CASE COVER SHEET

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

PLANNING & ZONING CASE NO. Z2024-025

PLANNING & ZONING FEE

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 June 25, 2024, the Planning and Zoning Commission approved a motion to recommend approval of the Specific Use Permit by a vote of 6-0, with one (1) vacant seat.

CITY COUNCIL READING #1

On July 1, 2024, the City Council approved a motion to approve the Specific Use Permit by a vote of 6-0, with Council Member Campbell absent.

CITY COUNCIL READING #2

On July 15, 2024, the City Council approved a motion to approve the SUP by a vote of 6-0. with Council Member Thompson absent.

CONDITIONS OF APPROVAL

(a) The development or redevelopment of the Subject Property shall generally conform to the Site Plan and Building Elevations depicted in Exhibits 'B' and 'C' of this ordinance.
(b) The development or redevelopment of the Subject Property shall generally conform to the Site Plan and Building Elevations depicted in Exhibits 'B' and 'C' of this ordinance.
(c) The development or redevelopment of the Subject Property shall generally conform to the Site Plan and Building Elevations depicted in Exhibits 'B' and 'C' of this ordinance.

NOTES

DEVELOPMENT APPLICATION

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

STAFF USE ONLY
PLANNING & ZONING CASE NO. Z2024-025

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	1290 I-30 Rockwall TX 75087				
SUBDIVISION		LOT		BLOCK	
GENERAL LOCATION	Townsend Dr. & I-30 Frontage rd				

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING	LI		CURRENT USE	CTE Entertainment LP	
PROPOSED ZONING	LI		PROPOSED USE	Solar	
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	
CONTACT PERSON	Justin Ripp	CONTACT PERSON	Teshia Brown
ADDRESS	1290 E I-30	ADDRESS	4801 Freidrich LN. Ste 109
CITY, STATE & ZIP	Rockwall, TX 75087	CITY, STATE & ZIP	Austin, TX 78744
PHONE	972-839-8196	PHONE	940-594-9718
E-MAIL	justin@elevatedvg.com	E-MAIL	teshiabrown@freedomsolarpower.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Justin Ripp [*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 $ 215 *TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE* 16 *DAY OF* May *20* 24 *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 16 *DAY OF* May *20* 24

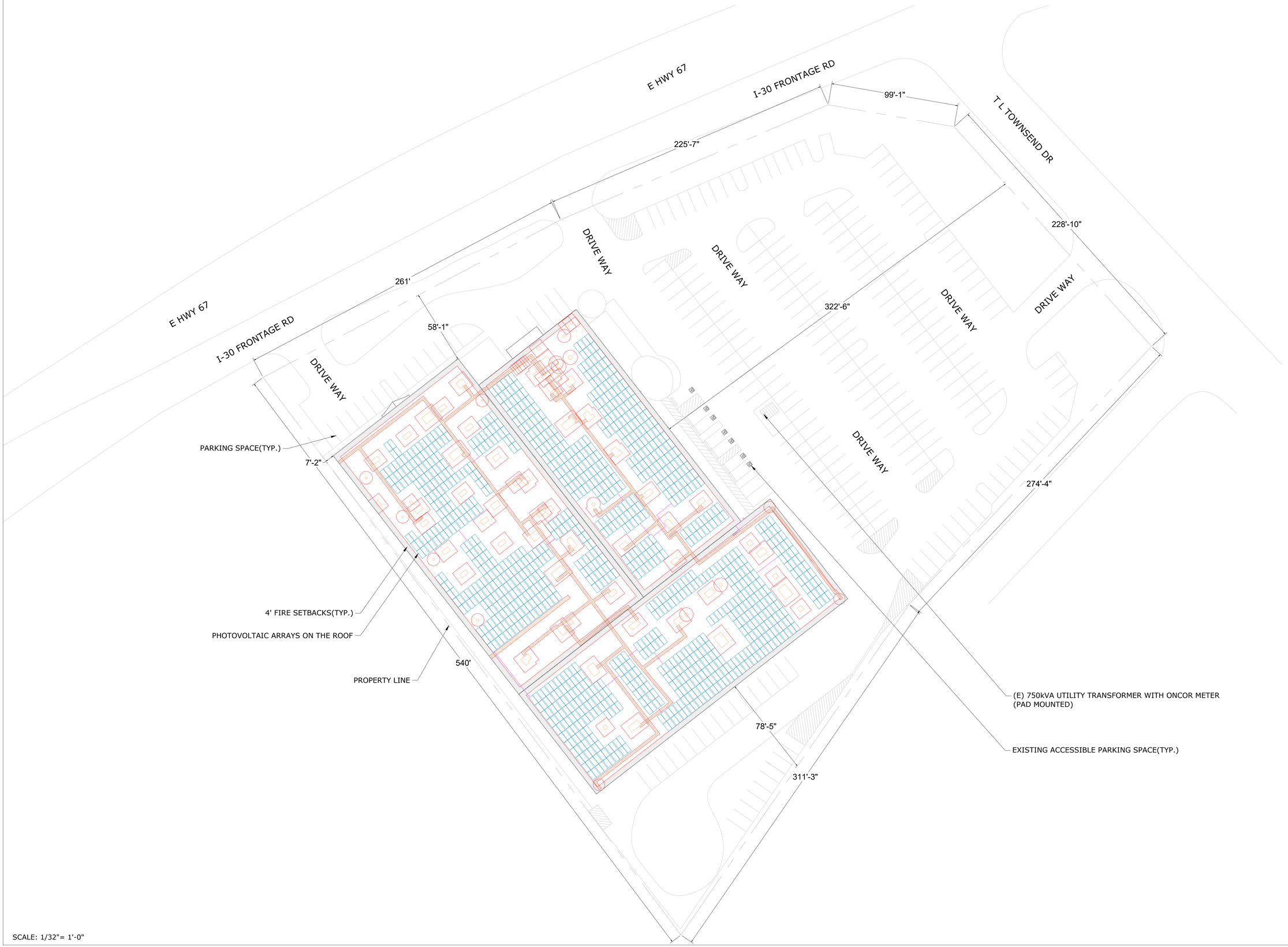
OWNER'S SIGNATURE

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES

JARED FARMER
Notary Public, State of Texas
Comm. Expires 09-11-2026
Notary ID 131718186

SITE PLAN : DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW



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

FREEDOM™ SOLAR POWER

4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

STATE OF TEXAS
JORDNA F. HANLEY
133867
LICENSED PROFESSIONAL ENGINEER

JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

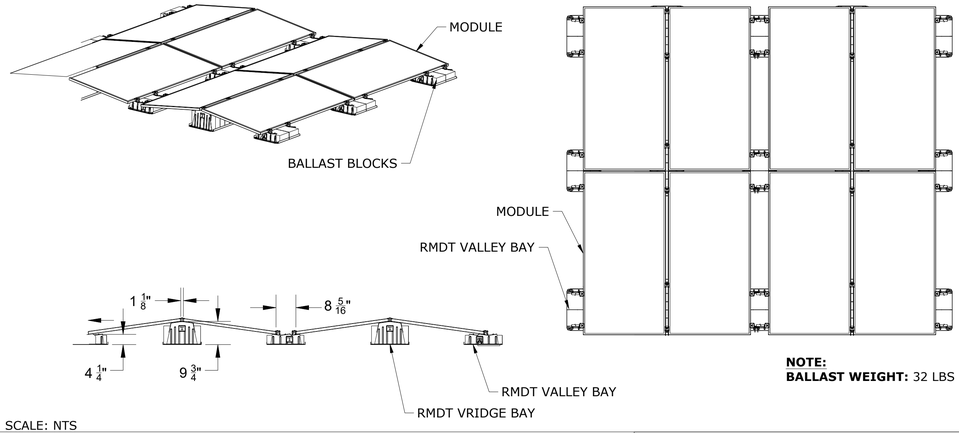
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SITE PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	A-01

ATTACHMENT DETAILS - UNIRAC RMDT



SCALE: NTS

NOTE:
BALLAST WEIGHT: 32 LBS

BILL OF MATERIALS

PART NUMBER	DESCRIPTION	QTY	UNIT
Q.PEAK DUO XL-G10.3/BFG 485W	MODULE	1112	QTY.
N/A	BALLAST BLOCK	1658	QTY.
310802	RMDT VALLEY BAY	813	QTY.
310826	RMDT MID CLAMP 32-35MM	1324	QTY.
310820	RMDT END CLAMP 30-40MM	2648	QTY.
310860	KIT 1/4-20 CLIP ON NUT SS 18-8	3972	QTY.
310801	RMDT RIDGE BAY	662	QTY.
008115M	MLPE TIGER CLIP	1112	QTY.

GENERAL STRUCTURAL NOTES

1.ALL EQUIPMENTS SHALL BE INSTALLED PER MANUFACTURER INSTALLATION AND OPERATIONS MANUAL REQUIREMENTS.
2.PRIOR TO COMMENCEMENT OF WORK OR FABRICATION OF COMPONENTS, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS,AND ELEVATIONS OF THE EXISTING CONSTRUCTION.CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE FIELD -VERIFIED CONDITIONS, DIMENSIONS,AND ELEVATION AND THOSE INDICATED ON THE DRAWINGS.
3.ALL THE CONSTRUCTION SHALL COMPLY WITH REQUIREMENTS OF 2021 EDITION OF THE BUILDING CODE.

SOLAR RACK COMPONENTS:

1. FOLLOW MANUFACTURER'S INSTALLATION FOR INSTALLATION OF THE SOLAR COMPONENTS,INCLUDING MODULE CLAMPS,L-FEET,BRACKETS MECHANICAL ATTACHMENTS,AND HARDWARE.

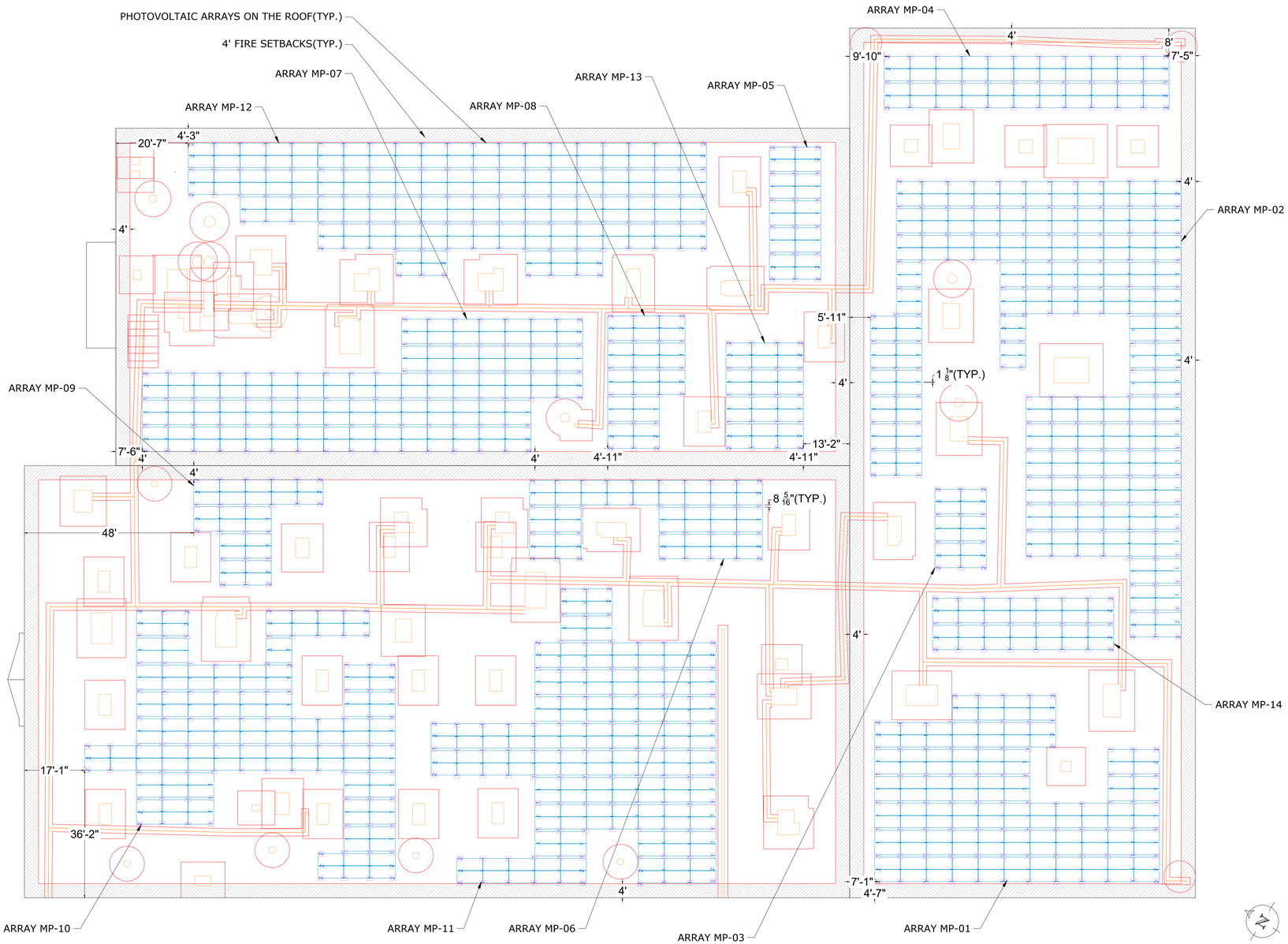
LEGEND:

1 STANDARD CORNER BAY WITH CMU BLOCK COUNT

2 SUPPLEMENTAL BAY WITH CMU BLOCK COUNT

SITE INFORMATION - WIND SPEED: 105 MPH, EXPOSURE: B AND SNOW LOAD: 5 PSF

SR. NO	AZIMUTH	MODULE TILT	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT
ARRAY MP-01	52°&232°	8°	120	3372	TPO	UNIRAC RMDT
ARRAY MP-02	52°&232°	8°	222	6211	TPO	UNIRAC RMDT
ARRAY MP-03	52°&232°	8°	12	341	TPO	UNIRAC RMDT
ARRAY MP-04	52°&232°	8°	44	1265	TPO	UNIRAC RMDT
ARRAY MP-05	52°&232°	8°	20	562	TPO	UNIRAC RMDT
ARRAY MP-06	52°&232°	8°	42	1201	TPO	UNIRAC RMDT
ARRAY MP-07	52°&232°	8°	122	3449	TPO	UNIRAC RMDT
ARRAY MP-08	52°&232°	8°	26	732	TPO	UNIRAC RMDT
ARRAY MP-09	52°&232°	8°	24	686	TPO	UNIRAC RMDT
ARRAY MP-10	52°&232°	8°	124	3500	TPO	UNIRAC RMDT
ARRAY MP-11	52°&232°	8°	148	4155	TPO	UNIRAC RMDT
ARRAY MP-12	52°&232°	8°	156	4402	TPO	UNIRAC RMDT
ARRAY MP-13	52°&232°	8°	24	677	TPO	UNIRAC RMDT
ARRAY MP-14	52°&232°	8°	28	805	TPO	UNIRAC RMDT



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OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF MINIMUM
TEMPERATURE: -8°C
MAXIMUM
TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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ILLUMINE i

STRUCTURAL PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | S-01

STRINGING DIAGRAM:

STRING ID LEGEND

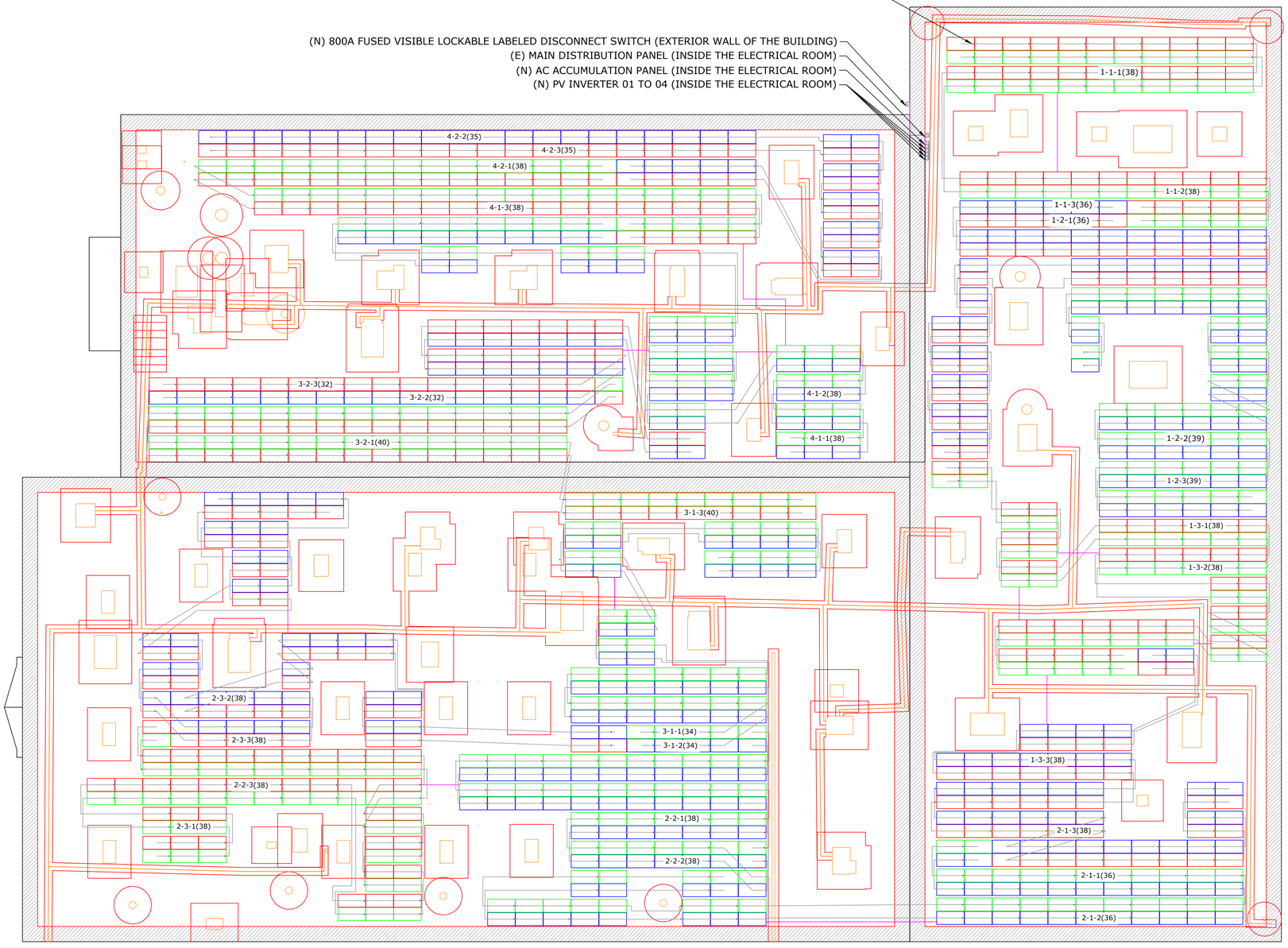
STR 1-1-1(X)

- # OF MODULES
- STRING ID
- UNIT #(1,2,3)
- INVERTER ID#

(E) 750kVA UTILITY TRANSFORMER WITH ONCOR METER (PAD MOUNTED)

STRING STARTS HERE

(N) 800A FUSED VISIBLE LOCKABLE LABELED DISCONNECT SWITCH (EXTERIOR WALL OF THE BUILDING)
(E) MAIN DISTRIBUTION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) AC ACCUMULATION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) PV INVERTER 01 TO 04 (INSIDE THE ELECTRICAL ROOM)



SCALE:1"=15'-0"

WIRING AND WIRING METHODS:

1. EXPOSED PV SOLAR MODULE WIRING AND PV SOURCE CIRCUITS TO BE UV RESISTANT 2,000V PV WIRE, 90° C, AND RATED FOR WET CONDITIONS.
2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED IN A NEAT WORKMAN LIKE MANNER TO PREVENT CHAFFING, SWINGING, AND EXCEEDING MINIMUM BEND RADIUS WITH PROPER MECHANICAL SUNLIGHT RESISTANT MEANS AND ROUTED TO AVOID DIRECT EXPOSURE TO SUNLIGHT AT ALL TIMES.
3. ALL FIELD WIRING THAT IS NOT COLOR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND.
4. FLEXIBLE METAL CONDUIT IS SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS OR CONDUIT FITTING) AND NO MORE THAN 48 INCHES APART.
5. LIQUID TIGHT FLEXIBLE METAL AND NON-METALLIC CONDUIT IS SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART.
6. PVC CONDUIT AND FITTINGS SHALL NOT BE USED ON ROOFTOP CONDITIONS OR EXPOSED TO DIRECT SUNLIGHT.WHEN USED IN ACCEPTABLE LOCATION CONDUIT SHALL BE SCHEDULE 80 UV RESISTANT UNLESS NOTED OTHERWISE.
7. FUSES AND WIRES SUBJECT TO TEMPERATURES CONDITIONS GREATER THAN 100°F OR TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
8. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
9. ALL TERMINATIONS SHALL HAVE ANTI-OXIDANT COMPOUND AND BE TORQUED PER DEVICE LISTING, OR MANUFACTURER'S RECOMMENDATIONS.
10. SPLIT BOLTS /SPLICES / CONNECTORS ARE PERMITTED ON THE AC CONDUCTORS AND SHALL BE INSULATED WITH APPROVED MEANS. SPLICES ON THE DC CONDUCTORS IS NOT PERMITTEDIN ANY LOCATION.
11.NO PVC CONDUIT ALLOWED ON ROOF, UNLESS OPEN ENDED WIRE MANAGEMENT <10'.

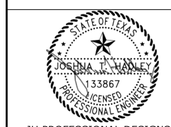
INVERTER 1, 120kW			INVERTER 2, 120kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
1-1-1	38	19	2-1-1	36	18
1-1-2	38	19	2-1-2	36	18
1-1-3	36	18	2-1-3	38	19
UNIT 02			UNIT 02		
1-2-1	36	18	2-2-1	38	19
1-2-2	39	20	2-2-2	38	19
1-2-3	39	20	2-2-3	38	19
UNIT 03			UNIT 03		
1-3-1	38	19	2-3-1	38	19
1-3-2	38	19	2-3-2	38	19
1-3-3	38	19	2-3-3	38	19

INVERTER 3, 80kW			INVERTER 4, 80kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
3-1-1	34	17	4-1-1	38	19
3-1-2	34	17	4-1-2	38	19
3-1-3	40	20	4-1-3	38	19
UNIT 02			UNIT 02		
3-2-1	40	20	4-2-1	38	19
3-2-2	32	16	4-2-2	35	18
3-2-3	32	16	4-2-3	35	18
			GRAND TOTAL	1112	558

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MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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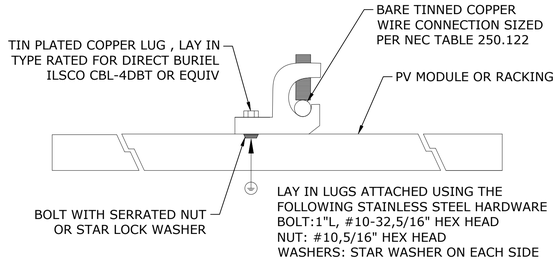
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STRINGING MAP

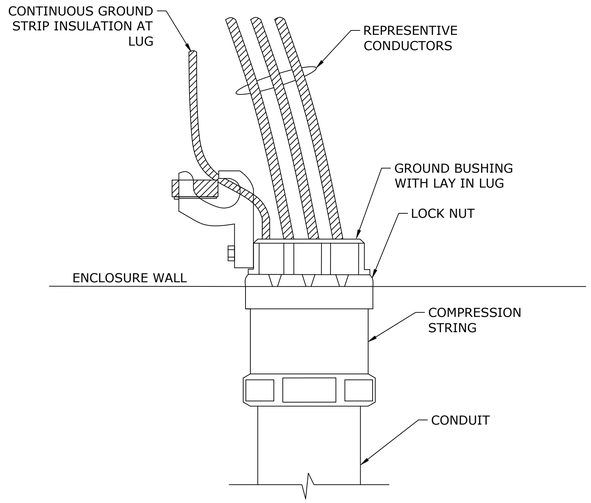
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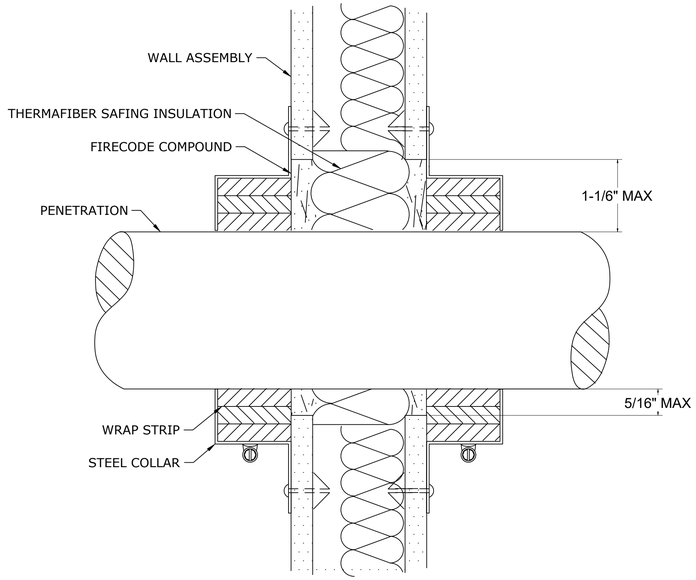
GROUND LUG DETAIL:



CONDUIT BODY GROUNDING DETAIL:

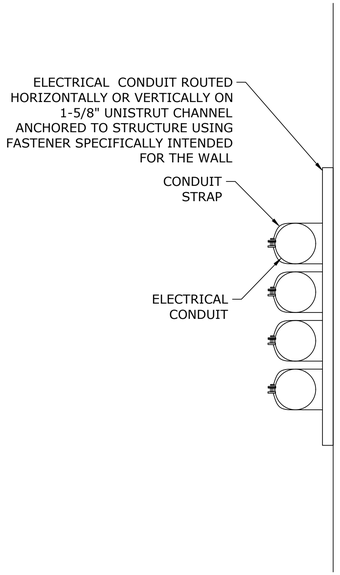


FIRE WALL PENETRATION DETAIL:

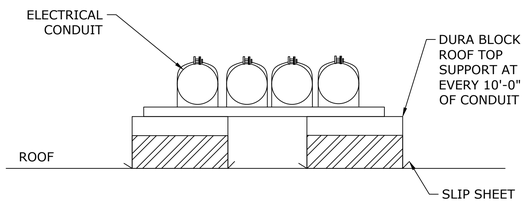


SCALE: NTS

CONDUIT WALL ANCHORING:



TYPICAL DURA-BLOCK CONDUIT SUPPORT DETAIL:



NOTE: DETAIL DRAWINGS ARE FOR REFERENCE ONLY

GROUNDING - SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION:

1.ONLY ONE CONNECTION TO DC CIRCUITS AND AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (REFERENCED TO THE SAME POINT).
2.EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING ELECTRODE CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING CONNECTION POINT AS PRACTICABLE AND A MINIMUM NUMBER OF TURNS.
3.TO ENSURE PROPER GROUNDING, NON-CURRENT CARRYING METAL PARTS SHALL BE INSTALLED, NOTING THAT PAINT AND FINISH SHALL BE PROPERLY REMOVED WHERE IT MAY INSULATE AN ENCLOSURES BONDING CONNECTION.APPLY NO-LOX OR OTHER SIMILAR ANTI-OXIDANT COMPOUND TO EXPOSED SURFACES.
4.THE CONNECTION TO THE MODULE OF THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT.
5.GROUNDING SYSTEM COMPONENTS SHALL BE APPROVED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC. GROUNDING DEVICES EXPOSED TO THE ENVIRONMENT SHALL BE RATED FOR DIRECT BURIAL.
6.UNDERGROUND OR INACCESSIBLE CONNECTIONS OF GROUNDING CONDUCTORS SHALL ONLY BE MADE VIA EXO-THERMIC WELDS. THE USE OF MECHANICAL CONNECTIONS ARE ACCEPTABLE FOR ACCESSIBLE ABOVE GROUND LOCATIONS.
7.ALL METALLIC CONDUITS SHALL BE INSTALLED AND TERMINATED WITH INSULATED GROUND BUSHINGS.

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 1044372000636390O
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

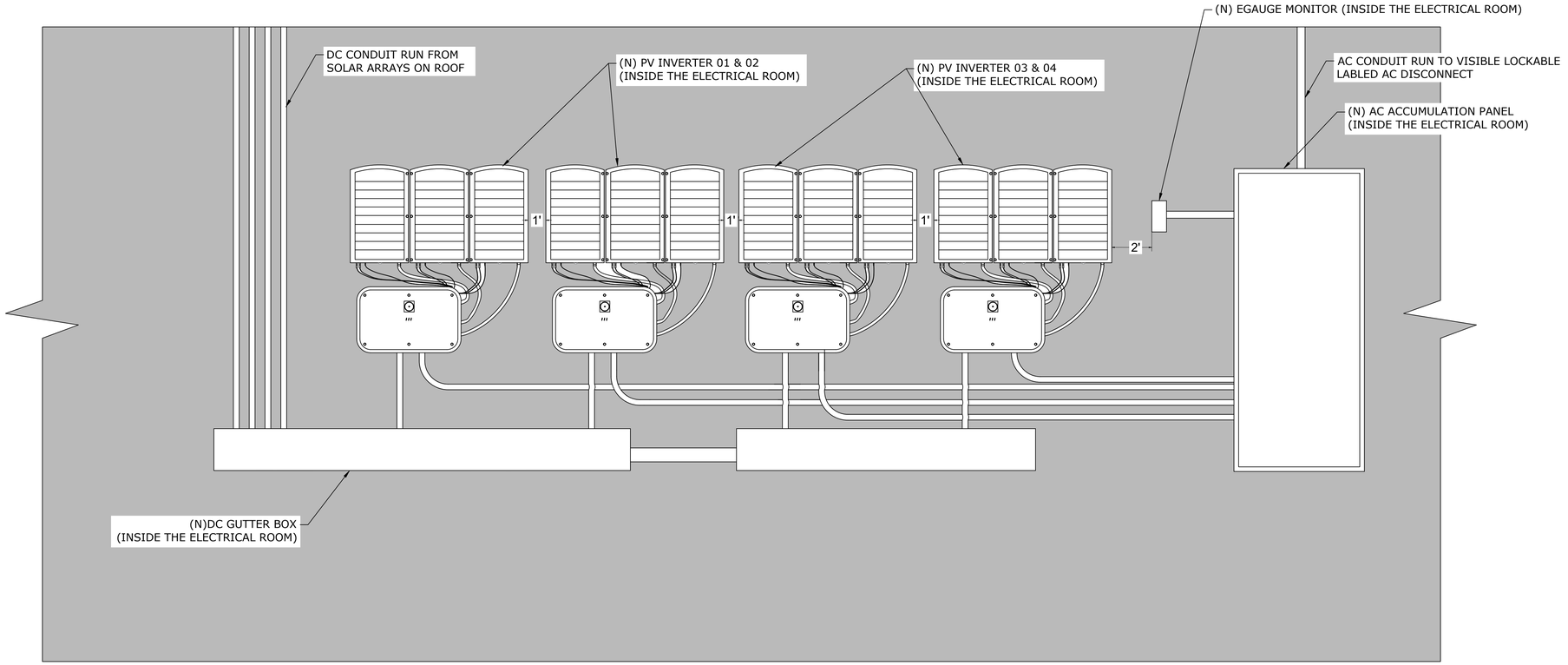
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ELECTRICAL MOUNTING DETAILS

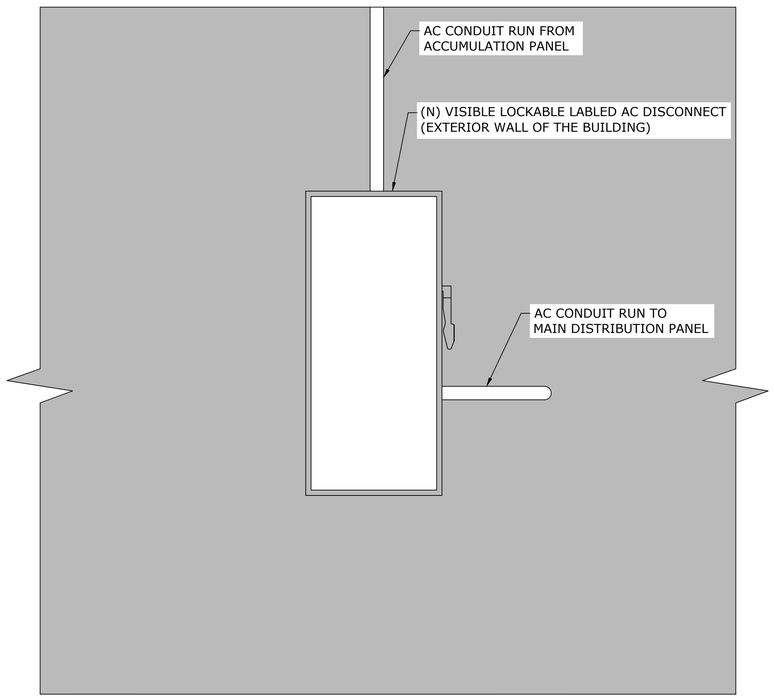
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-02

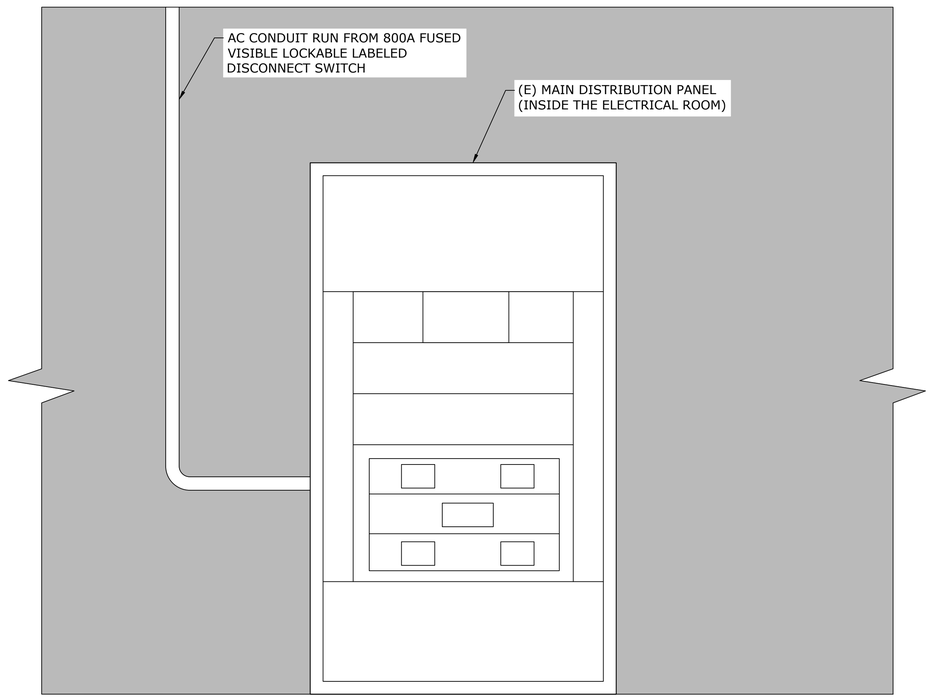
ELECTRICAL EQUIPMENT ELEVATION VIEW :



SCALE: NTS



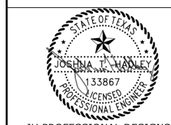
SCALE: NTS



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PRN NUMBER:FMS-CU-2023-1688

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EQUIPMENT ELEVATION VIEW

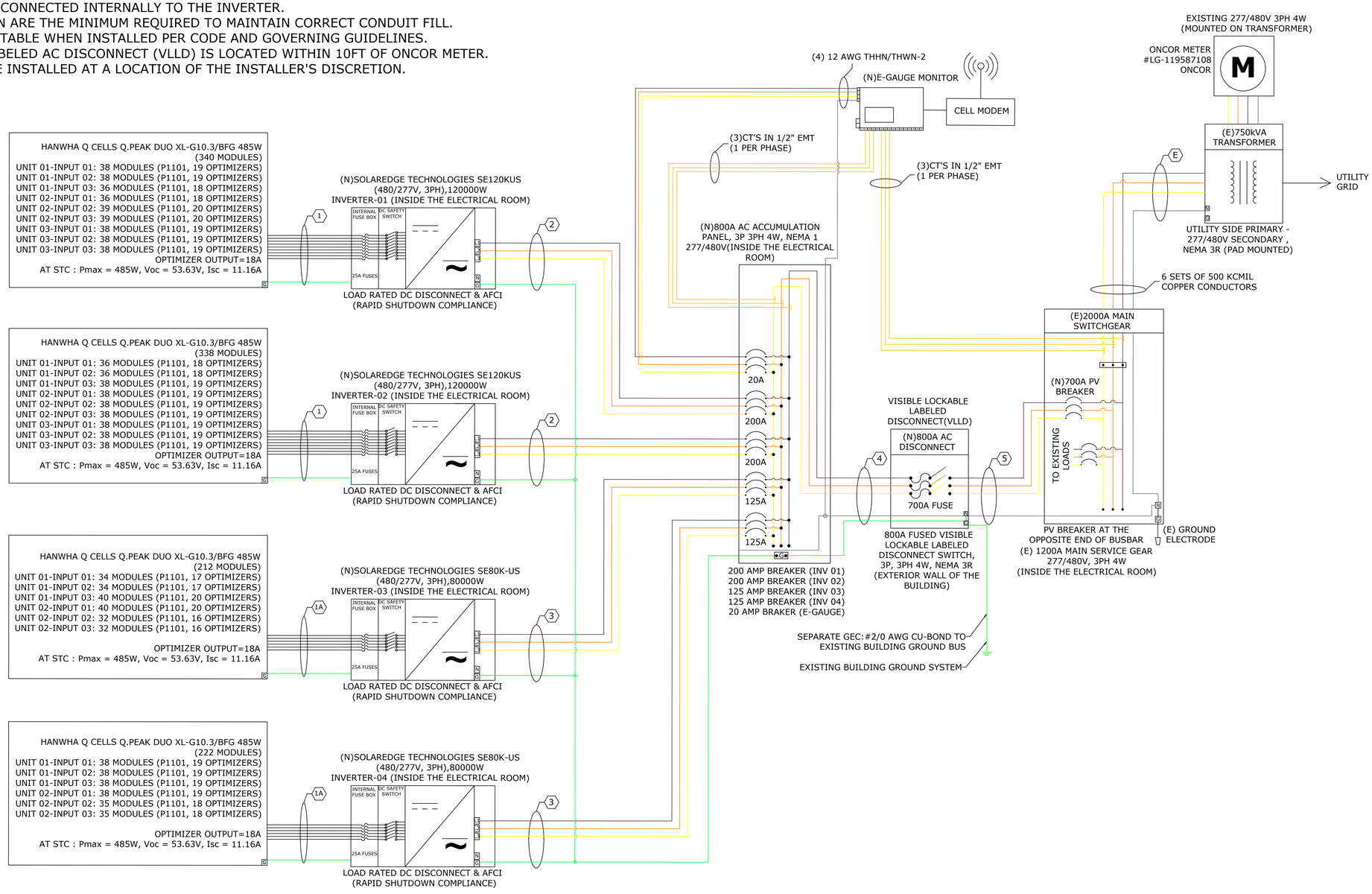
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-03

ELECTRICAL DIAGRAM: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

NOTE:

1. TYPICALLY EACH SOLAREDGE P1101 POWER OPTIMIZER IS CONNECTED TO TWO MODULES.
2. EACH SOLAREDGE P1101 POWER OPTIMIZER IS RAPID SHUTDOWN COMPLIANT.
3. ALL DC FUSES SHOWN ARE CONNECTED INTERNALLY TO THE INVERTER.
4. ALL CONDUIT SIZES SHOWN ARE THE MINIMUM REQUIRED TO MAINTAIN CORRECT CONDUIT FILL.
5. LARGER CONDUIT IS ACCEPTABLE WHEN INSTALLED PER CODE AND GOVERNING GUIDELINES.
6. THE VISIBLE LOCKABLE, LABELED AC DISCONNECT (VLLD) IS LOCATED WITHIN 10FT OF ONCOR METER.
7. MONITORING DEVICE TO BE INSTALLED AT A LOCATION OF THE INSTALLER'S DISCRETION.



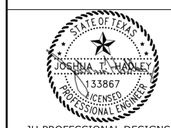
CONDUIT SCHEDULE

TAG ID	NO OF PARALLEL FEEDER	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	1	1-1/4" EMT 1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
1A	1	1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
2	1	2" EMT	(3) 3/0 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	1	1-1/4" EMT	(3) 1 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
4	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2
5	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 500 KCMIL THHN/THWN-2	NONE

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JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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PRN NUMBER:FMS-CU-2023-1688

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THREE LINE DIAGRAM

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | E-05

ELECTRICAL CALCULATION: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

OCPD CALCULATIONS:
MAIN PANEL RATING:2000A,
LINE SIDE INTERCONNECTION ALLOWABLE BACKFEED IS =2000A
OCPD CALCULATIONS: INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X 1.25
=(144.3AX2)+(96.5AX2)X1.25=602.00A=>PV BREAKER/FUSE = 700A
TOTAL REQUIRED PV BREAKER/FUSE SIZE =>700A PV BREAKER/FUSE

ELECTRICAL CALCULATIONS:
SYSTEM INFO:
539.32 kW DC SYSTEM SIZE
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W MODULES
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
(558)SOLAREDGE P1101 POWER OPTIMIZER

SYSTEM CHARACTERISTICS:(INV 01 & 02)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 144.75A
ISC - MAXIMUM CIRCUIT CURRENT = 144.75A

SYSTEM CHARACTERISTICS:(INV 03 & 04)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 96.50A
ISC - MAXIMUM CIRCUIT CURRENT = 96.50A

DC WIRE SIZING (TAG 1):
MAX CIRCUIT CURRENT = OPTIMIZER MAX OUTPUT X HIGH IRRADIANCE [NEC 690.8(A)(1)] X 1.25 [NEC 690.53]
=18A X 1 X 1.25= 22.5A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 0.8 X 40A = 29.12A
TERMINAL RATING, [PER 110.14(C)] - 10 AWG , 75°C RATED = 35A
30A ≥ 22.5A SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 29.12A ≥ 18A, AND **10 AWG** IS SUFFICIENT.

AC WIRE SIZING (TAG 2):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 144.3A X 1.25 = 180.38A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 225A = 204.75A
TERMINAL RATING, [PER 110.14(C)] - 3/0 AWG , 75°C RATED = 200A
200A ≥ 180.38A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 204.75A ≥ 144.3A, AND **3/0 AWG** IS SUFFICIENT.
INVERTER OVER CURRENT PROTECTION = INVERTER MAX OUTPUT CURRENT X 1.25
= 144.3A X 1.25 = 200A --> 200A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 3):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 96.5A X 1.25 = 120.63A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 145A = 131.95A
TERMINAL RATING, [PER 110.14(C)] - 1 AWG , 75°C RATED = 130A
130A ≥ 120.63A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 131.95A ≥ 96.5A, AND **1 AWG** IS SUFFICIENT.
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X CONTINUOUS LOAD
= 96.5A X 1.25 = 125A --> 125A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 4 & 5): (NO OF PARALLEL FEEDEER =2)
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X 1.25
=(144.3A X 2)+(96.5A X 2)X 1.25 =602.00A/2 = 301A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 430A = 391.30A
TERMINAL RATING, [PER 110.14(C)] - 500 KCMIL , 75°C RATED = 380A
380A ≥ 301A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 391.30A ≥ 240.8A, AND **500 KCMIL** IS SUFFICIENT.

NOTE:
1.THIS INSTALLATION IS TO BE CONSIDERED SUPERVISED.ALL NEW ADDITIONS AND ALTERATIONS TO ANY EQUIPMENT IDENTIFIED IN THIS DOCUMENT MUST BE MADE WITH ENGINEERING SUPERVISION AND ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.
2.ALL EQUIPMENT AND TERMINALS MUST BE MINIMUM 75°C RATED.
3.ALL CONDUCTORS ARE COPPER, UNLESS OTHERWISE SPECIFIED.

MODULE SPECIFICATIONS	
MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
MODULE POWER @ STC	485W
OPEN CIRCUIT VOLTAGE:**Voc**	53.63V
MAX POWER VOLTAGE:**Vmp**	45.63V
SHORT CIRCUIT CURRENT:**Isc**	11.16A
MAX POWER CURRENT:**Imp**	10.63A

INVERTER-01 & 02 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
POWER RATING	120000W
MAX OUTPUT CURRENT	144.3A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	144.75A
MAX DC VOLTAGE	1000V

OPTIMIZER CHARACTERISTICS	
MODEL	SOLAREDGE P1101 POWER OPTIMIZER
MAX INPUT VOLTAGE	125 VDC
MAX INPUT CURRENT	14.1 ADC
MAX OUTPUT CURRENT	18 ADC

INVERTER-03 & 04 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
POWER RATING	80000W
MAX OUTPUT CURRENT	96.5A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	96.5A
MAX DC VOLTAGE	1000V

VOLTAGE DROP CALCULATIONS:

DC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	OPTIMIZER CURRENT (IMP)	STRING VOLTAGE AT 2%DB (VMP)	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
MODULES	INVERTER 01	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	230	1.06%
MODULES	INVERTER 02	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	390	1.80%
MODULES	INVERTER 03	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	260	1.20%
MODULES	INVERTER 04	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	200	0.92%
											MAX Vdrop	1.80%

3 PHASE AC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	CURRENT	VOLTAGE	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
INVERTER TO POI												
INVERTER 01	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 02	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 03	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
INVERTER 04	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
AC ACCUMULATION	AC DISCONNECT	4	EMT	481.6	480	1	I AWG 01	Cu	0.00016	0.000140362	25	0.61%
AC DISCONNECT	POI	5	EMT	481.6	480	2	R 500 KCMIL	Cu	0.000032	0.000028072	15	0.04%
											MAX Vdrop	0.84%
											TOTAL SYSTEM VDROP	2.64%

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ELECTRICAL CALCULATION

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-06

PLACARDS

1.

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 690.13(B)

2.

WARNING:PHOTOVOLTAIC POWER SOURCE

INSTALLED ON: CONDUIT, RACEWAYS, AND J-BOXES (LABELED EVERY 10'). REFLECTIVE. MIN 3/8" WHITE TEXT ON BLACK BACKGROUND.
APPLICABLE CODE(S): NEC 690.31(D)(2)

3.

PHOTOVOLTAIC

DC DISCONNECT

INSTALLED ON: DC DISCONNECT(S)
APPLICABLE CODE(S): NEC 690.13(B)

INVERTER 1 & 2

4.

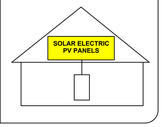
MAXIMUM DC VOLTAGE
1000 V
OF PV SYSTEM

INSTALLED ON: INVERTER
APPLICABLE CODE(S): NEC 690.53

5.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.
APPLICABLE CODE(S): NEC 690.56(C)

6.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON:RAPID SHUTDOWN SWITCH
APPLICABLE CODE(S): NEC 690.56(C)(2)

7.

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 481.6 AMPS AC
AC NOMINAL OPERATING VOLTAGE 480 VAC

INSTALLED ON: AC DISCONNECT(S), POINT OF INTERCONNECTION.
APPLICABLE CODE(S): NEC 690.54

8.

⚠ WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

INSTALLED ON: POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 705.12(C)

9.

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

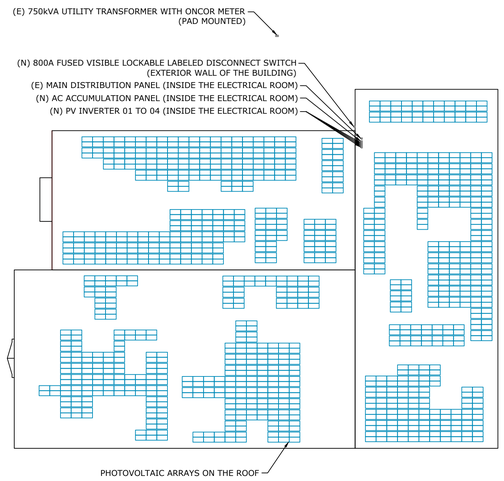
10.

FREEDOM™ SOLAR POWER

11.

WARNING: ⚠

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



1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

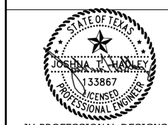
KEY	QTY.	LOCATION
1.	3	AC DISCONNECT, LOAD CENTER, POINT OF INTERCONNECTION
2.	10	CONDUIT
3.	4	DC DISCONNECTS
4.	4	INVERTER
5.	6	AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
6.	4	INVERTER
7.	2	AC DISCONNECT, POINT OF INTERCONNECTION
8.	1	POINT OF INTERCONNECTION
9.	1	COMBINER PANEL
10.	1	POINT OF INTERCONNECTION
11.	1	POINT OF INTERCONNECTION

NOTES: ROOFTOP TRIP HAZARDS ON ROOF SHALL BE IDENTIFIED WITH REFLECTIVE MATERIAL. MARKING CONTENT AND FORMAT RED BACKGROUND WHITE LETTERING MINIMUM 3/8"LETTER HEIGHT ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT(DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT).

