 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  
 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# 433400D002000R  
 UTILITY: ONCOR  
 AHJ: CITY OF ROCKWALL

### SHEET NAME

SPEC SHEETS

### SHEET SIZE

ANSI B  
 11" X 17"

### SHEET NUMBER

PV-10

# 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



To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



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

## 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
Envy 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	<ul style="list-style-type: none"> <li>• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors</li> <li>• 60 A breaker branch input: 4 to 1/0 AWG copper conductors</li> <li>• Main lug combined output: 10 to 2/0 AWG copper conductors</li> <li>• Neutral and ground: 14 to 1/0 copper conductors</li> </ul> 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](https://enphase.com)

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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# 4334000D002000R  
UTILITY: ONCOR  
AHJ: CITY OF ROCKWALL

### SHEET NAME

SPEC SHEETS

### SHEET SIZE

ANSI B  
11" X 17"

### SHEET NUMBER

PV-11

## 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](http://enphase.com/in)



## 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)



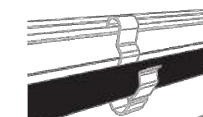
#### SEALING CAPS

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](http://enphase.com/in)

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*Regan George*

#### VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

#### PROJECT NAME

CHARLES FISHER  
 125 LANSHIRE DR,  
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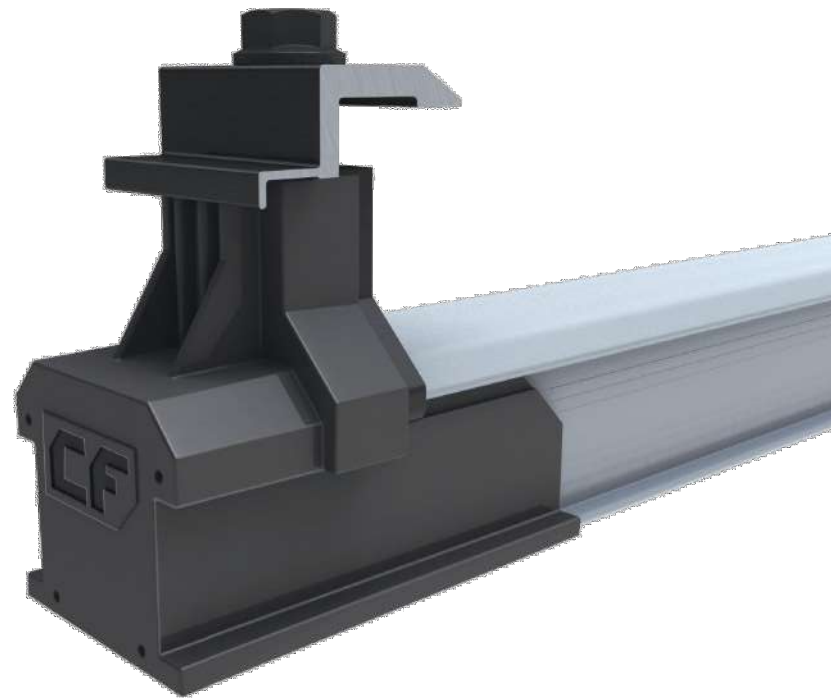
SPEC SHEETS

#### SHEET SIZE

ANSI B  
 11" X 17"