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INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT FOR CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

ELECTRICAL PLACARDS

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:03/22/2024 | E-06

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

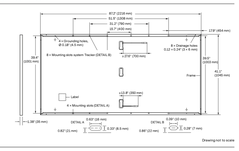
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

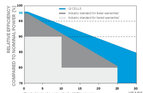
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

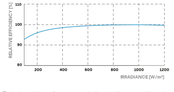
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
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ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

powered by Q.ANTUM DUO Z



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470-485

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Q CELLS Yield Security



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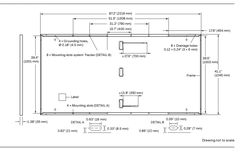
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	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

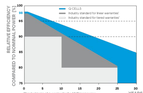
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MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

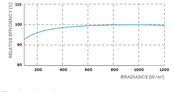
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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solaredge

Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

DEVELOPMENT APPLICATION

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

STAFF USE ONLY
PLANNING & ZONING CASE NO. Z2024-025

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	1290 I-30 Rockwall TX 75087				
SUBDIVISION		LOT		BLOCK	
GENERAL LOCATION	Townsend Dr. & I-30 Frontage rd				

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING	LI		CURRENT USE	CTE Entertainment LP	
PROPOSED ZONING	LI		PROPOSED USE	Solar	
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	
CONTACT PERSON	Justin Ripp	CONTACT PERSON	Teshia Brown
ADDRESS	1290 E I-30	ADDRESS	4801 Freidrich LN. Ste 109
CITY, STATE & ZIP	Rockwall, TX 75087	CITY, STATE & ZIP	Austin, TX 78744
PHONE	972-839-8196	PHONE	940-594-9718
E-MAIL	justin@elevatedvg.com	E-MAIL	teshiabrown@freedomsolarpower.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Justin Ripp [*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 $ 215 *TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE* 16 *DAY OF* May *20* 24 *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."*

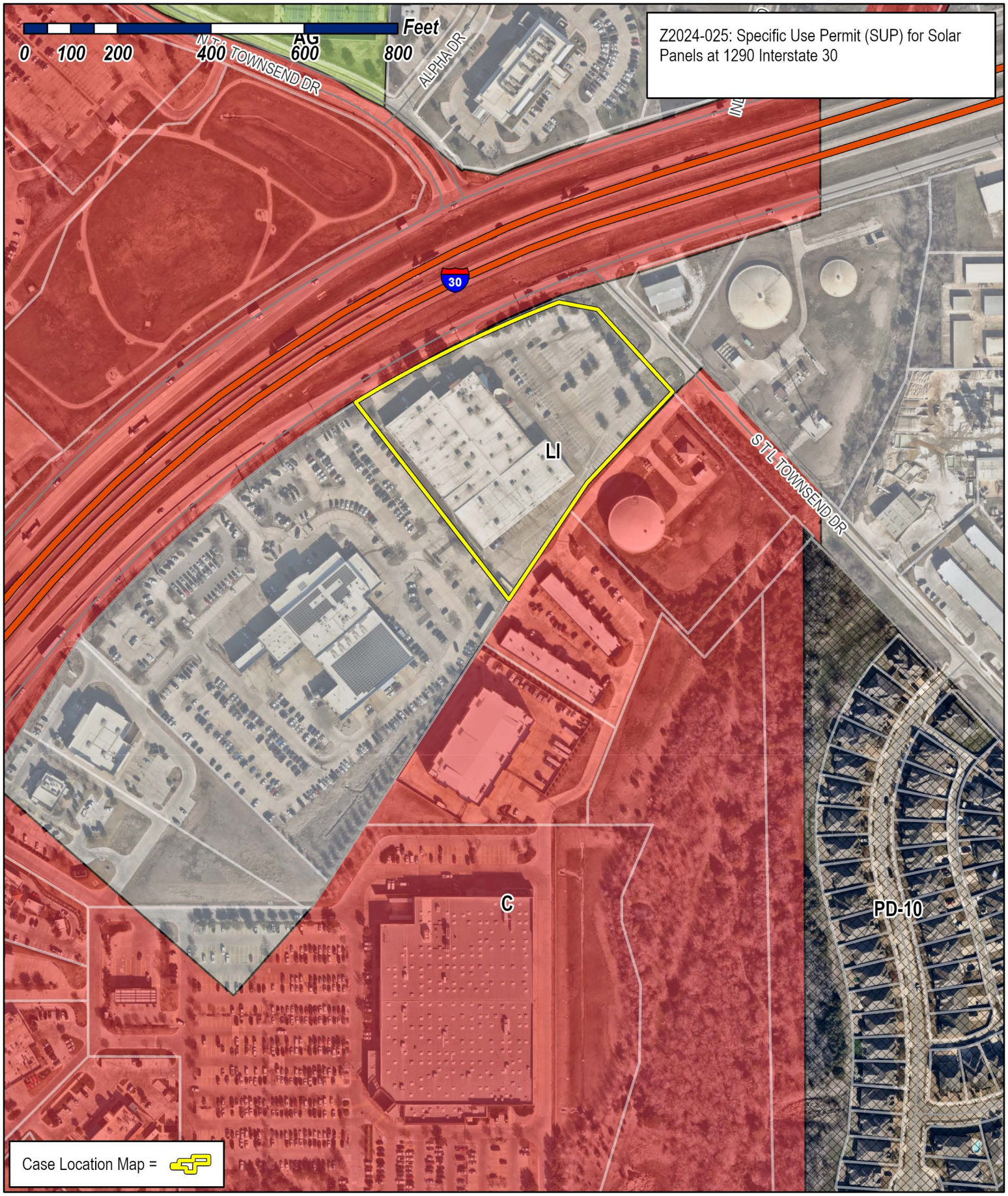
GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* May *20* 24

OWNER'S SIGNATURE

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES

JARED FARMER
Notary Public, State of Texas
Comm. Expires 09-11-2026
Notary ID 131718186



City of Rockwall

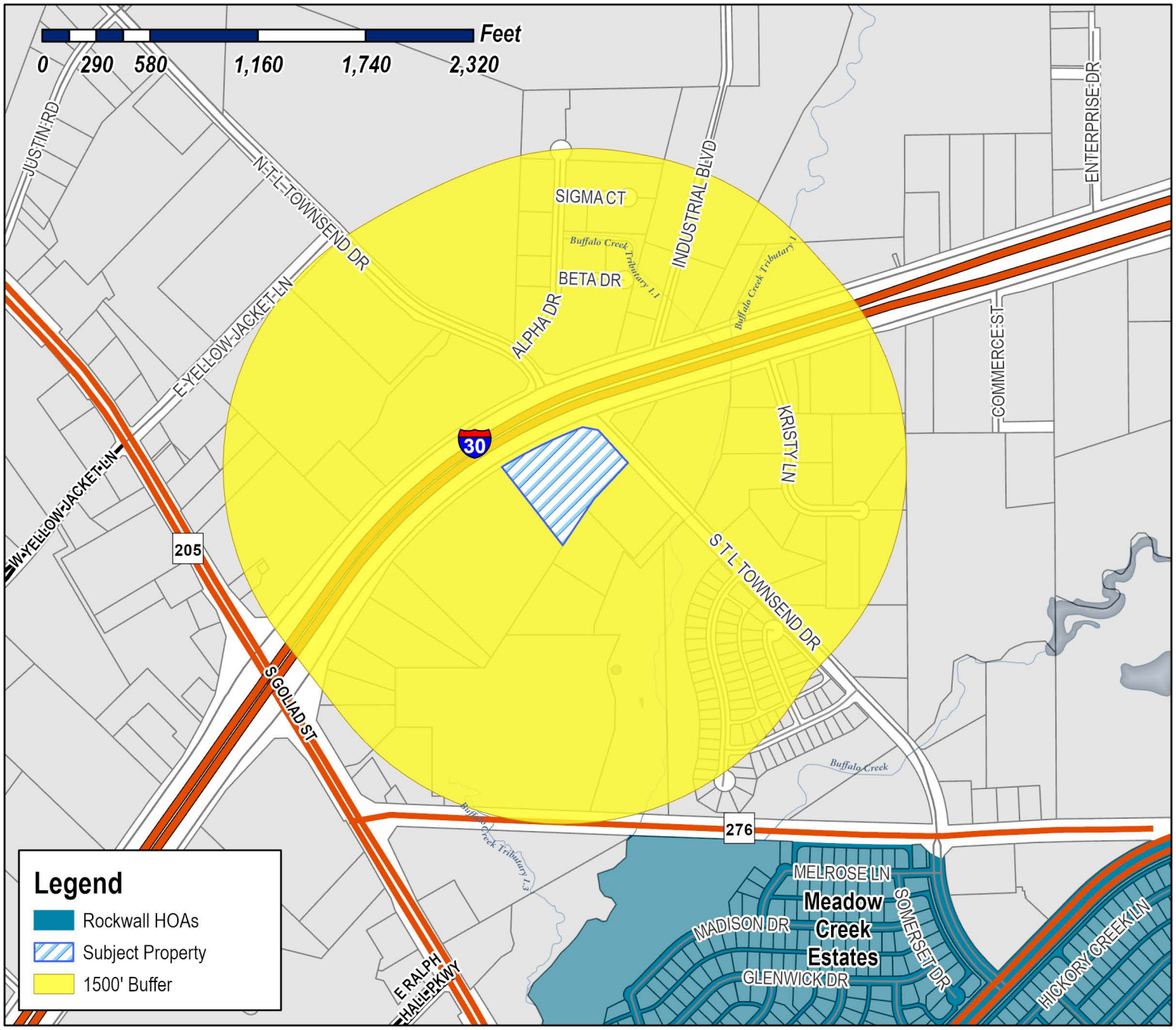
Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com

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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30

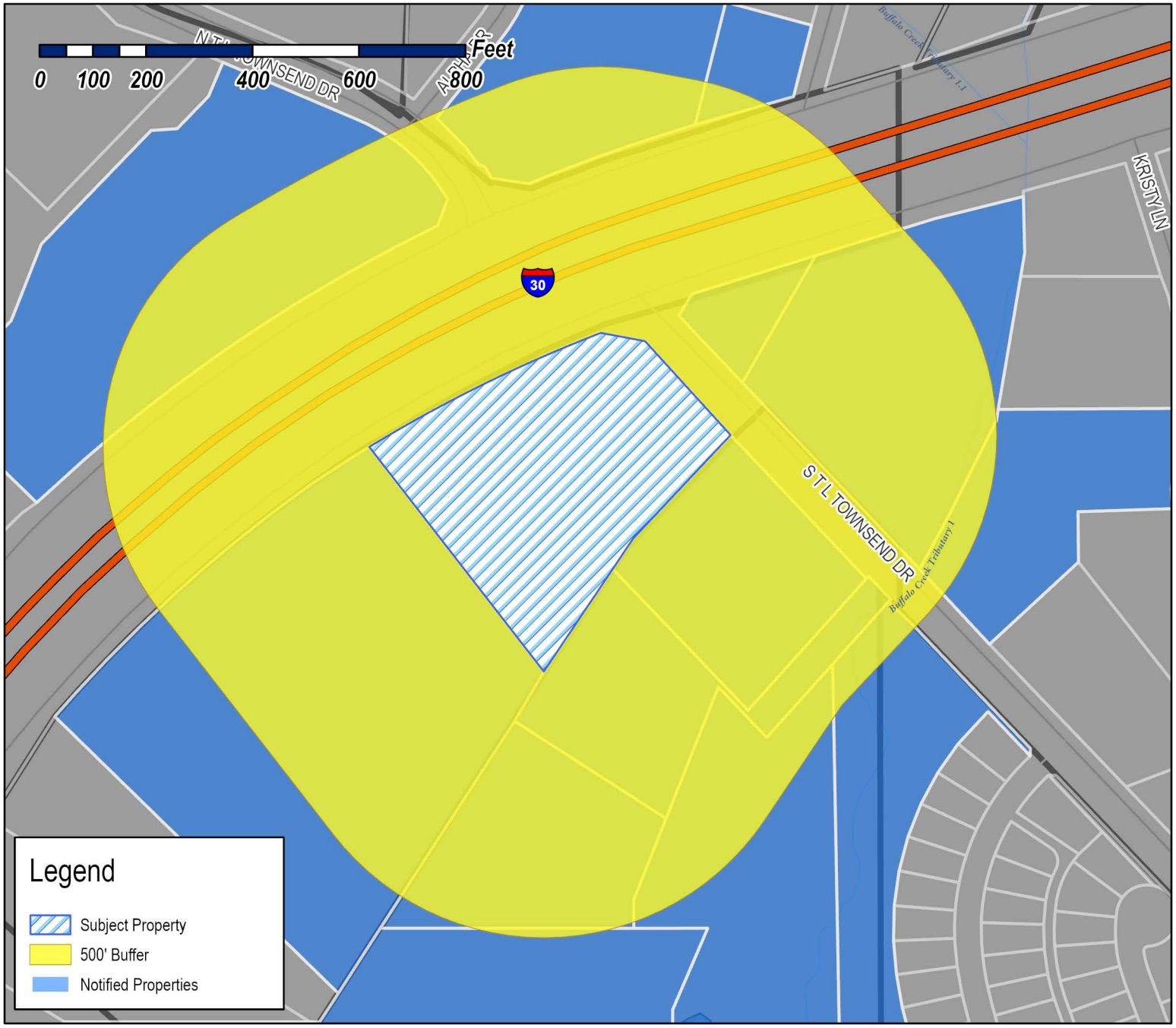


Date Saved: 5/17/2024
For Questions on this Case Call (972) 771-7745

City of Rockwall

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Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30



Date Saved: 5/17/2024
For Questions on this Case Call: (972) 771-7745

RESIDENT
S T L TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
T L TOWNSEND
ROCKWALL, TX 75087

RESIDENT
TOWNSEND DR
ROCKWALL, TX 75087

MCCALLUM V LLC
1 SOAPBERRY LN
ROCKWALL, TX 75087

ROCKWALL COUNTY
1101 RIDGE RD
STE 105
ROCKWALL, TX 75087

RESIDENT
1225 HWY 276
ROCKWALL, TX 75087

RESIDENT
1245 HWY276 DR
ROCKWALL, TX 75087

JACKSON AUTOMOTIVE REAL ESTATE INV LLC
1250 E INTERSTATE 30
ROCKWALL, TX 75087

RESIDENT
1290 I30
ROCKWALL, TX 75087

RESIDENT
1301 I30
ROCKWALL, TX 75087

RESIDENT
1401 E I30
ROCKWALL, TX 75087

SARO PARTNERS LLC
1450 T L TOWNSEND
ROCKWALL, TX 75032

RESIDENT
1460 S TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
1480 S T L TOWNSEND DR
ROCKWALL, TX 75087

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

PRITCHARD DONNA CULLINS &
1610 SHORES BLVD
ROCKWALL, TX 75087

HTA ROCKWALL MEDICAL CENTER LLC
16435 NORTH SCOTTSDALE ROAD SUITE 320
SCOTTSDALE, AZ 85254

RESIDENT
1975 ALPHA RD
ROCKWALL, TX 75087

CITY OF HEATH
200 LAURENCE DRIVE
HEATH, TX 75032

RESIDENT
2010 KRISTY LN
ROCKWALL, TX 75087

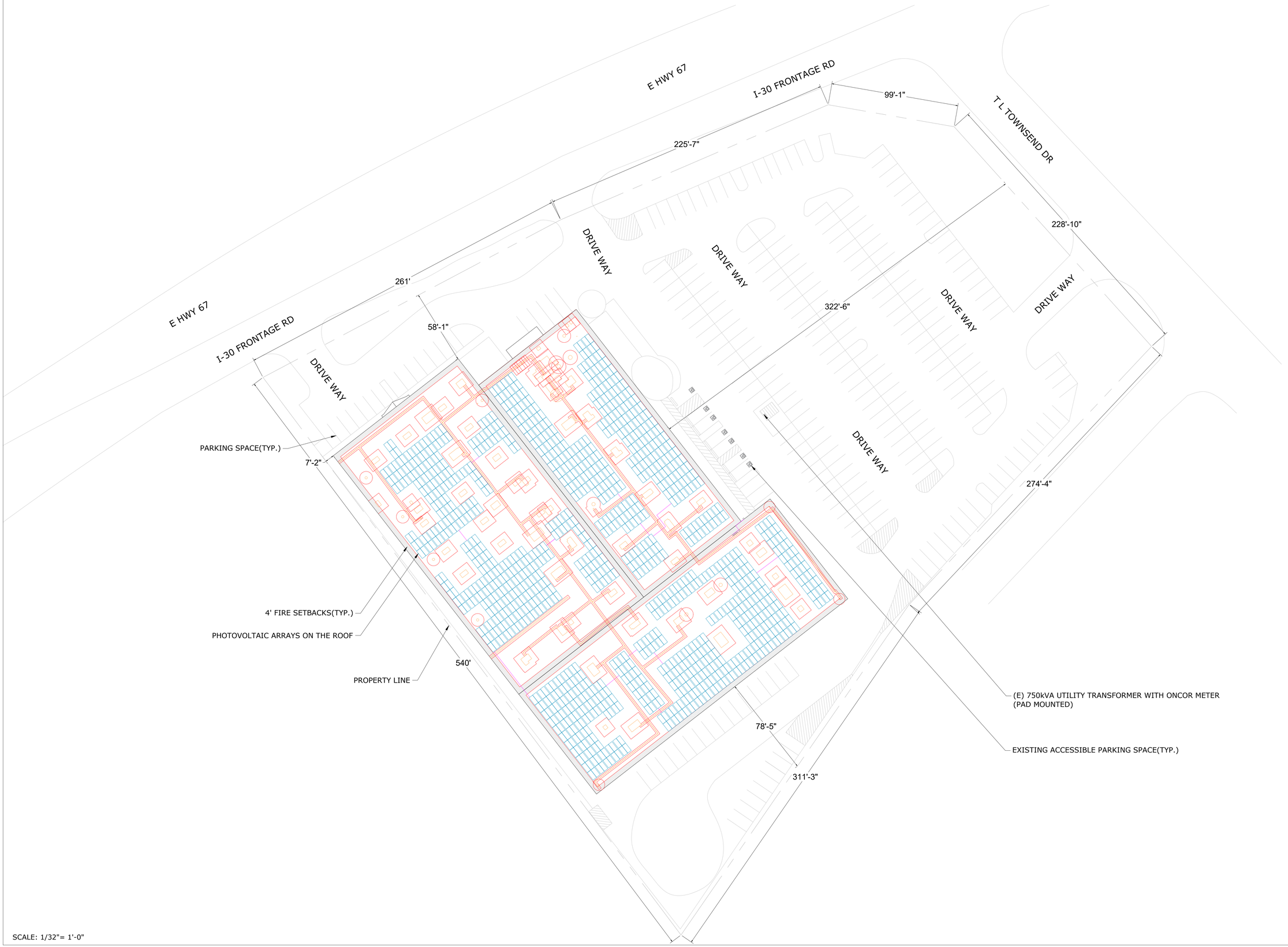
CTE PHASE I LP
2266 LAFAYETTE LNDG
ROCKWALL, TX 75032

REDI MIX LLC
331 N MAIN STREET
EULESS, TX 76039

MSC ROCKWALL LLC
725 PARK CENTER DRIVE
MATTHEWS, NC 28105

COSTCO WHOLESALE CORP
999 LAKE DR
ISSAQUAH, WA 98027

SITE PLAN : DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW



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

FREEDOM™ SOLAR POWER

4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

STATE OF TEXAS
JORDNA F. HANLEY
133867
LICENSED PROFESSIONAL ENGINEER

JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

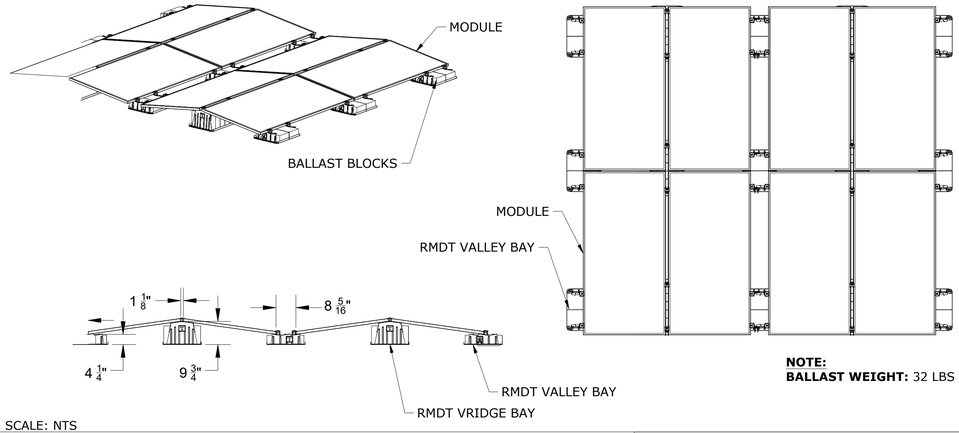
ILLUMINE i

SITE PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	A-01

ATTACHMENT DETAILS - UNIRAC RMDT



SCALE: NTS

NOTE:
BALLAST WEIGHT: 32 LBS

BILL OF MATERIALS

PART NUMBER	DESCRIPTION	QTY	UNIT
Q.PEAK DUO XL-G10.3/BFG 485W	MODULE	1112	QTY.
N/A	BALLAST BLOCK	1658	QTY.
310802	RMDT VALLEY BAY	813	QTY.
310826	RMDT MID CLAMP 32-35MM	1324	QTY.
310820	RMDT END CLAMP 30-40MM	2648	QTY.
310860	KIT 1/4-20 CLIP ON NUT SS 18-8	3972	QTY.
310801	RMDT RIDGE BAY	662	QTY.
008115M	MLPE TIGER CLIP	1112	QTY.

GENERAL STRUCTURAL NOTES

1.ALL EQUIPMENTS SHALL BE INSTALLED PER MANUFACTURER INSTALLATION AND OPERATIONS MANUAL REQUIREMENTS.
2.PRIOR TO COMMENCEMENT OF WORK OR FABRICATION OF COMPONENTS, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS,AND ELEVATIONS OF THE EXISTING CONSTRUCTION.CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE FIELD -VERIFIED CONDITIONS, DIMENSIONS,AND ELEVATION AND THOSE INDICATED ON THE DRAWINGS.
3.ALL THE CONSTRUCTION SHALL COMPLY WITH REQUIREMENTS OF 2021 EDITION OF THE BUILDING CODE.

SOLAR RACK COMPONENTS:

1. FOLLOW MANUFACTURER'S INSTALLATION FOR INSTALLATION OF THE SOLAR COMPONENTS,INCLUDING MODULE CLAMPS,L-FEET,BRACKETS MECHANICAL ATTACHMENTS,AND HARDWARE.

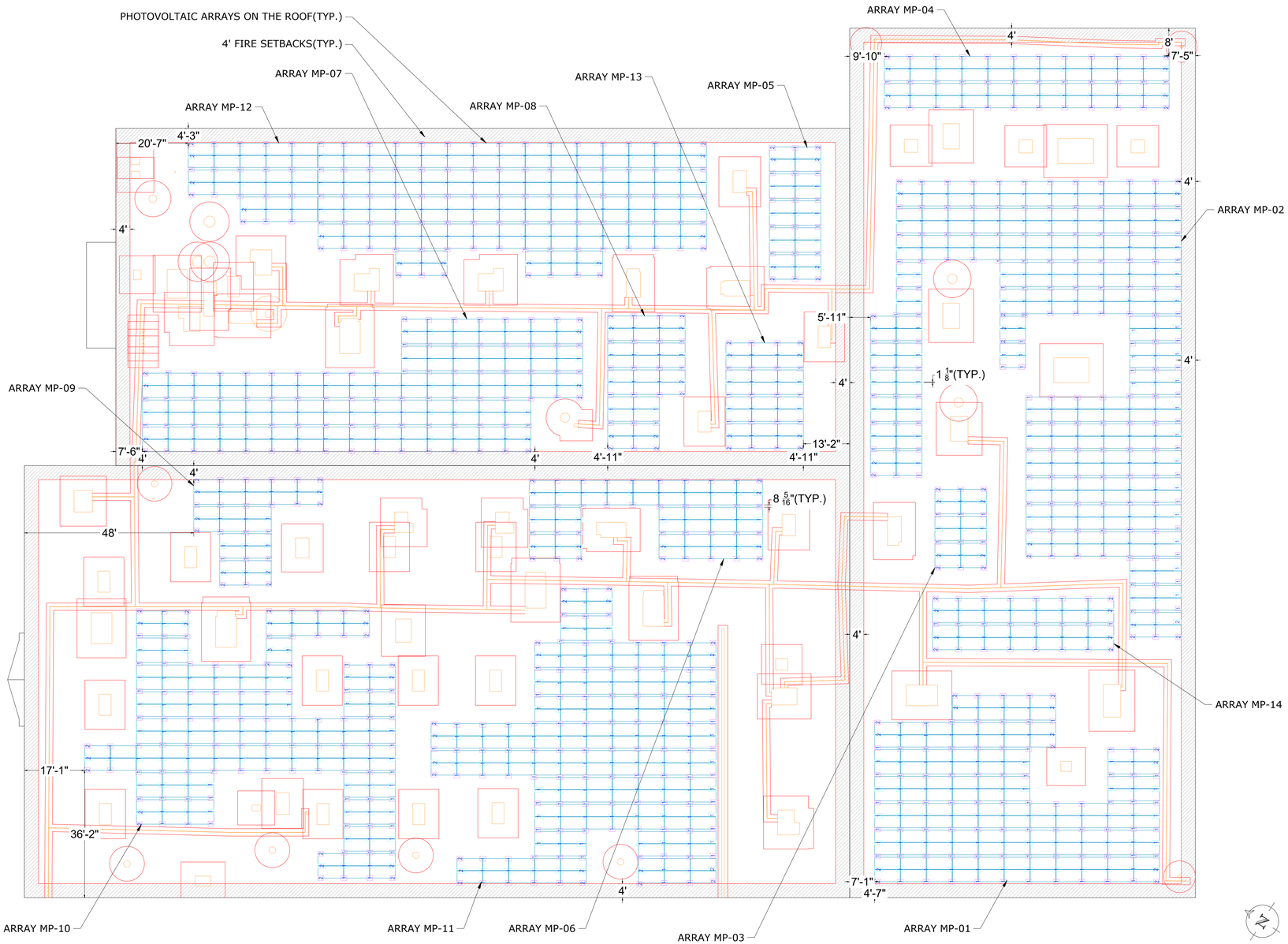
LEGEND:

1 STANDARD CORNER BAY WITH CMU BLOCK COUNT

2 SUPPLEMENTAL BAY WITH CMU BLOCK COUNT

SITE INFORMATION - WIND SPEED: 105 MPH, EXPOSURE: B AND SNOW LOAD: 5 PSF

SR. NO	AZIMUTH	MODULE TILT	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT
ARRAY MP-01	52°&232°	8°	120	3372	TPO	UNIRAC RMDT
ARRAY MP-02	52°&232°	8°	222	6211	TPO	UNIRAC RMDT
ARRAY MP-03	52°&232°	8°	12	341	TPO	UNIRAC RMDT
ARRAY MP-04	52°&232°	8°	44	1265	TPO	UNIRAC RMDT
ARRAY MP-05	52°&232°	8°	20	562	TPO	UNIRAC RMDT
ARRAY MP-06	52°&232°	8°	42	1201	TPO	UNIRAC RMDT
ARRAY MP-07	52°&232°	8°	122	3449	TPO	UNIRAC RMDT
ARRAY MP-08	52°&232°	8°	26	732	TPO	UNIRAC RMDT
ARRAY MP-09	52°&232°	8°	24	686	TPO	UNIRAC RMDT
ARRAY MP-10	52°&232°	8°	124	3500	TPO	UNIRAC RMDT
ARRAY MP-11	52°&232°	8°	148	4155	TPO	UNIRAC RMDT
ARRAY MP-12	52°&232°	8°	156	4402	TPO	UNIRAC RMDT
ARRAY MP-13	52°&232°	8°	24	677	TPO	UNIRAC RMDT
ARRAY MP-14	52°&232°	8°	28	805	TPO	UNIRAC RMDT



FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF MINIMUM
TEMPERATURE: -8°C
MAXIMUM
TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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05/16/2024	EQUIPMENT UPDATE	B

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ILLUMINE i

STRUCTURAL PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | S-01

STRINGING DIAGRAM:

STRING ID LEGEND

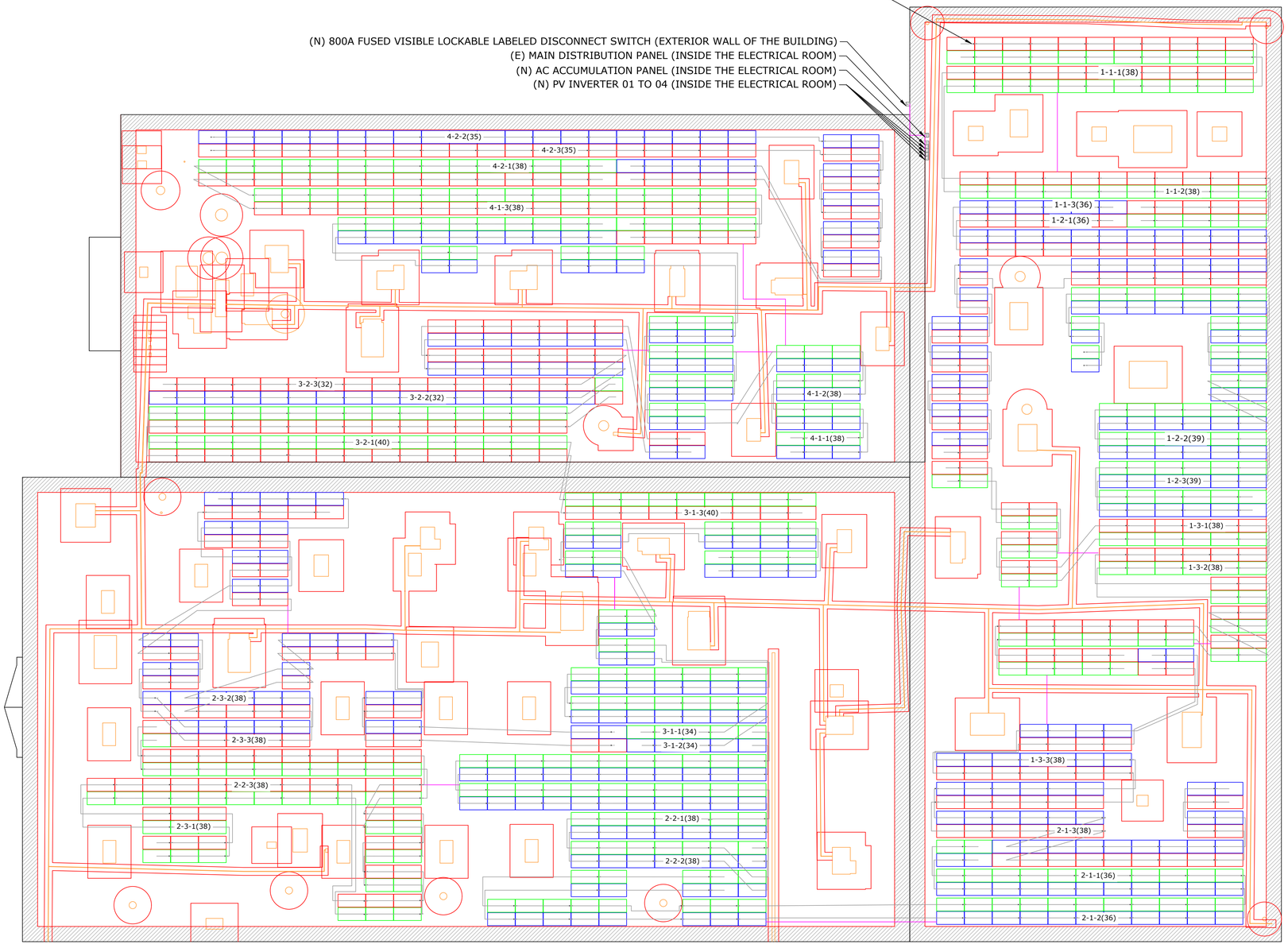
STR 1-1-1(X)

- # OF MODULES
- STRING ID
- UNIT #(1,2,3)
- INVERTER ID#

(E) 750kVA UTILITY TRANSFORMER WITH ONCOR METER (PAD MOUNTED)

STRING STARTS HERE

(N) 800A FUSED VISIBLE LOCKABLE LABELED DISCONNECT SWITCH (EXTERIOR WALL OF THE BUILDING)
(E) MAIN DISTRIBUTION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) AC ACCUMULATION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) PV INVERTER 01 TO 04 (INSIDE THE ELECTRICAL ROOM)



SCALE:1"=15'-0"

WIRING AND WIRING METHODS:

1. EXPOSED PV SOLAR MODULE WIRING AND PV SOURCE CIRCUITS TO BE UV RESISTANT 2,000V PV WIRE, 90° C, AND RATED FOR WET CONDITIONS.
2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED IN A NEAT WORKMAN LIKE MANNER TO PREVENT CHAFFING, SWINGING, AND EXCEEDING MINIMUM BEND RADIUS WITH PROPER MECHANICAL SUNLIGHT RESISTANT MEANS AND ROUTED TO AVOID DIRECT EXPOSURE TO SUNLIGHT AT ALL TIMES.
3. ALL FIELD WIRING THAT IS NOT COLOR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND.
4. FLEXIBLE METAL CONDUIT IS SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS OR CONDUIT FITTING) AND NO MORE THAN 48 INCHES APART.
5. LIQUID TIGHT FLEXIBLE METAL AND NON-METALLIC CONDUIT IS SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART.
6. PVC CONDUIT AND FITTINGS SHALL NOT BE USED ON ROOFTOP CONDITIONS OR EXPOSED TO DIRECT SUNLIGHT.WHEN USED IN ACCEPTABLE LOCATION CONDUIT SHALL BE SCHEDULE 80 UV RESISTANT UNLESS NOTED OTHERWISE.
7. FUSES AND WIRES SUBJECT TO TEMPERATURES CONDITIONS GREATER THAN 100°F OR TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
8. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
9. ALL TERMINATIONS SHALL HAVE ANTI-OXIDANT COMPOUND AND BE TORQUED PER DEVICE LISTING, OR MANUFACTURER'S RECOMMENDATIONS.
10. SPLIT BOLTS /SPLICES / CONNECTORS ARE PERMITTED ON THE AC CONDUCTORS AND SHALL BE INSULATED WITH APPROVED MEANS. SPLICES ON THE DC CONDUCTORS IS NOT PERMITTEDIN ANY LOCATION.
11.NO PVC CONDUIT ALLOWED ON ROOF, UNLESS OPEN ENDED WIRE MANAGEMENT <10'.

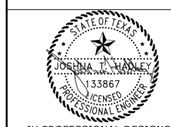
INVERTER 1, 120kW			INVERTER 2, 120kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
1-1-1	38	19	2-1-1	36	18
1-1-2	38	19	2-1-2	36	18
1-1-3	36	18	2-1-3	38	19
UNIT 02			UNIT 02		
1-2-1	36	18	2-2-1	38	19
1-2-2	39	20	2-2-2	38	19
1-2-3	39	20	2-2-3	38	19
UNIT 03			UNIT 03		
1-3-1	38	19	2-3-1	38	19
1-3-2	38	19	2-3-2	38	19
1-3-3	38	19	2-3-3	38	19

INVERTER 3, 80kW			INVERTER 4, 80kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
3-1-1	34	17	4-1-1	38	19
3-1-2	34	17	4-1-2	38	19
3-1-3	40	20	4-1-3	38	19
UNIT 02			UNIT 02		
3-2-1	40	20	4-2-1	38	19
3-2-2	32	16	4-2-2	35	18
3-2-3	32	16	4-2-3	35	18
			GRAND TOTAL	1112	558

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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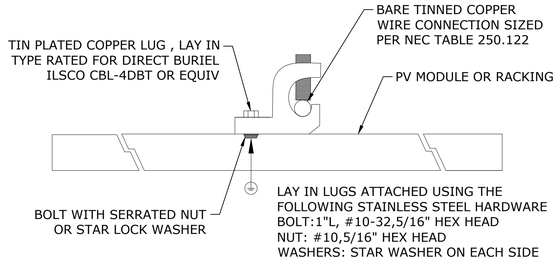
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STRINGING MAP

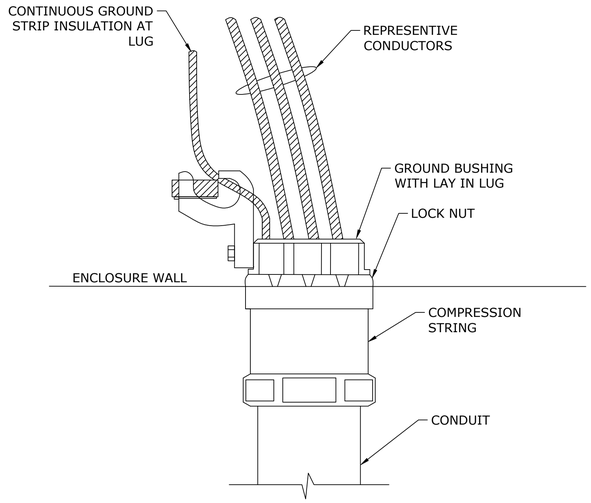
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-01

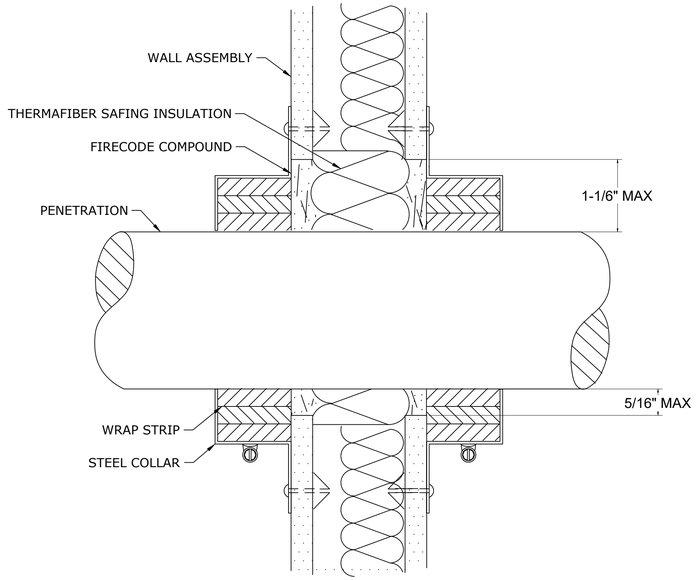
GROUND LUG DETAIL:



CONDUIT BODY GROUNDING DETAIL:

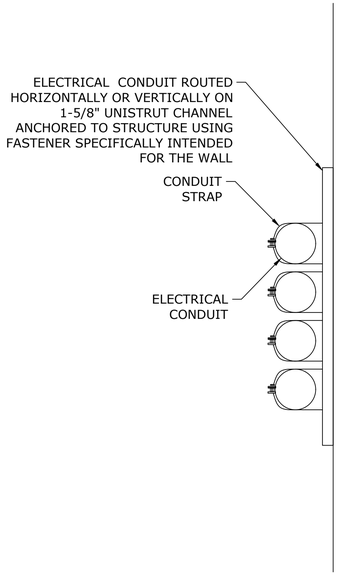


FIRE WALL PENETRATION DETAIL:

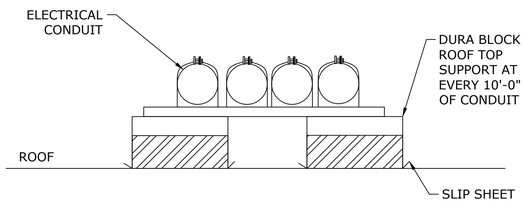


SCALE: NTS

CONDUIT WALL ANCHORING:



TYPICAL DURA-BLOCK CONDUIT SUPPORT DETAIL:



NOTE: DETAIL DRAWINGS ARE FOR REFERENCE ONLY

GROUNDING - SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION:

1.ONLY ONE CONNECTION TO DC CIRCUITS AND AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (REFERENCED TO THE SAME POINT).
2.EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING ELECTRODE CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING CONNECTION POINT AS PRACTICABLE AND A MINIMUM NUMBER OF TURNS.
3.TO ENSURE PROPER GROUNDING, NON-CURRENT CARRYING METAL PARTS SHALL BE INSTALLED, NOTING THAT PAINT AND FINISH SHALL BE PROPERLY REMOVED WHERE IT MAY INSULATE AN ENCLOSURES BONDING CONNECTION.APPLY NO-LOX OR OTHER SIMILAR ANTI-OXIDANT COMPOUND TO EXPOSED SURFACES.
4.THE CONNECTION TO THE MODULE OF THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT.
5.GROUNDING SYSTEM COMPONENTS SHALL BE APPROVED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC. GROUNDING DEVICES EXPOSED TO THE ENVIRONMENT SHALL BE RATED FOR DIRECT BURIAL.
6.UNDERGROUND OR INACCESSIBLE CONNECTIONS OF GROUNDING CONDUCTORS SHALL ONLY BE MADE VIA EXO-THERMIC WELDS. THE USE OF MECHANICAL CONNECTIONS ARE ACCEPTABLE FOR ACCESSIBLE ABOVE GROUND LOCATIONS.
7.ALL METALLIC CONDUITS SHALL BE INSTALLED AND TERMINATED WITH INSULATED GROUND BUSHINGS.

FREEDOM SOLAR POWER
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OPTIMIZER:
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WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
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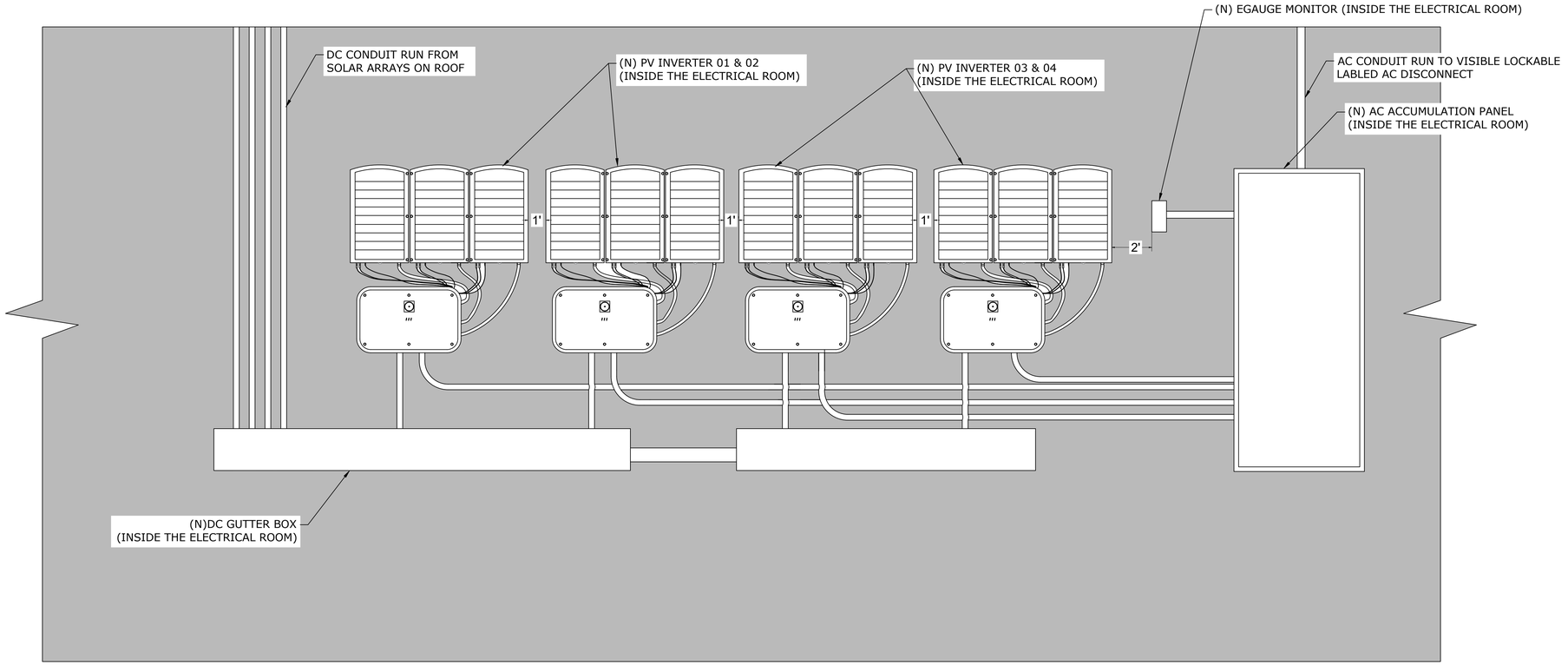
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ELECTRICAL MOUNTING DETAILS

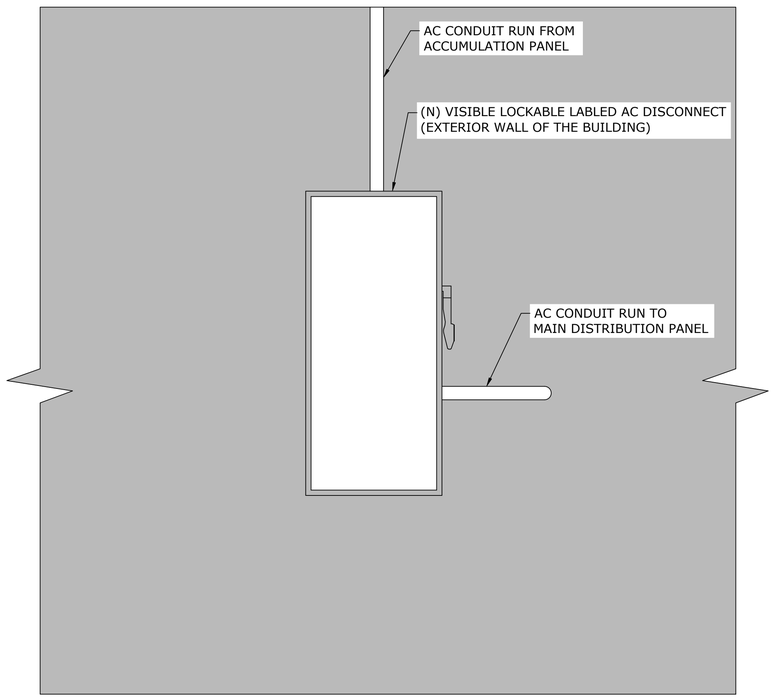
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-02

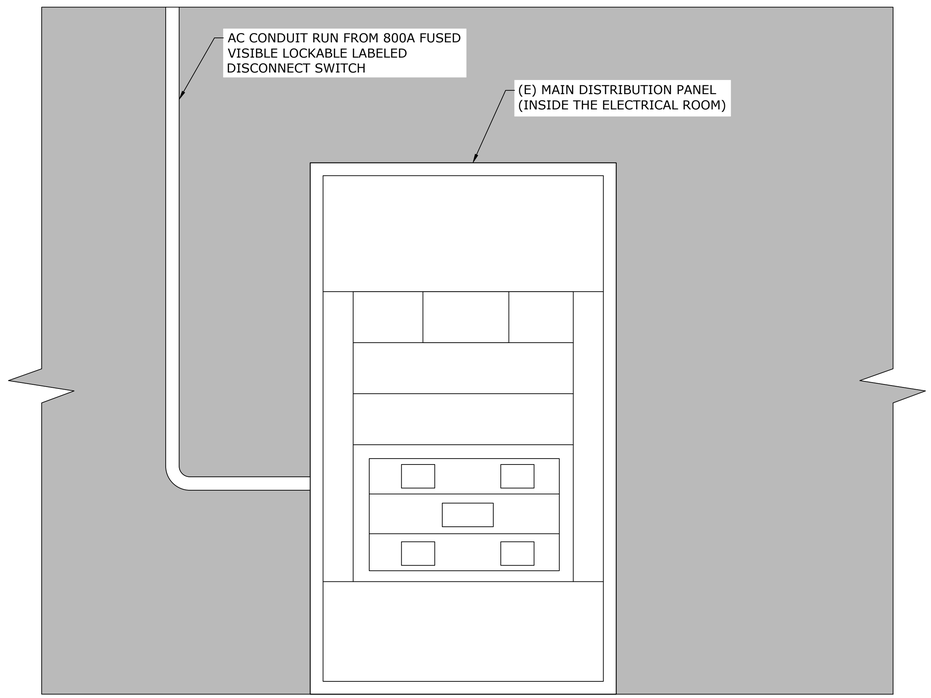
ELECTRICAL EQUIPMENT ELEVATION VIEW :



SCALE: NTS



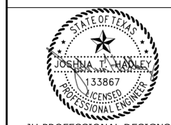
SCALE: NTS



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ILLUMINE i

EQUIPMENT ELEVATION VIEW

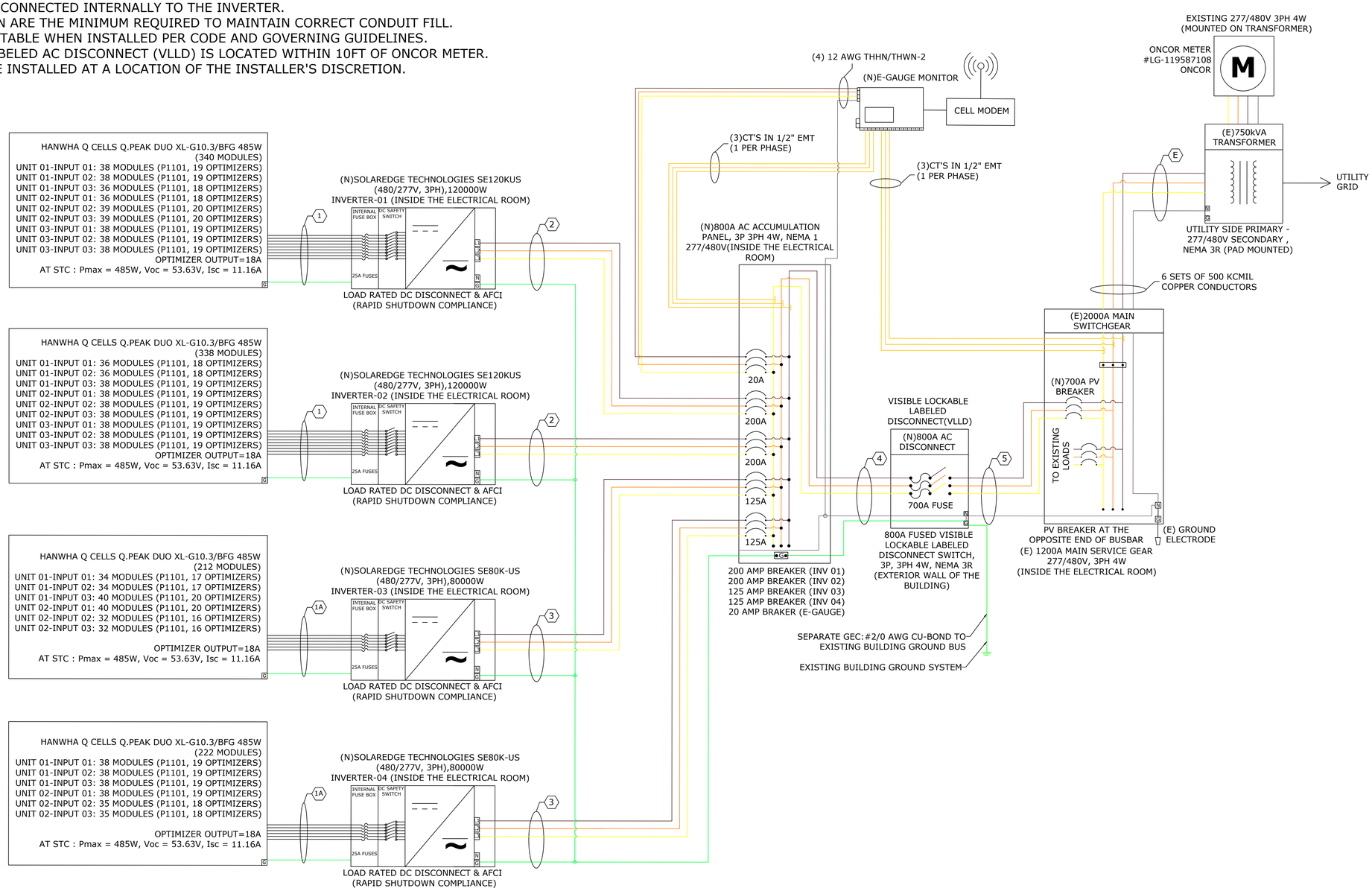
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-03

ELECTRICAL DIAGRAM: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

NOTE:

1. TYPICALLY EACH SOLAREDGE P1101 POWER OPTIMIZER IS CONNECTED TO TWO MODULES.
2. EACH SOLAREDGE P1101 POWER OPTIMIZER IS RAPID SHUTDOWN COMPLIANT.
3. ALL DC FUSES SHOWN ARE CONNECTED INTERNALLY TO THE INVERTER.
4. ALL CONDUIT SIZES SHOWN ARE THE MINIMUM REQUIRED TO MAINTAIN CORRECT CONDUIT FILL.
5. LARGER CONDUIT IS ACCEPTABLE WHEN INSTALLED PER CODE AND GOVERNING GUIDELINES.
6. THE VISIBLE LOCKABLE, LABELED AC DISCONNECT (VLLD) IS LOCATED WITHIN 10FT OF ONCOR METER.
7. MONITORING DEVICE TO BE INSTALLED AT A LOCATION OF THE INSTALLER'S DISCRETION.



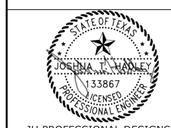
CONDUIT SCHEDULE

TAG ID	NO OF PARALLEL FEEDER	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	1	1-1/4" EMT 1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
1A	1	1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
2	1	2" EMT	(3) 3/0 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	1	1-1/4" EMT	(3) 1 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
4	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2
5	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 500 KCMIL THHN/THWN-2	NONE

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4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD,
ROCKWALL, TX 75032
ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

THREE LINE DIAGRAM

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | E-05

ELECTRICAL CALCULATION: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

OCPD CALCULATIONS:
MAIN PANEL RATING:2000A,
LINE SIDE INTERCONNECTION ALLOWABLE BACKFEED IS =2000A
OCPD CALCULATIONS: INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X 1.25
=(144.3AX2)+(96.5AX2)X1.25=602.00A=>PV BREAKER/FUSE = 700A
TOTAL REQUIRED PV BREAKER/FUSE SIZE =>700A PV BREAKER/FUSE

ELECTRICAL CALCULATIONS:
SYSTEM INFO:
539.32 kW DC SYSTEM SIZE
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W MODULES
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
(558)SOLAREDGE P1101 POWER OPTIMIZER

SYSTEM CHARACTERISTICS:(INV 01 & 02)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 144.75A
ISC - MAXIMUM CIRCUIT CURRENT = 144.75A

SYSTEM CHARACTERISTICS:(INV 03 & 04)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 96.50A
ISC - MAXIMUM CIRCUIT CURRENT = 96.50A

DC WIRE SIZING (TAG 1):
MAX CIRCUIT CURRENT = OPTIMIZER MAX OUTPUT X HIGH IRRADIANCE [NEC 690.8(A)(1)] X 1.25 [NEC 690.53]
=18A X 1 X 1.25= 22.5A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 0.8 X 40A = 29.12A
TERMINAL RATING, [PER 110.14(C)] - 10 AWG , 75°C RATED = 35A
30A ≥ 22.5A SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 29.12A ≥ 18A, AND **10 AWG** IS SUFFICIENT.

AC WIRE SIZING (TAG 2):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 144.3A X 1.25 = 180.38A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 225A = 204.75A
TERMINAL RATING, [PER 110.14(C)] - 3/0 AWG , 75°C RATED = 200A
200A ≥ 180.38A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 204.75A ≥ 144.3A, AND **3/0 AWG** IS SUFFICIENT.
INVERTER OVER CURRENT PROTECTION = INVERTER MAX OUTPUT CURRENT X 1.25
= 144.3A X 1.25 = 200A --> 200A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 3):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 96.5A X 1.25 = 120.63A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 145A = 131.95A
TERMINAL RATING, [PER 110.14(C)] - 1 AWG , 75°C RATED = 130A
130A ≥ 120.63A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 131.95A ≥ 96.5A, AND **1 AWG** IS SUFFICIENT.
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X CONTINUOUS LOAD
= 96.5A X 1.25 = 125A --> 125A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 4 & 5): (NO OF PARALLEL FEEDEER =2)
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X 1.25
=(144.3A X 2)+(96.5A X 2)X 1.25 =602.00A/2 = 301A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 430A = 391.30A
TERMINAL RATING, [PER 110.14(C)] - 500 KCMIL , 75°C RATED = 380A
380A ≥ 301A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 391.30A ≥ 240.8A, AND **500 KCMIL** IS SUFFICIENT.

NOTE:
1.THIS INSTALLATION IS TO BE CONSIDERED SUPERVISED.ALL NEW ADDITIONS AND ALTERATIONS TO ANY EQUIPMENT IDENTIFIED IN THIS DOCUMENT MUST BE MADE WITH ENGINEERING SUPERVISION AND ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.
2.ALL EQUIPMENT AND TERMINALS MUST BE MINIMUM 75°C RATED.
3.ALL CONDUCTORS ARE COPPER, UNLESS OTHERWISE SPECIFIED.

MODULE SPECIFICATIONS	
MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
MODULE POWER @ STC	485W
OPEN CIRCUIT VOLTAGE:**Voc**	53.63V
MAX POWER VOLTAGE:**Vmp**	45.63V
SHORT CIRCUIT CURRENT:**Isc**	11.16A
MAX POWER CURRENT:**Imp**	10.63A

INVERTER-01 & 02 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
POWER RATING	120000W
MAX OUTPUT CURRENT	144.3A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	144.75A
MAX DC VOLTAGE	1000V

OPTIMIZER CHARACTERISTICS	
MODEL	SOLAREDGE P1101 POWER OPTIMIZER
MAX INPUT VOLTAGE	125 VDC
MAX INPUT CURRENT	14.1 ADC
MAX OUTPUT CURRENT	18 ADC

INVERTER-03 & 04 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
POWER RATING	80000W
MAX OUTPUT CURRENT	96.5A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	96.5A
MAX DC VOLTAGE	1000V

VOLTAGE DROP CALCULATIONS:

DC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	OPTIMIZER CURRENT (IMP)	STRING VOLTAGE AT 2%DB (VMP)	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
MODULES	INVERTER 01	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	230	1.06%
MODULES	INVERTER 02	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	390	1.80%
MODULES	INVERTER 03	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	260	1.20%
MODULES	INVERTER 04	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	200	0.92%
											MAX Vdrop	1.80%

3 PHASE AC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	CURRENT	VOLTAGE	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
INVERTER TO POI												
INVERTER 01	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 02	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 03	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
INVERTER 04	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
AC ACCUMULATION	AC DISCONNECT	4	EMT	481.6	480	1	I AWG 01	Cu	0.00016	0.000140362	25	0.61%
AC DISCONNECT	POI	5	EMT	481.6	480	2	R 500 KCMIL	Cu	0.000032	0.000028072	15	0.04%
											MAX Vdrop	0.84%
											TOTAL SYSTEM VDROP	2.64%

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
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AC SYSTEM SIZE: 400.00kW
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OPTIMIZER:
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WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

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COM-41783

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ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

ELECTRICAL CALCULATION

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-06

PLACARDS

1.

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 690.13(B)

2.

WARNING:PHOTOVOLTAIC POWER SOURCE

INSTALLED ON: CONDUIT, RACEWAYS, AND J-BOXES (LABELED EVERY 10'). REFLECTIVE. MIN 3/8" WHITE TEXT ON BLACK BACKGROUND.
APPLICABLE CODE(S): NEC 690.31(D)(2)

3.

PHOTOVOLTAIC

DC DISCONNECT

INSTALLED ON: DC DISCONNECT(S)
APPLICABLE CODE(S): NEC 690.13(B)

INVERTER 1 & 2

4.

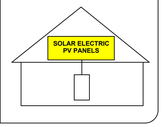
MAXIMUM DC VOLTAGE
1000 V
OF PV SYSTEM

INSTALLED ON: INVERTER
APPLICABLE CODE(S): NEC 690.53

5.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.
APPLICABLE CODE(S): NEC 690.56(C)

6.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON:RAPID SHUTDOWN SWITCH
APPLICABLE CODE(S): NEC 690.56(C)(2)

7.

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 481.6 AMPS AC
AC NOMINAL OPERATING VOLTAGE 480 VAC

INSTALLED ON: AC DISCONNECT(S), POINT OF INTERCONNECTION.
APPLICABLE CODE(S): NEC 690.54

8.

⚠ WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

INSTALLED ON: POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 705.12(C)

9.

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

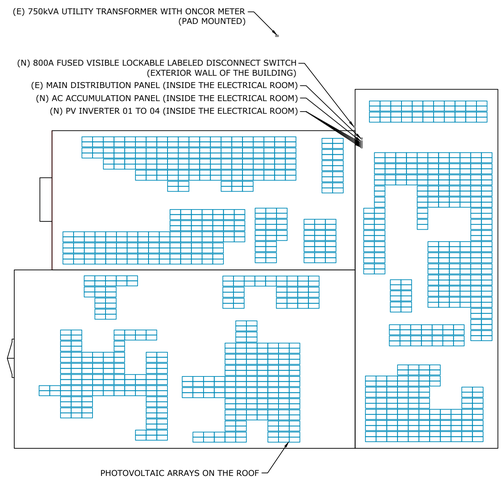
10.

FREEDOM™ SOLAR POWER

11.

WARNING: ⚠

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



1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

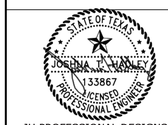
KEY	QTY.	LOCATION
1.	3	AC DISCONNECT, LOAD CENTER, POINT OF INTERCONNECTION
2.	10	CONDUIT
3.	4	DC DISCONNECTS
4.	4	INVERTER
5.	6	AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
6.	4	INVERTER
7.	2	AC DISCONNECT, POINT OF INTERCONNECTION
8.	1	POINT OF INTERCONNECTION
9.	1	COMBINER PANEL
10.	1	POINT OF INTERCONNECTION
11.	1	POINT OF INTERCONNECTION

NOTES: ROOFTOP TRIP HAZARDS ON ROOF SHALL BE IDENTIFIED WITH REFLECTIVE MATERIAL. MARKING CONTENT AND FORMAT RED BACKGROUND WHITE LETTERING MINIMUM 3/8"LETTER HEIGHT ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT(DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT).

FREEDOM™ SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
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SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT FOR CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
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REVISION

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ILLUMINEI

ELECTRICAL PLACARDS

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:03/22/2024 | E-06

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

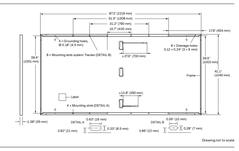
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

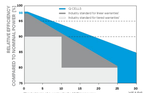
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

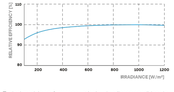
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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.
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Specifications subject to technical changes © **Q CELLS** Q.PEAK DUO XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

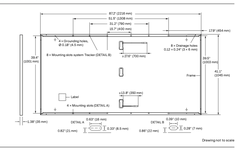
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

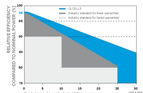
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

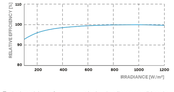
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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.

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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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Power Optimizer
For North America
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PV power optimization at the module level
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- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
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PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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solaredge

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

PROJECT COMMENTS

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

DATE: 5/24/2024

PROJECT NUMBER: Z2024-025
PROJECT NAME: SUP for 1290 I-30
SITE ADDRESS/LOCATIONS: 1290 E INTERSTATE 30, ROCKWALL, 75032

CASE CAPTION: Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and take any action necessary.

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
	Henry Lee	05/24/2024	Approved w/ Comments

05/24/2024: Please address the following comments (M= Mandatory Comments; I = Informational Comments)

I.1 This is a request for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30.

I.2 For questions or comments concerning this case please contact Henry Lee in the Planning Department at (972) 772-6434 or email hlee@rockwall.com.

M.3 For reference, include the case number (Z2024-025) in the lower right-hand corner of all pages on future submittals.

I.4 According to Article 13, Definitions, of the Unified Development Code (UDC), Solar Energy Collector Panels and Systems are defined 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..”

I.5 According to Subsection 02.03 (K)(7) of Article 04, of the UDC, the following conditional land uses apply the proposed use, Solar Energy Collector Panels and System:

1) Solar Energy Collector Panels on a Flat Roof. Solar Energy Collector Panels installed on a flat roof, whether rack-mounted or flat-mounted, shall be screened from public view, and meet the following requirements:
a. The height of such screening, at the minimum, shall be the height of the Solar Energy Collector Panel.
b. The screening may be by a parapet or screening wall replicating the materials of the building.

2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

4) Any Solar Energy Collector Panels or Systems not meeting these requirements, or any installation of Solar Energy Systems as the principal use on any property, shall require approval of a Specific Use Permit (SUP).

I.6 In accordance with item 4) above, the Specific Use Permit (SUP) is required due to the proposed Solar Energy Collector System being unable to meet item 1) above. The provided building elevations provide staff with the appropriate documentation to show the Planning and Zoning Commission and City Council.

M.7 Please review the attached draft ordinance prior to the May 28, 2024 Planning & Zoning Commission meeting, and provide staff with your markups by June 4, 2024.

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 June 4, 2024; 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 June 11, 2024 Planning and Zoning Commission Public Hearing Meeting. The Planning and Zoning Commission Work Session Meeting for this case will be held on May 28, 2024.

I.9 The projected City Council meeting dates for this case will be June 17, 2024 (1st Reading) and July 1, 2024 (2nd Reading).

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
ENGINEERING	Madelyn Price	05/22/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
BUILDING	Craig Foshee	05/23/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
FIRE	Ariana Kistner	05/22/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
GIS	Lance Singleton	05/20/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
POLICE	Chris Cleveland	05/21/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
PARKS	Travis Sales	05/20/2024	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. Z2024-025

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	1290 I-30 Rockwall TX 75087				
SUBDIVISION		LOT		BLOCK	
GENERAL LOCATION	Townsend Dr. & I-30 Frontage rd				

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING	LI		CURRENT USE	CTE Entertainment LP	
PROPOSED ZONING	LI		PROPOSED USE	Solar	
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	
CONTACT PERSON	Justin Ripp	CONTACT PERSON	Teshia Brown
ADDRESS	1290 E I-30	ADDRESS	4801 Freidrich LN. Ste 109
CITY, STATE & ZIP	Rockwall, TX 75087	CITY, STATE & ZIP	Austin, TX 78744
PHONE	972-839-8196	PHONE	940-594-9718
E-MAIL	justin@elevatedvg.com	E-MAIL	teshiabrown@freedomsolarpower.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Justin Ripp [*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 $ 215 *TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE* 16 *DAY OF* May *20* 24 *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."*

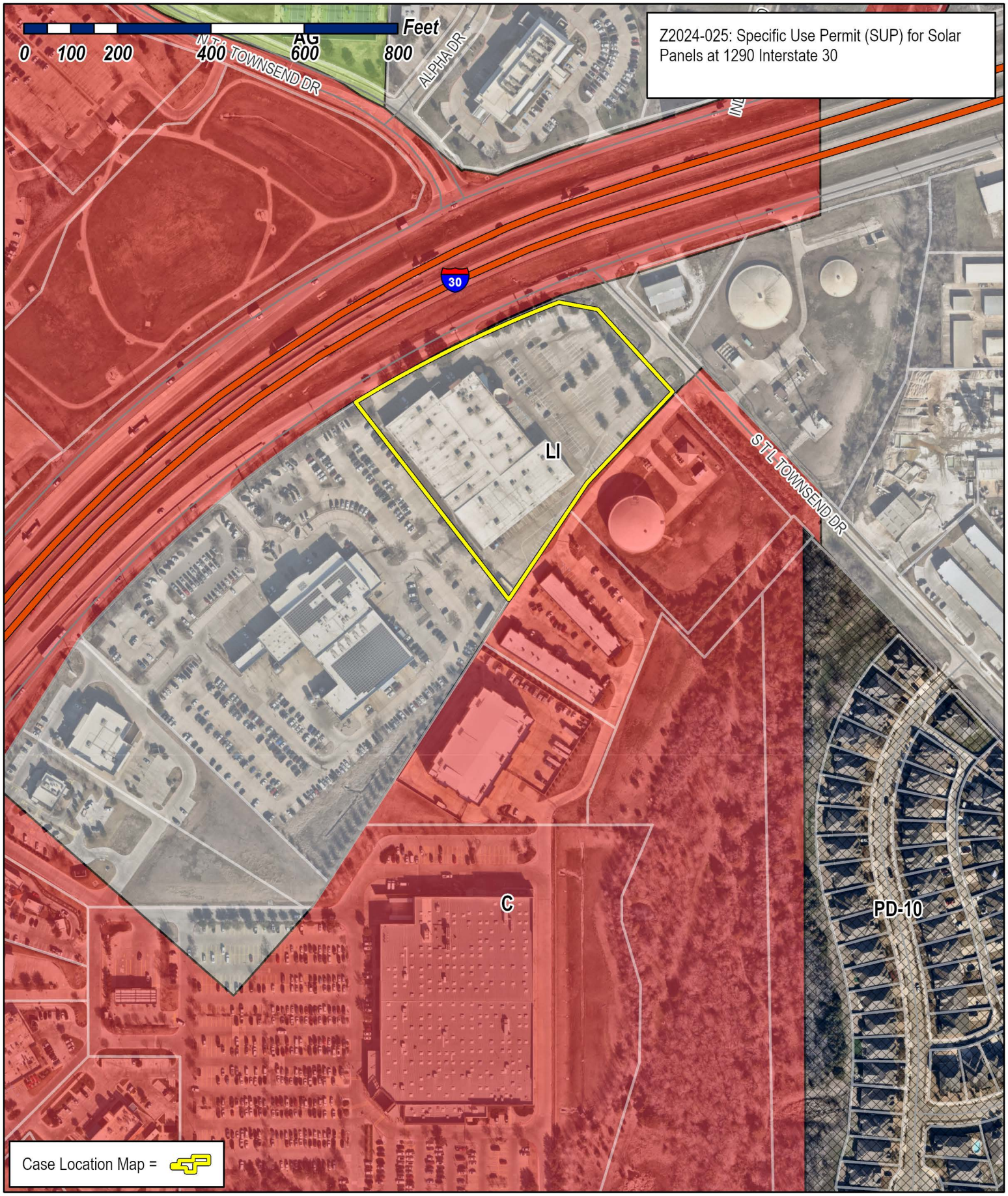
GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* May *20* 24

OWNER'S SIGNATURE

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES

JARED FARMER
Notary Public, State of Texas
Comm. Expires 09-11-2026
Notary ID 131718186



City of Rockwall

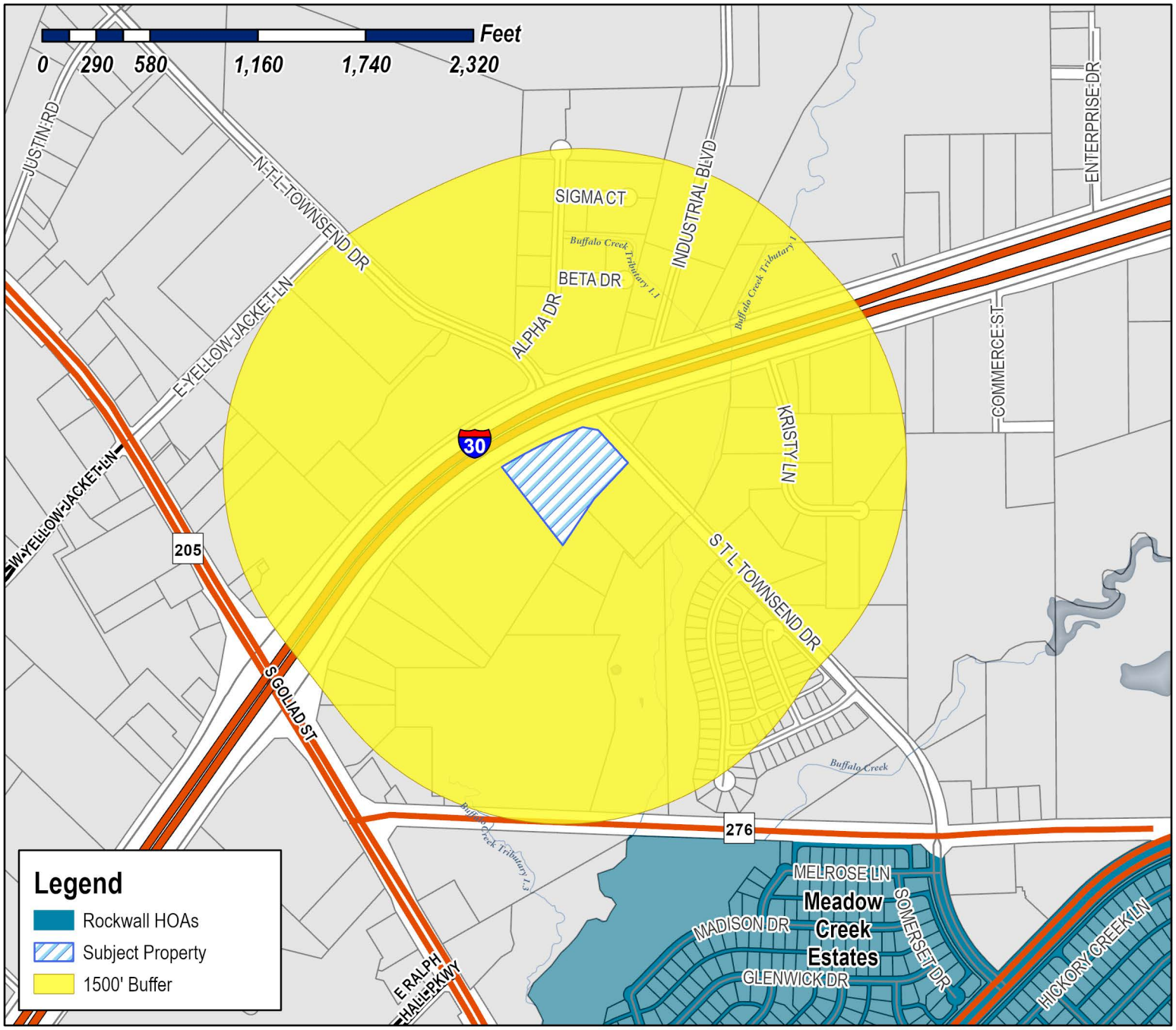
Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com

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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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30

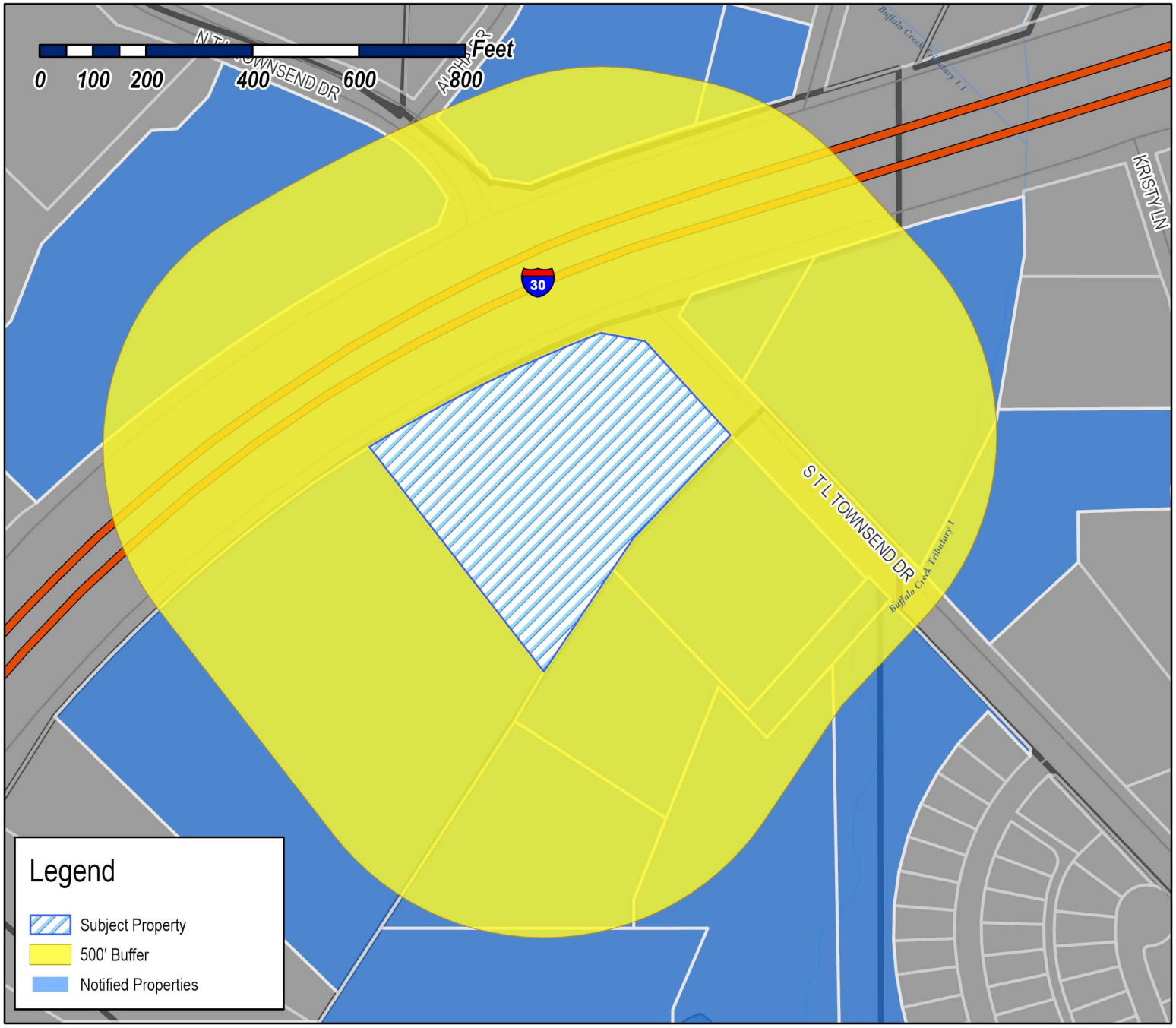


Date Saved: 5/17/2024
For Questions on this Case Call (972) 771-7745

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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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30



Date Saved: 5/17/2024
For Questions on this Case Call: (972) 771-7745

RESIDENT
S T L TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
T L TOWNSEND
ROCKWALL, TX 75087

RESIDENT
TOWNSEND DR
ROCKWALL, TX 75087

MCCALLUM V LLC
1 SOAPBERRY LN
ROCKWALL, TX 75087

ROCKWALL COUNTY
1101 RIDGE RD
STE 105
ROCKWALL, TX 75087

RESIDENT
1225 HWY 276
ROCKWALL, TX 75087

RESIDENT
1245 HWY276 DR
ROCKWALL, TX 75087

JACKSON AUTOMOTIVE REAL ESTATE INV LLC
1250 E INTERSTATE 30
ROCKWALL, TX 75087

RESIDENT
1290 I30
ROCKWALL, TX 75087

RESIDENT
1301 I30
ROCKWALL, TX 75087

RESIDENT
1401 E I30
ROCKWALL, TX 75087

SARO PARTNERS LLC
1450 T L TOWNSEND
ROCKWALL, TX 75032

RESIDENT
1460 S TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
1480 S T L TOWNSEND DR
ROCKWALL, TX 75087

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

PRITCHARD DONNA CULLINS &
1610 SHORES BLVD
ROCKWALL, TX 75087

HTA ROCKWALL MEDICAL CENTER LLC
16435 NORTH SCOTTSDALE ROAD SUITE 320
SCOTTSDALE, AZ 85254

RESIDENT
1975 ALPHA RD
ROCKWALL, TX 75087

CITY OF HEATH
200 LAURENCE DRIVE
HEATH, TX 75032

RESIDENT
2010 KRISTY LN
ROCKWALL, TX 75087

CTE PHASE I LP
2266 LAFAYETTE LNDG
ROCKWALL, TX 75032

REDI MIX LLC
331 N MAIN STREET
EULESS, TX 76039

MSC ROCKWALL LLC
725 PARK CENTER DRIVE
MATTHEWS, NC 28105

COSTCO WHOLESALE CORP
999 LAKE DR
ISSAQUAH, WA 98027

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:

Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector Panels
Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, 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, June 11, 2024 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, June 17, 2024 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:

Henry Lee
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, June 17, 2024 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. Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector 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.

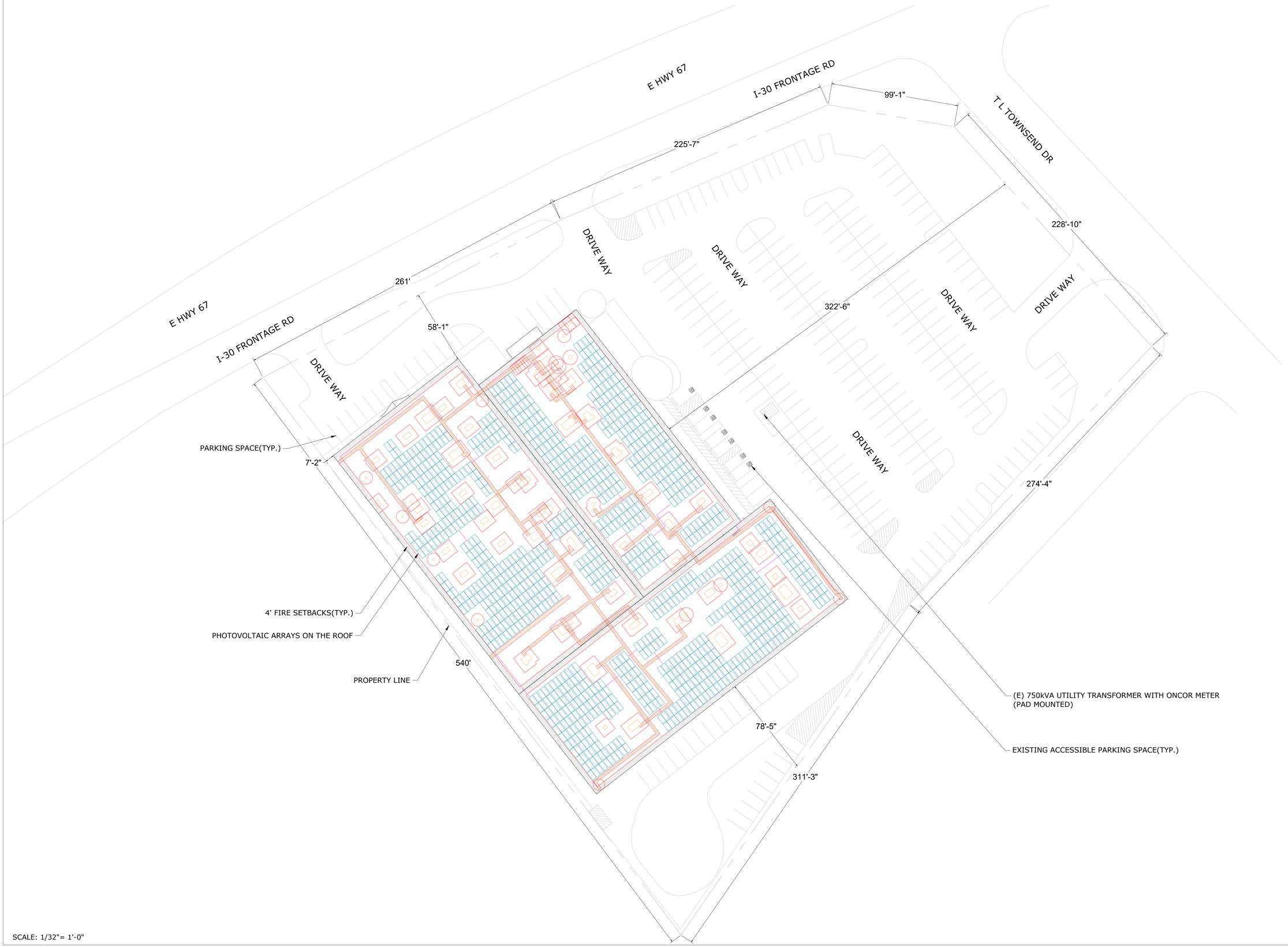
Name:

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

SITE PLAN : DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW



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

FREEDOM™ SOLAR POWER

4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

STATE OF TEXAS
JORDNA F. HANLEY
133867
LICENSED PROFESSIONAL ENGINEER

JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

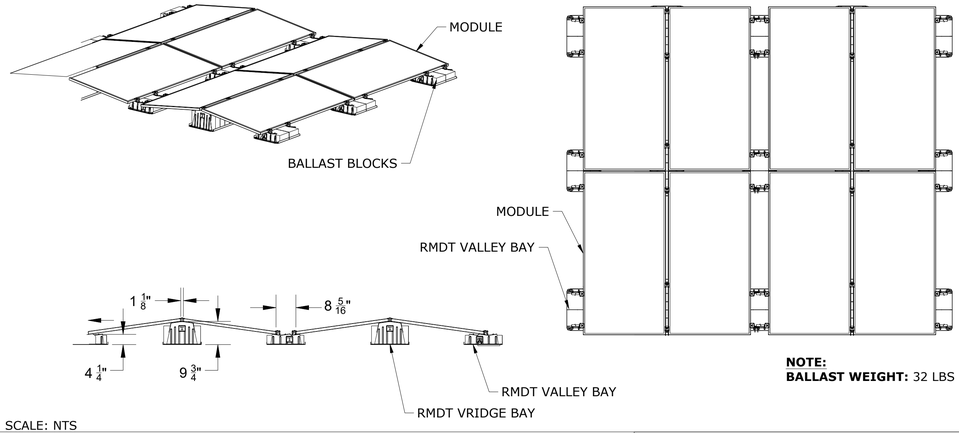
ILLUMINE i

SITE PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	A-01

ATTACHMENT DETAILS - UNIRAC RMDT



SCALE: NTS

NOTE:
BALLAST WEIGHT: 32 LBS

BILL OF MATERIALS

PART NUMBER	DESCRIPTION	QTY	UNIT
Q.PEAK DUO XL-G10.3/BFG 485W	MODULE	1112	QTY.
N/A	BALLAST BLOCK	1658	QTY.
310802	RMDT VALLEY BAY	813	QTY.
310826	RMDT MID CLAMP 32-35MM	1324	QTY.
310820	RMDT END CLAMP 30-40MM	2648	QTY.
310860	KIT 1/4-20 CLIP ON NUT SS 18-8	3972	QTY.
310801	RMDT RIDGE BAY	662	QTY.
008115M	MLPE TIGER CLIP	1112	QTY.

GENERAL STRUCTURAL NOTES

1.ALL EQUIPMENTS SHALL BE INSTALLED PER MANUFACTURER INSTALLATION AND OPERATIONS MANUAL REQUIREMENTS.
2.PRIOR TO COMMENCEMENT OF WORK OR FABRICATION OF COMPONENTS, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS,AND ELEVATIONS OF THE EXISTING CONSTRUCTION.CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE FIELD -VERIFIED CONDITIONS, DIMENSIONS,AND ELEVATION AND THOSE INDICATED ON THE DRAWINGS.
3.ALL THE CONSTRUCTION SHALL COMPLY WITH REQUIREMENTS OF 2021 EDITION OF THE BUILDING CODE.

SOLAR RACK COMPONENTS:

1. FOLLOW MANUFACTURER'S INSTALLATION FOR INSTALLATION OF THE SOLAR COMPONENTS,INCLUDING MODULE CLAMPS,L-FEET,BRACKETS MECHANICAL ATTACHMENTS,AND HARDWARE.

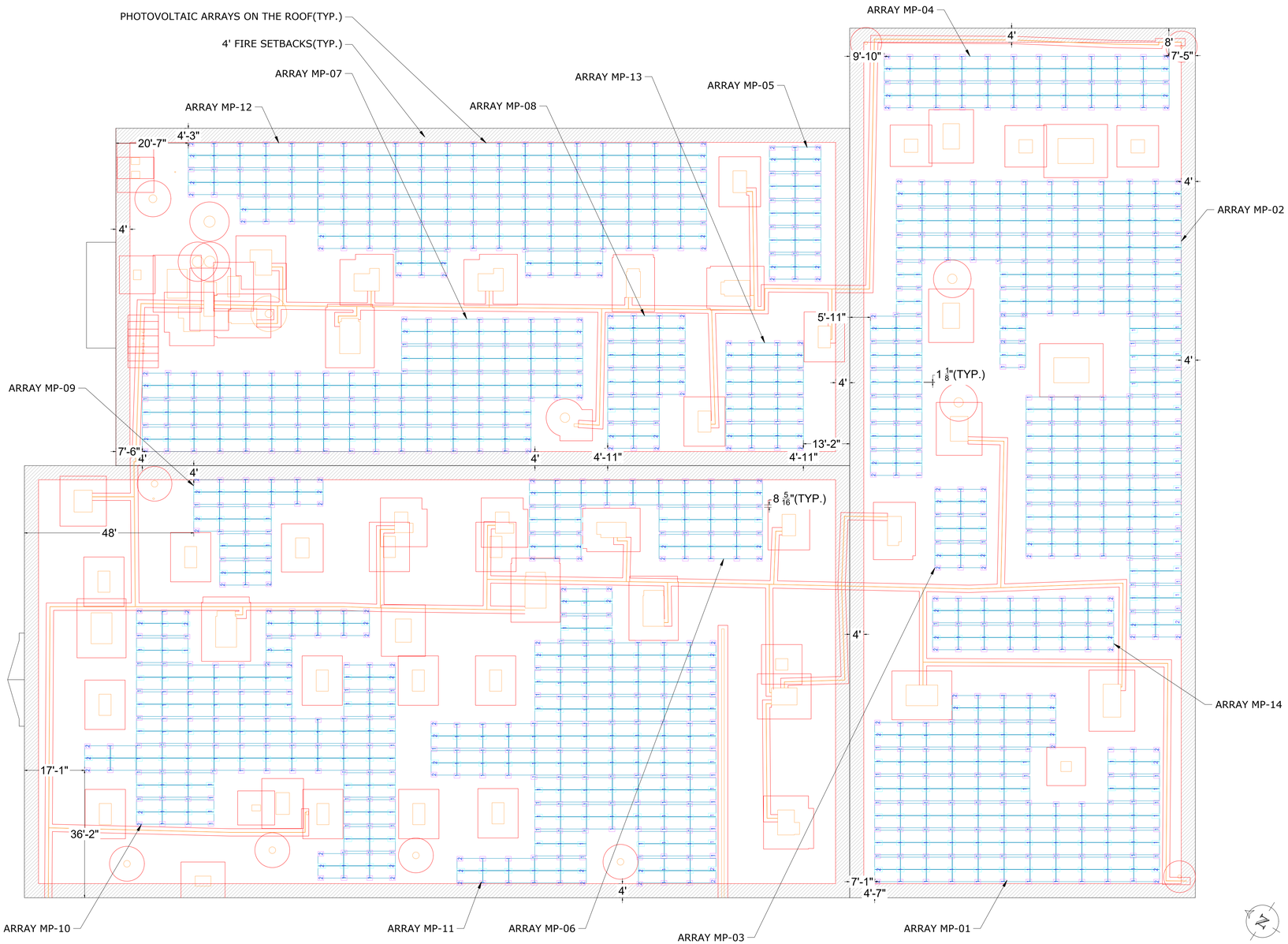
LEGEND:

1 STANDARD CORNER BAY WITH CMU BLOCK COUNT

2 SUPPLEMENTAL BAY WITH CMU BLOCK COUNT

SITE INFORMATION - WIND SPEED: 105 MPH, EXPOSURE: B AND SNOW LOAD: 5 PSF

SR. NO	AZIMUTH	MODULE TILT	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT
ARRAY MP-01	52°&232°	8°	120	3372	TPO	UNIRAC RMDT
ARRAY MP-02	52°&232°	8°	222	6211	TPO	UNIRAC RMDT
ARRAY MP-03	52°&232°	8°	12	341	TPO	UNIRAC RMDT
ARRAY MP-04	52°&232°	8°	44	1265	TPO	UNIRAC RMDT
ARRAY MP-05	52°&232°	8°	20	562	TPO	UNIRAC RMDT
ARRAY MP-06	52°&232°	8°	42	1201	TPO	UNIRAC RMDT
ARRAY MP-07	52°&232°	8°	122	3449	TPO	UNIRAC RMDT
ARRAY MP-08	52°&232°	8°	26	732	TPO	UNIRAC RMDT
ARRAY MP-09	52°&232°	8°	24	686	TPO	UNIRAC RMDT
ARRAY MP-10	52°&232°	8°	124	3500	TPO	UNIRAC RMDT
ARRAY MP-11	52°&232°	8°	148	4155	TPO	UNIRAC RMDT
ARRAY MP-12	52°&232°	8°	156	4402	TPO	UNIRAC RMDT
ARRAY MP-13	52°&232°	8°	24	677	TPO	UNIRAC RMDT
ARRAY MP-14	52°&232°	8°	28	805	TPO	UNIRAC RMDT



FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF MINIMUM
TEMPERATURE: -8°C
MAXIMUM
TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900

32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

STRUCTURAL PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | S-01

STRINGING DIAGRAM:

STRING ID LEGEND

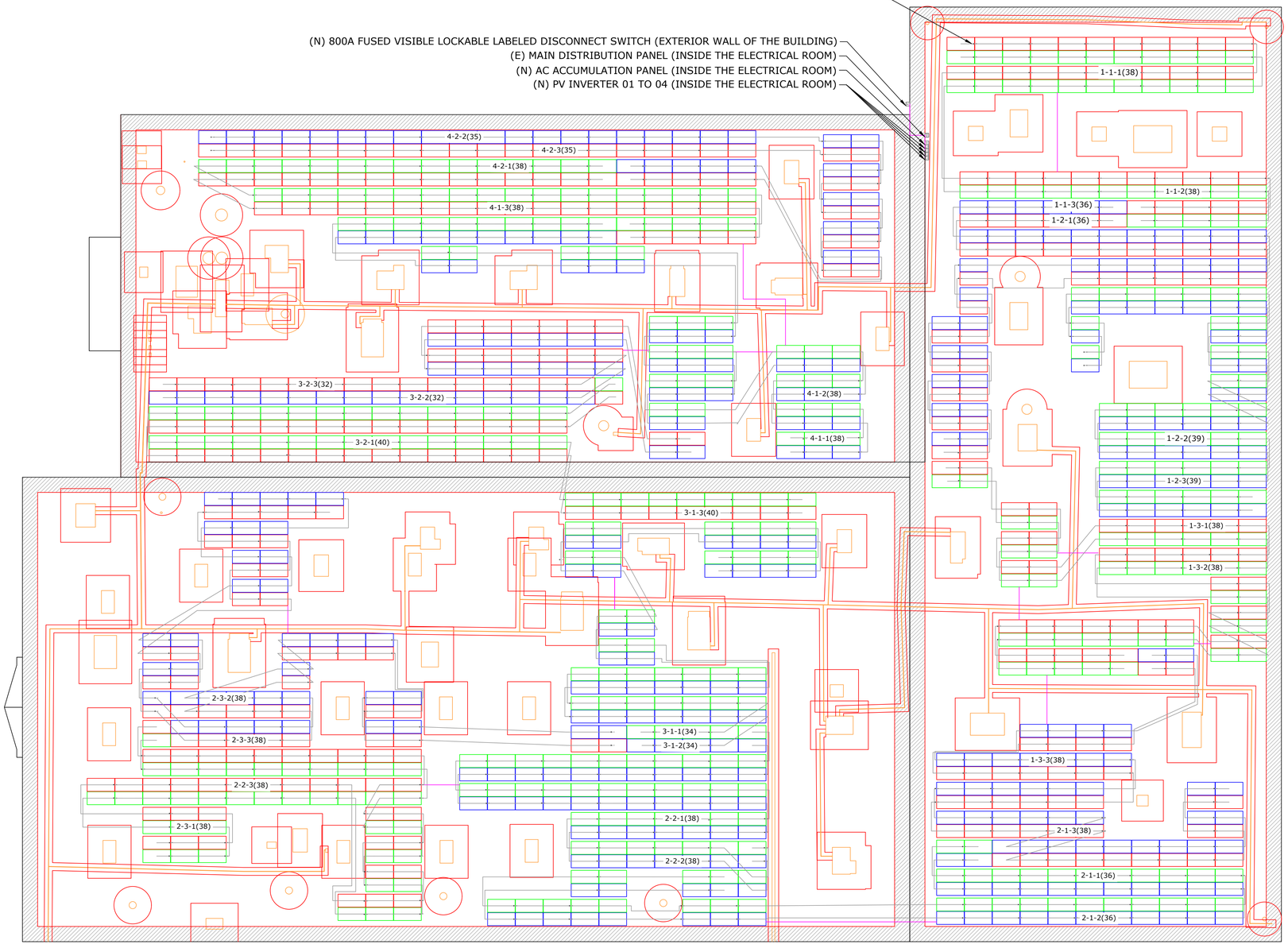
STR 1-1-1(X)

- # OF MODULES
- STRING ID
- UNIT #(1,2,3)
- INVERTER ID#

(E) 750kVA UTILITY TRANSFORMER WITH ONCOR METER (PAD MOUNTED)

STRING STARTS HERE

(N) 800A FUSED VISIBLE LOCKABLE LABELED DISCONNECT SWITCH (EXTERIOR WALL OF THE BUILDING)
(E) MAIN DISTRIBUTION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) AC ACCUMULATION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) PV INVERTER 01 TO 04 (INSIDE THE ELECTRICAL ROOM)



SCALE:1"=15'-0"

WIRING AND WIRING METHODS:

1. EXPOSED PV SOLAR MODULE WIRING AND PV SOURCE CIRCUITS TO BE UV RESISTANT 2,000V PV WIRE, 90° C, AND RATED FOR WET CONDITIONS.
2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED IN A NEAT WORKMAN LIKE MANNER TO PREVENT CHAFFING, SWINGING, AND EXCEEDING MINIMUM BEND RADIUS WITH PROPER MECHANICAL SUNLIGHT RESISTANT MEANS AND ROUTED TO AVOID DIRECT EXPOSURE TO SUNLIGHT AT ALL TIMES.
3. ALL FIELD WIRING THAT IS NOT COLOR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND.
4. FLEXIBLE METAL CONDUIT IS SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS OR CONDUIT FITTING) AND NO MORE THAN 48 INCHES APART.
5. LIQUID TIGHT FLEXIBLE METAL AND NON-METALLIC CONDUIT IS SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART.
6. PVC CONDUIT AND FITTINGS SHALL NOT BE USED ON ROOFTOP CONDITIONS OR EXPOSED TO DIRECT SUNLIGHT.WHEN USED IN ACCEPTABLE LOCATION CONDUIT SHALL BE SCHEDULE 80 UV RESISTANT UNLESS NOTED OTHERWISE.
7. FUSES AND WIRES SUBJECT TO TEMPERATURES CONDITIONS GREATER THAN 100°F OR TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
8. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
9. ALL TERMINATIONS SHALL HAVE ANTI-OXIDANT COMPOUND AND BE TORQUED PER DEVICE LISTING, OR MANUFACTURER'S RECOMMENDATIONS.
10. SPLIT BOLTS /SPLICES / CONNECTORS ARE PERMITTED ON THE AC CONDUCTORS AND SHALL BE INSULATED WITH APPROVED MEANS. SPLICES ON THE DC CONDUCTORS IS NOT PERMITTEDIN ANY LOCATION.
11.NO PVC CONDUIT ALLOWED ON ROOF, UNLESS OPEN ENDED WIRE MANAGEMENT <10'.

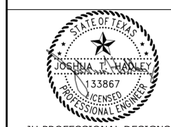
INVERTER 1, 120kW			INVERTER 2, 120kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
1-1-1	38	19	2-1-1	36	18
1-1-2	38	19	2-1-2	36	18
1-1-3	36	18	2-1-3	38	19
UNIT 02			UNIT 02		
1-2-1	36	18	2-2-1	38	19
1-2-2	39	20	2-2-2	38	19
1-2-3	39	20	2-2-3	38	19
UNIT 03			UNIT 03		
1-3-1	38	19	2-3-1	38	19
1-3-2	38	19	2-3-2	38	19
1-3-3	38	19	2-3-3	38	19

INVERTER 3, 80kW			INVERTER 4, 80kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
3-1-1	34	17	4-1-1	38	19
3-1-2	34	17	4-1-2	38	19
3-1-3	40	20	4-1-3	38	19
UNIT 02			UNIT 02		
3-2-1	40	20	4-2-1	38	19
3-2-2	32	16	4-2-2	35	18
3-2-3	32	16	4-2-3	35	18
			GRAND TOTAL	1112	558

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

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AC SYSTEM SIZE: 400.00kW
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(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

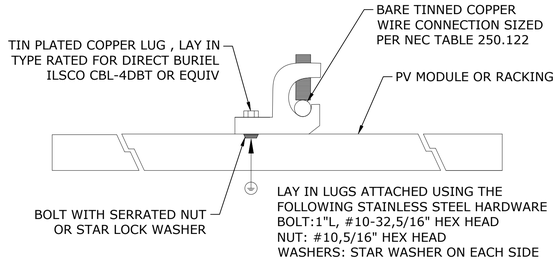
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STRINGING MAP

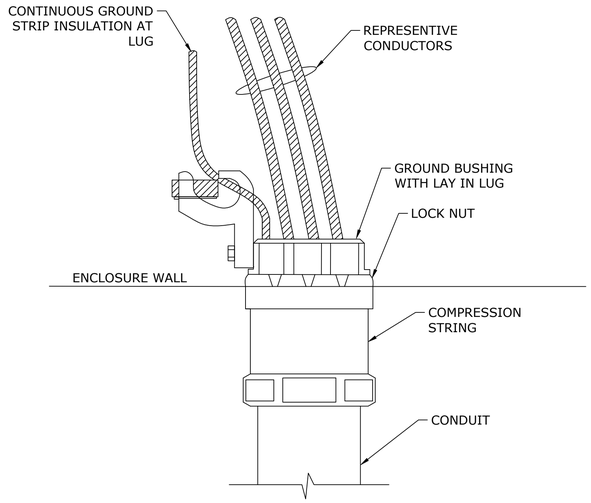
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-01

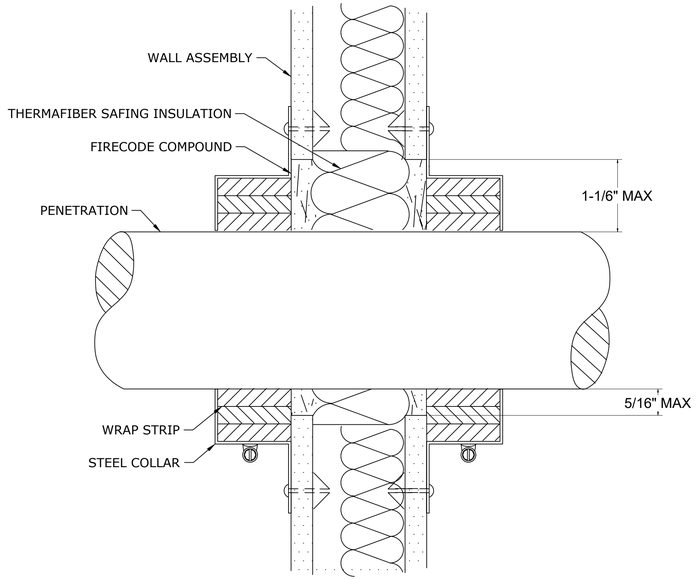
GROUND LUG DETAIL:



CONDUIT BODY GROUNDING DETAIL:

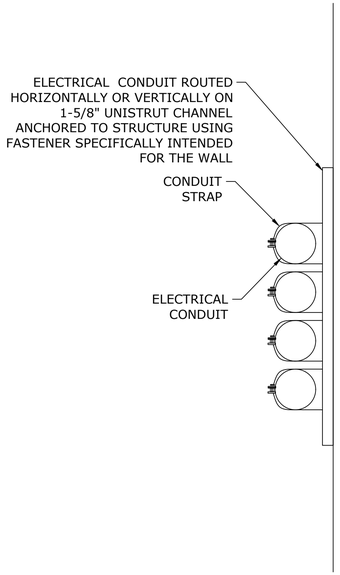


FIRE WALL PENETRATION DETAIL:

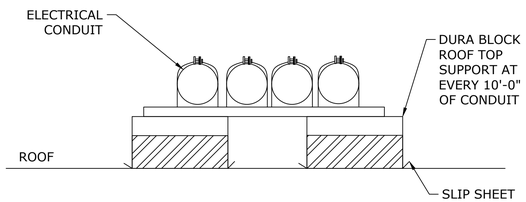


SCALE: NTS

CONDUIT WALL ANCHORING:



TYPICAL DURA-BLOCK CONDUIT SUPPORT DETAIL:



NOTE: DETAIL DRAWINGS ARE FOR REFERENCE ONLY

GROUNDING - SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION:

1.ONLY ONE CONNECTION TO DC CIRCUITS AND AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (REFERENCED TO THE SAME POINT).
2.EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING ELECTRODE CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING CONNECTION POINT AS PRACTICABLE AND A MINIMUM NUMBER OF TURNS.
3.TO ENSURE PROPER GROUNDING, NON-CURRENT CARRYING METAL PARTS SHALL BE INSTALLED, NOTING THAT PAINT AND FINISH SHALL BE PROPERLY REMOVED WHERE IT MAY INSULATE AN ENCLOSURES BONDING CONNECTION.APPLY NO-LOX OR OTHER SIMILAR ANTI-OXIDANT COMPOUND TO EXPOSED SURFACES.
4.THE CONNECTION TO THE MODULE OF THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT.
5.GROUNDING SYSTEM COMPONENTS SHALL BE APPROVED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC. GROUNDING DEVICES EXPOSED TO THE ENVIRONMENT SHALL BE RATED FOR DIRECT BURIAL.
6.UNDERGROUND OR INACCESSIBLE CONNECTIONS OF GROUNDING CONDUCTORS SHALL ONLY BE MADE VIA EXO-THERMIC WELDS. THE USE OF MECHANICAL CONNECTIONS ARE ACCEPTABLE FOR ACCESSIBLE ABOVE GROUND LOCATIONS.
7.ALL METALLIC CONDUITS SHALL BE INSTALLED AND TERMINATED WITH INSULATED GROUND BUSHINGS.