#### SHEET NUMBER

PV-12



**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.

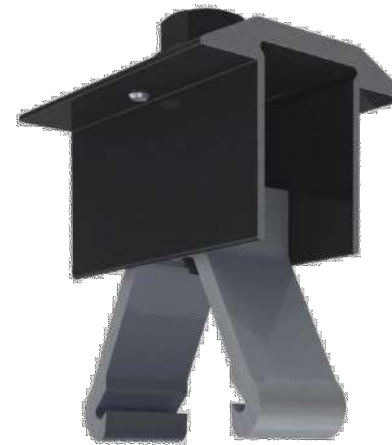
**CF MLPE MOUNT**

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



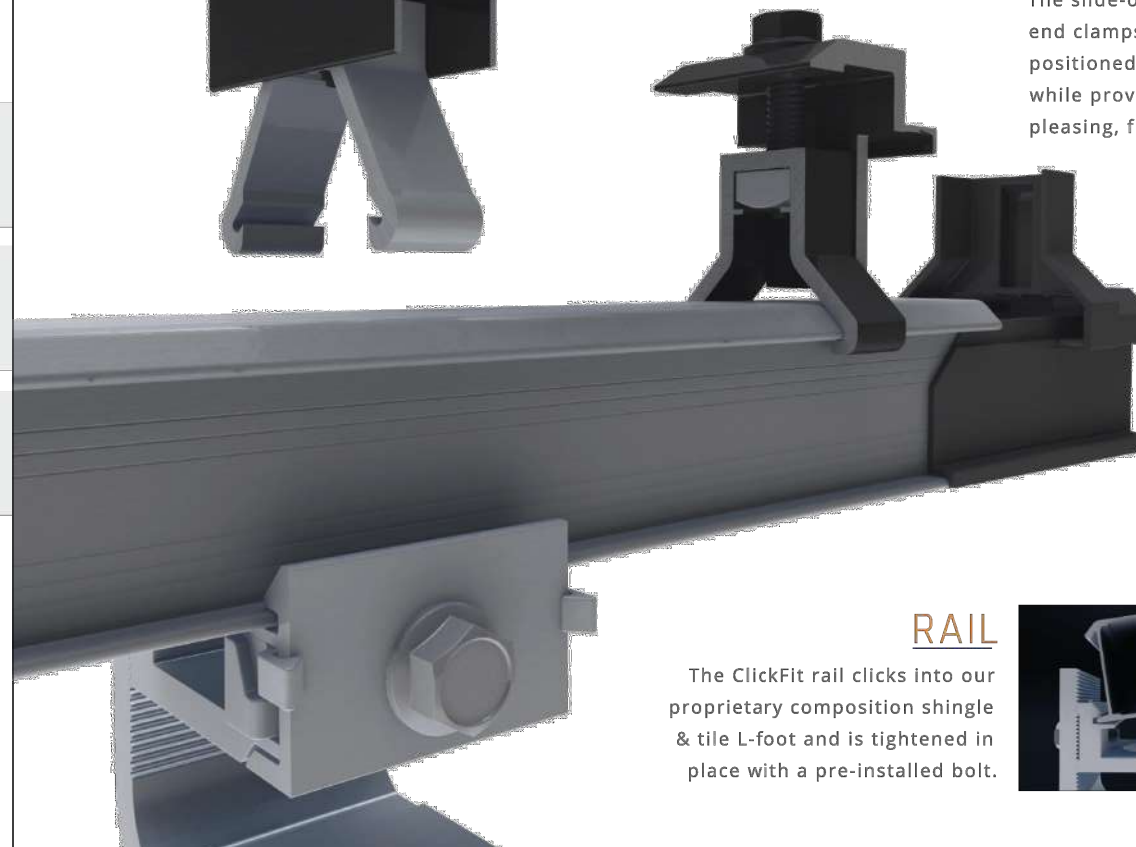
**END CLAMP**

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.



**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

- Composition Shingle, Tile, Metal**
- Rail-Based**
- Structural-Attach Direct-Attach**



ECOFASTENSOLAR.COM

**SOLNOVA**

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

*Regan George*

VERSION

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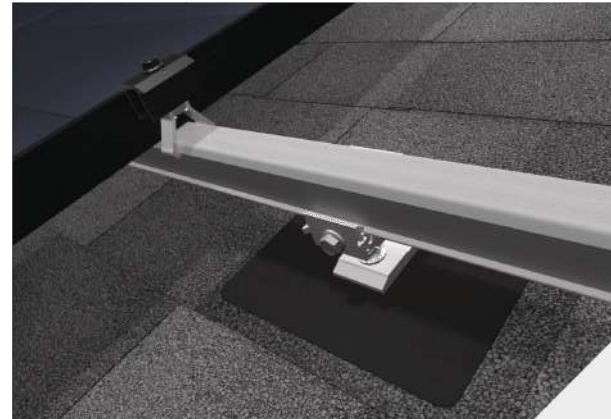
SHEET NUMBER