FREEDOM SOLAR POWER
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AC SYSTEM SIZE: 400.00kW
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(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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PROJECT INFORMATION

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ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 1044372000636390O
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

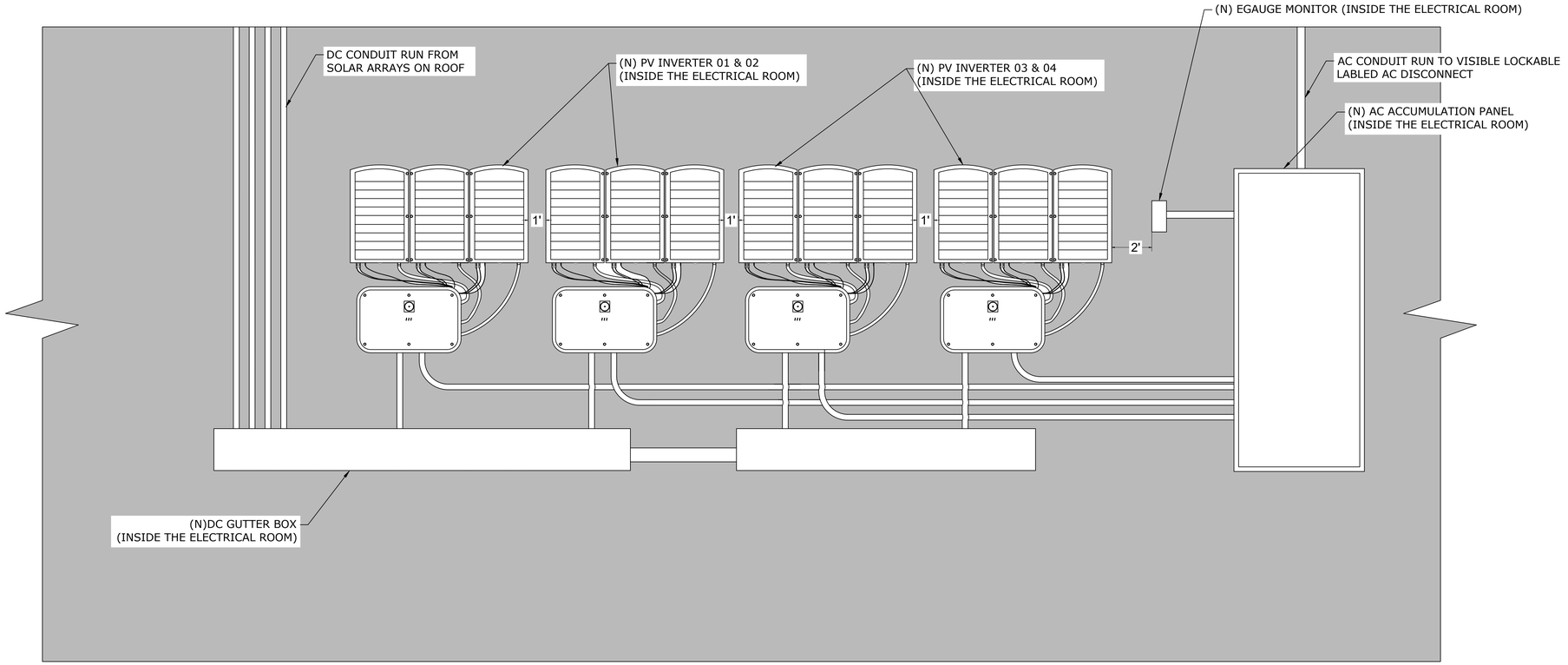
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ELECTRICAL MOUNTING DETAILS

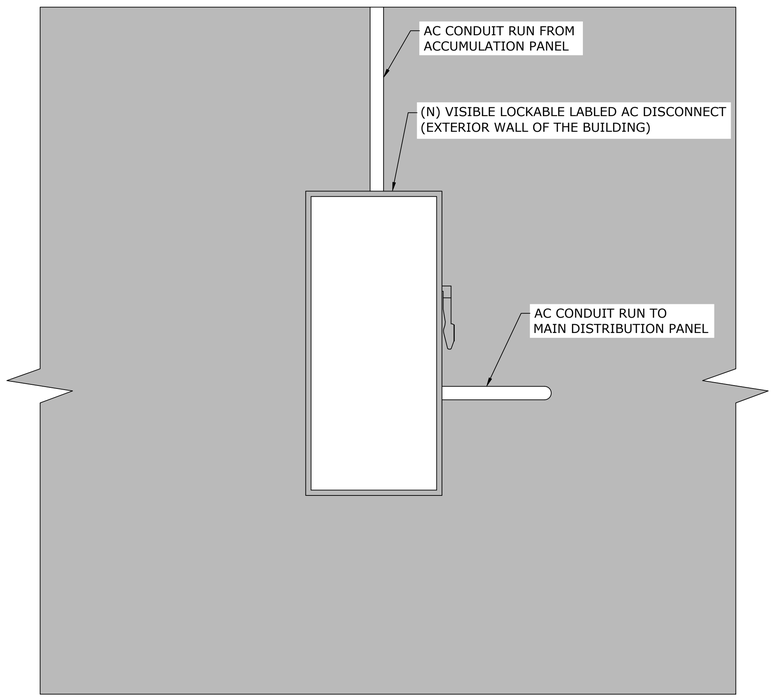
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-02

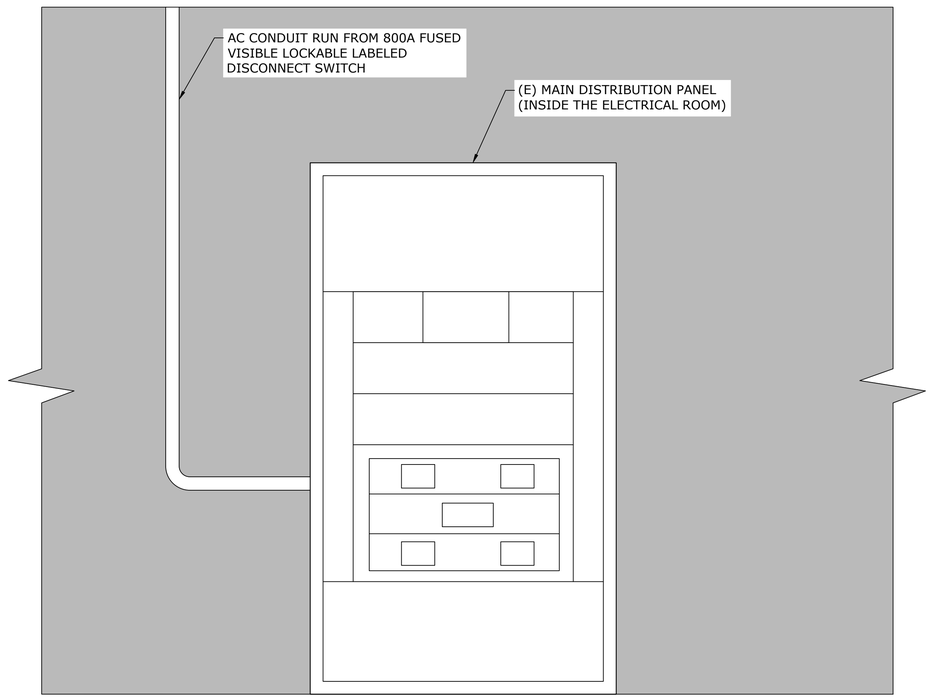
ELECTRICAL EQUIPMENT ELEVATION VIEW :



SCALE: NTS



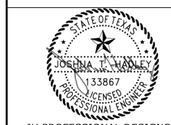
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FREEDOM™ SOLAR POWER
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SOLAR PV PROJECT
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EQUIPMENT ELEVATION VIEW

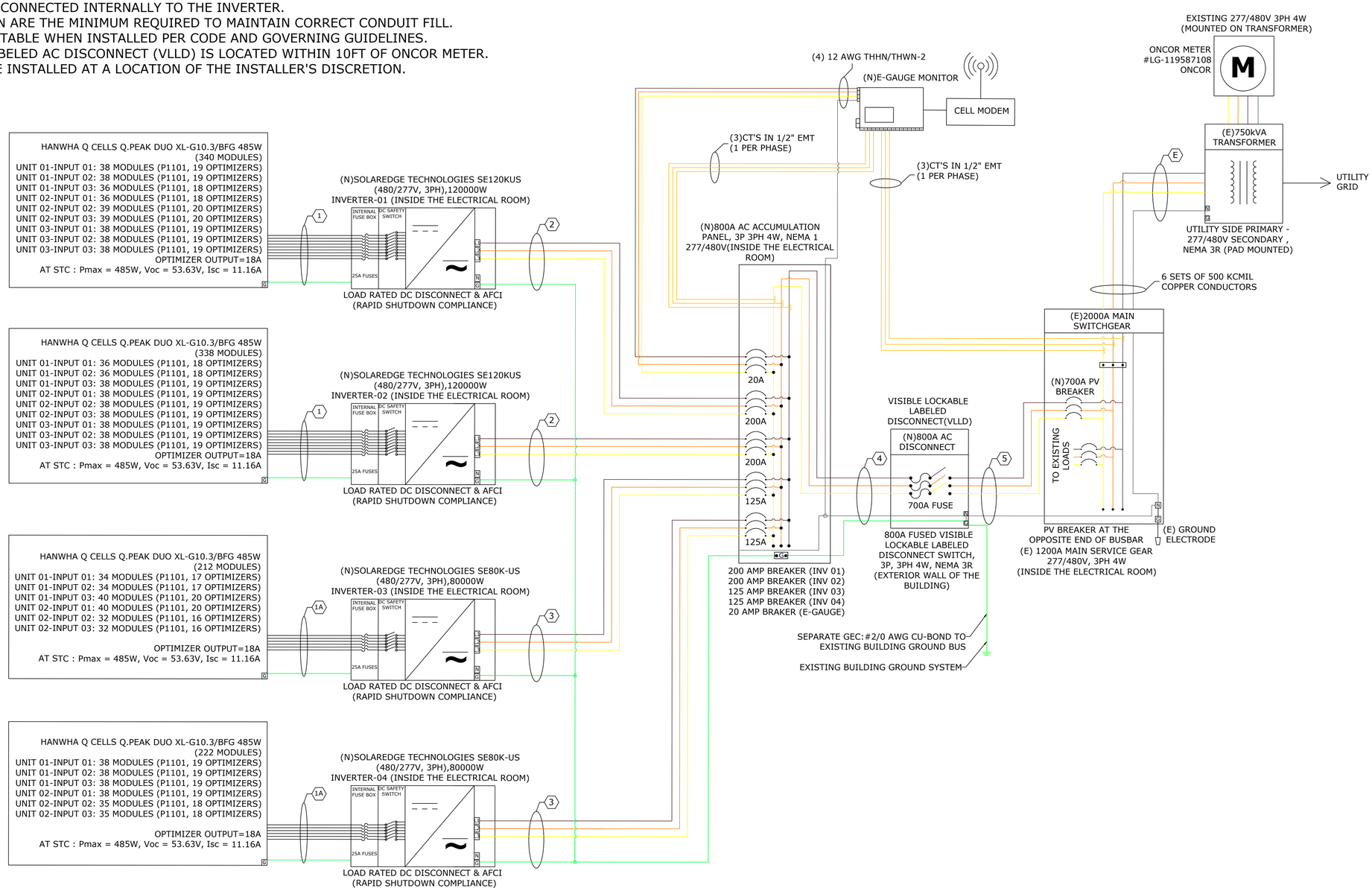
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-03

ELECTRICAL DIAGRAM: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

NOTE:

1. TYPICALLY EACH SOLAREDGE P1101 POWER OPTIMIZER IS CONNECTED TO TWO MODULES.
2. EACH SOLAREDGE P1101 POWER OPTIMIZER IS RAPID SHUTDOWN COMPLIANT.
3. ALL DC FUSES SHOWN ARE CONNECTED INTERNALLY TO THE INVERTER.
4. ALL CONDUIT SIZES SHOWN ARE THE MINIMUM REQUIRED TO MAINTAIN CORRECT CONDUIT FILL.
5. LARGER CONDUIT IS ACCEPTABLE WHEN INSTALLED PER CODE AND GOVERNING GUIDELINES.
6. THE VISIBLE LOCKABLE, LABELED AC DISCONNECT (VLLD) IS LOCATED WITHIN 10FT OF ONCOR METER.
7. MONITORING DEVICE TO BE INSTALLED AT A LOCATION OF THE INSTALLER'S DISCRETION.



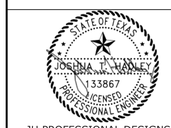
CONDUIT SCHEDULE

TAG ID	NO OF PARALLEL FEEDER	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	1	1-1/4" EMT 1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
1A	1	1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
2	1	2" EMT	(3) 3/0 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	1	1-1/4" EMT	(3) 1 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
4	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2
5	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 500 KCMIL THHN/THWN-2	NONE

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JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
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CTE ENTERTAINMENT, LP COM-41783
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ROCKWALL, TX 75032
ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

THREE LINE DIAGRAM

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | E-05

ELECTRICAL CALCULATION: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

OCPD CALCULATIONS:
MAIN PANEL RATING:2000A,
LINE SIDE INTERCONNECTION ALLOWABLE BACKFEED IS =2000A
OCPD CALCULATIONS: INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X 1.25
=(144.3AX2)+(96.5AX2)X1.25=602.00A=>PV BREAKER/FUSE = 700A
TOTAL REQUIRED PV BREAKER/FUSE SIZE =>700A PV BREAKER/FUSE

ELECTRICAL CALCULATIONS:
SYSTEM INFO:
539.32 kW DC SYSTEM SIZE
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W MODULES
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
(558)SOLAREDGE P1101 POWER OPTIMIZER

SYSTEM CHARACTERISTICS:(INV 01 & 02)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 144.75A
ISC - MAXIMUM CIRCUIT CURRENT = 144.75A

SYSTEM CHARACTERISTICS:(INV 03 & 04)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 96.50A
ISC - MAXIMUM CIRCUIT CURRENT = 96.50A

DC WIRE SIZING (TAG 1):
MAX CIRCUIT CURRENT = OPTIMIZER MAX OUTPUT X HIGH IRRADIANCE [NEC 690.8(A)(1)] X 1.25 [NEC 690.53]
=18A X 1 X 1.25= 22.5A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 0.8 X 40A = 29.12A
TERMINAL RATING, [PER 110.14(C)] - 10 AWG , 75°C RATED = 35A
30A ≥ 22.5A SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 29.12A ≥ 18A, AND **10 AWG** IS SUFFICIENT.

AC WIRE SIZING (TAG 2):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 144.3A X 1.25 = 180.38A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 225A = 204.75A
TERMINAL RATING, [PER 110.14(C)] - 3/0 AWG , 75°C RATED = 200A
200A ≥ 180.38A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 204.75A ≥ 144.3A, AND **3/0 AWG** IS SUFFICIENT.
INVERTER OVER CURRENT PROTECTION = INVERTER MAX OUTPUT CURRENT X 1.25
= 144.3A X 1.25 = 200A --> 200A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 3):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 96.5A X 1.25 = 120.63A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 145A = 131.95A
TERMINAL RATING, [PER 110.14(C)] - 1 AWG , 75°C RATED = 130A
130A ≥ 120.63A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 131.95A ≥ 96.5A, AND **1 AWG** IS SUFFICIENT.
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X CONTINUOUS LOAD
= 96.5A X 1.25 = 125A --> 125A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 4 & 5): (NO OF PARALLEL FEEDEER =2)
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X 1.25
=(144.3A X 2)+(96.5A X 2)X 1.25 =602.00A/2 = 301A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 430A = 391.30A
TERMINAL RATING, [PER 110.14(C)] - 500 KCMIL , 75°C RATED = 380A
380A ≥ 301A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 391.30A ≥ 240.8A, AND **500 KCMIL** IS SUFFICIENT.

NOTE:
1.THIS INSTALLATION IS TO BE CONSIDERED SUPERVISED.ALL NEW ADDITIONS AND ALTERATIONS TO ANY EQUIPMENT IDENTIFIED IN THIS DOCUMENT MUST BE MADE WITH ENGINEERING SUPERVISION AND ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.
2.ALL EQUIPMENT AND TERMINALS MUST BE MINIMUM 75°C RATED.
3.ALL CONDUCTORS ARE COPPER, UNLESS OTHERWISE SPECIFIED.

MODULE SPECIFICATIONS	
MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
MODULE POWER @ STC	485W
OPEN CIRCUIT VOLTAGE:**Voc**	53.63V
MAX POWER VOLTAGE:**Vmp**	45.63V
SHORT CIRCUIT CURRENT:**Isc**	11.16A
MAX POWER CURRENT:**Imp**	10.63A

INVERTER-01 & 02 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
POWER RATING	120000W
MAX OUTPUT CURRENT	144.3A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	144.75A
MAX DC VOLTAGE	1000V

OPTIMIZER CHARACTERISTICS	
MODEL	SOLAREDGE P1101 POWER OPTIMIZER
MAX INPUT VOLTAGE	125 VDC
MAX INPUT CURRENT	14.1 ADC
MAX OUTPUT CURRENT	18 ADC

INVERTER-03 & 04 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
POWER RATING	80000W
MAX OUTPUT CURRENT	96.5A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	96.5A
MAX DC VOLTAGE	1000V

VOLTAGE DROP CALCULATIONS:

DC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	OPTIMIZER CURRENT (IMP)	STRING VOLTAGE AT 2%DB (VMP)	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
MODULES	INVERTER 01	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	230	1.06%
MODULES	INVERTER 02	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	390	1.80%
MODULES	INVERTER 03	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	260	1.20%
MODULES	INVERTER 04	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	200	0.92%
											MAX Vdrop	1.80%

3 PHASE AC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	CURRENT	VOLTAGE	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
INVERTER TO POI												
INVERTER 01	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 02	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 03	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
INVERTER 04	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
AC ACCUMULATION	AC DISCONNECT	4	EMT	481.6	480	1	I AWG 01	Cu	0.00016	0.000140362	25	0.61%
AC DISCONNECT	POI	5	EMT	481.6	480	2	R 500 KCMIL	Cu	0.000032	0.000028072	15	0.04%
											MAX Vdrop	0.84%
											TOTAL SYSTEM VDROP	2.64%

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION
DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

ELECTRICAL CALCULATION

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-06

PLACARDS

1.

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 690.13(B)

2.

WARNING:PHOTOVOLTAIC POWER SOURCE

INSTALLED ON: CONDUIT, RACEWAYS, AND J-BOXES (LABELED EVERY 10'). REFLECTIVE. MIN 3/8" WHITE TEXT ON BLACK BACKGROUND.
APPLICABLE CODE(S): NEC 690.31(D)(2)

3.

PHOTOVOLTAIC

DC DISCONNECT

INSTALLED ON: DC DISCONNECT(S)
APPLICABLE CODE(S): NEC 690.13(B)

INVERTER 1 & 2

4.

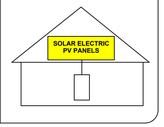
MAXIMUM DC VOLTAGE
1000 V
OF PV SYSTEM

INSTALLED ON: INVERTER
APPLICABLE CODE(S): NEC 690.53

5.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.
APPLICABLE CODE(S): NEC 690.56(C)

6.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON:RAPID SHUTDOWN SWITCH
APPLICABLE CODE(S): NEC 690.56(C)(2)

7.

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 481.6 AMPS AC
AC NOMINAL OPERATING VOLTAGE 480 VAC

INSTALLED ON: AC DISCONNECT(S), POINT OF INTERCONNECTION.
APPLICABLE CODE(S): NEC 690.54

8.

⚠ WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

INSTALLED ON: POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 705.12(C)

9.

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

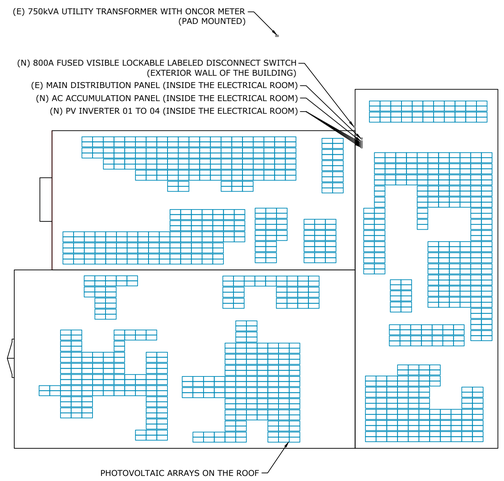
10.

FREEDOM™ SOLAR POWER

11.

WARNING: ⚠

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



1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

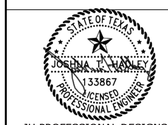
KEY	QTY.	LOCATION
1.	3	AC DISCONNECT, LOAD CENTER, POINT OF INTERCONNECTION
2.	10	CONDUIT
3.	4	DC DISCONNECTS
4.	4	INVERTER
5.	6	AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
6.	4	INVERTER
7.	2	AC DISCONNECT, POINT OF INTERCONNECTION
8.	1	POINT OF INTERCONNECTION
9.	1	COMBINER PANEL
10.	1	POINT OF INTERCONNECTION
11.	1	POINT OF INTERCONNECTION

NOTES: ROOFTOP TRIP HAZARDS ON ROOF SHALL BE IDENTIFIED WITH REFLECTIVE MATERIAL. MARKING CONTENT AND FORMAT RED BACKGROUND WHITE LETTERING MINIMUM 3/8"LETTER HEIGHT ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT(DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT).

FREEDOM™ SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT FOR CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
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PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

ELECTRICAL PLACARDS

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:03/22/2024 | E-06

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

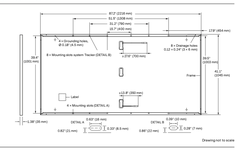
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

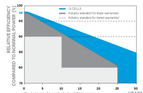
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

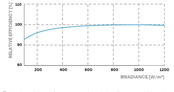
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

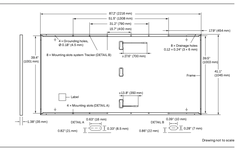
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

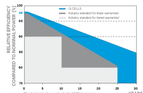
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

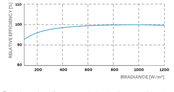
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

CITY OF ROCKWALL

ORDINANCE NO. 24-XX

SPECIFIC USE PERMIT NO. S-3XX

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 ENERGY COLLECTOR PANELS* ON THE ROOF OF AN EXISTING BUILDING SITUATED ON A FIVE (5) ACRE PARCEL OF LAND IDENTIFIED AS LOT 2, BLOCK A, PARK PLACE BUSINESS CENTRE 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.

WHEREAS, the City has received a request from Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for *Solar Energy Collector Panels* on the roof of an existing building situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and being more specifically depicted and described 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) allowing *Solar Energy Collector Panels* as stipulated by Subsection 01.02, *Land Use Schedule*, 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, *Conditional Land Use Standards*, of Article 04, *Permissible Uses*, and Subsection 04.01, *General Commercial District Standards*, and Subsection 04.05, *Commercial (C) District*, of Article 05, *District Development Standards*, of the Unified Development Code

PRIVILEGE 05-28-2024

(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 *Solar Energy Collector Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

(2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

(3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

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 compliance to the following:

(1) Upon obtaining a *Certificate of Occupancy (CO)* and/or building permit, should the business owner operating under the 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.

DRAFT
05.28.2024

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 1st DAY OF JULY, 2024.

_____
Trace Johannesen, *Mayor*

ATTEST:

_____
Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

_____
Frank J. Garza, *City Attorney*

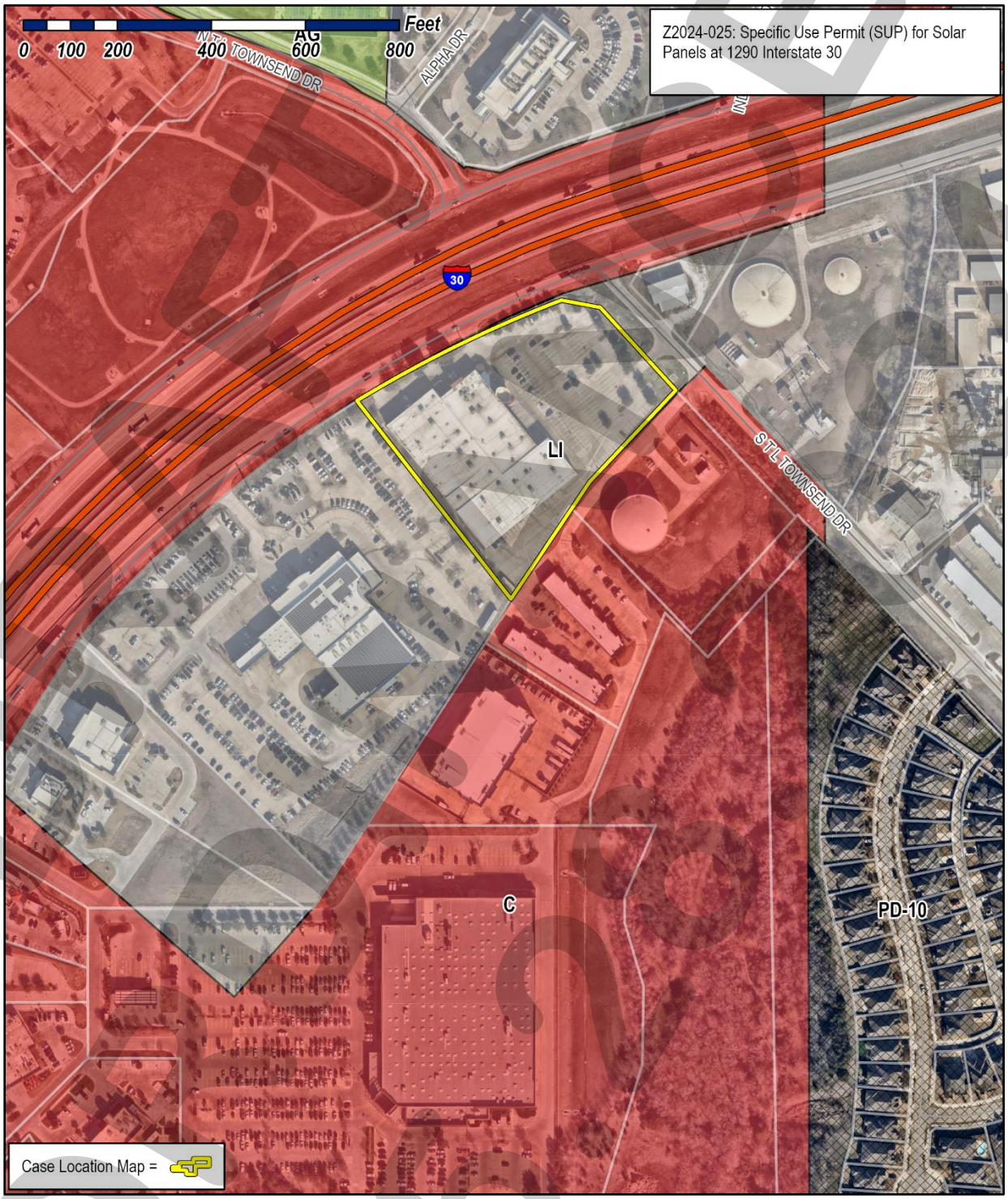
1st Reading: *June 17, 2024*

2nd Reading: *July 1, 2024*

DRAFT ORDINANCE 05.28.2024

Exhibit 'A'
Zoning Exhibit

Address: *1290 E. IH-30*
Legal Description: *Lot 2, Block A, Park Place Business Centre Addition*



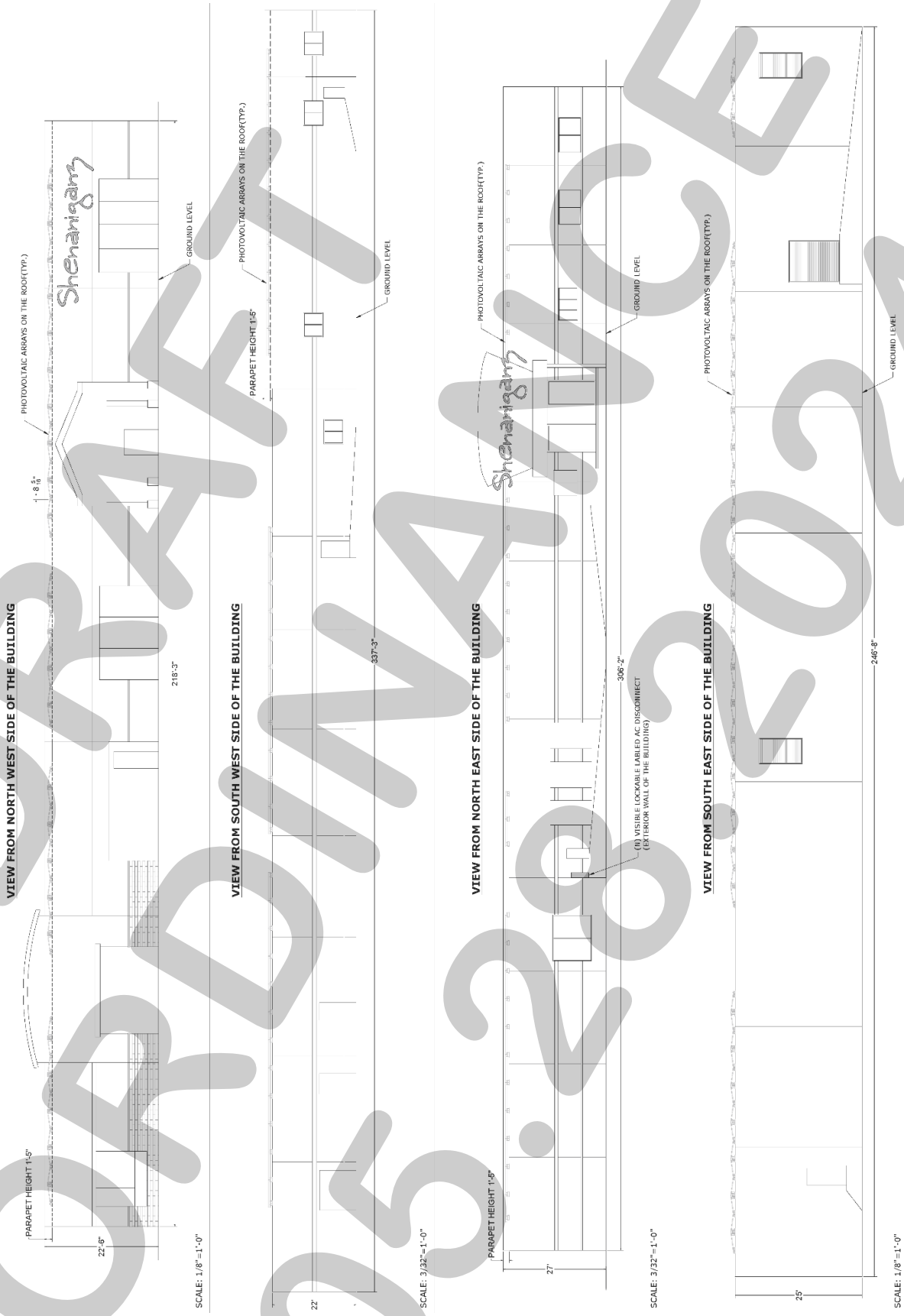
DRAFT 03/07/2024

Exhibit 'B':
Concept Plan



DRAFT ORDINANCE 05.29.2024

Exhibit 'C':
Building Elevations



DRAFT ORDINANCE 05.28.2024

PROJECT COMMENTS

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

DATE: 5/24/2024

PROJECT NUMBER: Z2024-025
PROJECT NAME: SUP for 1290 I-30
SITE ADDRESS/LOCATIONS: 1290 E INTERSTATE 30, ROCKWALL, 75032

CASE CAPTION: Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and take any action necessary.

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
	Henry Lee	05/24/2024	Approved w/ Comments

05/24/2024: Please address the following comments (M= Mandatory Comments; I = Informational Comments)

I.1 This is a request for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30.

I.2 For questions or comments concerning this case please contact Henry Lee in the Planning Department at (972) 772-6434 or email hlee@rockwall.com.

M.3 For reference, include the case number (Z2024-025) in the lower right-hand corner of all pages on future submittals.

I.4 According to Article 13, Definitions, of the Unified Development Code (UDC), Solar Energy Collector Panels and Systems are defined 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..”

I.5 According to Subsection 02.03 (K)(7) of Article 04, of the UDC, the following conditional land uses apply the proposed use, Solar Energy Collector Panels and System:

1) Solar Energy Collector Panels on a Flat Roof. Solar Energy Collector Panels installed on a flat roof, whether rack-mounted or flat-mounted, shall be screened from public view, and meet the following requirements:
a. The height of such screening, at the minimum, shall be the height of the Solar Energy Collector Panel.
b. The screening may be by a parapet or screening wall replicating the materials of the building.

2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

4) Any Solar Energy Collector Panels or Systems not meeting these requirements, or any installation of Solar Energy Systems as the principal use on any property, shall require approval of a Specific Use Permit (SUP).

I.6 In accordance with item 4) above, the Specific Use Permit (SUP) is required due to the proposed Solar Energy Collector System being unable to meet item 1) above. The provided building elevations provide staff with the appropriate documentation to show the Planning and Zoning Commission and City Council.

M.7 Please review the attached draft ordinance prior to the May 28, 2024 Planning & Zoning Commission meeting, and provide staff with your markups by June 4, 2024.

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 June 4, 2024; 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 June 11, 2024 Planning and Zoning Commission Public Hearing Meeting. The Planning and Zoning Commission Work Session Meeting for this case will be held on May 28, 2024.

I.9 The projected City Council meeting dates for this case will be June 17, 2024 (1st Reading) and July 1, 2024 (2nd Reading).

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
ENGINEERING	Madelyn Price	05/22/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
BUILDING	Craig Foshee	05/23/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
FIRE	Ariana Kistner	05/22/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
GIS	Lance Singleton	05/20/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
POLICE	Chris Cleveland	05/21/2024	Approved

No Comments

DEPARTMENT	REVIEWER	DATE OF REVIEW	STATUS OF PROJECT
PARKS	Travis Sales	05/20/2024	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. Z2024-025

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	1290 I-30 Rockwall TX 75087				
SUBDIVISION		LOT		BLOCK	
GENERAL LOCATION	Townsend Dr. & I-30 Frontage rd				

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING	LI		CURRENT USE	CTE Entertainment LP	
PROPOSED ZONING	LI		PROPOSED USE	Solar	
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	
CONTACT PERSON	Justin Ripp	CONTACT PERSON	Teshia Brown
ADDRESS	1290 E I-30	ADDRESS	4801 Freidrich LN. Ste 109
CITY, STATE & ZIP	Rockwall, TX 75087	CITY, STATE & ZIP	Austin, TX 78744
PHONE	972-839-8196	PHONE	940-594-9718
E-MAIL	justin@elevatedvg.com	E-MAIL	teshiabrown@freedomsolarpower.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Justin Ripp [*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 $ 215 *TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE* 16 *DAY OF* May *20* 24 *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."*

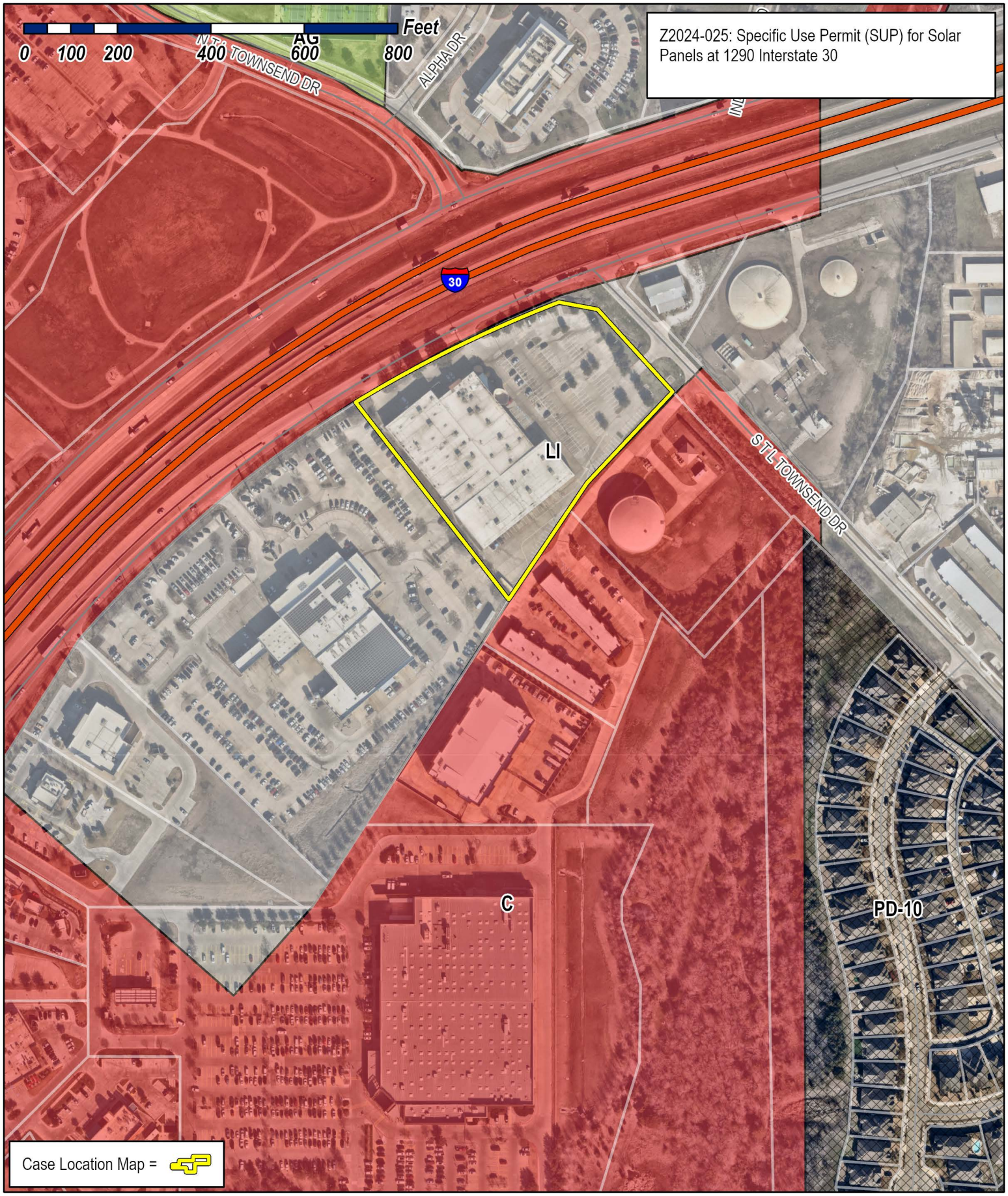
GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* May *20* 24

OWNER'S SIGNATURE

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES

JARED FARMER
Notary Public, State of Texas
Comm. Expires 09-11-2026
Notary ID 131718186



City of Rockwall

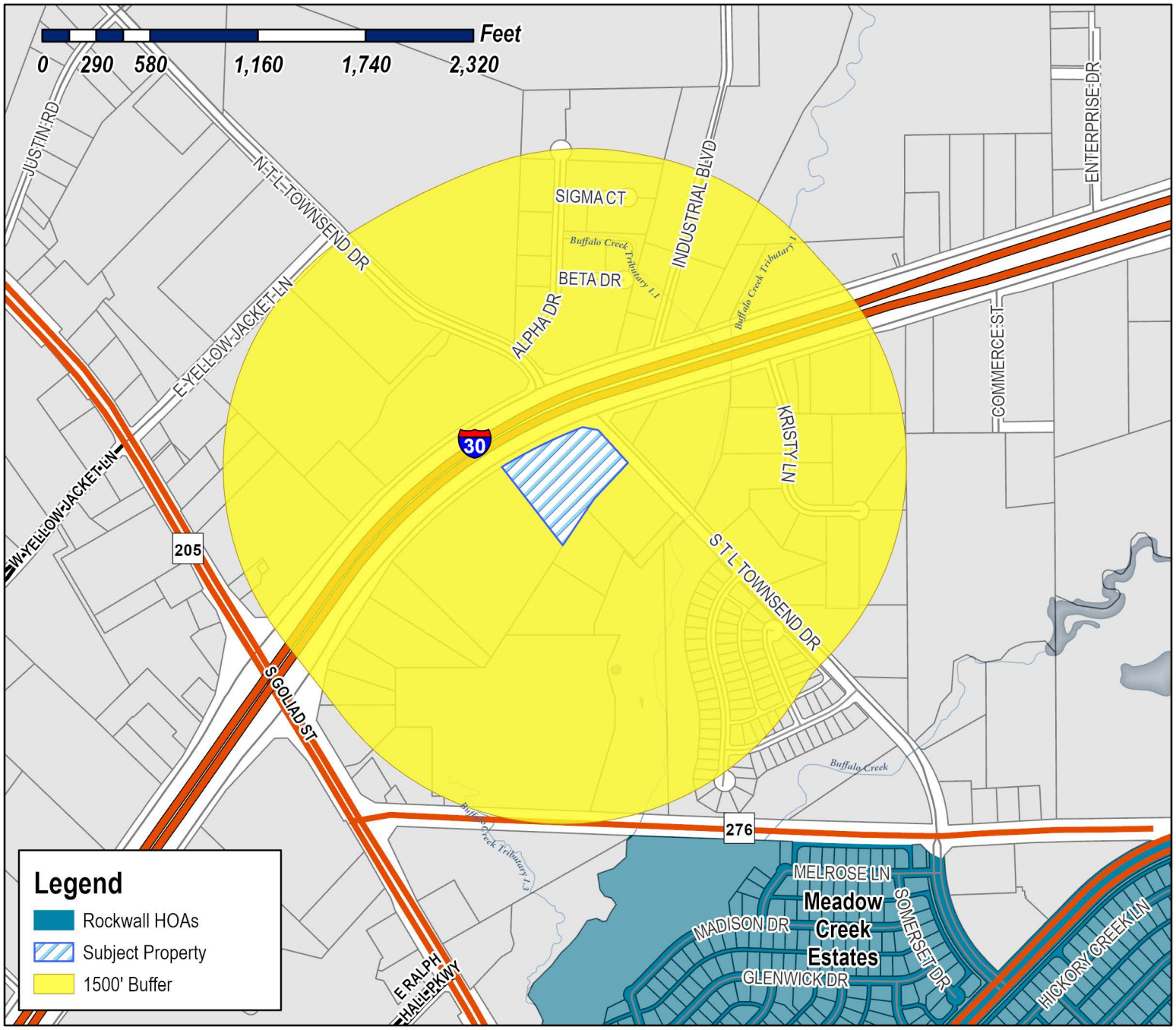
Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com

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

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30

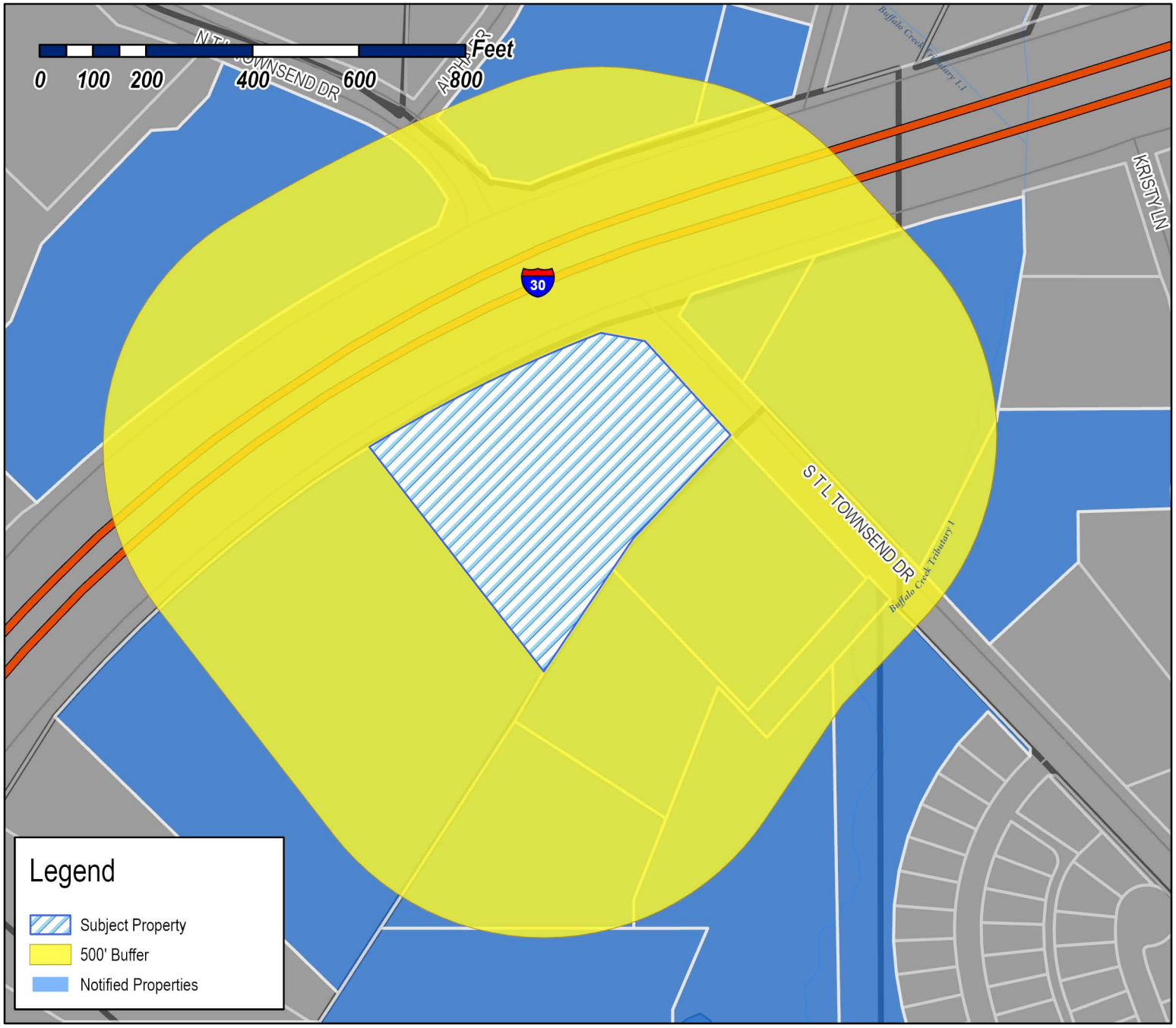


Date Saved: 5/17/2024
For Questions on this Case Call (972) 771-7745

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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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30



Date Saved: 5/17/2024
For Questions on this Case Call: (972) 771-7745

RESIDENT
S T L TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
T L TOWNSEND
ROCKWALL, TX 75087

RESIDENT
TOWNSEND DR
ROCKWALL, TX 75087

MCCALLUM V LLC
1 SOAPBERRY LN
ROCKWALL, TX 75087

ROCKWALL COUNTY
1101 RIDGE RD
STE 105
ROCKWALL, TX 75087

RESIDENT
1225 HWY 276
ROCKWALL, TX 75087

RESIDENT
1245 HWY276 DR
ROCKWALL, TX 75087

JACKSON AUTOMOTIVE REAL ESTATE INV LLC
1250 E INTERSTATE 30
ROCKWALL, TX 75087

RESIDENT
1290 I30
ROCKWALL, TX 75087

RESIDENT
1301 I30
ROCKWALL, TX 75087

RESIDENT
1401 E I30
ROCKWALL, TX 75087

SARO PARTNERS LLC
1450 T L TOWNSEND
ROCKWALL, TX 75032

RESIDENT
1460 S TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
1480 S T L TOWNSEND DR
ROCKWALL, TX 75087

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

PRITCHARD DONNA CULLINS &
1610 SHORES BLVD
ROCKWALL, TX 75087

HTA ROCKWALL MEDICAL CENTER LLC
16435 NORTH SCOTTSDALE ROAD SUITE 320
SCOTTSDALE, AZ 85254

RESIDENT
1975 ALPHA RD
ROCKWALL, TX 75087

CITY OF HEATH
200 LAURENCE DRIVE
HEATH, TX 75032

RESIDENT
2010 KRISTY LN
ROCKWALL, TX 75087

CTE PHASE I LP
2266 LAFAYETTE LNDG
ROCKWALL, TX 75032

REDI MIX LLC
331 N MAIN STREET
EULESS, TX 76039

MSC ROCKWALL LLC
725 PARK CENTER DRIVE
MATTHEWS, NC 28105

COSTCO WHOLESALE CORP
999 LAKE DR
ISSAQUAH, WA 98027

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:

Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector Panels
Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, 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, June 11, 2024 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, June 17, 2024 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:

Henry Lee
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, June 17, 2024 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. Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector 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.

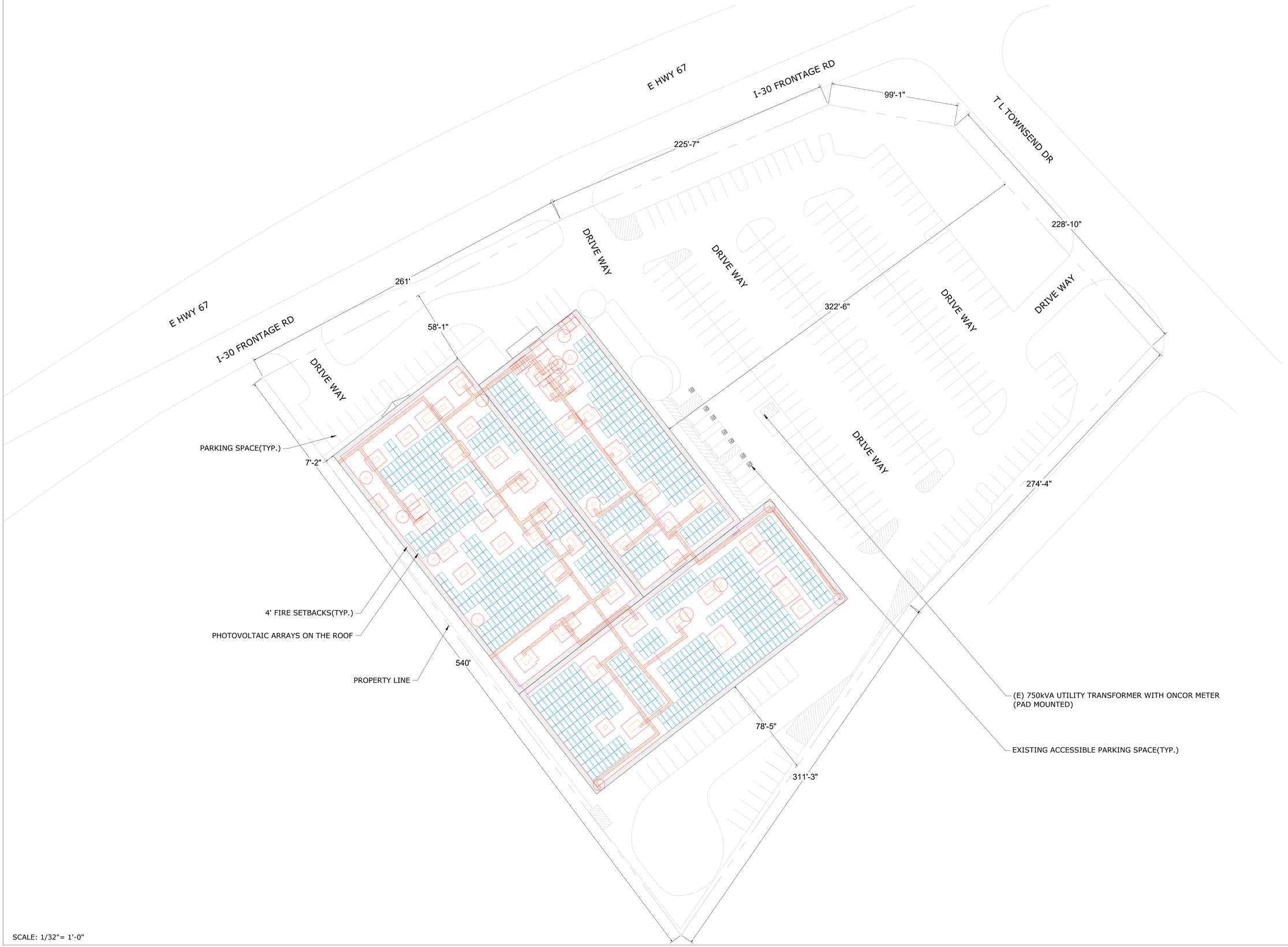
Name:

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

SITE PLAN : DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW



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

FREEDOM™ SOLAR POWER

4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

STATE OF TEXAS
JORDNA F. HANLEY
133867
LICENSED PROFESSIONAL ENGINEER

JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

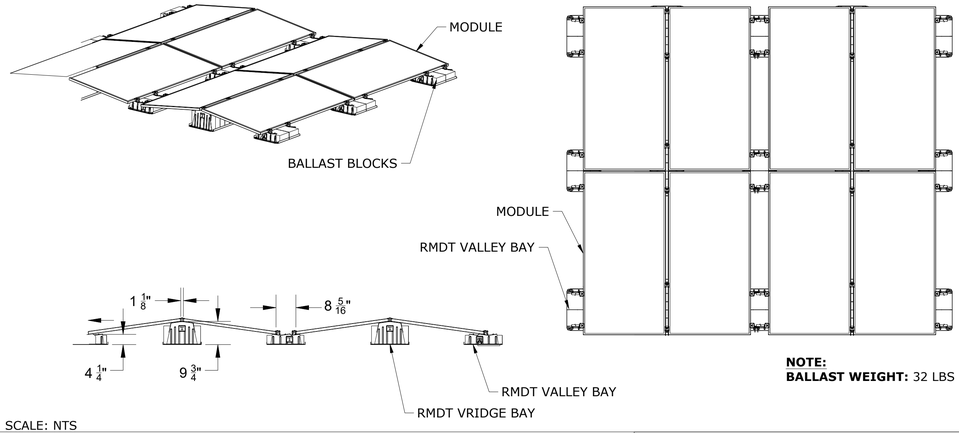
ILLUMINE i

SITE PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	A-01

ATTACHMENT DETAILS - UNIRAC RMDT



SCALE: NTS

NOTE:
BALLAST WEIGHT: 32 LBS

BILL OF MATERIALS

PART NUMBER	DESCRIPTION	QTY	UNIT
Q.PEAK DUO XL-G10.3/BFG 485W	MODULE	1112	QTY.
N/A	BALLAST BLOCK	1658	QTY.
310802	RMDT VALLEY BAY	813	QTY.
310826	RMDT MID CLAMP 32-35MM	1324	QTY.
310820	RMDT END CLAMP 30-40MM	2648	QTY.
310860	KIT 1/4-20 CLIP ON NUT SS 18-8	3972	QTY.
310801	RMDT RIDGE BAY	662	QTY.
008115M	MLPE TIGER CLIP	1112	QTY.

GENERAL STRUCTURAL NOTES

1.ALL EQUIPMENTS SHALL BE INSTALLED PER MANUFACTURER INSTALLATION AND OPERATIONS MANUAL REQUIREMENTS.
2.PRIOR TO COMMENCEMENT OF WORK OR FABRICATION OF COMPONENTS, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS,AND ELEVATIONS OF THE EXISTING CONSTRUCTION.CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE FIELD -VERIFIED CONDITIONS, DIMENSIONS,AND ELEVATION AND THOSE INDICATED ON THE DRAWINGS.
3.ALL THE CONSTRUCTION SHALL COMPLY WITH REQUIREMENTS OF 2021 EDITION OF THE BUILDING CODE.

SOLAR RACK COMPONENTS:

1. FOLLOW MANUFACTURER'S INSTALLATION FOR INSTALLATION OF THE SOLAR COMPONENTS,INCLUDING MODULE CLAMPS,L-FEET,BRACKETS MECHANICAL ATTACHMENTS,AND HARDWARE.

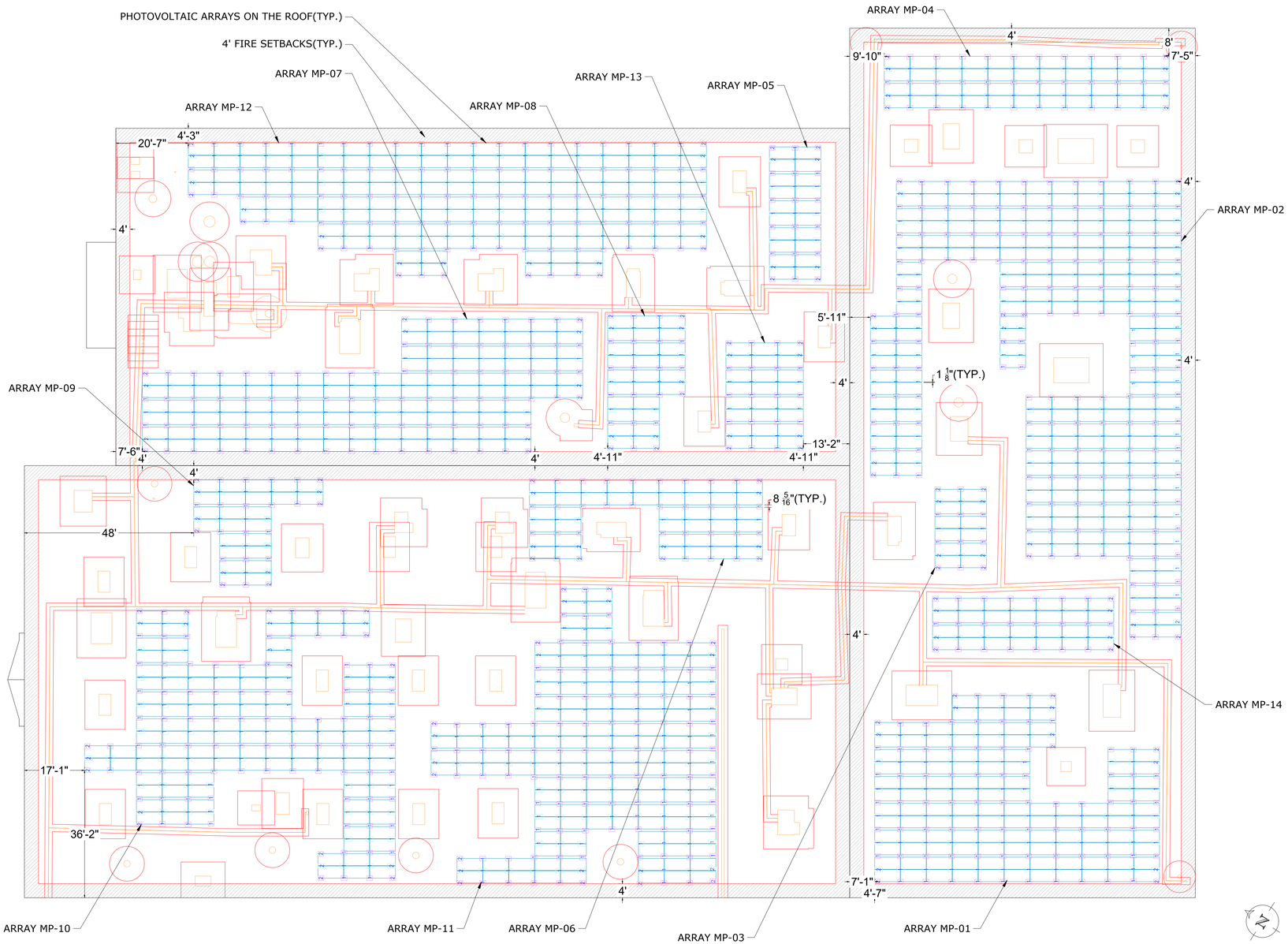
LEGEND:

1 STANDARD CORNER BAY WITH CMU BLOCK COUNT

2 SUPPLEMENTAL BAY WITH CMU BLOCK COUNT

SITE INFORMATION - WIND SPEED: 105 MPH, EXPOSURE: B AND SNOW LOAD: 5 PSF

SR. NO	AZIMUTH	MODULE TILT	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT
ARRAY MP-01	52°&232°	8°	120	3372	TPO	UNIRAC RMDT
ARRAY MP-02	52°&232°	8°	222	6211	TPO	UNIRAC RMDT
ARRAY MP-03	52°&232°	8°	12	341	TPO	UNIRAC RMDT
ARRAY MP-04	52°&232°	8°	44	1265	TPO	UNIRAC RMDT
ARRAY MP-05	52°&232°	8°	20	562	TPO	UNIRAC RMDT
ARRAY MP-06	52°&232°	8°	42	1201	TPO	UNIRAC RMDT
ARRAY MP-07	52°&232°	8°	122	3449	TPO	UNIRAC RMDT
ARRAY MP-08	52°&232°	8°	26	732	TPO	UNIRAC RMDT
ARRAY MP-09	52°&232°	8°	24	686	TPO	UNIRAC RMDT
ARRAY MP-10	52°&232°	8°	124	3500	TPO	UNIRAC RMDT
ARRAY MP-11	52°&232°	8°	148	4155	TPO	UNIRAC RMDT
ARRAY MP-12	52°&232°	8°	156	4402	TPO	UNIRAC RMDT
ARRAY MP-13	52°&232°	8°	24	677	TPO	UNIRAC RMDT
ARRAY MP-14	52°&232°	8°	28	805	TPO	UNIRAC RMDT



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WIND SPEED:105MPH
SNOW LOAD:5PSF MINIMUM
TEMPERATURE: -8°C
MAXIMUM
TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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FOR
CTE ENTERTAINMENT, LP COM-41783
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UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

STRUCTURAL PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | S-01

STRINGING DIAGRAM:

STRING ID LEGEND

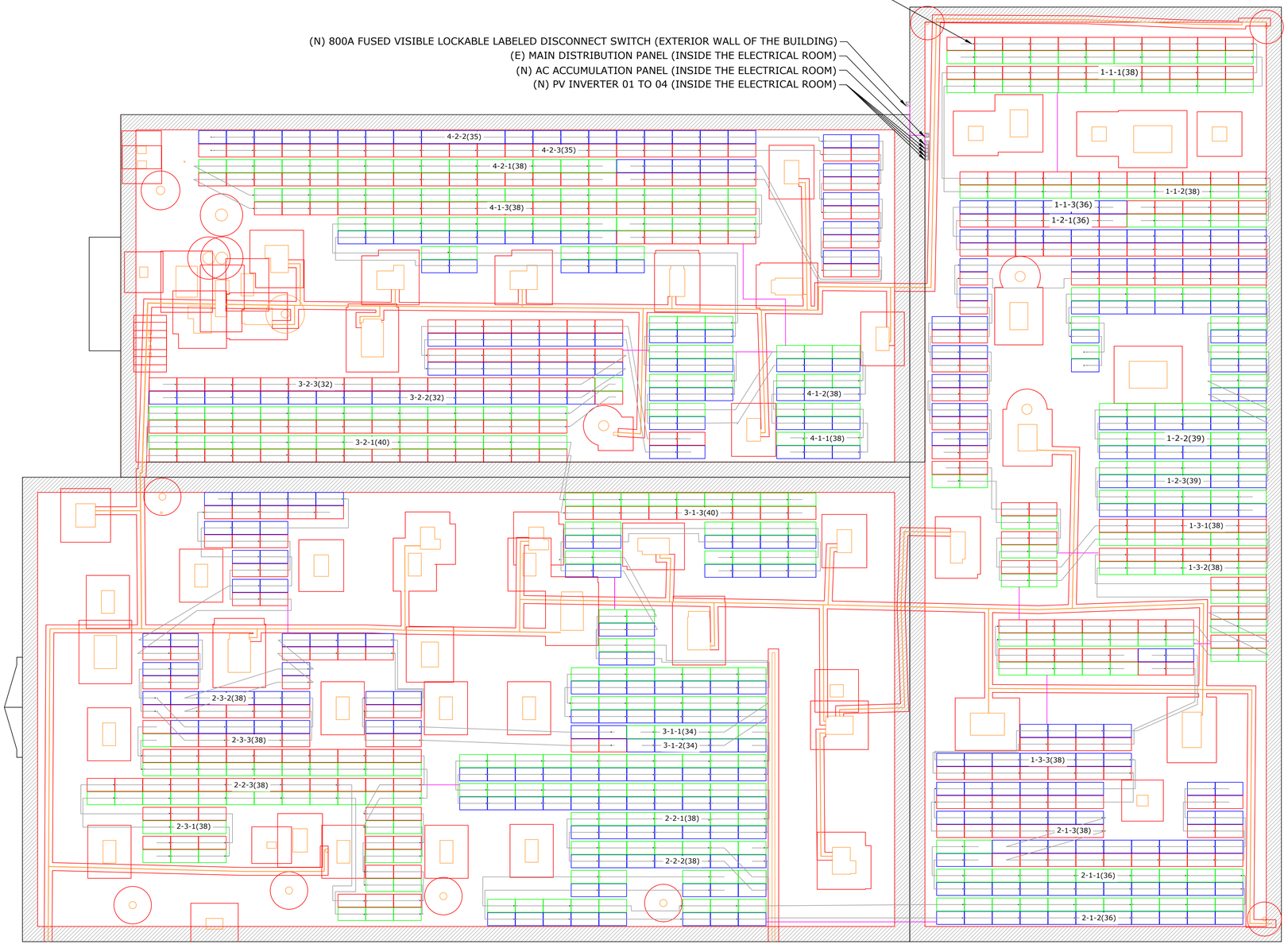
STR 1-1-1(X)

- # OF MODULES
- STRING ID
- UNIT #(1,2,3)
- INVERTER ID#

(E) 750kVA UTILITY TRANSFORMER WITH ONCOR METER (PAD MOUNTED)

STRING STARTS HERE

(N) 800A FUSED VISIBLE LOCKABLE LABELED DISCONNECT SWITCH (EXTERIOR WALL OF THE BUILDING)
(E) MAIN DISTRIBUTION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) AC ACCUMULATION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) PV INVERTER 01 TO 04 (INSIDE THE ELECTRICAL ROOM)



SCALE:1"=15'-0"

WIRING AND WIRING METHODS:

1. EXPOSED PV SOLAR MODULE WIRING AND PV SOURCE CIRCUITS TO BE UV RESISTANT 2,000V PV WIRE, 90° C, AND RATED FOR WET CONDITIONS.
2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED IN A NEAT WORKMAN LIKE MANNER TO PREVENT CHAFFING, SWINGING, AND EXCEEDING MINIMUM BEND RADIUS WITH PROPER MECHANICAL SUNLIGHT RESISTANT MEANS AND ROUTED TO AVOID DIRECT EXPOSURE TO SUNLIGHT AT ALL TIMES.
3. ALL FIELD WIRING THAT IS NOT COLOR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND.
4. FLEXIBLE METAL CONDUIT IS SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS OR CONDUIT FITTING) AND NO MORE THAN 48 INCHES APART.
5. LIQUID TIGHT FLEXIBLE METAL AND NON-METALLIC CONDUIT IS SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART.
6. PVC CONDUIT AND FITTINGS SHALL NOT BE USED ON ROOFTOP CONDITIONS OR EXPOSED TO DIRECT SUNLIGHT.WHEN USED IN ACCEPTABLE LOCATION CONDUIT SHALL BE SCHEDULE 80 UV RESISTANT UNLESS NOTED OTHERWISE.
7. FUSES AND WIRES SUBJECT TO TEMPERATURES CONDITIONS GREATER THAN 100°F OR TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
8. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
9. ALL TERMINATIONS SHALL HAVE ANTI-OXIDANT COMPOUND AND BE TORQUED PER DEVICE LISTING, OR MANUFACTURER'S RECOMMENDATIONS.
10. SPLIT BOLTS /SPLICES / CONNECTORS ARE PERMITTED ON THE AC CONDUCTORS AND SHALL BE INSULATED WITH APPROVED MEANS. SPLICES ON THE DC CONDUCTORS IS NOT PERMITTEDIN ANY LOCATION.
11.NO PVC CONDUIT ALLOWED ON ROOF, UNLESS OPEN ENDED WIRE MANAGEMENT <10'.

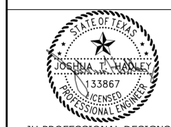
INVERTER 1, 120kW			INVERTER 2, 120kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
1-1-1	38	19	2-1-1	36	18
1-1-2	38	19	2-1-2	36	18
1-1-3	36	18	2-1-3	38	19
UNIT 02			UNIT 02		
1-2-1	36	18	2-2-1	38	19
1-2-2	39	20	2-2-2	38	19
1-2-3	39	20	2-2-3	38	19
UNIT 03			UNIT 03		
1-3-1	38	19	2-3-1	38	19
1-3-2	38	19	2-3-2	38	19
1-3-3	38	19	2-3-3	38	19

INVERTER 3, 80kW			INVERTER 4, 80kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
3-1-1	34	17	4-1-1	38	19
3-1-2	34	17	4-1-2	38	19
3-1-3	40	20	4-1-3	38	19
UNIT 02			UNIT 02		
3-2-1	40	20	4-2-1	38	19
3-2-2	32	16	4-2-2	35	18
3-2-3	32	16	4-2-3	35	18
			GRAND TOTAL	1112	558

FREEDOM SOLAR POWER
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freedomsolarpower.com

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OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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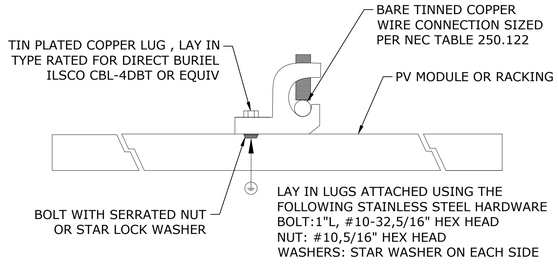
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STRINGING MAP

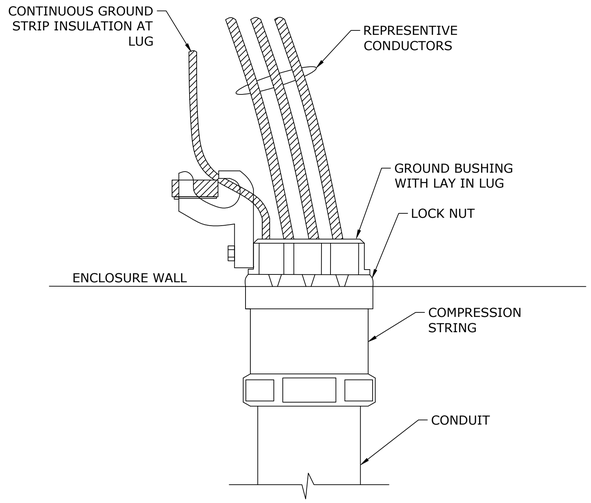
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-01

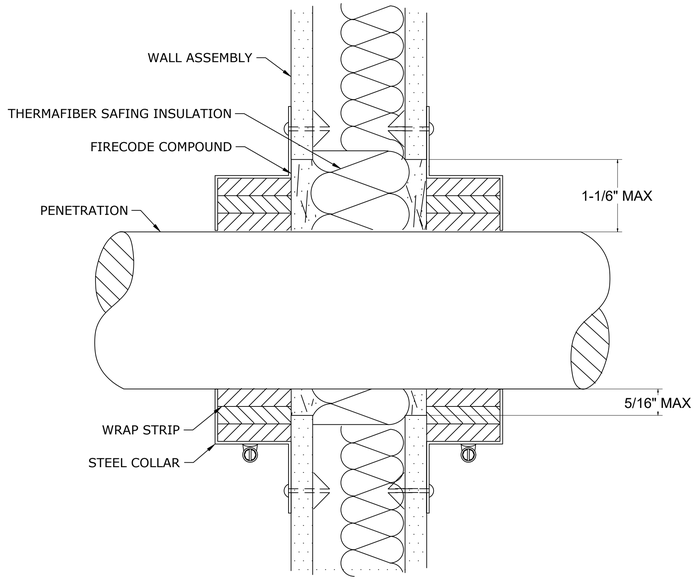
GROUND LUG DETAIL:



CONDUIT BODY GROUNDING DETAIL:

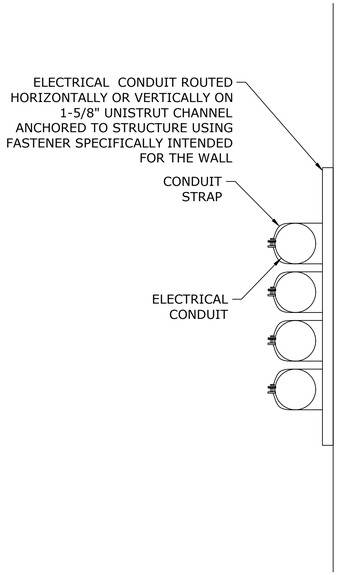


FIRE WALL PENETRATION DETAIL:

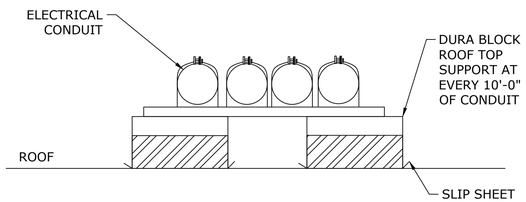


SCALE: NTS

CONDUIT WALL ANCHORING:



TYPICAL DURA-BLOCK CONDUIT SUPPORT DETAIL:



NOTE: DETAIL DRAWINGS ARE FOR REFERENCE ONLY

GROUNDING - SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION:

1.ONLY ONE CONNECTION TO DC CIRCUITS AND AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (REFERENCED TO THE SAME POINT).
2.EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING ELECTRODE CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING CONNECTION POINT AS PRACTICABLE AND A MINIMUM NUMBER OF TURNS.
3.TO ENSURE PROPER GROUNDING, NON-CURRENT CARRYING METAL PARTS SHALL BE INSTALLED, NOTING THAT PAINT AND FINISH SHALL BE PROPERLY REMOVED WHERE IT MAY INSULATE AN ENCLOSURES BONDING CONNECTION.APPLY NO-LOX OR OTHER SIMILAR ANTI-OXIDANT COMPOUND TO EXPOSED SURFACES.
4.THE CONNECTION TO THE MODULE OF THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT.
5.GROUNDING SYSTEM COMPONENTS SHALL BE APPROVED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC. GROUNDING DEVICES EXPOSED TO THE ENVIRONMENT SHALL BE RATED FOR DIRECT BURIAL.
6.UNDERGROUND OR INACCESSIBLE CONNECTIONS OF GROUNDING CONDUCTORS SHALL ONLY BE MADE VIA EXO-THERMIC WELDS. THE USE OF MECHANICAL CONNECTIONS ARE ACCEPTABLE FOR ACCESSIBLE ABOVE GROUND LOCATIONS.
7.ALL METALLIC CONDUITS SHALL BE INSTALLED AND TERMINATED WITH INSULATED GROUND BUSHINGS.

FREEDOM SOLAR POWER
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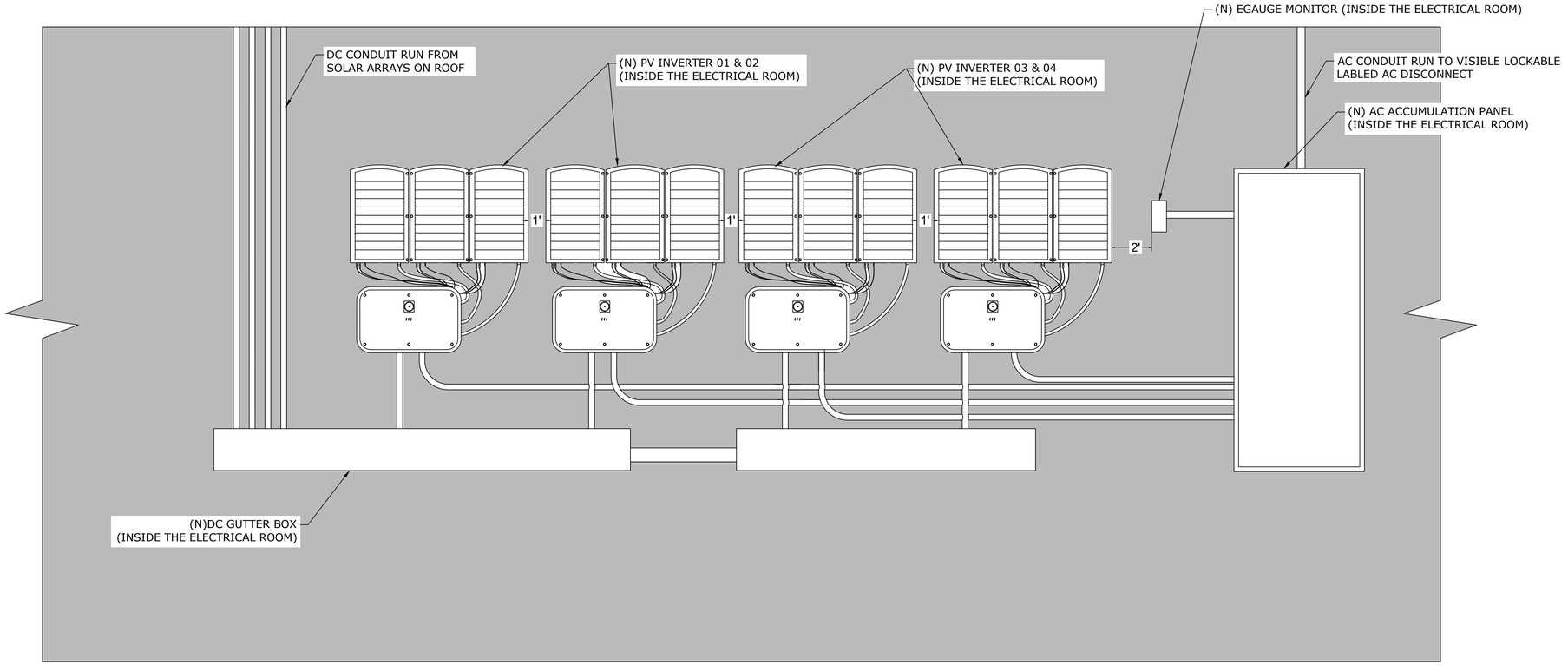
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ELECTRICAL MOUNTING DETAILS

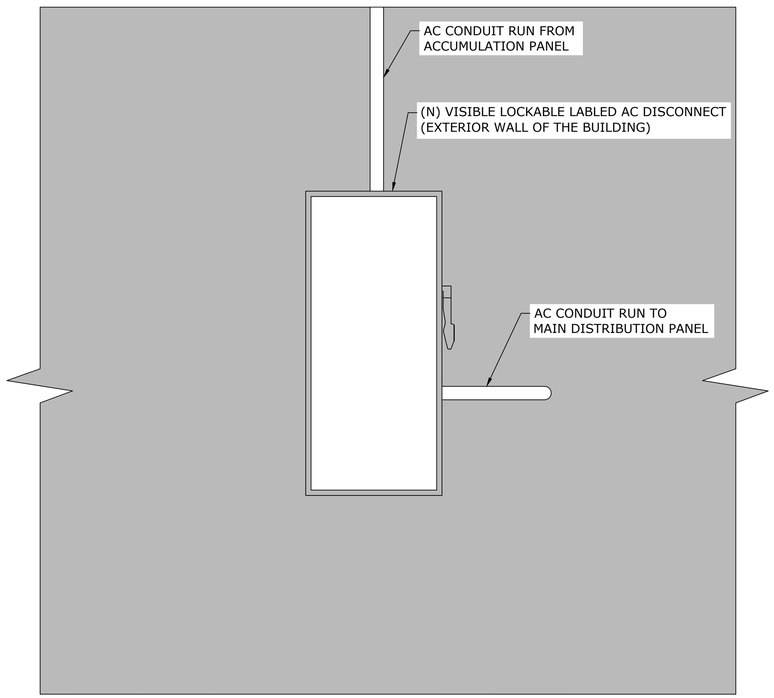
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-02

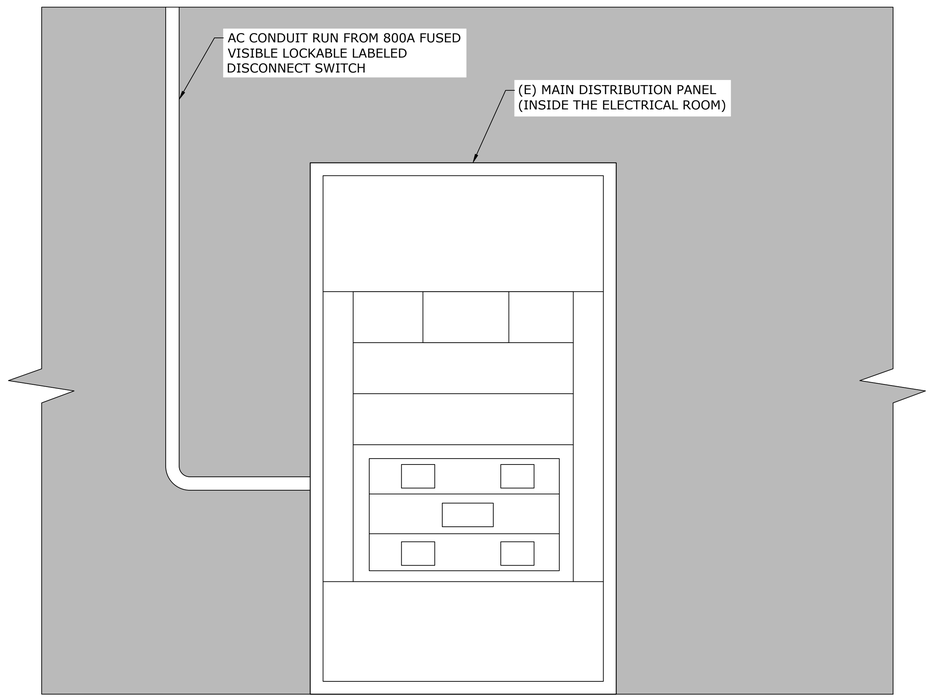
ELECTRICAL EQUIPMENT ELEVATION VIEW :



SCALE: NTS



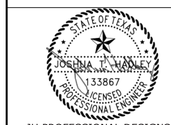
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(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

EQUIPMENT ELEVATION VIEW

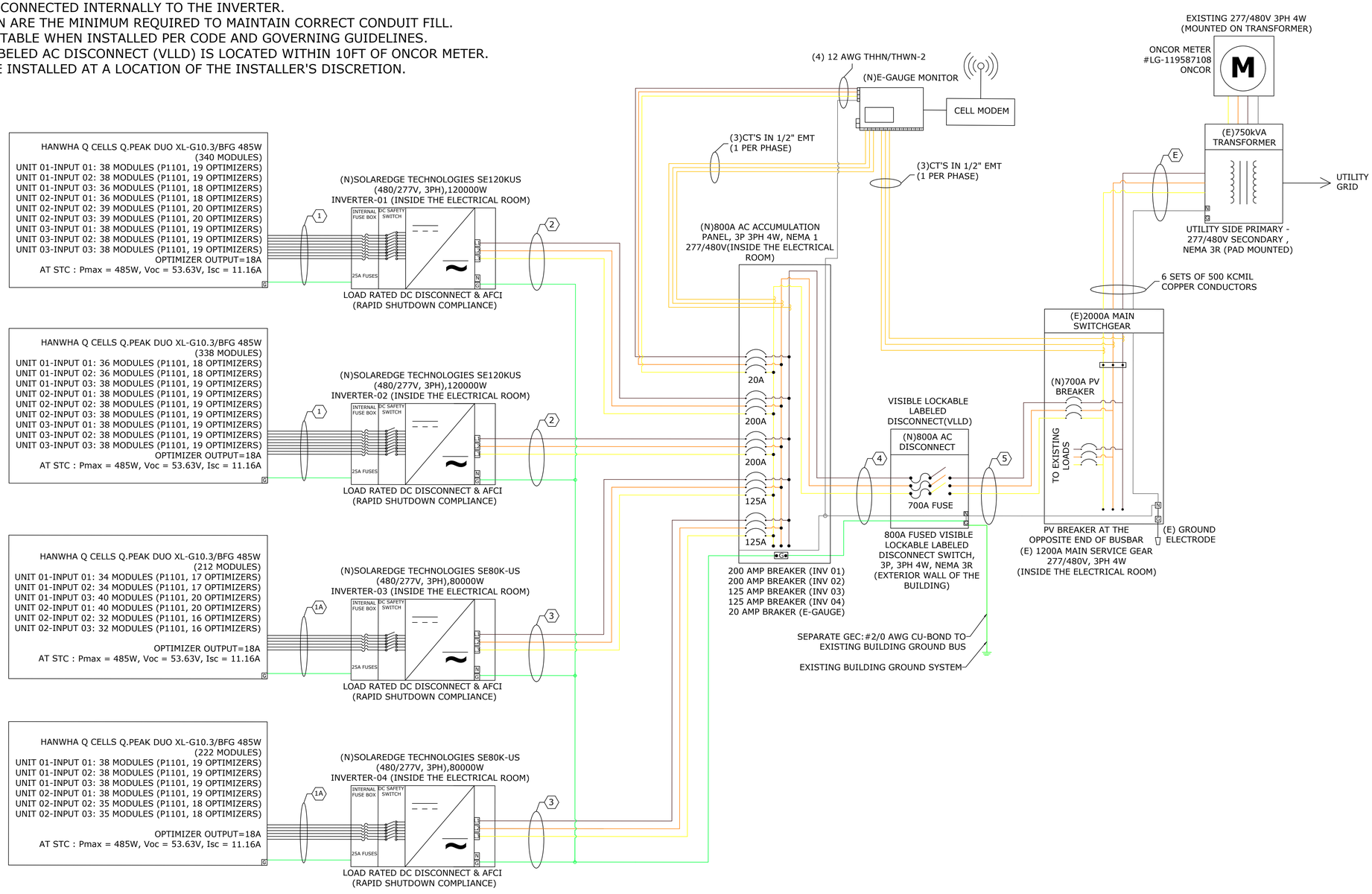
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-03

ELECTRICAL DIAGRAM: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

NOTE:

1. TYPICALLY EACH SOLAREDGE P1101 POWER OPTIMIZER IS CONNECTED TO TWO MODULES.
2. EACH SOLAREDGE P1101 POWER OPTIMIZER IS RAPID SHUTDOWN COMPLIANT.
3. ALL DC FUSES SHOWN ARE CONNECTED INTERNALLY TO THE INVERTER.
4. ALL CONDUIT SIZES SHOWN ARE THE MINIMUM REQUIRED TO MAINTAIN CORRECT CONDUIT FILL.
5. LARGER CONDUIT IS ACCEPTABLE WHEN INSTALLED PER CODE AND GOVERNING GUIDELINES.
6. THE VISIBLE LOCKABLE, LABELED AC DISCONNECT (VLLD) IS LOCATED WITHIN 10FT OF ONCOR METER.
7. MONITORING DEVICE TO BE INSTALLED AT A LOCATION OF THE INSTALLER'S DISCRETION.



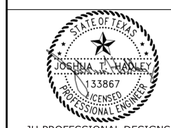
CONDUIT SCHEDULE

TAG ID	NO OF PARALLEL FEEDER	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	1	1-1/4" EMT 1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
1A	1	1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
2	1	2" EMT	(3) 3/0 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	1	1-1/4" EMT	(3) 1 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
4	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2
5	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 500 KCMIL THHN/THWN-2	NONE

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

THREE LINE DIAGRAM

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | E-05

ELECTRICAL CALCULATION: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

OCPD CALCULATIONS:
MAIN PANEL RATING:2000A,
LINE SIDE INTERCONNECTION ALLOWABLE BACKFEED IS =2000A
OCPD CALCULATIONS: INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X 1.25
=(144.3AX2)+(96.5AX2)X1.25=602.00A=>PV BREAKER/FUSE = 700A
TOTAL REQUIRED PV BREAKER/FUSE SIZE =>700A PV BREAKER/FUSE

ELECTRICAL CALCULATIONS:
SYSTEM INFO:
539.32 kW DC SYSTEM SIZE
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W MODULES
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
(558)SOLAREDGE P1101 POWER OPTIMIZER

SYSTEM CHARACTERISTICS:(INV 01 & 02)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 144.75A
ISC - MAXIMUM CIRCUIT CURRENT = 144.75A

SYSTEM CHARACTERISTICS:(INV 03 & 04)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 96.50A
ISC - MAXIMUM CIRCUIT CURRENT = 96.50A

DC WIRE SIZING (TAG 1):
MAX CIRCUIT CURRENT = OPTIMIZER MAX OUTPUT X HIGH IRRADIANCE [NEC 690.8(A)(1)] X 1.25 [NEC 690.53]
=18A X 1 X 1.25= 22.5A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 0.8 X 40A = 29.12A
TERMINAL RATING, [PER 110.14(C)] - 10 AWG , 75°C RATED = 35A
30A ≥ 22.5A SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 29.12A ≥ 18A, AND **10 AWG** IS SUFFICIENT.

AC WIRE SIZING (TAG 2):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 144.3A X 1.25 = 180.38A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 225A = 204.75A
TERMINAL RATING, [PER 110.14(C)] - 3/0 AWG , 75°C RATED = 200A
200A ≥ 180.38A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 204.75A ≥ 144.3A, AND **3/0 AWG** IS SUFFICIENT.
INVERTER OVER CURRENT PROTECTION = INVERTER MAX OUTPUT CURRENT X 1.25
= 144.3A X 1.25 = 200A --> 200A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 3):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 96.5A X 1.25 = 120.63A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 145A = 131.95A
TERMINAL RATING, [PER 110.14(C)] - 1 AWG , 75°C RATED = 130A
130A ≥ 120.63A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 131.95A ≥ 96.5A, AND **1 AWG** IS SUFFICIENT.
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X CONTINUOUS LOAD
= 96.5A X 1.25 = 125A --> 125A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 4 & 5): (NO OF PARALLEL FEEDEER =2)
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X 1.25
=(144.3A X 2)+(96.5A X 2)X 1.25 =602.00A/2 = 301A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 430A = 391.30A
TERMINAL RATING, [PER 110.14(C)] - 500 KCMIL , 75°C RATED = 380A
380A ≥ 301A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 391.30A ≥ 240.8A, AND **500 KCMIL** IS SUFFICIENT.

NOTE:
1.THIS INSTALLATION IS TO BE CONSIDERED SUPERVISED.ALL NEW ADDITIONS AND ALTERATIONS TO ANY EQUIPMENT IDENTIFIED IN THIS DOCUMENT MUST BE MADE WITH ENGINEERING SUPERVISION AND ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.
2.ALL EQUIPMENT AND TERMINALS MUST BE MINIMUM 75°C RATED.
3.ALL CONDUCTORS ARE COPPER, UNLESS OTHERWISE SPECIFIED.

MODULE SPECIFICATIONS	
MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
MODULE POWER @ STC	485W
OPEN CIRCUIT VOLTAGE:**Voc**	53.63V
MAX POWER VOLTAGE:**Vmp**	45.63V
SHORT CIRCUIT CURRENT:**Isc**	11.16A
MAX POWER CURRENT:**Imp**	10.63A

INVERTER-01 & 02 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
POWER RATING	120000W
MAX OUTPUT CURRENT	144.3A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	144.75A
MAX DC VOLTAGE	1000V

OPTIMIZER CHARACTERISTICS	
MODEL	SOLAREDGE P1101 POWER OPTIMIZER
MAX INPUT VOLTAGE	125 VDC
MAX INPUT CURRENT	14.1 ADC
MAX OUTPUT CURRENT	18 ADC

INVERTER-03 & 04 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
POWER RATING	80000W
MAX OUTPUT CURRENT	96.5A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	96.5A
MAX DC VOLTAGE	1000V

VOLTAGE DROP CALCULATIONS:

DC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	OPTIMIZER CURRENT (IMP)	STRING VOLTAGE AT 2%DB (VMP)	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
MODULES	INVERTER 01	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	230	1.06%
MODULES	INVERTER 02	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	390	1.80%
MODULES	INVERTER 03	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	260	1.20%
MODULES	INVERTER 04	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	200	0.92%
											MAX Vdrop	1.80%

3 PHASE AC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	CURRENT	VOLTAGE	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
INVERTER TO POI												
INVERTER 01	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 02	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 03	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
INVERTER 04	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
AC ACCUMULATION	AC DISCONNECT	4	EMT	481.6	480	1	I AWG 01	Cu	0.00016	0.000140362	25	0.61%
AC DISCONNECT	POI	5	EMT	481.6	480	2	R 500 KCMIL	Cu	0.000032	0.000028072	15	0.04%
											MAX Vdrop	0.84%
											TOTAL SYSTEM VDROP	2.64%

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION
DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

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AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

ELECTRICAL CALCULATION

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-06

PLACARDS

1.

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 690.13(B)

2.

WARNING:PHOTOVOLTAIC POWER SOURCE

INSTALLED ON: CONDUIT, RACEWAYS, AND J-BOXES (LABELED EVERY 10'). REFLECTIVE. MIN 3/8" WHITE TEXT ON BLACK BACKGROUND.
APPLICABLE CODE(S): NEC 690.31(D)(2)

3.

PHOTOVOLTAIC

DC DISCONNECT

INSTALLED ON: DC DISCONNECT(S)
APPLICABLE CODE(S): NEC 690.13(B)

INVERTER 1 & 2

4.

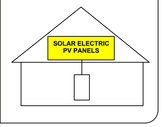
MAXIMUM DC VOLTAGE
1000 V
OF PV SYSTEM

INSTALLED ON: INVERTER
APPLICABLE CODE(S): NEC 690.53

5.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.
APPLICABLE CODE(S): NEC 690.56(C)

6.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON:RAPID SHUTDOWN SWITCH
APPLICABLE CODE(S): NEC 690.56(C)(2)

7.

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 481.6 AMPS AC
AC NOMINAL OPERATING VOLTAGE 480 VAC

INSTALLED ON: AC DISCONNECT(S), POINT OF INTERCONNECTION.
APPLICABLE CODE(S): NEC 690.54

8.

⚠ WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

INSTALLED ON: POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 705.12(C)

9.

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

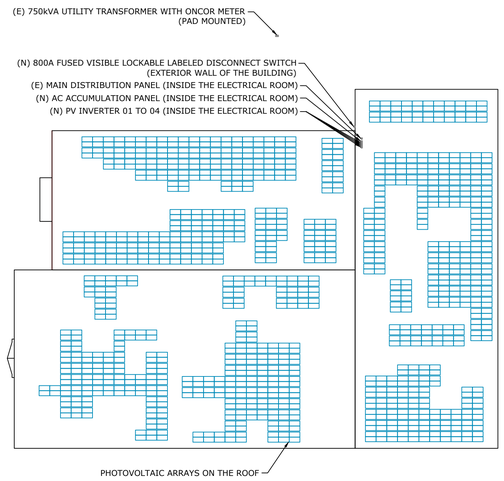
10.

FREEDOM™ SOLAR POWER

11.

WARNING: ⚠

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



1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

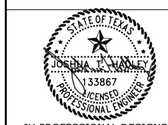
KEY	QTY.	LOCATION
1.	3	AC DISCONNECT, LOAD CENTER, POINT OF INTERCONNECTION
2.	10	CONDUIT
3.	4	DC DISCONNECTS
4.	4	INVERTER
5.	6	AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
6.	4	INVERTER
7.	2	AC DISCONNECT, POINT OF INTERCONNECTION
8.	1	POINT OF INTERCONNECTION
9.	1	COMBINER PANEL
10.	1	POINT OF INTERCONNECTION
11.	1	POINT OF INTERCONNECTION

NOTES: ROOFTOP TRIP HAZARDS ON ROOF SHALL BE IDENTIFIED WITH REFLECTIVE MATERIAL. MARKING CONTENT AND FORMAT RED BACKGROUND WHITE LETTERING MINIMUM 3/8"LETTER HEIGHT ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT(DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT).

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SYSTEM INFORMATION

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AC SYSTEM SIZE: 400.00kW
MODULES:
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(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
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WIND SPEED:105MPH
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MINIMUM TEMPERATURE: -8°C
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TX FIRM: F-26320
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ILLUMINEI

ELECTRICAL PLACARDS

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:03/22/2024 | E-06

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

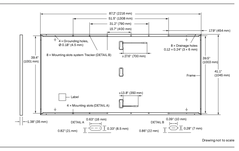
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

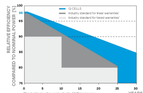
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

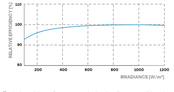
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
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Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

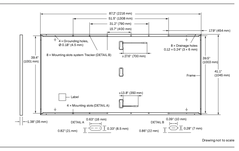
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

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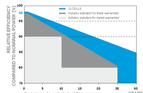
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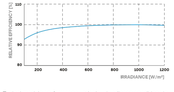
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Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
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Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

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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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

CITY OF ROCKWALL

ORDINANCE NO. 24-XX

SPECIFIC USE PERMIT NO. S-3XX

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 ENERGY COLLECTOR PANELS* ON THE ROOF OF AN EXISTING BUILDING SITUATED ON A FIVE (5) ACRE PARCEL OF LAND IDENTIFIED AS LOT 2, BLOCK A, PARK PLACE BUSINESS CENTRE 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.

WHEREAS, the City has received a request from Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for *Solar Energy Collector Panels* on the roof of an existing building situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and being more specifically depicted and described 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) allowing *Solar Energy Collector Panels* as stipulated by Subsection 01.02, *Land Use Schedule*, 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, *Conditional Land Use Standards*, of Article 04, *Permissible Uses*, and Subsection 04.01, *General Commercial District Standards*, and Subsection 04.05, *Commercial (C) District*, of Article 05, *District Development Standards*, of the Unified Development Code

PRIVILEGE 05-28-2024

(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 *Solar Energy Collector Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

(2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

(3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

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 compliance to the following:

(1) Upon obtaining a *Certificate of Occupancy (CO)* and/or building permit, should the business owner operating under the 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.

DRAFT
05.28.2024

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 1st DAY OF JULY, 2024.

_____
Trace Johannesen, *Mayor*

ATTEST:

_____
Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

_____
Frank J. Garza, *City Attorney*

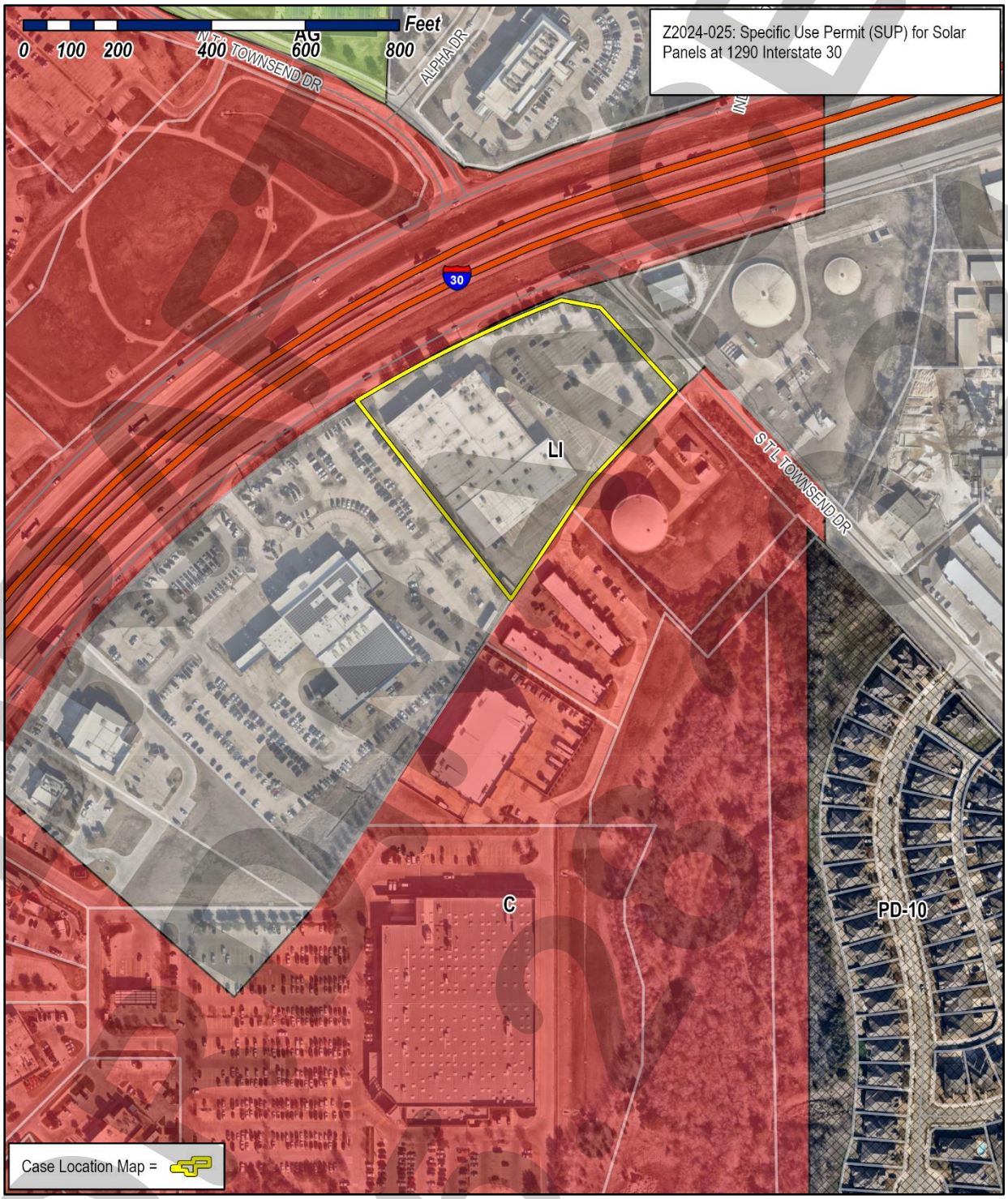
1st Reading: *June 17, 2024*

2nd Reading: *July 1, 2024*

DRAFT ORDINANCE 05.28.2024

Exhibit 'A'
Zoning Exhibit

Address: *1290 E. IH-30*
Legal Description: *Lot 2, Block A, Park Place Business Centre Addition*



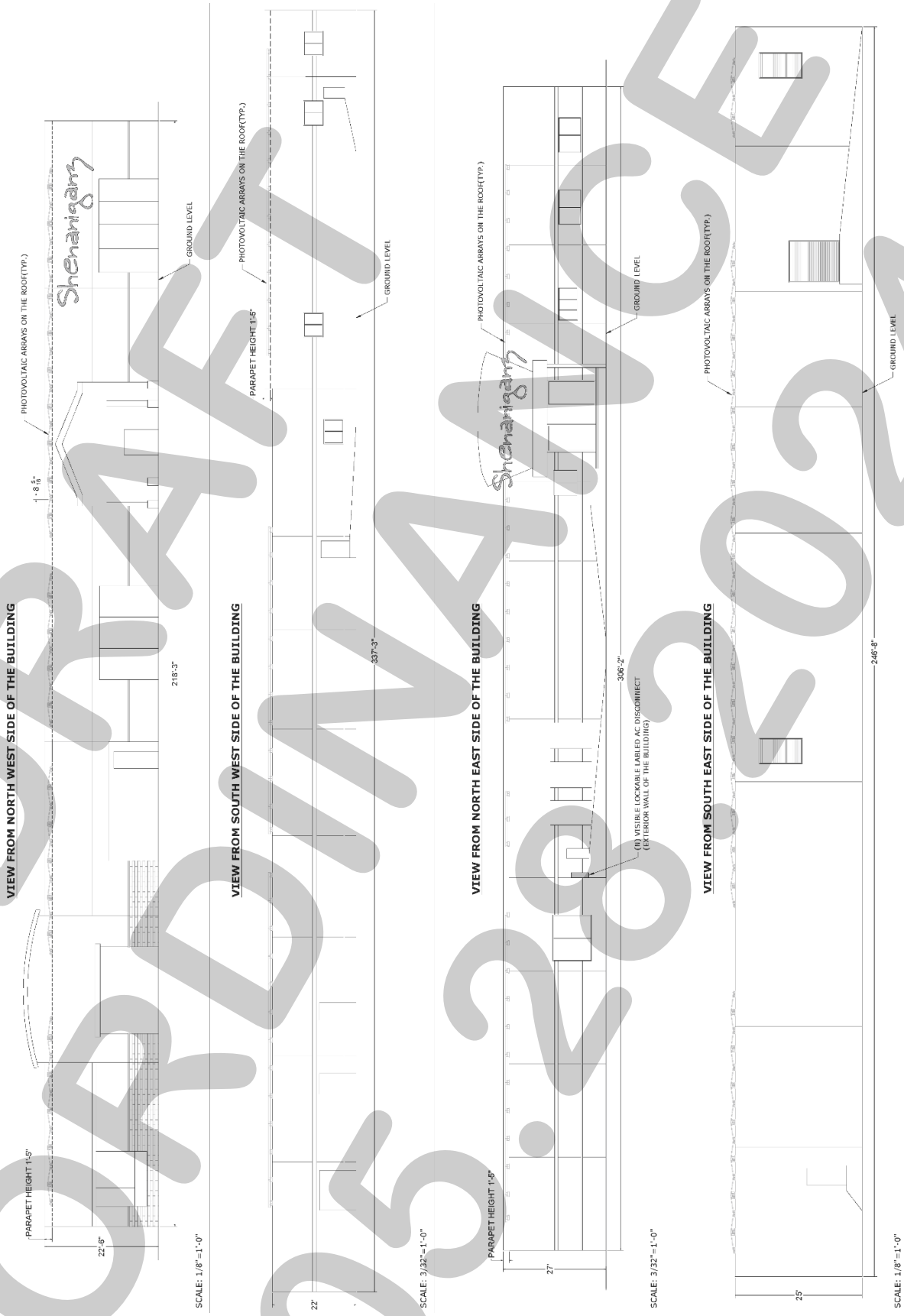
DRAFT 03/07/2024

Exhibit 'B':
Concept Plan



DRAFT ORDINANCE 05.29.2024

Exhibit 'C':
Building Elevations



DRAFT ORDINANCE 05.28.2024

CITY OF ROCKWALL

PLANNING AND ZONING COMMISSION 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:	June 25, 2024
APPLICANT:	Tashia Brown
CASE NUMBER:	Z2024-025; *Specific Use Permit (SUP) for Solar Collector Energy Panels at 1290 E. IH-30*

SUMMARY

Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a *Specific Use Permit (SUP)* for *Solar Energy Collector Panels* on the roof of an existing *Commercial Indoor Amusement* facility (*i.e. Shenanigans*) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and take any action necessary.

BACKGROUND

The subject property was annexed by the City Council on September 5, 1960 by *Ordinance No. 60-02* [*Case No. A1960-002*]. Based on the City's historic zoning maps, the subject property was zoned from an Agricultural (AG) District to a Commercial (C) District at some time between annexation and January 3, 1972. In addition, at some point between January 3, 1972 and July 11, 1985, the subject property was rezoned from a Commercial (C) District to a Light Industrial (LI) District. On October 17, 1989, the City Council approved a final plat (*Case No. PZ1989-023-01*) that established the subject property as Lot 1, Block A, Park Place Business Centre Addition. According to Rockwall County Appraisal District (RCAD), the 74,660 SF *Indoor Commercial Amusement Facility* was constructed in 1990. On July 2, 2008, an amended site plan was administratively approved by staff (*Case No. SP2008-013*) allowing new parking lot landscaping and lighting. On August 4, 2008, the City Council approved a replat (*Case No. P2008-027*) that establish the subject property as Lot 2, Block A, Park Place Business Centre Addition.

PURPOSE

On May 17, 2024, the applicant -- *Teshia Brown* -- submitted an application requesting approval of a Specific Use Permit (SUP) to allow *Solar Energy Collector Panels* on the subject property.