PV-13



*Regan George*

## 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

VERSION

DESCRIPTION	DATE	REV
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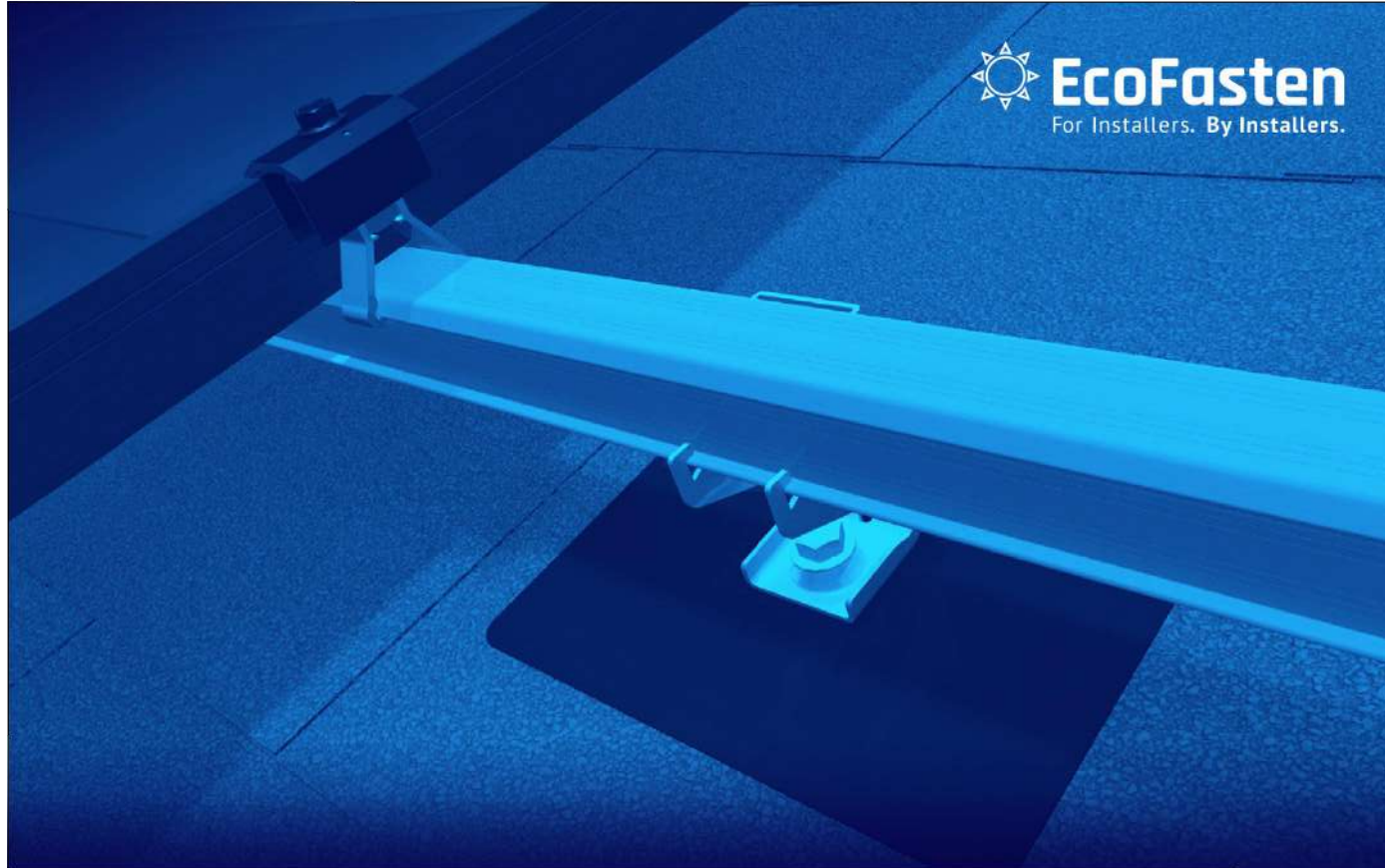
SHEET NUMBER

PV-14

*Regan George*



INSTALLATION GUIDE



**COMPLETE RAIL-BASED RACKING SYSTEM**

INSTALLATION GUIDE

REVISION DATE: 04/09/21

VERSION: v2.4

MANUFACTURER	LIST OF UL2703 APPROVED MODULES
<b>GCL</b>	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
<b>GigaWatt Solar</b>	Gigawatt modules with 40 mm frames GWxxxYY Where "YY" can be either PB or MB
<b>Hansol</b>	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
<b>Hanwha Solar</b>	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
<b>Hanwha Q CELLS</b>	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
<b>Heliene</b>	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
<b>HT-SAAE</b>	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

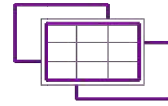
VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	08-29-2022	UR

PROJECT NAME  
**CHARLES FISHER  
125 LANSHIRE DR,  
ROCKWALL, TX 75032 USA  
APN# 4334000D002000R  
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# 4334000D002000R  
UTILITY: ONCOR  
AHJ: CITY OF ROCKWALL

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-16