ADJACENT LAND USES AND ACCESS

The subject property is located at the southwest corner of the E. IH-30 Frontage Road and T. L. Townsend Drive. The land uses adjacent to the subject property are as follows:

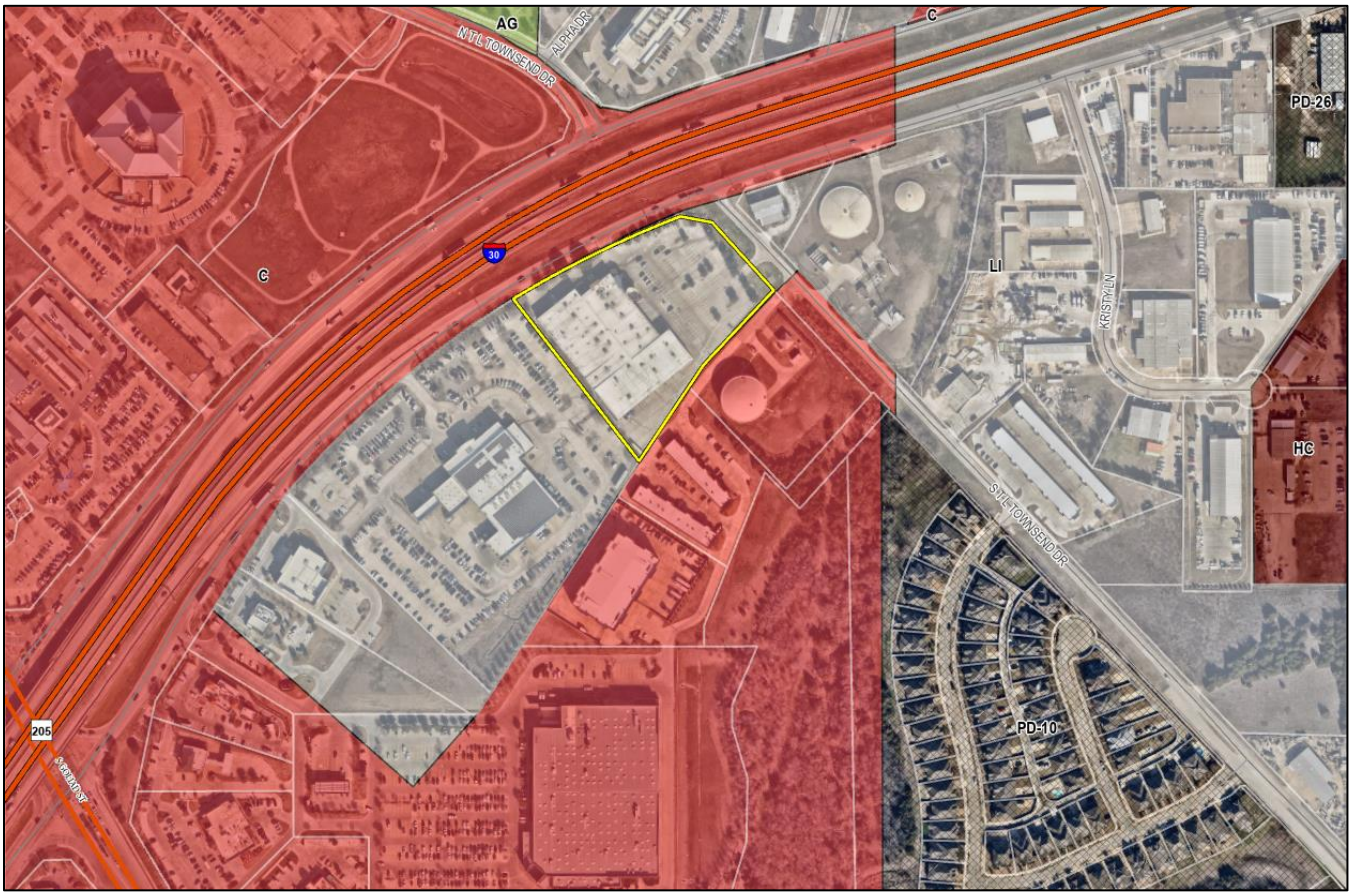
North: Directly north of the subject property are the eastbound lanes of the IH-30 Frontage Road, followed by the main lanes of IH-30, and the westbound lanes of the IH-30 Frontage Road. Following this is a 4.194-acre parcel of land (*i.e. Lot 1, Block A, Emerus Emergency Hospital Addition*) zoned Light Industrial (LI) District and developed with a *Hospital*.

South: Directly south of the subject property is a 3.0047-acre tract of land (*i.e. Tract 2-2 of the J. Cadle Survey, Abstract No. 65*) owned by the City of Heath. Also, south of the subject property is a 2.692-acre parcel of land (*i.e. Lot 5, Block A, Platinum Storage Addition*) developed with two (2) multi-tenant *Office Buildings*. Following this is a 2.857-acre parcel of land (*i.e. Lot 4, Block A, Platinum Storage Addition*) developed with a *Mini-Warehouse Facility*. South of this is a 20.2904-acre parcel of land (*i.e. Lot 1R, Block 1, Rockwall Centre Corners Addition*) developed with a wholesale grocery store (*i.e. Costco*). All of these properties are zoned Commercial (C) District.

East: Directly east of the subject property is T. L. Townsend Drive, which is identified as a A4D (*i.e. arterial, four [4] lane, divided roadway*) on the Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan. Following this is a 0.6010-acre parcel of land (*i.e. Lot 1, Block 1, Cullins Subdivison*) developed with a *Major Auto Repair Garage*. Beyond this is a 4.967-acre parcel of land (*i.e. Lot 4, Bodin Industrial Tract Addition*) owned by the City of Rockwall. Beyond this are several parcels of land developed with Light Industrial (LI) District land uses that make up the remainder of the Bodin Industrial Tract Subdivision. All of these properties are zoned Light Industrial (LI) District.

West: Directly west of the subject property is a 11.2560-acre parcel of land (*i.e. Lot 1, Block 1, Toyota of Rockwall Addition*) zoned Light Industrial (LI) District and developed with an *Automotive Dealership*. Following this are the eastbound lanes of the IH-30 Frontage Road, followed by the main lanes of IH-30, and the westbound lanes of the IH-30 Frontage Road.

MAP 1: LOCATION MAP
YELLOW: SUBJECT PROPERTY



CHARACTERISTICS OF THE REQUEST

On March 28, 2024, the applicant submit a building permit (*Case No. COM2024-1392*) detailing the proposed instillation of a 539.32 kW roof mounted solar panel system. Staff informed the applicant that proper screening would be required, otherwise a Specific Use Permit (SUP) would need to be requested. In response to this, on May 17, 2024 the applicant submitted an application requesting approval of a Specific Use Permit (SUP) to allow *Solar Energy Collector Panels* on the existing 74,660 SF *Indoor Commercial Amusement Facility*. Included with the applicant's submittal was a site plan, roof plan, photometric plan, and building elevations. Based on the provided roof plan, the *Solar Energy Collector Panels* will occupy the vast majority of the roof (*see Figure 1*). According to the building elevations, the solar panels will be 9.75-inches tall and there is a 1½-foot tall parapet on two (2) sides of the building. Given that the *Solar Energy Collector Panels* will be visible on two (2) sides of the building the applicant is requesting approval of the Specific Use Permit (SUP) in accordance with the Unified Development Code (UDC).



FIGURE 1. ROOF PLAN

CONFORMANCE WITH THE CITY'S CODES

According to Article 13, *Definitions*, of the Unified Development Code (UDC), *Solar Energy Collector Panels and Systems* are defined 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." In this case, the proposed *Solar Energy Collector Panels* meet this definition. According to the *Permissible Use Charts* contained in Article 04, *Permissible Uses*, of the Unified Development Code (UDC), *Solar Energy Collector Panels and Systems* are permitted as an accessory use in a Light Industrial (LI) District. The purpose of this requirement is to ensure solar instillations are integrated into the existing built environment or are incorporated as only one (1) component in a new development. In addition, Article 04 establishes several conditional land use standards that dictate how *Solar Energy Collector Panels* may be established on non-residential properties. More specifically on flat roofs *Solar Energy Collector Panels* must be screened, where "(t)he height of such screening, at the minimum, shall be the height of the *Solar Energy Collector Panel*." In this case, the proposed *Solar Energy Collector Panels* are 9.75-inches tall and the existing parapet is 1½-feet tall and is only located on a portion of the building. The panels will be fully visible from the southwest and southeast sides of the building. Given that the applicant does not meet this conditional land use standard, they are requesting a Specific Use Permit (SUP) in accordance with Subsection 02.03(K)(7)(c)(8), of Article 04, of the Unified Development Code (UDC).

OURHOMETOWN VISION 2040 COMPREHENSIVE PLAN

According to the *Future Land Use Plan* contained in the OURHometown Vision 2040 Comprehensive Plan, the subject property is situated within the *IH-30 Corridor District* and is designated for *Special Commercial Corridor* land uses. This land use designation is defined as being "…intended to provide an area for commercial/retail and regional commercial/retail activity centers that are intended to support and serve the entire region…" According to the *District Strategies* for the *IH-30 Corridor District* properties designated for *Special Commercial Corridor* land uses "…will continue to be the City's primary retail corridor in the future…" and "…large commercial centers should incorporate green space or open space at the center of the development that can be used to provide amenity or break up large parking fields." In this case, the *Indoor Commercial Amusement Facility*

is existing on the subject property. Given this, the applicant is not changing the conformance of the subject property to the OURHometown Vision 2040 Comprehensive Plan

STAFF ANALYSIS

The documents provided by the applicant for their Specific Use Permit (SUP) request generally meet the requirements outlined within the Unified Development Code (UDC), with the exception of the *Solar Energy Collector Panel* screening. Based on the building elevations provided by the applicant, the proposed *Solar Energy Collector Panels* will be screened on the northeast, northwest, and a portion of the southwest side of the building. Staff should note, that the northeast and northwest sides of the building are the sides that face E. IH-30 and T. L. Townsend Drive. Given this, the *Solar Energy Collector Panels* should be mostly screened from the adjacent roadways. With that being said, the *Solar Energy Collector Panels* will still have limited visibility from E. IH-30 and the eastbound IH-30 Frontage Road, due to the curvature of the roadways; however, the trees within the landscape buffers along E. IH-30 should mitigate the majority of this visibility. With this being said, a request for a Specific Use Permit (SUP) is a discretionary decision for the City Council pending a recommendation from the Planning and Zoning Commission.

NOTIFICATIONS

On May 22, 2024, staff mailed 25 notices to property owners and occupants within 500-feet of the subject property. There are no Homeowner's Associations (HOA's)/Neighborhood Associations 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 drafted, staff had received one (1) notice in favor 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)* to allow *Solar Energy Collector Panels* on the subject property, 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) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

  (B) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing

  (C) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

(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. Z2024-025

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	1290 I-30 Rockwall TX 75087				
SUBDIVISION		LOT		BLOCK	
GENERAL LOCATION	Townsend Dr. & I-30 Frontage rd				

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING	LI		CURRENT USE	CTE Entertainment LP	
PROPOSED ZONING	LI		PROPOSED USE	Solar	
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	
CONTACT PERSON	Justin Ripp	CONTACT PERSON	Teshia Brown
ADDRESS	1290 E I-30	ADDRESS	4801 Freidrich LN. Ste 109
CITY, STATE & ZIP	Rockwall, TX 75087	CITY, STATE & ZIP	Austin, TX 78744
PHONE	972-839-8196	PHONE	940-594-9718
E-MAIL	justin@elevatedvg.com	E-MAIL	teshiabrown@freedomsolarpower.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Justin Ripp [*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 $ 215 *TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE* 16 *DAY OF* May *20* 24 *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."*

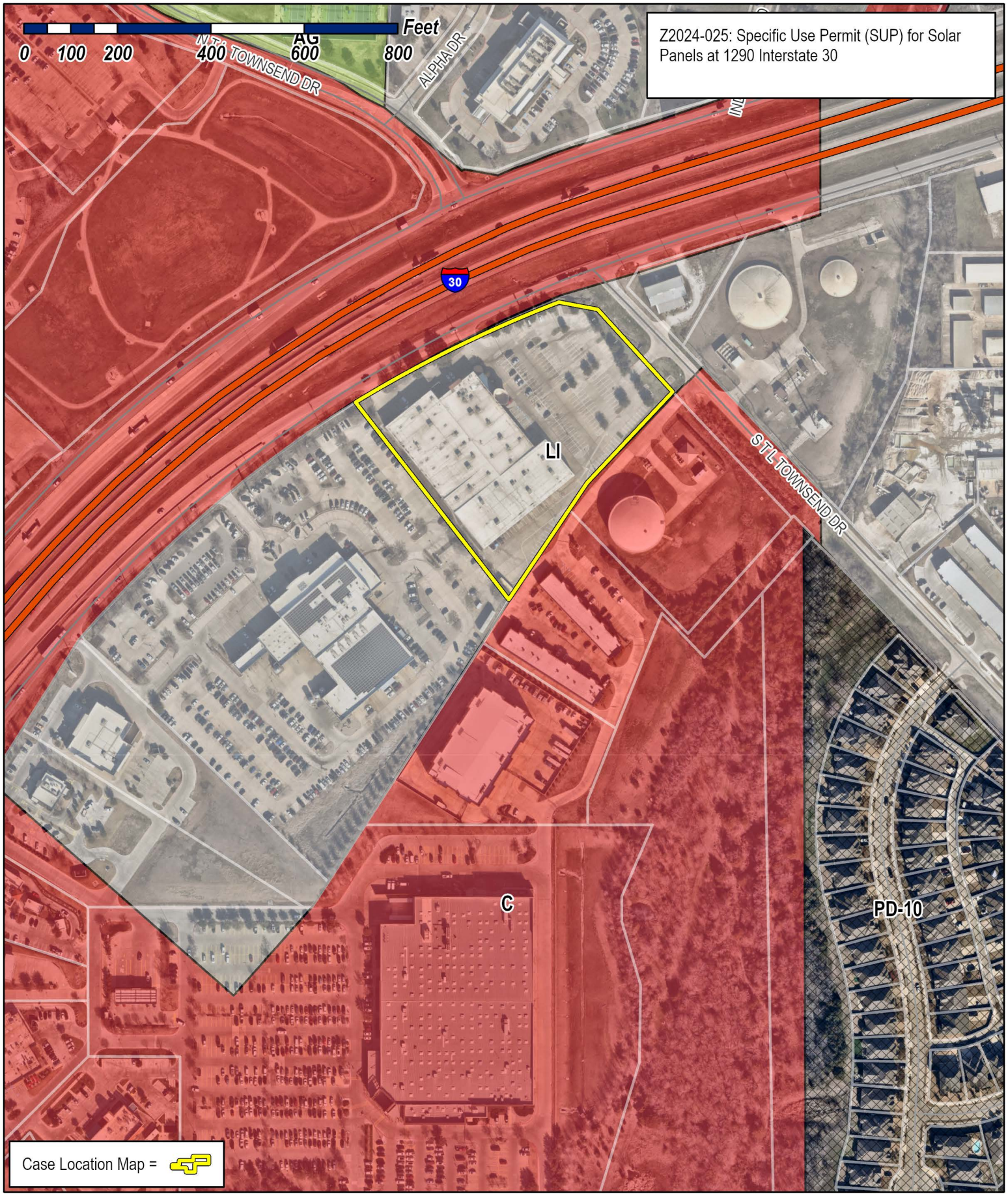
GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* May *20* 24

OWNER'S SIGNATURE

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES

JARED FARMER
Notary Public, State of Texas
Comm. Expires 09-11-2026
Notary ID 131718186



City of Rockwall

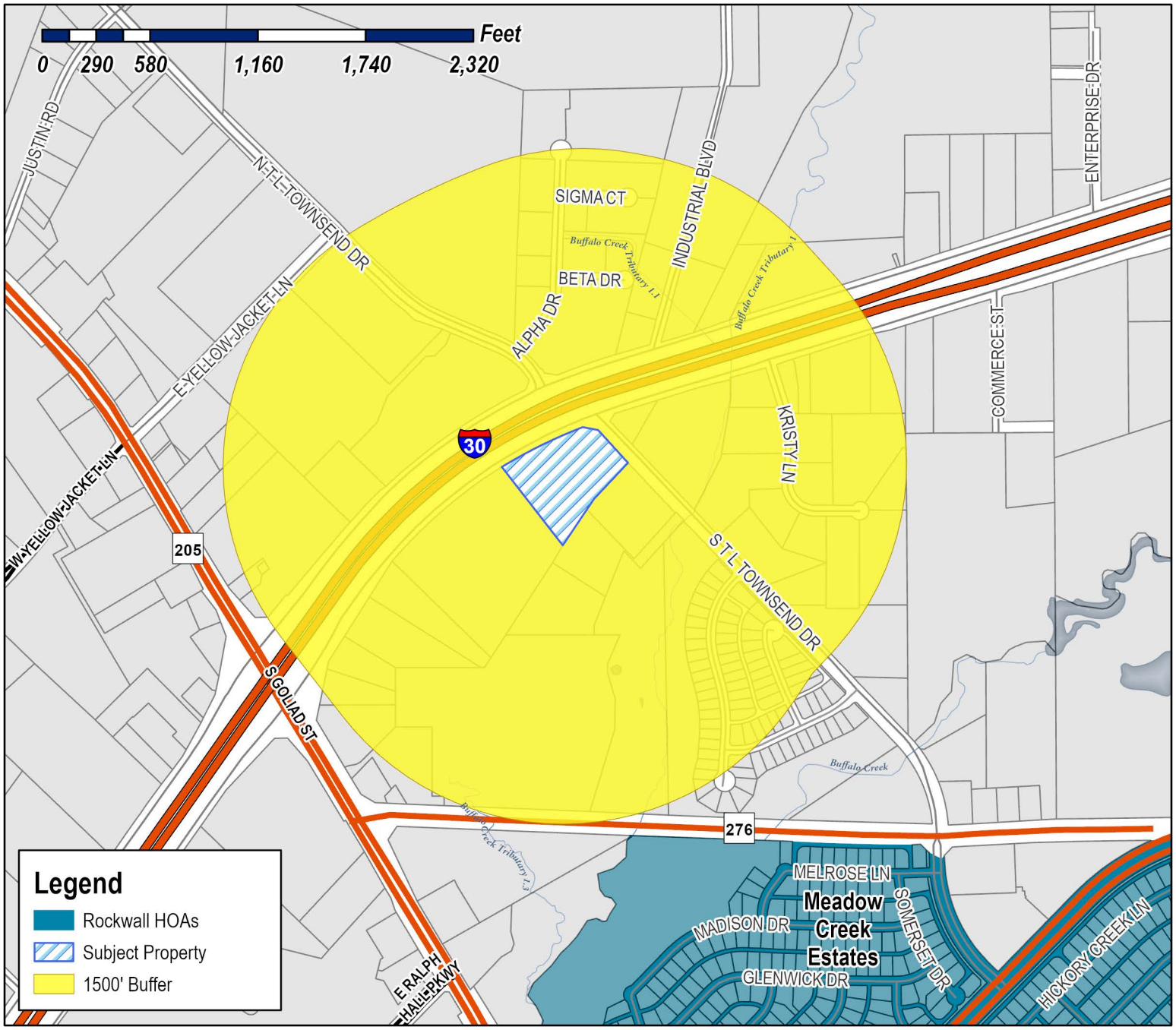
Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com

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.

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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30

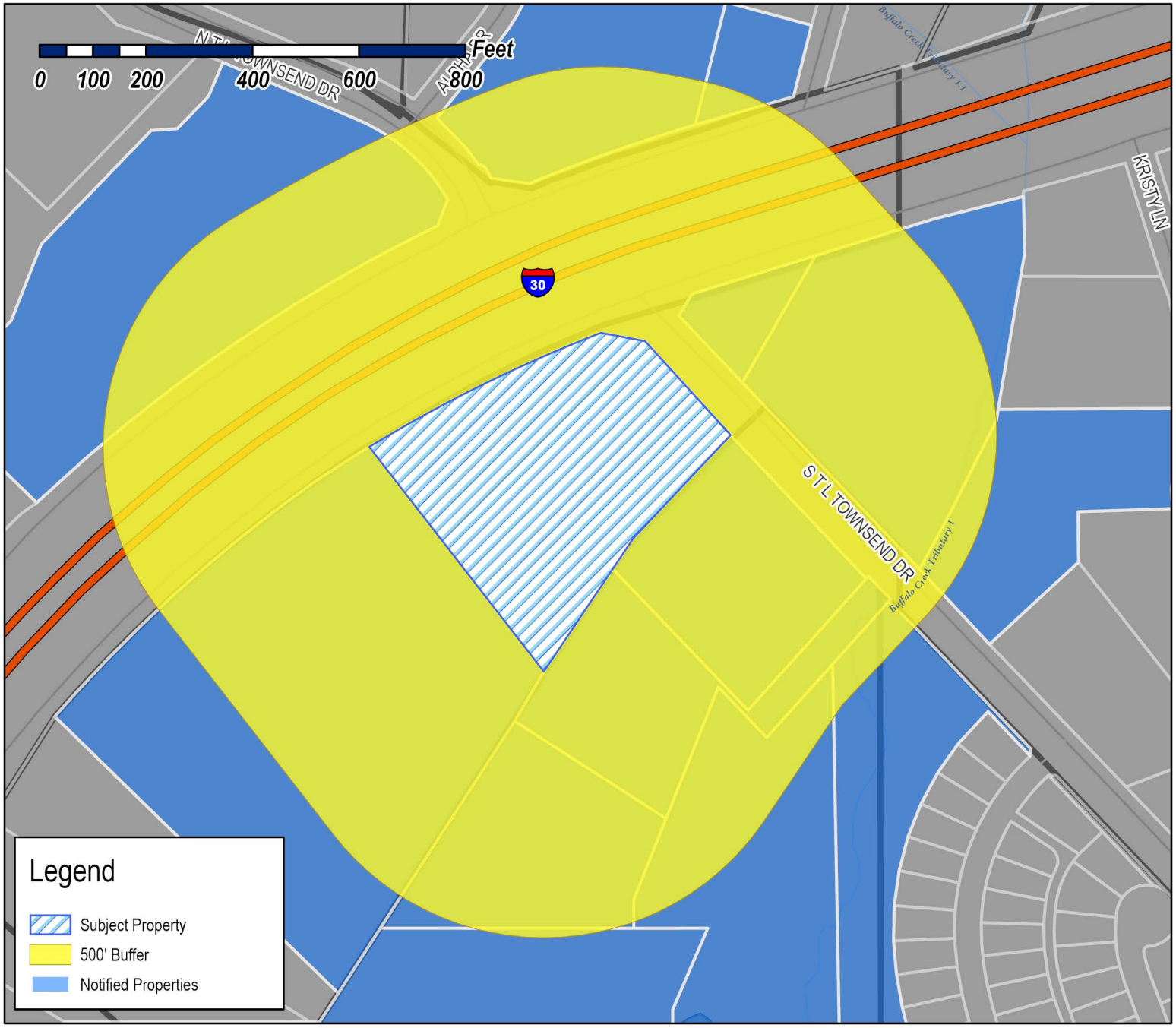


Date Saved: 5/17/2024
For Questions on this Case Call (972) 771-7745

City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
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Date Saved: 5/17/2024
For Questions on this Case Call: (972) 771-7745

RESIDENT
S T L TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
T L TOWNSEND
ROCKWALL, TX 75087

RESIDENT
TOWNSEND DR
ROCKWALL, TX 75087

MCCALLUM V LLC
1 SOAPBERRY LN
ROCKWALL, TX 75087

ROCKWALL COUNTY
1101 RIDGE RD
STE 105
ROCKWALL, TX 75087

RESIDENT
1225 HWY 276
ROCKWALL, TX 75087

RESIDENT
1245 HWY276 DR
ROCKWALL, TX 75087

JACKSON AUTOMOTIVE REAL ESTATE INV LLC
1250 E INTERSTATE 30
ROCKWALL, TX 75087

RESIDENT
1290 I30
ROCKWALL, TX 75087

RESIDENT
1301 I30
ROCKWALL, TX 75087

RESIDENT
1401 E I30
ROCKWALL, TX 75087

SARO PARTNERS LLC
1450 T L TOWNSEND
ROCKWALL, TX 75032

RESIDENT
1460 S TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
1480 S T L TOWNSEND DR
ROCKWALL, TX 75087

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

PRITCHARD DONNA CULLINS &
1610 SHORES BLVD
ROCKWALL, TX 75087

HTA ROCKWALL MEDICAL CENTER LLC
16435 NORTH SCOTTSDALE ROAD SUITE 320
SCOTTSDALE, AZ 85254

RESIDENT
1975 ALPHA RD
ROCKWALL, TX 75087

CITY OF HEATH
200 LAURENCE DRIVE
HEATH, TX 75032

RESIDENT
2010 KRISTY LN
ROCKWALL, TX 75087

CTE PHASE I LP
2266 LAFAYETTE LNDG
ROCKWALL, TX 75032

REDI MIX LLC
331 N MAIN STREET
EULESS, TX 76039

MSC ROCKWALL LLC
725 PARK CENTER DRIVE
MATTHEWS, NC 28105

COSTCO WHOLESALE CORP
999 LAKE DR
ISSAQUAH, WA 98027

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:

Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector Panels
Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, 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, June 11, 2024 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, June 17, 2024 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:

Henry Lee
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, June 17, 2024 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. Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector 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

RECEIVED
MAY 24 2024
BY: .....

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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.

I think they should be entitled to pursue if its on their building & property and does not infringe on the rights of other property owners.

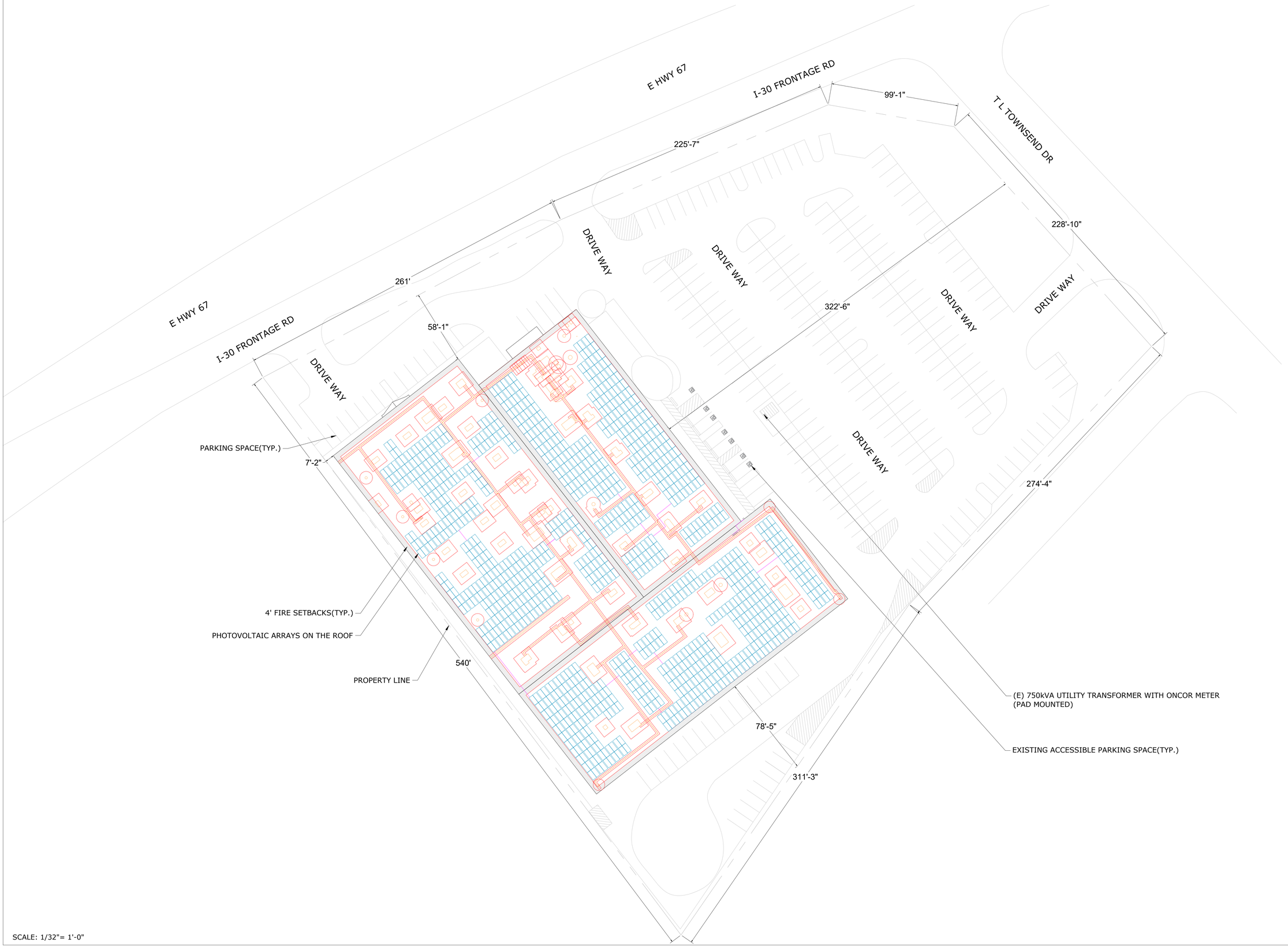
Name: Signature Staff Resources LLC

Address: 1460 TL Townsend Dr #104 Rockwall TX 75032

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

SITE PLAN : DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW



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

FREEDOM™ SOLAR POWER

4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

STATE OF TEXAS
JORDNA F. HANLEY
133867
LICENSED PROFESSIONAL ENGINEER

JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

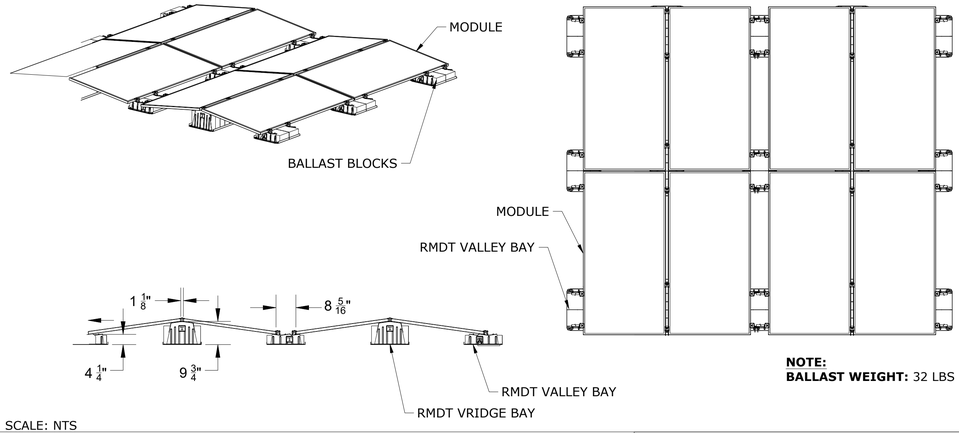
ILLUMINE i

SITE PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	A-01

ATTACHMENT DETAILS - UNIRAC RMDT



SCALE: NTS

NOTE:
BALLAST WEIGHT: 32 LBS

BILL OF MATERIALS

PART NUMBER	DESCRIPTION	QTY	UNIT
Q.PEAK DUO XL-G10.3/BFG 485W	MODULE	1112	QTY.
N/A	BALLAST BLOCK	1658	QTY.
310802	RMDT VALLEY BAY	813	QTY.
310826	RMDT MID CLAMP 32-35MM	1324	QTY.
310820	RMDT END CLAMP 30-40MM	2648	QTY.
310860	KIT 1/4-20 CLIP ON NUT SS 18-8	3972	QTY.
310801	RMDT RIDGE BAY	662	QTY.
008115M	MLPE TIGER CLIP	1112	QTY.

GENERAL STRUCTURAL NOTES

1.ALL EQUIPMENTS SHALL BE INSTALLED PER MANUFACTURER INSTALLATION AND OPERATIONS MANUAL REQUIREMENTS.
2.PRIOR TO COMMENCEMENT OF WORK OR FABRICATION OF COMPONENTS, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS,AND ELEVATIONS OF THE EXISTING CONSTRUCTION.CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE FIELD -VERIFIED CONDITIONS, DIMENSIONS,AND ELEVATION AND THOSE INDICATED ON THE DRAWINGS.
3.ALL THE CONSTRUCTION SHALL COMPLY WITH REQUIREMENTS OF 2021 EDITION OF THE BUILDING CODE.

SOLAR RACK COMPONENTS:

1. FOLLOW MANUFACTURER'S INSTALLATION FOR INSTALLATION OF THE SOLAR COMPONENTS,INCLUDING MODULE CLAMPS,L-FEET,BRACKETS MECHANICAL ATTACHMENTS,AND HARDWARE.

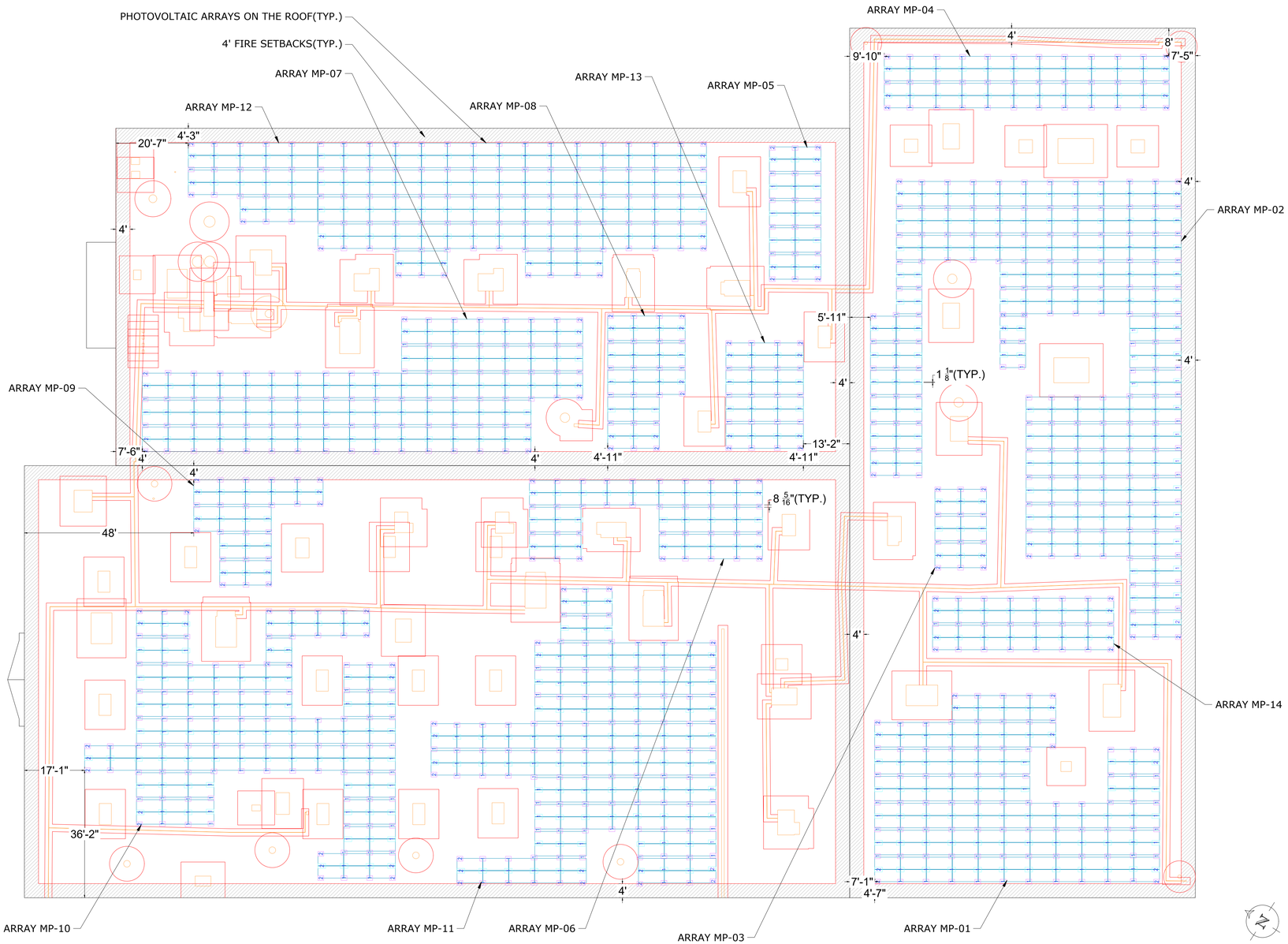
LEGEND:

1 STANDARD CORNER BAY WITH CMU BLOCK COUNT

2 SUPPLEMENTAL BAY WITH CMU BLOCK COUNT

SITE INFORMATION - WIND SPEED: 105 MPH, EXPOSURE: B AND SNOW LOAD: 5 PSF

SR. NO	AZIMUTH	MODULE TILT	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT
ARRAY MP-01	52°&232°	8°	120	3372	TPO	UNIRAC RMDT
ARRAY MP-02	52°&232°	8°	222	6211	TPO	UNIRAC RMDT
ARRAY MP-03	52°&232°	8°	12	341	TPO	UNIRAC RMDT
ARRAY MP-04	52°&232°	8°	44	1265	TPO	UNIRAC RMDT
ARRAY MP-05	52°&232°	8°	20	562	TPO	UNIRAC RMDT
ARRAY MP-06	52°&232°	8°	42	1201	TPO	UNIRAC RMDT
ARRAY MP-07	52°&232°	8°	122	3449	TPO	UNIRAC RMDT
ARRAY MP-08	52°&232°	8°	26	732	TPO	UNIRAC RMDT
ARRAY MP-09	52°&232°	8°	24	686	TPO	UNIRAC RMDT
ARRAY MP-10	52°&232°	8°	124	3500	TPO	UNIRAC RMDT
ARRAY MP-11	52°&232°	8°	148	4155	TPO	UNIRAC RMDT
ARRAY MP-12	52°&232°	8°	156	4402	TPO	UNIRAC RMDT
ARRAY MP-13	52°&232°	8°	24	677	TPO	UNIRAC RMDT
ARRAY MP-14	52°&232°	8°	28	805	TPO	UNIRAC RMDT



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P: 512.640.3864
freedomsolarpower.com

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JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

STRUCTURAL PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | S-01

STRINGING DIAGRAM:

STRING ID LEGEND

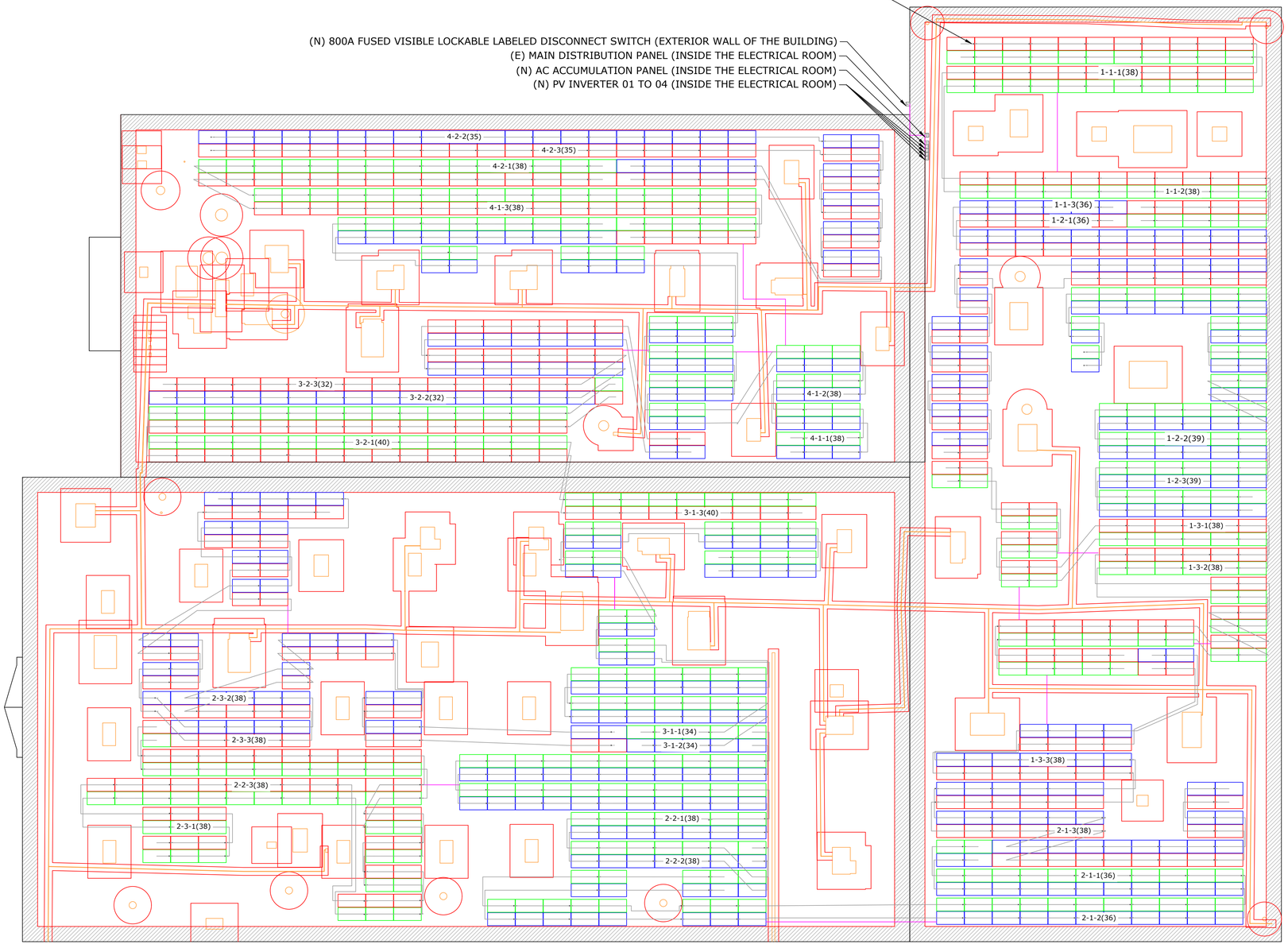
STR 1-1-1(X)

- # OF MODULES
- STRING ID
- UNIT #(1,2,3)
- INVERTER ID#

(E) 750kVA UTILITY TRANSFORMER WITH ONCOR METER (PAD MOUNTED)

STRING STARTS HERE

(N) 800A FUSED VISIBLE LOCKABLE LABELED DISCONNECT SWITCH (EXTERIOR WALL OF THE BUILDING)
(E) MAIN DISTRIBUTION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) AC ACCUMULATION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) PV INVERTER 01 TO 04 (INSIDE THE ELECTRICAL ROOM)



SCALE:1"=15'-0"

WIRING AND WIRING METHODS:

1. EXPOSED PV SOLAR MODULE WIRING AND PV SOURCE CIRCUITS TO BE UV RESISTANT 2,000V PV WIRE, 90° C, AND RATED FOR WET CONDITIONS.
2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED IN A NEAT WORKMAN LIKE MANNER TO PREVENT CHAFFING, SWINGING, AND EXCEEDING MINIMUM BEND RADIUS WITH PROPER MECHANICAL SUNLIGHT RESISTANT MEANS AND ROUTED TO AVOID DIRECT EXPOSURE TO SUNLIGHT AT ALL TIMES.
3. ALL FIELD WIRING THAT IS NOT COLOR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND.
4. FLEXIBLE METAL CONDUIT IS SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS OR CONDUIT FITTING) AND NO MORE THAN 48 INCHES APART.
5. LIQUID TIGHT FLEXIBLE METAL AND NON-METALLIC CONDUIT IS SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART.
6. PVC CONDUIT AND FITTINGS SHALL NOT BE USED ON ROOFTOP CONDITIONS OR EXPOSED TO DIRECT SUNLIGHT.WHEN USED IN ACCEPTABLE LOCATION CONDUIT SHALL BE SCHEDULE 80 UV RESISTANT UNLESS NOTED OTHERWISE.
7. FUSES AND WIRES SUBJECT TO TEMPERATURES CONDITIONS GREATER THAN 100°F OR TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
8. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
9. ALL TERMINATIONS SHALL HAVE ANTI-OXIDANT COMPOUND AND BE TORQUED PER DEVICE LISTING, OR MANUFACTURER'S RECOMMENDATIONS.
10. SPLIT BOLTS /SPLICES / CONNECTORS ARE PERMITTED ON THE AC CONDUCTORS AND SHALL BE INSULATED WITH APPROVED MEANS. SPLICES ON THE DC CONDUCTORS IS NOT PERMITTEDIN ANY LOCATION.
11.NO PVC CONDUIT ALLOWED ON ROOF, UNLESS OPEN ENDED WIRE MANAGEMENT <10'.

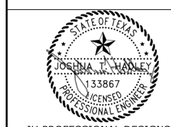
INVERTER 1, 120kW			INVERTER 2, 120kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
1-1-1	38	19	2-1-1	36	18
1-1-2	38	19	2-1-2	36	18
1-1-3	36	18	2-1-3	38	19
UNIT 02			UNIT 02		
1-2-1	36	18	2-2-1	38	19
1-2-2	39	20	2-2-2	38	19
1-2-3	39	20	2-2-3	38	19
UNIT 03			UNIT 03		
1-3-1	38	19	2-3-1	38	19
1-3-2	38	19	2-3-2	38	19
1-3-3	38	19	2-3-3	38	19

INVERTER 3, 80kW			INVERTER 4, 80kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
3-1-1	34	17	4-1-1	38	19
3-1-2	34	17	4-1-2	38	19
3-1-3	40	20	4-1-3	38	19
UNIT 02			UNIT 02		
3-2-1	40	20	4-2-1	38	19
3-2-2	32	16	4-2-2	35	18
3-2-3	32	16	4-2-3	35	18
			GRAND TOTAL	1112	558

FREEDOM SOLAR POWER
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P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

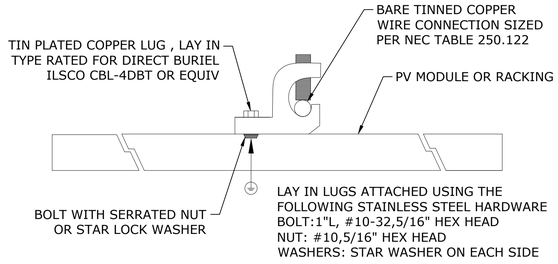
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STRINGING MAP

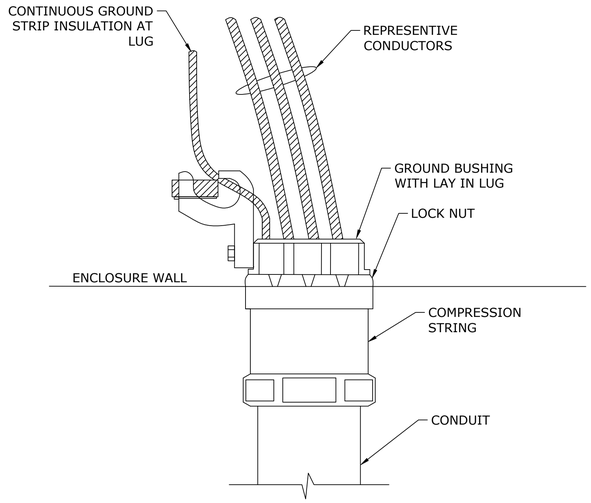
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NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-01

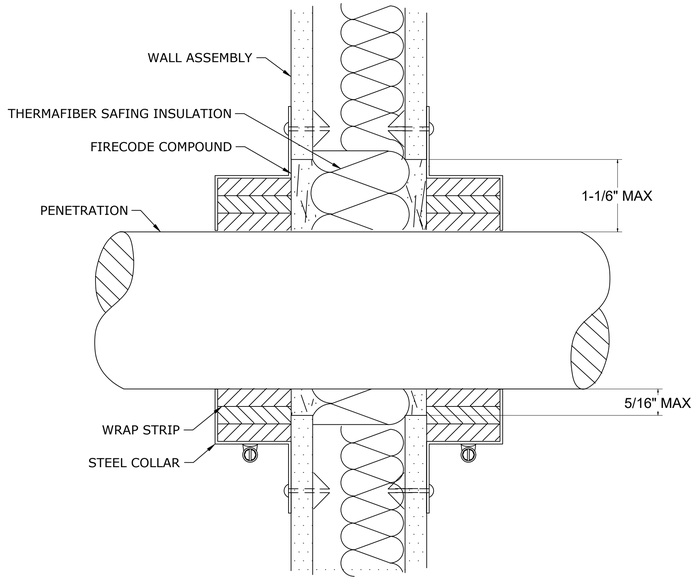
GROUND LUG DETAIL:



CONDUIT BODY GROUNDING DETAIL:

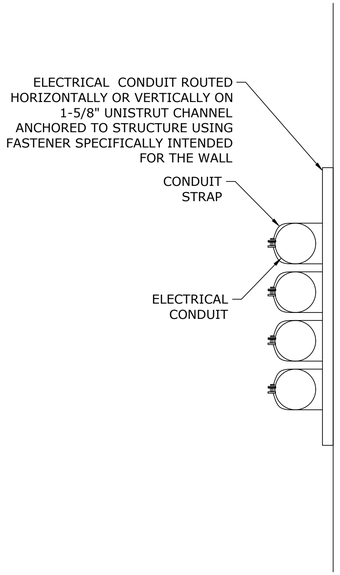


FIRE WALL PENETRATION DETAIL:

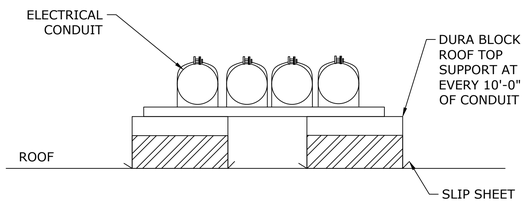


SCALE: NTS

CONDUIT WALL ANCHORING:



TYPICAL DURA-BLOCK CONDUIT SUPPORT DETAIL:



NOTE: DETAIL DRAWINGS ARE FOR REFERENCE ONLY

GROUNDING - SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION:

1.ONLY ONE CONNECTION TO DC CIRCUITS AND AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (REFERENCED TO THE SAME POINT).
2.EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING ELECTRODE CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING CONNECTION POINT AS PRACTICABLE AND A MINIMUM NUMBER OF TURNS.
3.TO ENSURE PROPER GROUNDING, NON-CURRENT CARRYING METAL PARTS SHALL BE INSTALLED, NOTING THAT PAINT AND FINISH SHALL BE PROPERLY REMOVED WHERE IT MAY INSULATE AN ENCLOSURES BONDING CONNECTION.APPLY NO-LOX OR OTHER SIMILAR ANTI-OXIDANT COMPOUND TO EXPOSED SURFACES.
4.THE CONNECTION TO THE MODULE OF THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT.
5.GROUNDING SYSTEM COMPONENTS SHALL BE APPROVED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC. GROUNDING DEVICES EXPOSED TO THE ENVIRONMENT SHALL BE RATED FOR DIRECT BURIAL.
6.UNDERGROUND OR INACCESSIBLE CONNECTIONS OF GROUNDING CONDUCTORS SHALL ONLY BE MADE VIA EXO-THERMIC WELDS. THE USE OF MECHANICAL CONNECTIONS ARE ACCEPTABLE FOR ACCESSIBLE ABOVE GROUND LOCATIONS.
7.ALL METALLIC CONDUITS SHALL BE INSTALLED AND TERMINATED WITH INSULATED GROUND BUSHINGS.

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
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SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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PROJECT INFORMATION

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ESI ID: 1044372000636390O
32.912126, -96.445302
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AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

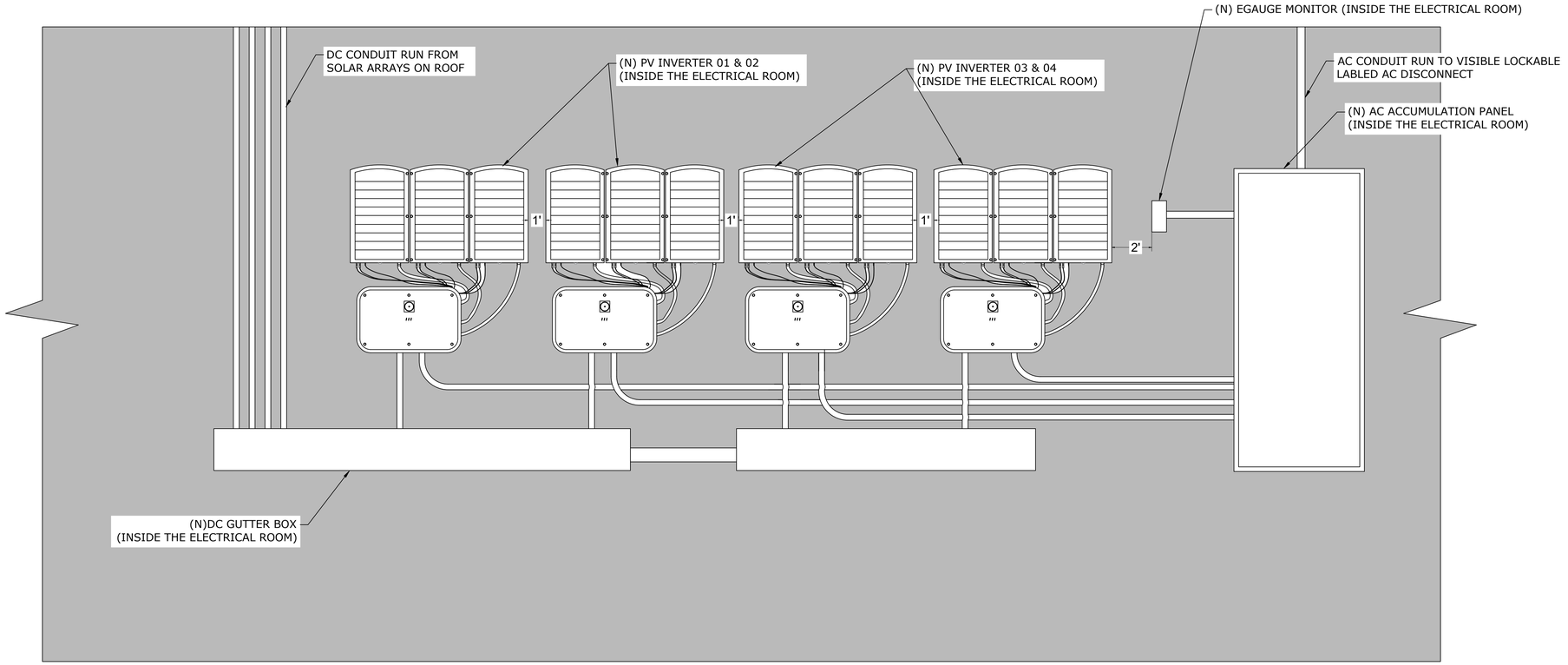
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ELECTRICAL MOUNTING DETAILS

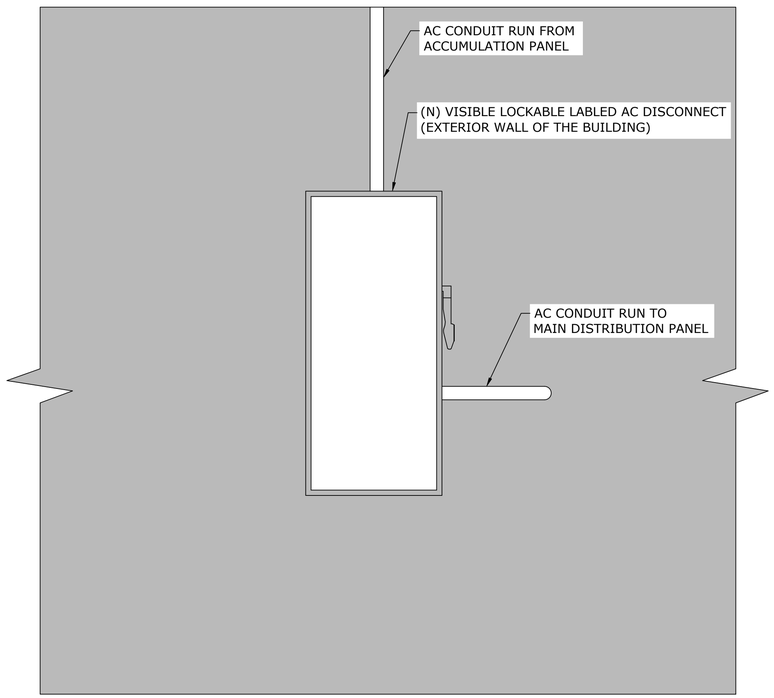
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-02

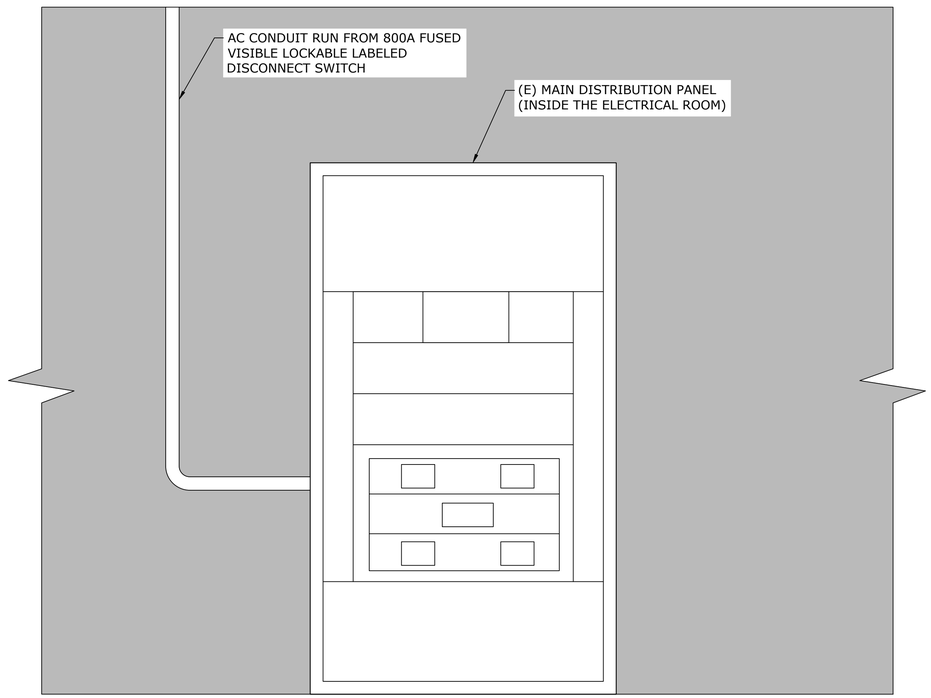
ELECTRICAL EQUIPMENT ELEVATION VIEW :



SCALE: NTS



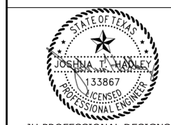
SCALE: NTS



FREEDOM™ SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
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SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
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(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

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PRN NUMBER:FMS-CU-2023-1688

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EQUIPMENT ELEVATION VIEW

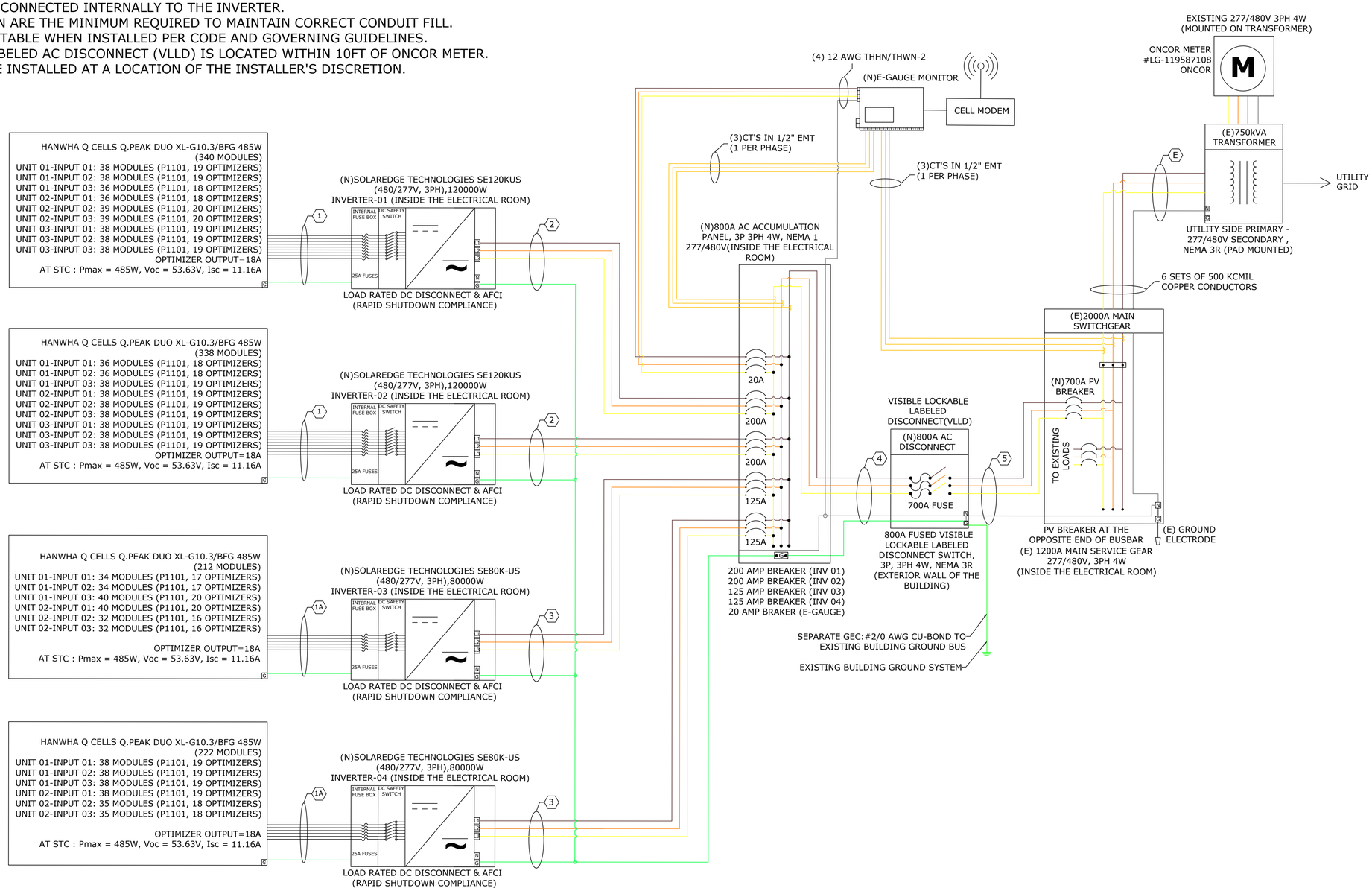
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-03

ELECTRICAL DIAGRAM: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

NOTE:

1. TYPICALLY EACH SOLAREDGE P1101 POWER OPTIMIZER IS CONNECTED TO TWO MODULES.
2. EACH SOLAREDGE P1101 POWER OPTIMIZER IS RAPID SHUTDOWN COMPLIANT.
3. ALL DC FUSES SHOWN ARE CONNECTED INTERNALLY TO THE INVERTER.
4. ALL CONDUIT SIZES SHOWN ARE THE MINIMUM REQUIRED TO MAINTAIN CORRECT CONDUIT FILL.
5. LARGER CONDUIT IS ACCEPTABLE WHEN INSTALLED PER CODE AND GOVERNING GUIDELINES.
6. THE VISIBLE LOCKABLE, LABELED AC DISCONNECT (VLLD) IS LOCATED WITHIN 10FT OF ONCOR METER.
7. MONITORING DEVICE TO BE INSTALLED AT A LOCATION OF THE INSTALLER'S DISCRETION.



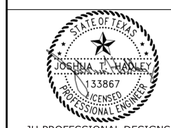
CONDUIT SCHEDULE

TAG ID	NO OF PARALLEL FEEDER	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	1	1-1/4" EMT 1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
1A	1	1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
2	1	2" EMT	(3) 3/0 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	1	1-1/4" EMT	(3) 1 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
4	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2
5	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 500 KCMIL THHN/THWN-2	NONE

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SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

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PROJECT INFORMATION

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COM-41783

ADDRESS:1290 I-30 FRONTAGE RD,
ROCKWALL, TX 75032
ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

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THREE LINE DIAGRAM

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | E-05

ELECTRICAL CALCULATION: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

OCPD CALCULATIONS:
MAIN PANEL RATING:2000A,
LINE SIDE INTERCONNECTION ALLOWABLE BACKFEED IS =2000A
OCPD CALCULATIONS: INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X 1.25
=(144.3AX2)+(96.5AX2)X1.25=602.00A=>PV BREAKER/FUSE = 700A
TOTAL REQUIRED PV BREAKER/FUSE SIZE =>700A PV BREAKER/FUSE

ELECTRICAL CALCULATIONS:
SYSTEM INFO:
539.32 kW DC SYSTEM SIZE
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W MODULES
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
(558)SOLAREDGE P1101 POWER OPTIMIZER

SYSTEM CHARACTERISTICS:(INV 01 & 02)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 144.75A
ISC - MAXIMUM CIRCUIT CURRENT = 144.75A

SYSTEM CHARACTERISTICS:(INV 03 & 04)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 96.50A
ISC - MAXIMUM CIRCUIT CURRENT = 96.50A

DC WIRE SIZING (TAG 1):
MAX CIRCUIT CURRENT = OPTIMIZER MAX OUTPUT X HIGH IRRADIANCE [NEC 690.8(A)(1)] X 1.25 [NEC 690.53]
=18A X 1 X 1.25= 22.5A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 0.8 X 40A = 29.12A
TERMINAL RATING, [PER 110.14(C)] - 10 AWG , 75°C RATED = 35A
30A ≥ 22.5A SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 29.12A ≥ 18A, AND **10 AWG** IS SUFFICIENT.

AC WIRE SIZING (TAG 2):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 144.3A X 1.25 = 180.38A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 225A = 204.75A
TERMINAL RATING, [PER 110.14(C)] - 3/0 AWG , 75°C RATED = 200A
200A ≥ 180.38A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 204.75A ≥ 144.3A, AND **3/0 AWG** IS SUFFICIENT.
INVERTER OVER CURRENT PROTECTION = INVERTER MAX OUTPUT CURRENT X 1.25
= 144.3A X 1.25 = 200A --> 200A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 3):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 96.5A X 1.25 = 120.63A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 145A = 131.95A
TERMINAL RATING, [PER 110.14(C)] - 1 AWG , 75°C RATED = 130A
130A ≥ 120.63A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 131.95A ≥ 96.5A, AND **1 AWG** IS SUFFICIENT.
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X CONTINUOUS LOAD
= 96.5A X 1.25 = 125A --> 125A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 4 & 5): (NO OF PARALLEL FEEDEER =2)
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X 1.25
=(144.3A X 2)+(96.5A X 2)X 1.25 =602.00A/2 = 301A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 430A = 391.30A
TERMINAL RATING, [PER 110.14(C)] - 500 KCMIL , 75°C RATED = 380A
380A ≥ 301A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 391.30A ≥ 240.8A, AND **500 KCMIL** IS SUFFICIENT.

NOTE:
1.THIS INSTALLATION IS TO BE CONSIDERED SUPERVISED.ALL NEW ADDITIONS AND ALTERATIONS TO ANY EQUIPMENT IDENTIFIED IN THIS DOCUMENT MUST BE MADE WITH ENGINEERING SUPERVISION AND ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.
2.ALL EQUIPMENT AND TERMINALS MUST BE MINIMUM 75°C RATED.
3.ALL CONDUCTORS ARE COPPER, UNLESS OTHERWISE SPECIFIED.

MODULE SPECIFICATIONS	
MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
MODULE POWER @ STC	485W
OPEN CIRCUIT VOLTAGE:**Voc**	53.63V
MAX POWER VOLTAGE:**Vmp**	45.63V
SHORT CIRCUIT CURRENT:**Isc**	11.16A
MAX POWER CURRENT:**Imp**	10.63A

INVERTER-01 & 02 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
POWER RATING	120000W
MAX OUTPUT CURRENT	144.3A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	144.75A
MAX DC VOLTAGE	1000V

OPTIMIZER CHARACTERISTICS	
MODEL	SOLAREDGE P1101 POWER OPTIMIZER
MAX INPUT VOLTAGE	125 VDC
MAX INPUT CURRENT	14.1 ADC
MAX OUTPUT CURRENT	18 ADC

INVERTER-03 & 04 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
POWER RATING	80000W
MAX OUTPUT CURRENT	96.5A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	96.5A
MAX DC VOLTAGE	1000V

VOLTAGE DROP CALCULATIONS:

DC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	OPTIMIZER CURRENT (IMP)	STRING VOLTAGE AT 2%DB (VMP)	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
MODULES	INVERTER 01	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	230	1.06%
MODULES	INVERTER 02	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	390	1.80%
MODULES	INVERTER 03	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	260	1.20%
MODULES	INVERTER 04	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	200	0.92%
											MAX Vdrop	1.80%

3 PHASE AC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	CURRENT	VOLTAGE	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
INVERTER TO POI												
INVERTER 01	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 02	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 03	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
INVERTER 04	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
AC ACCUMULATION	AC DISCONNECT	4	EMT	481.6	480	1	I AWG 01	Cu	0.00016	0.000140362	25	0.61%
AC DISCONNECT	POI	5	EMT	481.6	480	2	R 500 KCMIL	Cu	0.000032	0.000028072	15	0.04%
											MAX Vdrop	0.84%
											TOTAL SYSTEM VDROP	2.64%

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION
DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 1044372006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

ELECTRICAL CALCULATION

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-06

PLACARDS

1.

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 690.13(B)

2.

WARNING:PHOTOVOLTAIC POWER SOURCE

INSTALLED ON: CONDUIT, RACEWAYS, AND J-BOXES (LABELED EVERY 10'). REFLECTIVE. MIN 3/8" WHITE TEXT ON BLACK BACKGROUND.
APPLICABLE CODE(S): NEC 690.31(D)(2)

3.

PHOTOVOLTAIC

DC DISCONNECT

INSTALLED ON: DC DISCONNECT(S)
APPLICABLE CODE(S): NEC 690.13(B)

INVERTER 1 & 2

4.

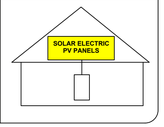
MAXIMUM DC VOLTAGE
1000 V
OF PV SYSTEM

INSTALLED ON: INVERTER
APPLICABLE CODE(S): NEC 690.53

5.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.
APPLICABLE CODE(S): NEC 690.56(C)

6.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON:RAPID SHUTDOWN SWITCH
APPLICABLE CODE(S): NEC 690.56(C)(2)

7.

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 481.6 AMPS AC
AC NOMINAL OPERATING VOLTAGE 480 VAC

INSTALLED ON: AC DISCONNECT(S), POINT OF INTERCONNECTION.
APPLICABLE CODE(S): NEC 690.54

8.

⚠ WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

INSTALLED ON: POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 705.12(C)

9.

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

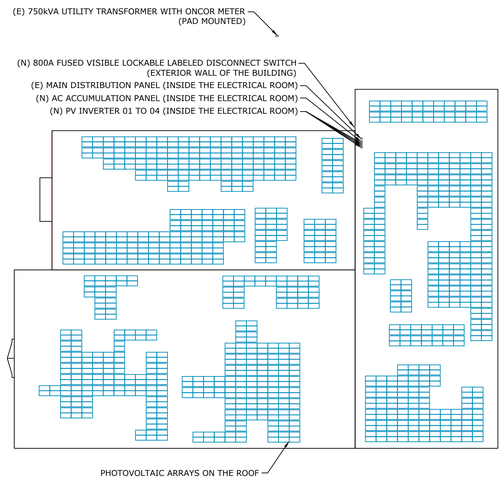
10.

FREEDOM™ SOLAR POWER

11.

WARNING: ⚠

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



1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

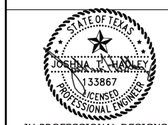
KEY	QTY.	LOCATION
1.	3	AC DISCONNECT, LOAD CENTER, POINT OF INTERCONNECTION
2.	10	CONDUIT
3.	4	DC DISCONNECTS
4.	4	INVERTER
5.	6	AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
6.	4	INVERTER
7.	2	AC DISCONNECT, POINT OF INTERCONNECTION
8.	1	POINT OF INTERCONNECTION
9.	1	COMBINER PANEL
10.	1	POINT OF INTERCONNECTION
11.	1	POINT OF INTERCONNECTION

NOTES: ROOFTOP TRIP HAZARDS ON ROOF SHALL BE IDENTIFIED WITH REFLECTIVE MATERIAL. MARKING CONTENT AND FORMAT RED BACKGROUND WHITE LETTERING MINIMUM 3/8"LETTER HEIGHT ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT(DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT).

FREEDOM™ SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT FOR CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
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PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

ELECTRICAL PLACARDS

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:03/22/2024 | E-06

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

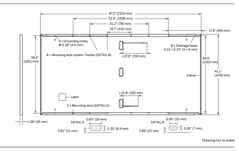
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

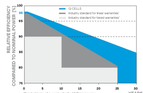
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

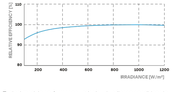
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

solaredge.com

solaredge

Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

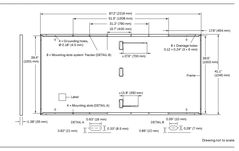
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

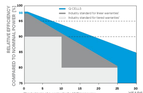
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

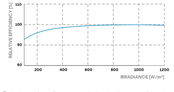
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

solaredge.com

solaredge

Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

CITY OF ROCKWALL

ORDINANCE NO. 24-XX

SPECIFIC USE PERMIT NO. S-3XX

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 ENERGY COLLECTOR PANELS* ON THE ROOF OF AN EXISTING BUILDING SITUATED ON A FIVE (5) ACRE PARCEL OF LAND IDENTIFIED AS LOT 2, BLOCK A, PARK PLACE BUSINESS CENTRE 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.

WHEREAS, the City has received a request from Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for *Solar Energy Collector Panels* on the roof of an existing building situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and being more specifically depicted and described 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) allowing *Solar Energy Collector Panels* as stipulated by Subsection 01.02, *Land Use Schedule*, 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, *Conditional Land Use Standards*, of Article 04, *Permissible Uses*, and Subsection 04.01, *General Commercial District Standards*, and Subsection 04.05, *Commercial (C) District*, of Article 05, *District Development Standards*, of the Unified Development Code

PRELIMINARY 08-29-2024

(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 *Solar Energy Collector Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

(2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

(3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

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 compliance to the following:

(1) Upon obtaining a *Certificate of Occupancy (CO)* and/or building permit, should the business owner operating under the 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.

DRAFT
05.15.2024

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 15th DAY OF JULY, 2024.

_____
Trace Johannesen, *Mayor*

ATTEST:

_____
Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

_____
Frank J. Garza, *City Attorney*

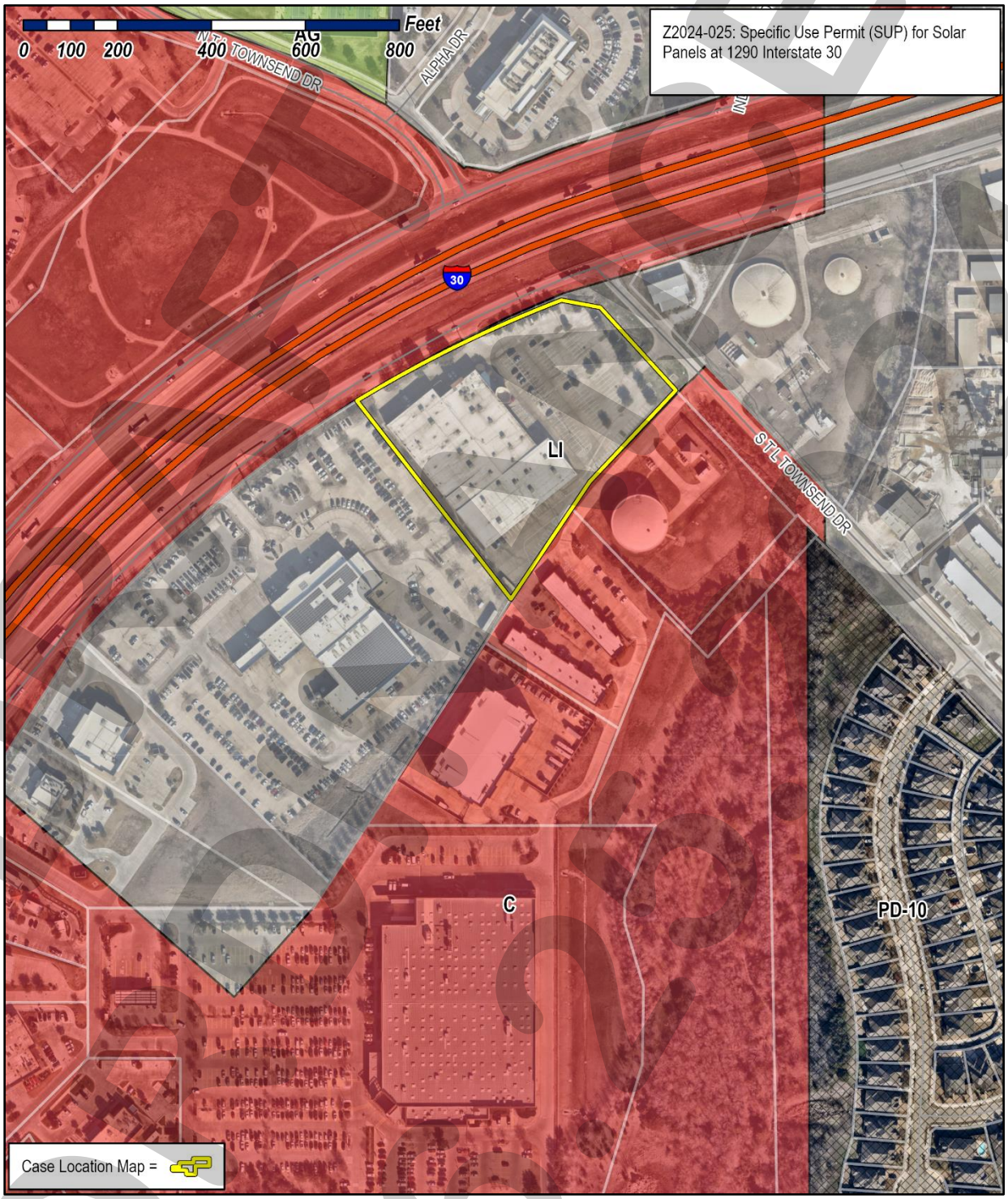
1st Reading: *July 1, 2024*

2nd Reading: *July 15, 2024*

DRAFT ORDINANCE 06.25.2024

Exhibit 'A'
Zoning Exhibit

Address: *1290 E. IH-30*
Legal Description: *Lot 2, Block A, Park Place Business Centre Addition*



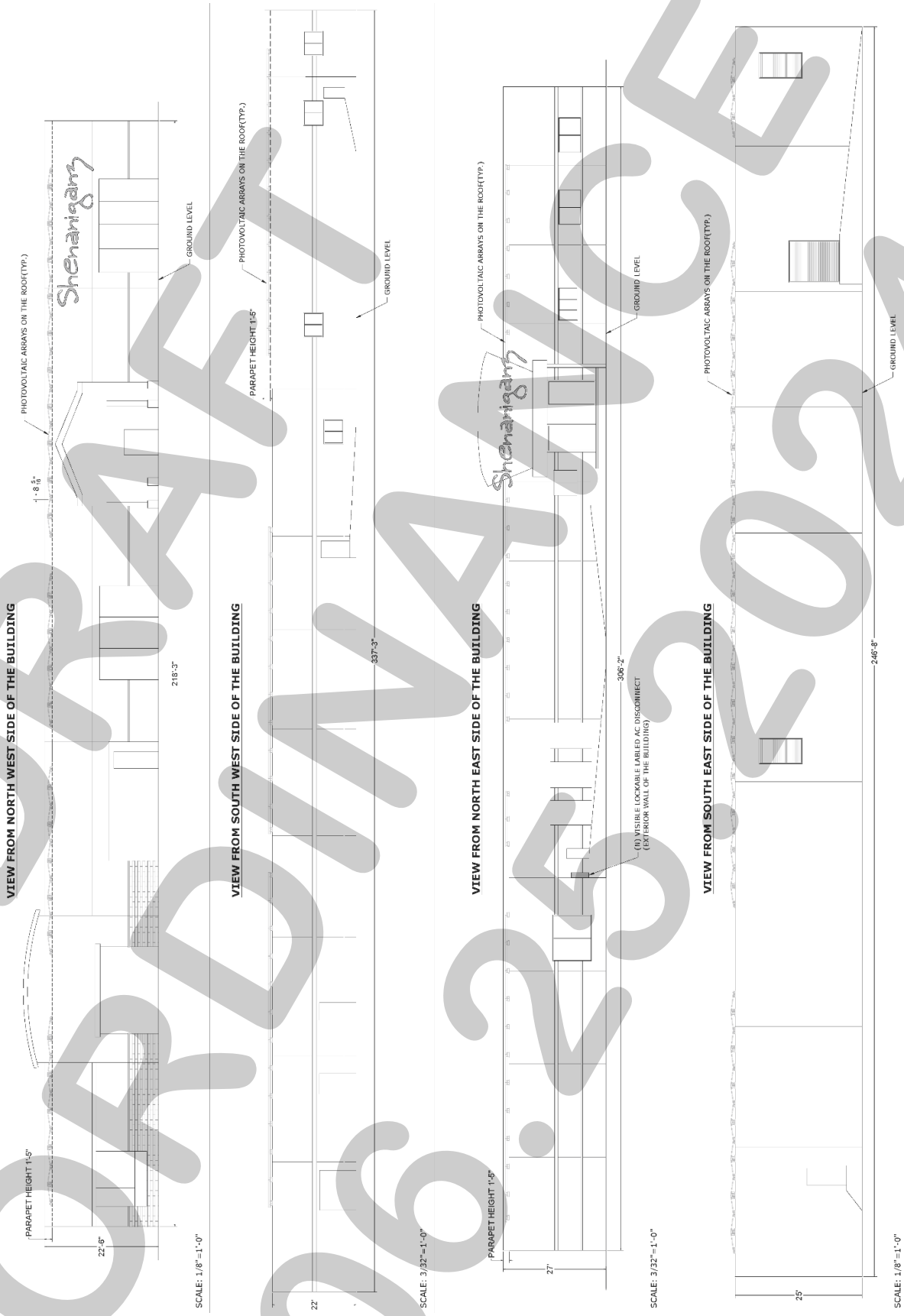
DRAFT 08/07/2024

Exhibit 'B':
Concept Plan



DRAFT ORDINANCE 06.25.2024

Exhibit 'C':
Building Elevations



DRAFT ORDINANCE 06.25.2024

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:	July 1, 2024
APPLICANT:	Tashia Brown
CASE NUMBER:	Z2024-025; *Specific Use Permit (SUP) for Solar Collector Energy Panels at 1290 E. IH-30*

SUMMARY

Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a *Specific Use Permit (SUP)* for *Solar Energy Collector Panels* on the roof of an existing *Commercial Indoor Amusement* facility (*i.e. Shenanigans*) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and take any action necessary.

BACKGROUND

The subject property was annexed by the City Council on September 5, 1960 by *Ordinance No. 60-02* [*Case No. A1960-002*]. Based on the City's historic zoning maps, the subject property was zoned from an Agricultural (AG) District to a Commercial (C) District at some time between annexation and January 3, 1972. In addition, at some point between January 3, 1972 and July 11, 1985, the subject property was rezoned from a Commercial (C) District to a Light Industrial (LI) District. On October 17, 1989, the City Council approved a final plat (*Case No. PZ1989-023-01*) that established the subject property as Lot 1, Block A, Park Place Business Centre Addition. According to Rockwall County Appraisal District (RCAD), the 74,660 SF *Indoor Commercial Amusement Facility* was constructed in 1990. On July 2, 2008, an amended site plan was administratively approved by staff (*Case No. SP2008-013*) allowing new parking lot landscaping and lighting. On August 4, 2008, the City Council approved a replat (*Case No. P2008-027*) that establish the subject property as Lot 2, Block A, Park Place Business Centre Addition.

PURPOSE

On May 17, 2024, the applicant -- *Teshia Brown* -- submitted an application requesting approval of a Specific Use Permit (SUP) to allow *Solar Energy Collector Panels* on the subject property.

ADJACENT LAND USES AND ACCESS

The subject property is located at the southwest corner of the E. IH-30 Frontage Road and T. L. Townsend Drive. The land uses adjacent to the subject property are as follows:

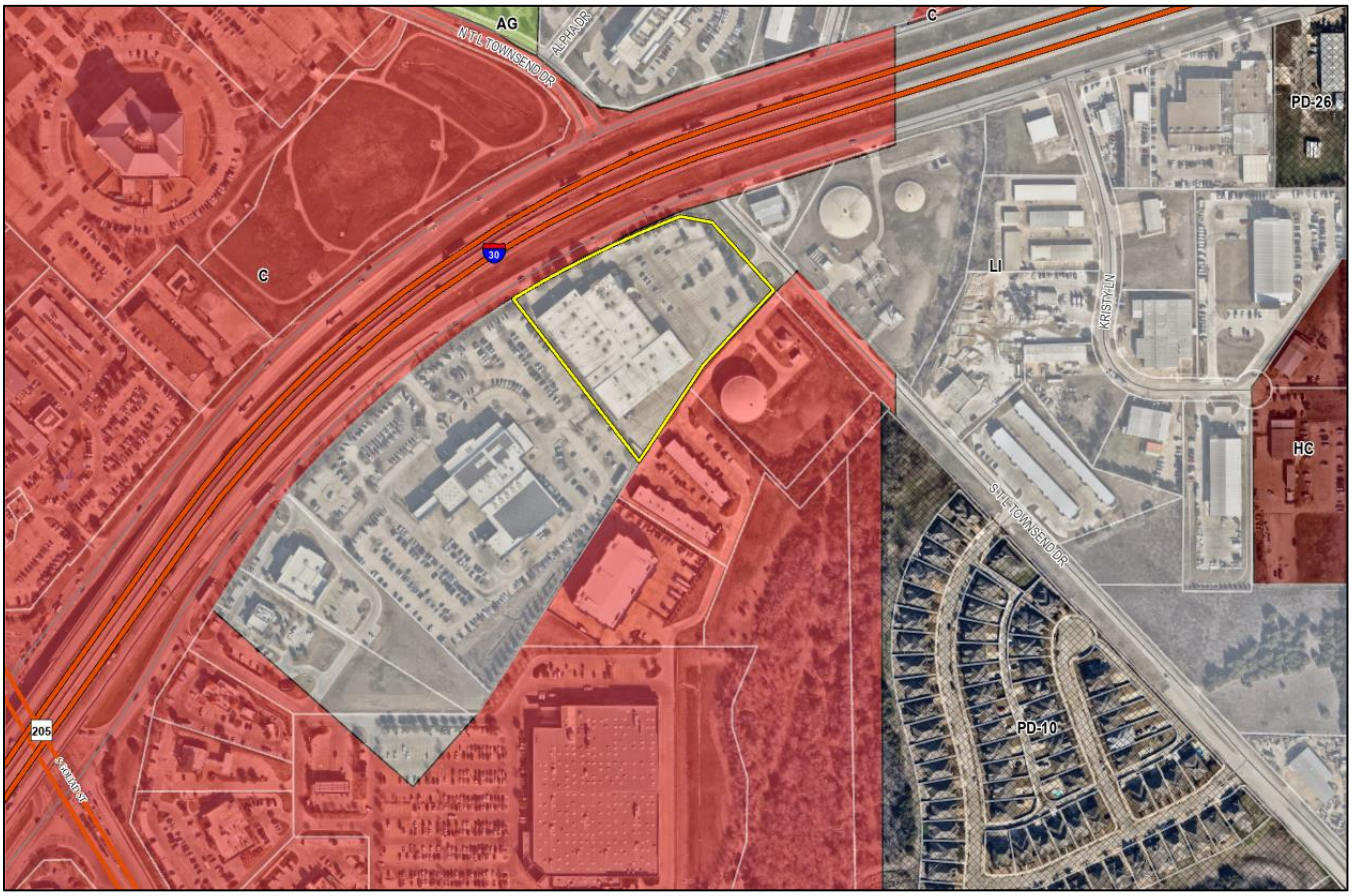
North: Directly north of the subject property are the eastbound lanes of the IH-30 Frontage Road, followed by the main lanes of IH-30, and the westbound lanes of the IH-30 Frontage Road. Following this is a 4.194-acre parcel of land (*i.e. Lot 1, Block A, Emerus Emergency Hospital Addition*) zoned Light Industrial (LI) District and developed with a *Hospital*.

South: Directly south of the subject property is a 3.0047-acre tract of land (*i.e. Tract 2-2 of the J. Cadle Survey, Abstract No. 65*) owned by the City of Heath. Also, south of the subject property is a 2.692-acre parcel of land (*i.e. Lot 5, Block A, Platinum Storage Addition*) developed with two (2) multi-tenant *Office Buildings*. Following this is a 2.857-acre parcel of land (*i.e. Lot 4, Block A, Platinum Storage Addition*) developed with a *Mini-Warehouse Facility*. South of this is a 20.2904-acre parcel of land (*i.e. Lot 1R, Block 1, Rockwall Centre Corners Addition*) developed with a wholesale grocery store (*i.e. Costco*). All of these properties are zoned Commercial (C) District.

East: Directly east of the subject property is T. L. Townsend Drive, which is identified as a A4D (*i.e. arterial, four [4] lane, divided roadway*) on the Master Thoroughfare Plan contained in the OURHometown Vision 2040 Comprehensive Plan. Following this is a 0.6010-acre parcel of land (*i.e. Lot 1, Block 1, Cullins Subdivison*) developed with a *Major Auto Repair Garage*. Beyond this is a 4.967-acre parcel of land (*i.e. Lot 4, Bodin Industrial Tract Addition*) owned by the City of Rockwall. Beyond this are several parcels of land developed with Light Industrial (LI) District land uses that make up the remainder of the Bodin Industrial Tract Subdivision. All of these properties are zoned Light Industrial (LI) District.

West: Directly west of the subject property is a 11.2560-acre parcel of land (*i.e. Lot 1, Block 1, Toyota of Rockwall Addition*) zoned Light Industrial (LI) District and developed with an *Automotive Dealership*. Following this are the eastbound lanes of the IH-30 Frontage Road, followed by the main lanes of IH-30, and the westbound lanes of the IH-30 Frontage Road.

MAP 1: LOCATION MAP
YELLOW: SUBJECT PROPERTY



CHARACTERISTICS OF THE REQUEST

On March 28, 2024, the applicant submit a building permit (*Case No. COM2024-1392*) detailing the proposed instillation of a 539.32 kW roof mounted solar panel system. Staff informed the applicant that proper screening would be required, otherwise a Specific Use Permit (SUP) would need to be requested. In response to this, on May 17, 2024 the applicant submitted an application requesting approval of a Specific Use Permit (SUP) to allow *Solar Energy Collector Panels* on the existing 74,660 SF *Indoor Commercial Amusement Facility*. Included with the applicant's submittal was a site plan, roof plan, photometric plan, and building elevations. Based on the provided roof plan, the *Solar Energy Collector Panels* will occupy the vast majority of the roof (*see Figure 1*). According to the building elevations, the solar panels will be 9.75-inches tall and there is a 1½-foot tall parapet on two (2) sides of the building. Given that the *Solar Energy Collector Panels* will be visible on two (2) sides of the building the applicant is requesting approval of the Specific Use Permit (SUP) in accordance with the Unified Development Code (UDC).



FIGURE 1. ROOF PLAN

CONFORMANCE WITH THE CITY'S CODES

According to Article 13, *Definitions*, of the Unified Development Code (UDC), *Solar Energy Collector Panels and Systems* are defined 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." In this case, the proposed *Solar Energy Collector Panels* meet this definition. According to the *Permissible Use Charts* contained in Article 04, *Permissible Uses*, of the Unified Development Code (UDC), *Solar Energy Collector Panels and Systems* are permitted as an accessory use in a Light Industrial (LI) District. The purpose of this requirement is to ensure solar instillations are integrated into the existing built environment or are incorporated as only one (1) component in a new development. In addition, Article 04 establishes several conditional land use standards that dictate how *Solar Energy Collector Panels* may be established on non-residential properties. More specifically on flat roofs *Solar Energy Collector Panels* must be screened, where "(t)he height of such screening, at the minimum, shall be the height of the *Solar Energy Collector Panel*." In this case, the proposed *Solar Energy Collector Panels* are 9.75-inches tall and the existing parapet is 1½-feet tall and is only located on a portion of the building. The panels will be fully visible from the southwest and southeast sides of the building. Given that the applicant does not meet this conditional land use standard, they are requesting a Specific Use Permit (SUP) in accordance with Subsection 02.03(K)(7)(c)(8), of Article 04, of the Unified Development Code (UDC).

OURHOMETOWN VISION 2040 COMPREHENSIVE PLAN

According to the *Future Land Use Plan* contained in the OURHometown Vision 2040 Comprehensive Plan, the subject property is situated within the *IH-30 Corridor District* and is designated for *Special Commercial Corridor* land uses. This land use designation is defined as being "…intended to provide an area for commercial/retail and regional commercial/retail activity centers that are intended to support and serve the entire region…" According to the *District Strategies* for the *IH-30 Corridor District* properties designated for *Special Commercial Corridor* land uses "…will continue to be the City's primary retail corridor in the future…" and "…large commercial centers should incorporate green space or open space at the center of the development that can be used to provide amenity or break up large parking fields." In this case, the *Indoor Commercial Amusement Facility*

is existing on the subject property. Given this, the applicant is not changing the conformance of the subject property to the OURHometown Vision 2040 Comprehensive Plan

STAFF ANALYSIS

The documents provided by the applicant for their Specific Use Permit (SUP) request generally meet the requirements outlined within the Unified Development Code (UDC), with the exception of the *Solar Energy Collector Panel* screening. Based on the building elevations provided by the applicant, the proposed *Solar Energy Collector Panels* will be screened on the northeast, northwest, and a portion of the southwest side of the building. Staff should note, that the northeast and northwest sides of the building are the sides that face E. IH-30 and T. L. Townsend Drive. Given this, the *Solar Energy Collector Panels* should be mostly screened from the adjacent roadways. With that being said, the *Solar Energy Collector Panels* will still have limited visibility from E. IH-30 and the eastbound IH-30 Frontage Road, due to the curvature of the roadways; however, the trees within the landscape buffers along E. IH-30 should mitigate the majority of this visibility. With this being said, a request for a Specific Use Permit (SUP) is a discretionary decision for the City Council pending a recommendation from the Planning and Zoning Commission.

NOTIFICATIONS

On May 22, 2024, staff mailed 25 notices to property owners and occupants within 500-feet of the subject property. There are no Homeowner's Associations (HOA's)/Neighborhood Associations 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 drafted, staff had received one (1) notice in favor 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)* to allow *Solar Energy Collector Panels* on the subject property, 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) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

  (B) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing

  (C) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

(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 June 25, 2024, the Planning and Zoning Commission approved a motion to recommend approval of the SUP by a vote of 6-0, with a vacant seat.

DEVELOPMENT APPLICATION

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

STAFF USE ONLY
PLANNING & ZONING CASE NO. Z2024-025

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	1290 I-30 Rockwall TX 75087				
SUBDIVISION		LOT		BLOCK	
GENERAL LOCATION	Townsend Dr. & I-30 Frontage rd				

ZONING, SITE PLAN AND PLATTING INFORMATION [PLEASE PRINT]

CURRENT ZONING	LI		CURRENT USE	CTE Entertainment LP	
PROPOSED ZONING	LI		PROPOSED USE	Solar	
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	
CONTACT PERSON	Justin Ripp	CONTACT PERSON	Teshia Brown
ADDRESS	1290 E I-30	ADDRESS	4801 Freidrich LN. Ste 109
CITY, STATE & ZIP	Rockwall, TX 75087	CITY, STATE & ZIP	Austin, TX 78744
PHONE	972-839-8196	PHONE	940-594-9718
E-MAIL	justin@elevatedvg.com	E-MAIL	teshiabrown@freedomsolarpower.com

NOTARY VERIFICATION [REQUIRED]

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Justin Ripp [*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 $ 215 *TO COVER THE COST OF THIS APPLICATION, HAS BEEN PAID TO THE CITY OF ROCKWALL ON THIS THE* 16 *DAY OF* May *20* 24 *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."*

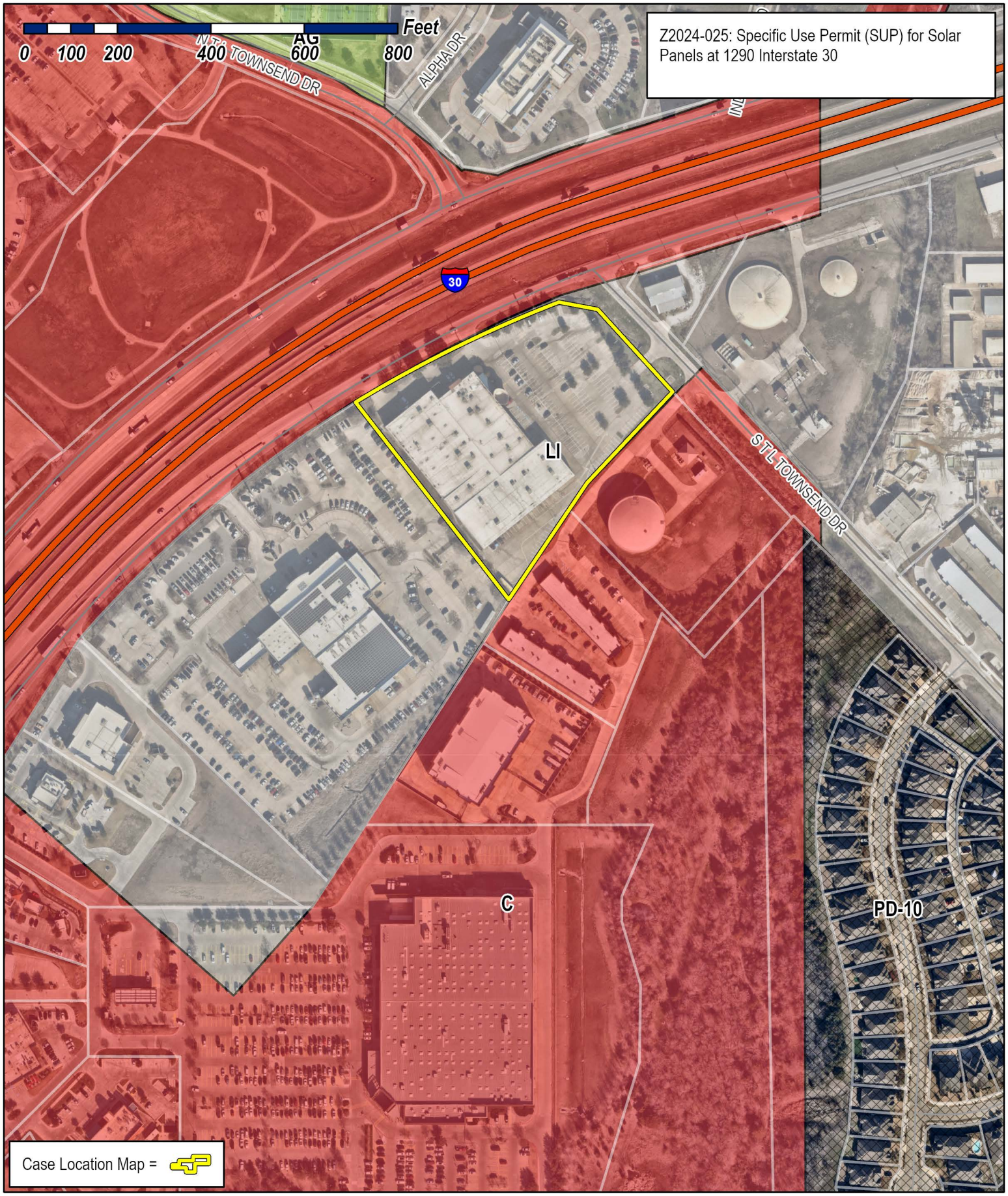
GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS THE 16 *DAY OF* May *20* 24

OWNER'S SIGNATURE

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES

JARED FARMER
Notary Public, State of Texas
Comm. Expires 09-11-2026
Notary ID 131718186



City of Rockwall

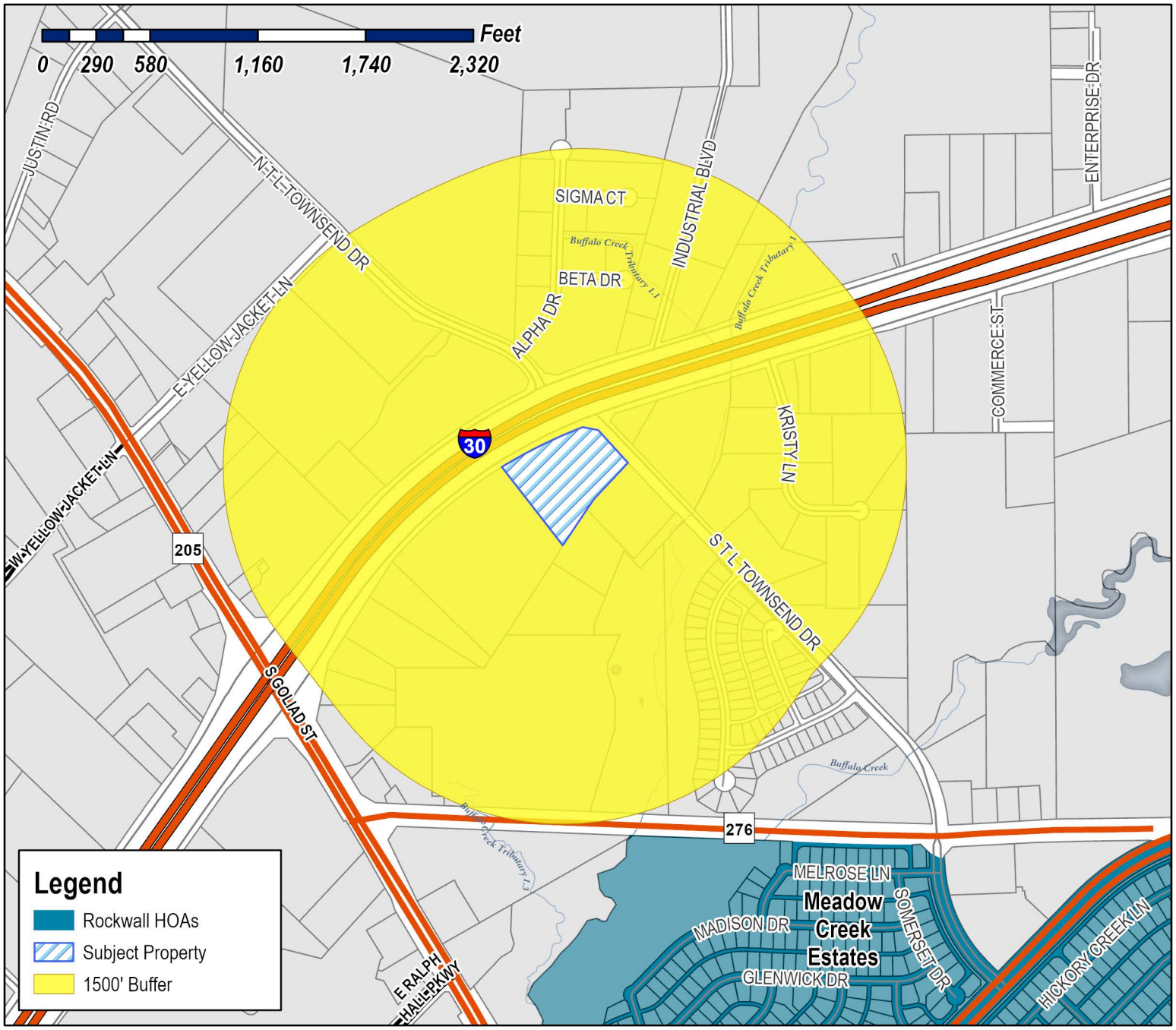
Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75087
(P): (972) 771-7745
(W): www.rockwall.com

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.

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Case Number: Z2024-025
Case Name: SUP for Solar Panels
Case Type: Zoning
Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30

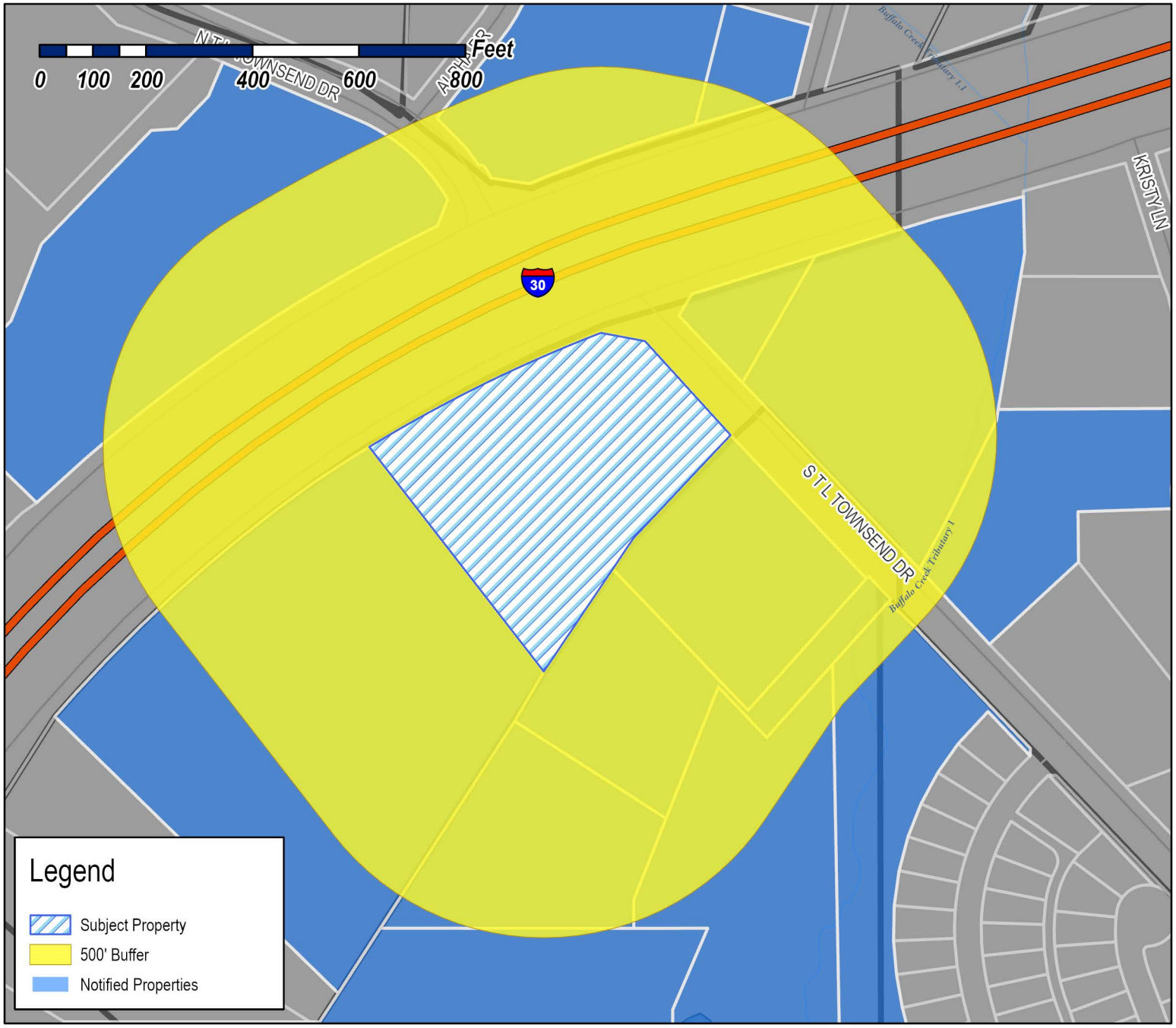


Date Saved: 5/17/2024
For Questions on this Case Call (972) 771-7745

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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Case Name: SUP for Solar Panels
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Zoning: Light Industrial (LI) District
Case Address: 1290 Interstate 30



Date Saved: 5/17/2024
For Questions on this Case Call: (972) 771-7745

RESIDENT
S T L TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
T L TOWNSEND
ROCKWALL, TX 75087

RESIDENT
TOWNSEND DR
ROCKWALL, TX 75087

MCCALLUM V LLC
1 SOAPBERRY LN
ROCKWALL, TX 75087

ROCKWALL COUNTY
1101 RIDGE RD
STE 105
ROCKWALL, TX 75087

RESIDENT
1225 HWY 276
ROCKWALL, TX 75087

RESIDENT
1245 HWY276 DR
ROCKWALL, TX 75087

JACKSON AUTOMOTIVE REAL ESTATE INV LLC
1250 E INTERSTATE 30
ROCKWALL, TX 75087

RESIDENT
1290 I30
ROCKWALL, TX 75087

RESIDENT
1301 I30
ROCKWALL, TX 75087

RESIDENT
1401 E I30
ROCKWALL, TX 75087

SARO PARTNERS LLC
1450 T L TOWNSEND
ROCKWALL, TX 75032

RESIDENT
1460 S TOWNSEND DR
ROCKWALL, TX 75087

RESIDENT
1480 S T L TOWNSEND DR
ROCKWALL, TX 75087

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

MOTA SAMUEL
1557 TROWBRIDGE CIR
ROCKWALL, TX 75032

PRITCHARD DONNA CULLINS &
1610 SHORES BLVD
ROCKWALL, TX 75087

HTA ROCKWALL MEDICAL CENTER LLC
16435 NORTH SCOTTSDALE ROAD SUITE 320
SCOTTSDALE, AZ 85254

RESIDENT
1975 ALPHA RD
ROCKWALL, TX 75087

CITY OF HEATH
200 LAURENCE DRIVE
HEATH, TX 75032

RESIDENT
2010 KRISTY LN
ROCKWALL, TX 75087

CTE PHASE I LP
2266 LAFAYETTE LNDG
ROCKWALL, TX 75032

REDI MIX LLC
331 N MAIN STREET
EULESS, TX 76039

MSC ROCKWALL LLC
725 PARK CENTER DRIVE
MATTHEWS, NC 28105

COSTCO WHOLESALE CORP
999 LAKE DR
ISSAQUAH, WA 98027

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:

Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector Panels
Hold a public hearing to discuss and consider a request by Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for Solar Energy Collector Panels on the roof of an existing Commercial Indoor Amusement facility (i.e. Shenanigans) situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, 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, June 11, 2024 at 6:00 PM*, and the City Council will hold a public hearing on *Monday, June 17, 2024 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:

Henry Lee
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, June 17, 2024 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. Z2024-025: Specific Use Permit (SUP) for Solar Energy Collector 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

RECEIVED
MAY 24 2024
BY: .....

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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.

I think they should be entitled to pursue if its on their building & property and does not infringe on the rights of other property owners.

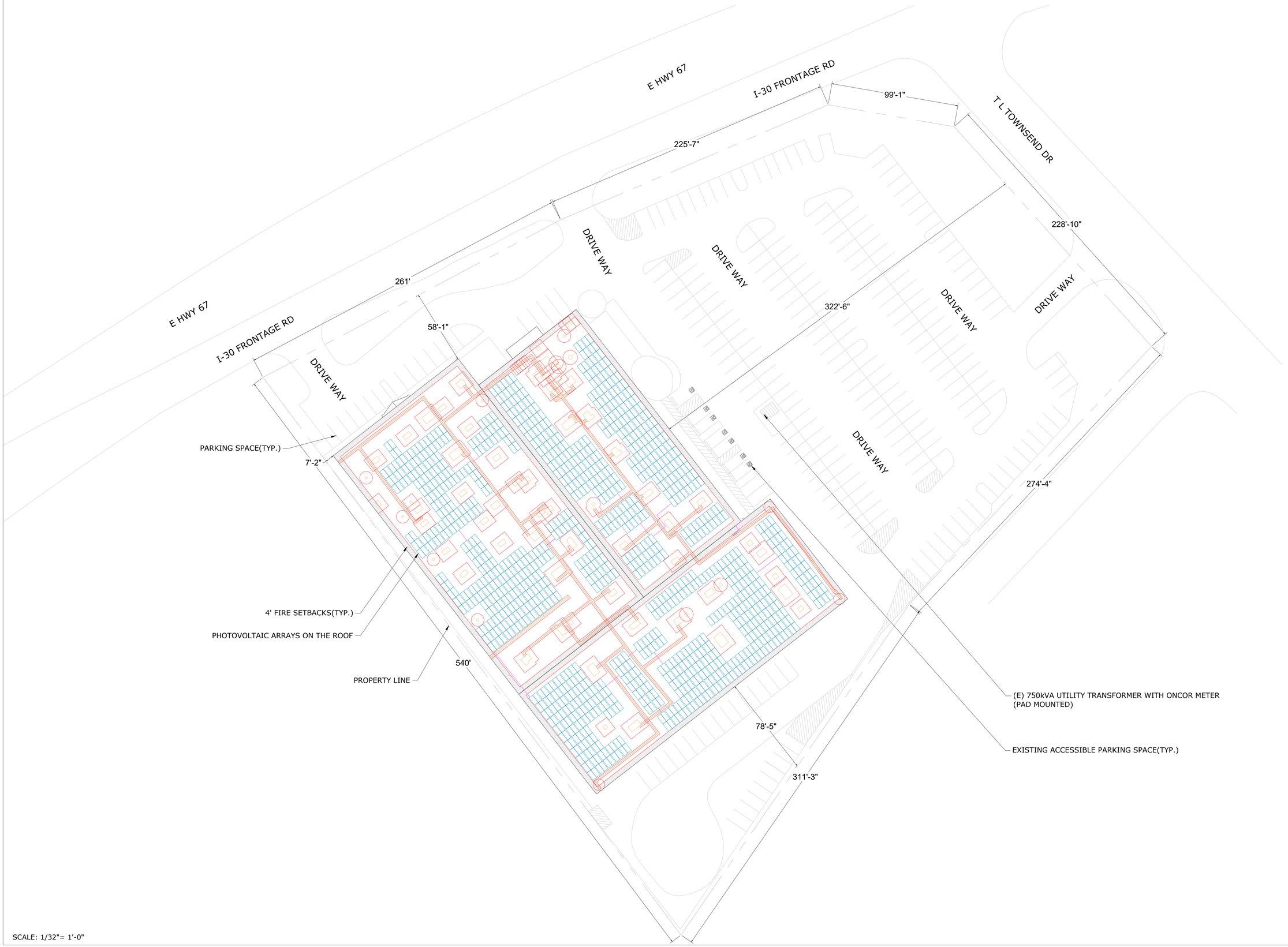
Name: Signature Staff Resources LLC

Address: 1460 TL Townsend Dr #104 Rockwall TX 75032

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SITE PLAN : DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW



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

FREEDOM™ SOLAR POWER

4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

STATE OF TEXAS
JORDNA F. HANLEY
133867
LICENSED PROFESSIONAL ENGINEER

JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP
COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

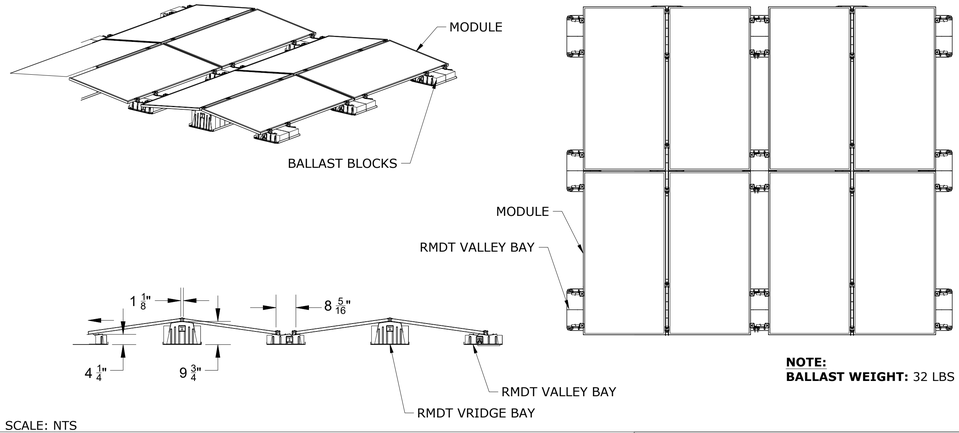
ILLUMINE i

SITE PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	A-01

ATTACHMENT DETAILS - UNIRAC RMDT



SCALE: NTS

NOTE:
BALLAST WEIGHT: 32 LBS

BILL OF MATERIALS

PART NUMBER	DESCRIPTION	QTY	UNIT
Q.PEAK DUO XL-G10.3/BFG 485W	MODULE	1112	QTY.
N/A	BALLAST BLOCK	1658	QTY.
310802	RMDT VALLEY BAY	813	QTY.
310826	RMDT MID CLAMP 32-35MM	1324	QTY.
310820	RMDT END CLAMP 30-40MM	2648	QTY.
310860	KIT 1/4-20 CLIP ON NUT SS 18-8	3972	QTY.
310801	RMDT RIDGE BAY	662	QTY.
008115M	MLPE TIGER CLIP	1112	QTY.

GENERAL STRUCTURAL NOTES

1.ALL EQUIPMENTS SHALL BE INSTALLED PER MANUFACTURER INSTALLATION AND OPERATIONS MANUAL REQUIREMENTS.
2.PRIOR TO COMMENCEMENT OF WORK OR FABRICATION OF COMPONENTS, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS,AND ELEVATIONS OF THE EXISTING CONSTRUCTION.CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE FIELD -VERIFIED CONDITIONS, DIMENSIONS,AND ELEVATION AND THOSE INDICATED ON THE DRAWINGS.
3.ALL THE CONSTRUCTION SHALL COMPLY WITH REQUIREMENTS OF 2021 EDITION OF THE BUILDING CODE.

SOLAR RACK COMPONENTS:

1. FOLLOW MANUFACTURER'S INSTALLATION FOR INSTALLATION OF THE SOLAR COMPONENTS,INCLUDING MODULE CLAMPS,L-FEET,BRACKETS MECHANICAL ATTACHMENTS,AND HARDWARE.

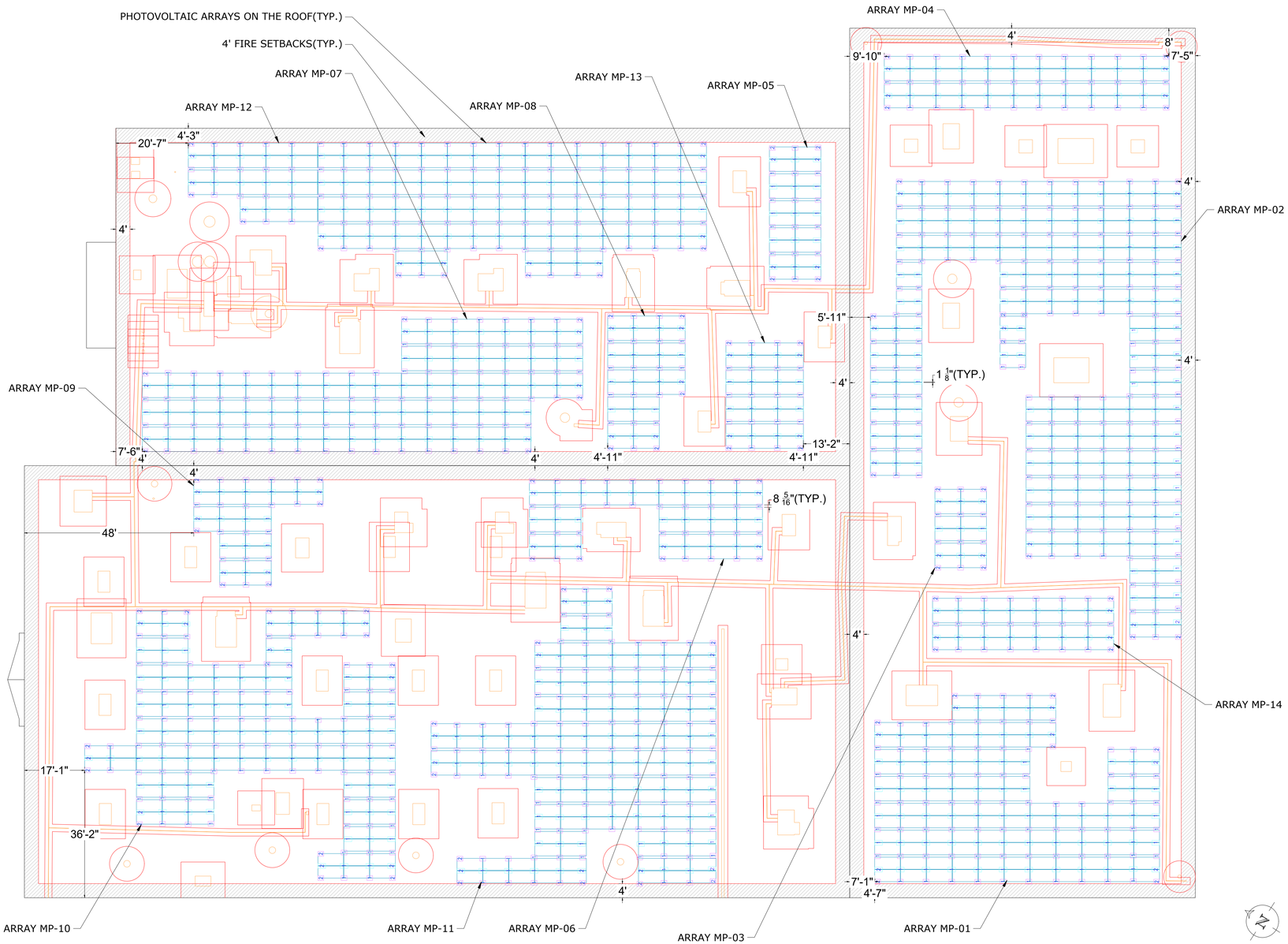
LEGEND:

1 STANDARD CORNER BAY WITH CMU BLOCK COUNT

2 SUPPLEMENTAL BAY WITH CMU BLOCK COUNT

SITE INFORMATION - WIND SPEED: 105 MPH, EXPOSURE: B AND SNOW LOAD: 5 PSF

SR. NO	AZIMUTH	MODULE TILT	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT
ARRAY MP-01	52°&232°	8°	120	3372	TPO	UNIRAC RMDT
ARRAY MP-02	52°&232°	8°	222	6211	TPO	UNIRAC RMDT
ARRAY MP-03	52°&232°	8°	12	341	TPO	UNIRAC RMDT
ARRAY MP-04	52°&232°	8°	44	1265	TPO	UNIRAC RMDT
ARRAY MP-05	52°&232°	8°	20	562	TPO	UNIRAC RMDT
ARRAY MP-06	52°&232°	8°	42	1201	TPO	UNIRAC RMDT
ARRAY MP-07	52°&232°	8°	122	3449	TPO	UNIRAC RMDT
ARRAY MP-08	52°&232°	8°	26	732	TPO	UNIRAC RMDT
ARRAY MP-09	52°&232°	8°	24	686	TPO	UNIRAC RMDT
ARRAY MP-10	52°&232°	8°	124	3500	TPO	UNIRAC RMDT
ARRAY MP-11	52°&232°	8°	148	4155	TPO	UNIRAC RMDT
ARRAY MP-12	52°&232°	8°	156	4402	TPO	UNIRAC RMDT
ARRAY MP-13	52°&232°	8°	24	677	TPO	UNIRAC RMDT
ARRAY MP-14	52°&232°	8°	28	805	TPO	UNIRAC RMDT



FREEDOM SOLAR POWER
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SNOW LOAD:5PSF MINIMUM
TEMPERATURE: -8°C
MAXIMUM
TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

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32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINE i

STRUCTURAL PLAN

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | S-01

STRINGING DIAGRAM:

STRING ID LEGEND

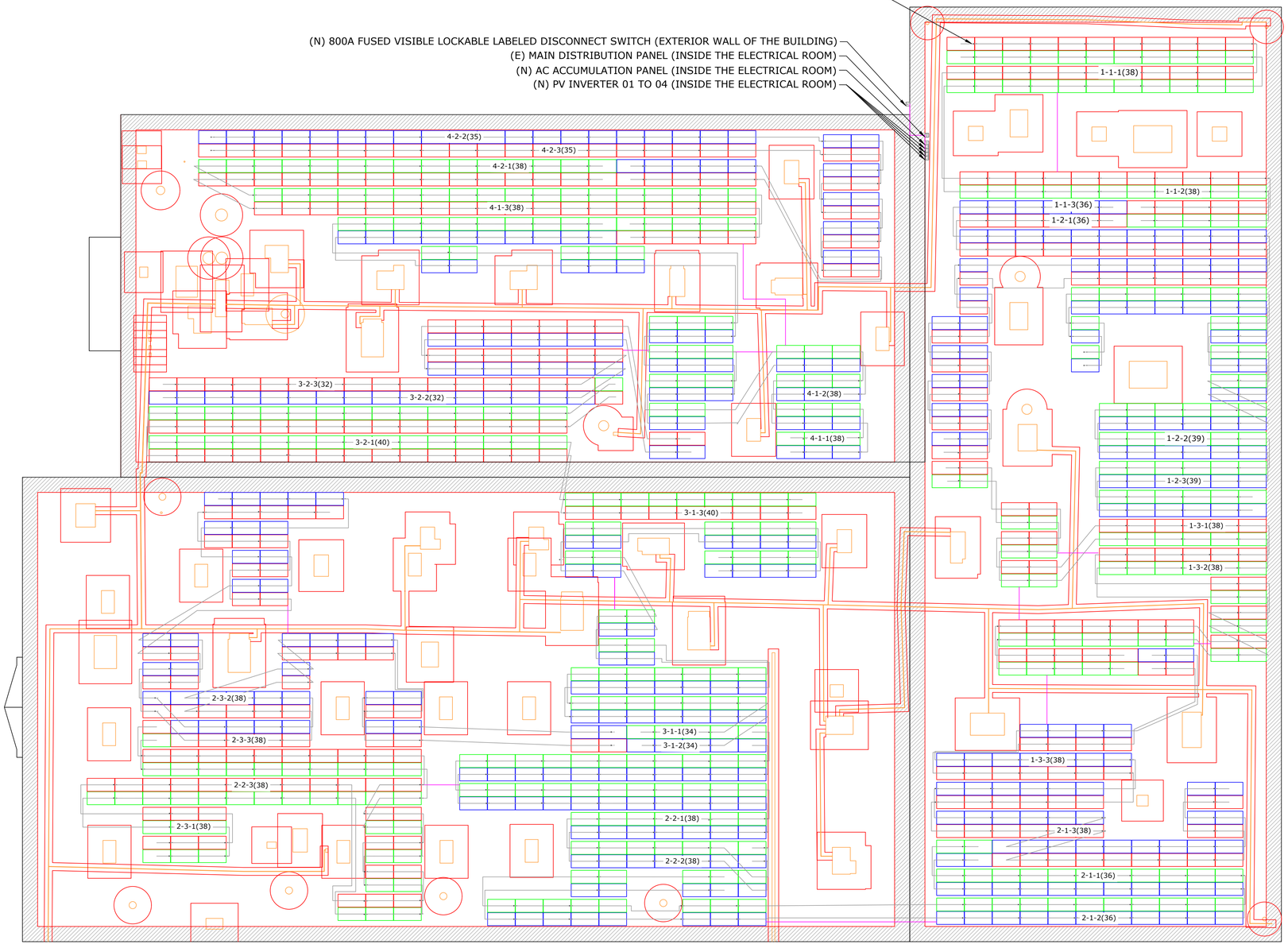
STR 1-1-1(X)

- # OF MODULES
- STRING ID
- UNIT #(1,2,3)
- INVERTER ID#

(E) 750kVA UTILITY TRANSFORMER WITH ONCOR METER (PAD MOUNTED)

STRING STARTS HERE

(N) 800A FUSED VISIBLE LOCKABLE LABELED DISCONNECT SWITCH (EXTERIOR WALL OF THE BUILDING)
(E) MAIN DISTRIBUTION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) AC ACCUMULATION PANEL (INSIDE THE ELECTRICAL ROOM)
(N) PV INVERTER 01 TO 04 (INSIDE THE ELECTRICAL ROOM)



SCALE:1"=15'-0"

WIRING AND WIRING METHODS:

1. EXPOSED PV SOLAR MODULE WIRING AND PV SOURCE CIRCUITS TO BE UV RESISTANT 2,000V PV WIRE, 90° C, AND RATED FOR WET CONDITIONS.
2. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED IN A NEAT WORKMAN LIKE MANNER TO PREVENT CHAFFING, SWINGING, AND EXCEEDING MINIMUM BEND RADIUS WITH PROPER MECHANICAL SUNLIGHT RESISTANT MEANS AND ROUTED TO AVOID DIRECT EXPOSURE TO SUNLIGHT AT ALL TIMES.
3. ALL FIELD WIRING THAT IS NOT COLOR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND.
4. FLEXIBLE METAL CONDUIT IS SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS OR CONDUIT FITTING) AND NO MORE THAN 48 INCHES APART.
5. LIQUID TIGHT FLEXIBLE METAL AND NON-METALLIC CONDUIT IS SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES APART.
6. PVC CONDUIT AND FITTINGS SHALL NOT BE USED ON ROOFTOP CONDITIONS OR EXPOSED TO DIRECT SUNLIGHT.WHEN USED IN ACCEPTABLE LOCATION CONDUIT SHALL BE SCHEDULE 80 UV RESISTANT UNLESS NOTED OTHERWISE.
7. FUSES AND WIRES SUBJECT TO TEMPERATURES CONDITIONS GREATER THAN 100°F OR TRANSFORMER INRUSH CURRENT SHALL BE SIZED ACCORDINGLY.
8. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY, CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY A PARTITION OR ARE CONNECTED TOGETHER.
9. ALL TERMINATIONS SHALL HAVE ANTI-OXIDANT COMPOUND AND BE TORQUED PER DEVICE LISTING, OR MANUFACTURER'S RECOMMENDATIONS.
10. SPLIT BOLTS /SPLICES / CONNECTORS ARE PERMITTED ON THE AC CONDUCTORS AND SHALL BE INSULATED WITH APPROVED MEANS. SPLICES ON THE DC CONDUCTORS IS NOT PERMITTEDIN ANY LOCATION.
11.NO PVC CONDUIT ALLOWED ON ROOF, UNLESS OPEN ENDED WIRE MANAGEMENT <10'.

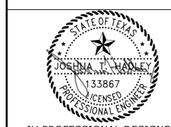
INVERTER 1, 120kW			INVERTER 2, 120kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
1-1-1	38	19	2-1-1	36	18
1-1-2	38	19	2-1-2	36	18
1-1-3	36	18	2-1-3	38	19
UNIT 02			UNIT 02		
1-2-1	36	18	2-2-1	38	19
1-2-2	39	20	2-2-2	38	19
1-2-3	39	20	2-2-3	38	19
UNIT 03			UNIT 03		
1-3-1	38	19	2-3-1	38	19
1-3-2	38	19	2-3-2	38	19
1-3-3	38	19	2-3-3	38	19

INVERTER 3, 80kW			INVERTER 4, 80kW		
UNIT 01			UNIT 01		
STRING	MOD. QTY.	OPT. QTY.	STRING	MOD. QTY.	OPT. QTY.
3-1-1	34	17	4-1-1	38	19
3-1-2	34	17	4-1-2	38	19
3-1-3	40	20	4-1-3	38	19
UNIT 02			UNIT 02		
3-2-1	40	20	4-2-1	38	19
3-2-2	32	16	4-2-2	35	18
3-2-3	32	16	4-2-3	35	18
			GRAND TOTAL	1112	558

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freedomsolarpower.com

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MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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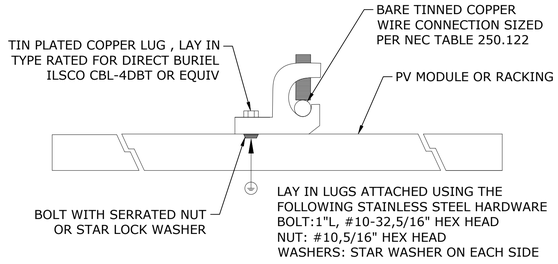
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STRINGING MAP

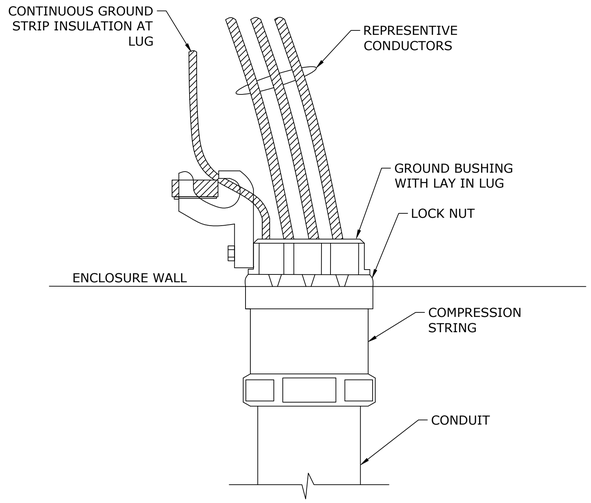
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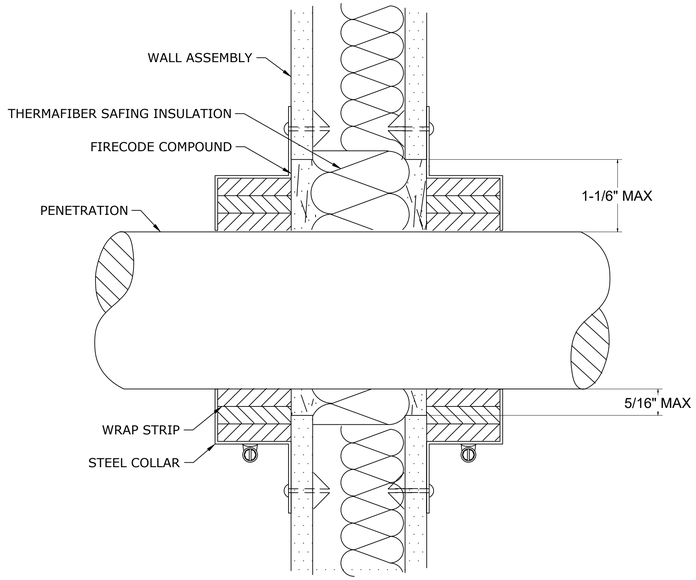
GROUND LUG DETAIL:



CONDUIT BODY GROUNDING DETAIL:

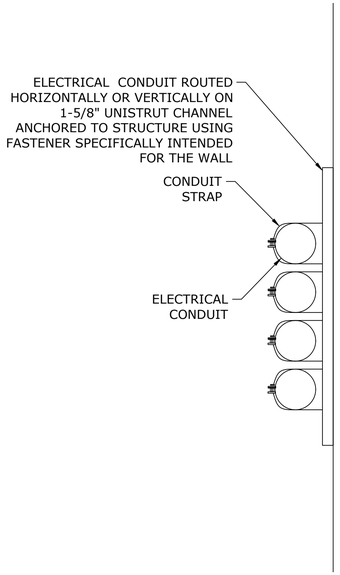


FIRE WALL PENETRATION DETAIL:

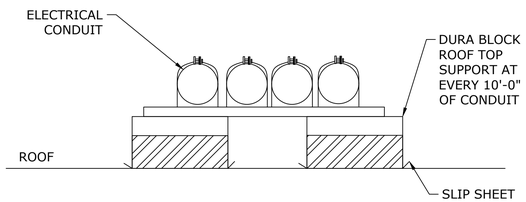


SCALE: NTS

CONDUIT WALL ANCHORING:



TYPICAL DURA-BLOCK CONDUIT SUPPORT DETAIL:



NOTE: DETAIL DRAWINGS ARE FOR REFERENCE ONLY

GROUNDING - SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION:

1.ONLY ONE CONNECTION TO DC CIRCUITS AND AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (REFERENCED TO THE SAME POINT).
2.EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING ELECTRODE CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO THE GROUNDING CONNECTION POINT AS PRACTICABLE AND A MINIMUM NUMBER OF TURNS.
3.TO ENSURE PROPER GROUNDING, NON-CURRENT CARRYING METAL PARTS SHALL BE INSTALLED, NOTING THAT PAINT AND FINISH SHALL BE PROPERLY REMOVED WHERE IT MAY INSULATE AN ENCLOSURES BONDING CONNECTION.APPLY NO-LOX OR OTHER SIMILAR ANTI-OXIDANT COMPOUND TO EXPOSED SURFACES.
4.THE CONNECTION TO THE MODULE OF THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUND TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT.
5.GROUNDING SYSTEM COMPONENTS SHALL BE APPROVED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC. GROUNDING DEVICES EXPOSED TO THE ENVIRONMENT SHALL BE RATED FOR DIRECT BURIAL.
6.UNDERGROUND OR INACCESSIBLE CONNECTIONS OF GROUNDING CONDUCTORS SHALL ONLY BE MADE VIA EXO-THERMIC WELDS. THE USE OF MECHANICAL CONNECTIONS ARE ACCEPTABLE FOR ACCESSIBLE ABOVE GROUND LOCATIONS.
7.ALL METALLIC CONDUITS SHALL BE INSTALLED AND TERMINATED WITH INSULATED GROUND BUSHINGS.

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
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OPTIMIZER:
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JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 1044372000636390O
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

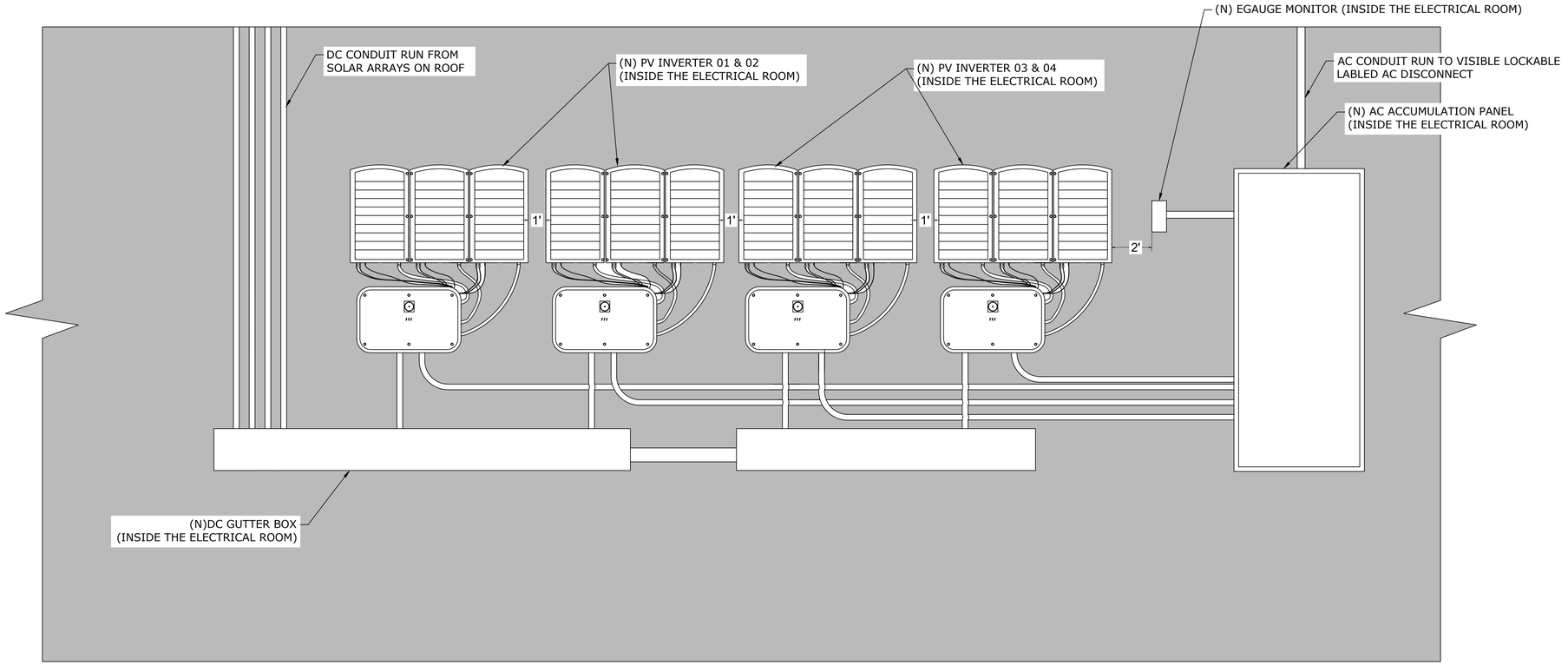
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ELECTRICAL MOUNTING DETAILS

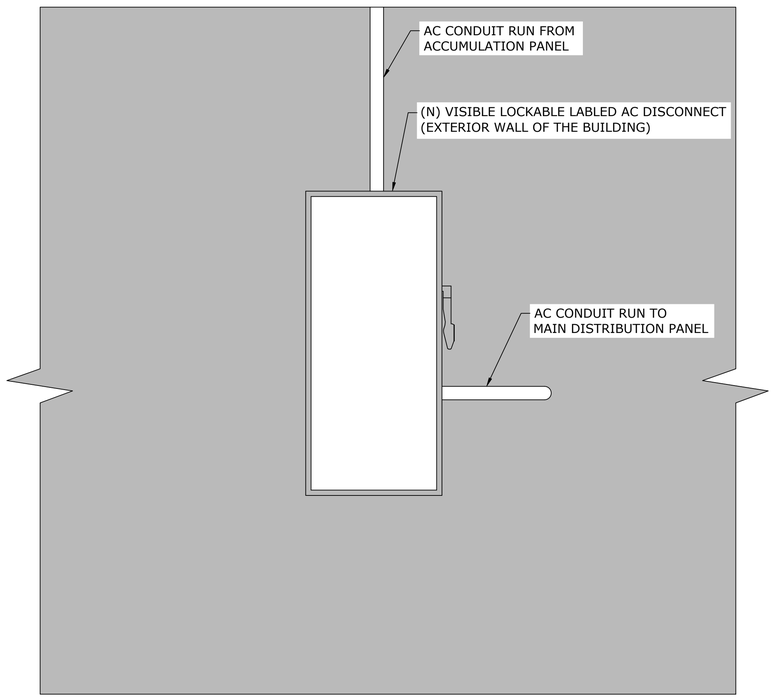
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-02

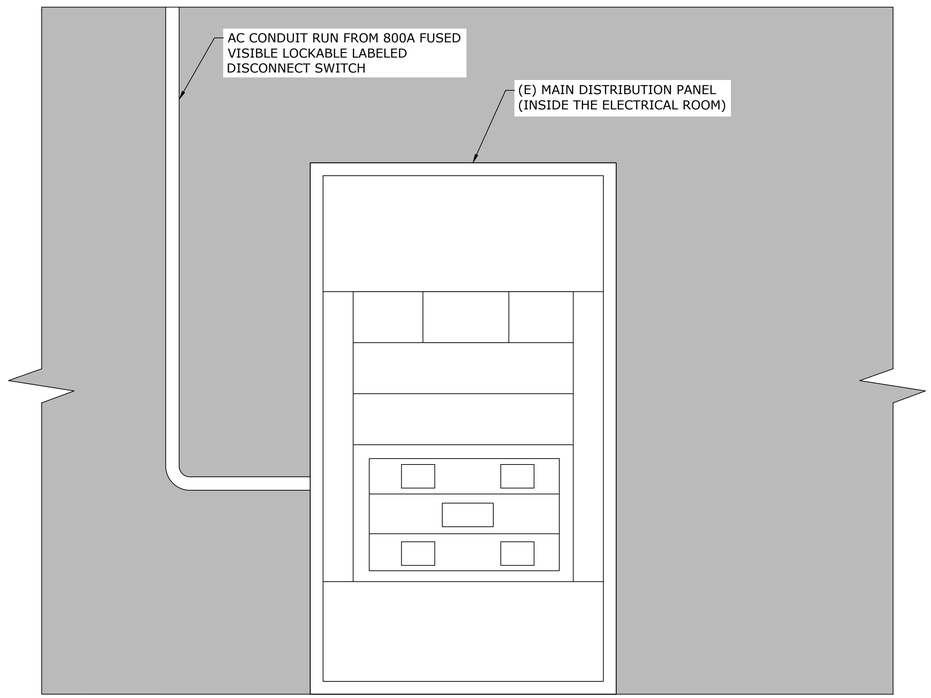
ELECTRICAL EQUIPMENT ELEVATION VIEW :



SCALE: NTS



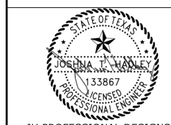
SCALE: NTS



FREEDOM™ SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C



JH PROFESSIONAL DESIGNS
TX FIRM: F-26320
SEALED: 05/16/2024

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EQUIPMENT ELEVATION VIEW

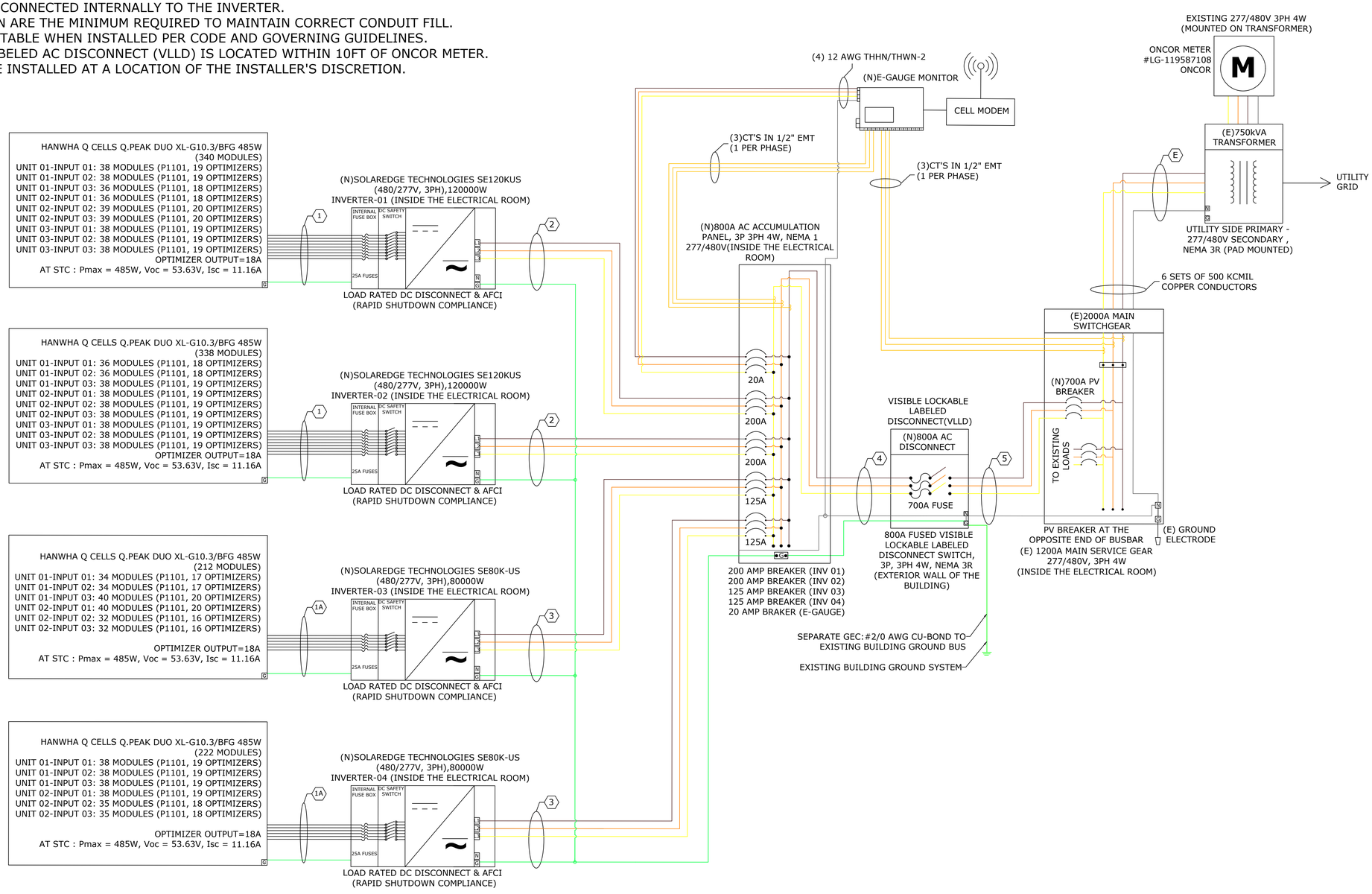
DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	E-03

ELECTRICAL DIAGRAM: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

NOTE:

1. TYPICALLY EACH SOLAREDGE P1101 POWER OPTIMIZER IS CONNECTED TO TWO MODULES.
2. EACH SOLAREDGE P1101 POWER OPTIMIZER IS RAPID SHUTDOWN COMPLIANT.
3. ALL DC FUSES SHOWN ARE CONNECTED INTERNALLY TO THE INVERTER.
4. ALL CONDUIT SIZES SHOWN ARE THE MINIMUM REQUIRED TO MAINTAIN CORRECT CONDUIT FILL.
5. LARGER CONDUIT IS ACCEPTABLE WHEN INSTALLED PER CODE AND GOVERNING GUIDELINES.
6. THE VISIBLE LOCKABLE, LABELED AC DISCONNECT (VLLD) IS LOCATED WITHIN 10FT OF ONCOR METER.
7. MONITORING DEVICE TO BE INSTALLED AT A LOCATION OF THE INSTALLER'S DISCRETION.



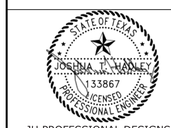
CONDUIT SCHEDULE

TAG ID	NO OF PARALLEL FEEDER	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	1	1-1/4" EMT 1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
1A	1	1-1/4" EMT 1-1/4" EMT	(6) 10 AWG PV WIRE 2kV (6) 10 AWG PV WIRE 2kV	NONE	(1) 6 AWG THHN/THWN-2
2	1	2" EMT	(3) 3/0 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
3	1	1-1/4" EMT	(3) 1 AWG THHN/THWN-2	NONE	(1) 6 AWG THHN/THWN-2
4	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2	(1) 1/0 AWG THHN/THWN-2
5	2	3" EMT	(3) 500 KCMIL THHN/THWN-2	(1) 500 KCMIL THHN/THWN-2	NONE

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OPTIMIZER:
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TX FIRM: F-26320
SEALED: 05/16/2024

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ILLUMINEI

THREE LINE DIAGRAM

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:05/16/2024 | E-05

ELECTRICAL CALCULATION: DC SYSTEM SIZE: **539.32**kW, AC SYSTEM SIZE: **400.00**kW

OCPD CALCULATIONS:
MAIN PANEL RATING:2000A,
LINE SIDE INTERCONNECTION ALLOWABLE BACKFEED IS =2000A
OCPD CALCULATIONS: INVERTER OVERCURRENT PROTECTION= INVERTER O/P I X 1.25
=(144.3AX2)+(96.5AX2)X1.25=602.00A=>PV BREAKER/FUSE = 700A
TOTAL REQUIRED PV BREAKER/FUSE SIZE =>700A PV BREAKER/FUSE

ELECTRICAL CALCULATIONS:
SYSTEM INFO:
539.32 kW DC SYSTEM SIZE
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W MODULES
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
(558)SOLAREDGE P1101 POWER OPTIMIZER

SYSTEM CHARACTERISTICS:(INV 01 & 02)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 144.75A
ISC - MAXIMUM CIRCUIT CURRENT = 144.75A

SYSTEM CHARACTERISTICS:(INV 03 & 04)
VMP - MAXIMUM POWER POINT VOLTAGE = 850V
VOC - MAXIMUM INVERTER SYSTEM VOLTAGE = 1000V
IMP - RATED MAXIMUM POWER-POINT CURRENT = 96.50A
ISC - MAXIMUM CIRCUIT CURRENT = 96.50A

DC WIRE SIZING (TAG 1):
MAX CIRCUIT CURRENT = OPTIMIZER MAX OUTPUT X HIGH IRRADIANCE [NEC 690.8(A)(1)] X 1.25 [NEC 690.53]
=18A X 1 X 1.25= 22.5A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 0.8 X 40A = 29.12A
TERMINAL RATING, [PER 110.14(C)] - 10 AWG , 75°C RATED = 35A
30A ≥ 22.5A SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 29.12A ≥ 18A, AND **10 AWG** IS SUFFICIENT.

AC WIRE SIZING (TAG 2):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 144.3A X 1.25 = 180.38A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 225A = 204.75A
TERMINAL RATING, [PER 110.14(C)] - 3/0 AWG , 75°C RATED = 200A
200A ≥ 180.38A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 204.75A ≥ 144.3A, AND **3/0 AWG** IS SUFFICIENT.
INVERTER OVER CURRENT PROTECTION = INVERTER MAX OUTPUT CURRENT X 1.25
= 144.3A X 1.25 = 200A --> 200A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 3):
MAX AC OUTPUT CURRENT = MAX INVERTER OUTPUT X 1.25 [PER NEC 690.52] = 96.5A X 1.25 = 120.63A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 145A = 131.95A
TERMINAL RATING, [PER 110.14(C)] - 1 AWG , 75°C RATED = 130A
130A ≥ 120.63A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 131.95A ≥ 96.5A, AND **1 AWG** IS SUFFICIENT.
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X CONTINUOUS LOAD
= 96.5A X 1.25 = 125A --> 125A OVERCURRENT PROTECTION

AC WIRE SIZING (TAG 4 & 5): (NO OF PARALLEL FEEDEER =2)
OVER CURRENT PROTECTION = MAX OUTPUT CURRENT X 1.25
=(144.3A X 2)+(96.5A X 2)X 1.25 =602.00A/2 = 301A
ADJUSTED CONDUCTOR AMPACITY = (HIGH TEMP) [PER TABLE 310.15(B)(1)] X (CONDUIT FILL) [PER TABLE 310.15(C)(1)]
X (CONDUCTOR AMPACITY) (PER TABLE 310.16) = 0.91 X 1 X 430A = 391.30A
TERMINAL RATING, [PER 110.14(C)] - 500 KCMIL , 75°C RATED = 380A
380A ≥ 301A, SO THE TERMINAL RATING GOVERNS THE CONDUCTOR SIZING
ALSO, 391.30A ≥ 240.8A, AND **500 KCMIL** IS SUFFICIENT.

NOTE:
1.THIS INSTALLATION IS TO BE CONSIDERED SUPERVISED.ALL NEW ADDITIONS AND ALTERATIONS TO ANY EQUIPMENT IDENTIFIED IN THIS DOCUMENT MUST BE MADE WITH ENGINEERING SUPERVISION AND ALL WORK MUST BE COMPLETED BY QUALIFIED PERSONNEL.
2.ALL EQUIPMENT AND TERMINALS MUST BE MINIMUM 75°C RATED.
3.ALL CONDUCTORS ARE COPPER, UNLESS OTHERWISE SPECIFIED.

MODULE SPECIFICATIONS	
MODEL	HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
MODULE POWER @ STC	485W
OPEN CIRCUIT VOLTAGE:**Voc**	53.63V
MAX POWER VOLTAGE:**Vmp**	45.63V
SHORT CIRCUIT CURRENT:**Isc**	11.16A
MAX POWER CURRENT:**Imp**	10.63A

INVERTER-01 & 02 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
POWER RATING	120000W
MAX OUTPUT CURRENT	144.3A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	144.75A
MAX DC VOLTAGE	1000V

OPTIMIZER CHARACTERISTICS	
MODEL	SOLAREDGE P1101 POWER OPTIMIZER
MAX INPUT VOLTAGE	125 VDC
MAX INPUT CURRENT	14.1 ADC
MAX OUTPUT CURRENT	18 ADC

INVERTER-03 & 04 SPECIFICATIONS	
MODEL	SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
POWER RATING	80000W
MAX OUTPUT CURRENT	96.5A
CEC WEIGHTED EFFICIENCY	98.5%
MAX INPUT CURRENT	96.5A
MAX DC VOLTAGE	1000V

VOLTAGE DROP CALCULATIONS:

DC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	OPTIMIZER CURRENT (IMP)	STRING VOLTAGE AT 2%DB (VMP)	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
MODULES	INVERTER 01	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	230	1.06%
MODULES	INVERTER 02	1	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	390	1.80%
MODULES	INVERTER 03	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	260	1.20%
MODULES	INVERTER 04	1A	EMT	18	850	1	C AWG 10	Cu	0.00124	0.001087802	200	0.92%
											MAX Vdrop	1.80%

3 PHASE AC VOLTAGE DROP CALCULATION

SOURCE	TERMINATION	TAG	CONDUIT TYPE	CURRENT	VOLTAGE	#SET OF PARALLEL CONDUCTOR	CONDUCTOR	CONDUCTOR MATERIAL	RESISTANCE AT 75 DEG C	RESISTANCE AT 2%DB	MAX CONDUTOR LENGTH(ft)	%V.DROP
INVERTER TO POI												
INVERTER 01	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 02	AC ACCUMULATION	2	EMT	144.3	480	1	L AWG 3/0	Cu	0.000082	0.000071935	10	0.04%
INVERTER 03	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
INVERTER 04	AC ACCUMULATION	3	EMT	96.5	480	1	L AWG 3/0	Cu	0.000082	7.19353E-05	10	0.03%
AC ACCUMULATION	AC DISCONNECT	4	EMT	481.6	480	1	I AWG 01	Cu	0.00016	0.000140362	25	0.61%
AC DISCONNECT	POI	5	EMT	481.6	480	2	R 500 KCMIL	Cu	0.000032	0.000028072	15	0.04%
											MAX Vdrop	0.84%
											TOTAL SYSTEM VDROP	2.64%

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MINIMUM TEMPERATURE: -8°C
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ELECTRICAL CALCULATION

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

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PLACARDS

1.

⚠ WARNING

ELECTRIC SHOCK HAZARD

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

INSTALLED ON: AC DISCONNECT, LOAD CENTERS, COMBINER PANELS, POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 690.13(B)

2.

WARNING:PHOTOVOLTAIC POWER SOURCE

INSTALLED ON: CONDUIT, RACEWAYS, AND J-BOXES (LABELED EVERY 10'). REFLECTIVE. MIN 3/8" WHITE TEXT ON BLACK BACKGROUND.
APPLICABLE CODE(S): NEC 690.31(D)(2)

3.

PHOTOVOLTAIC

DC DISCONNECT

INSTALLED ON: DC DISCONNECT(S)
APPLICABLE CODE(S): NEC 690.13(B)

INVERTER 1 & 2

4.

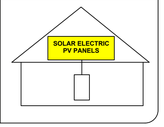
MAXIMUM DC VOLTAGE
1000 V
OF PV SYSTEM

INSTALLED ON: INVERTER
APPLICABLE CODE(S): NEC 690.53

5.

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



INSTALLED ON: WITHIN 3 FT OF SERVICE DISCONNECTING MEANS. MIN 3/8" BLACK TEXT ON YELLOW BACKGROUND & 3/16" BLACK TEXT ON WHITE BACKGROUND.
APPLICABLE CODE(S): NEC 690.56(C)

6.

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

INSTALLED ON:RAPID SHUTDOWN SWITCH
APPLICABLE CODE(S): NEC 690.56(C)(2)

7.

PHOTOVOLTAIC SYSTEM AC DISCONNECT SWITCH

RATED AC OPERATING CURRENT 481.6 AMPS AC
AC NOMINAL OPERATING VOLTAGE 480 VAC

INSTALLED ON: AC DISCONNECT(S), POINT OF INTERCONNECTION.
APPLICABLE CODE(S): NEC 690.54

8.

⚠ WARNING

DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

INSTALLED ON: POINT OF INTERCONNECTION
APPLICABLE CODE(S): NEC 705.12(C)

9.

DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL NO LOAD SHALL BE ADDED TO THIS PANEL

INSTALLED ON: COMBINER PANEL

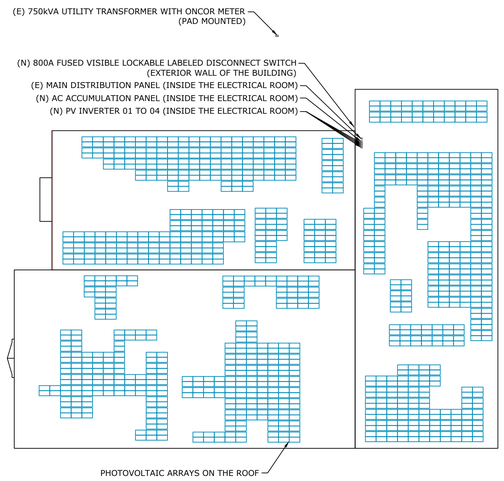
10.

FREEDOM™ SOLAR POWER

11.

WARNING: ⚠

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



1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.
PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.
FASTENERS APPROVED BY THE LOCAL JURISDICTION

LABEL LOCATION
SERVICE PANEL
PER CODE: NEC 705.10

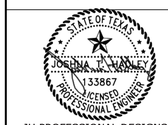
KEY	QTY.	LOCATION
1.	3	AC DISCONNECT, LOAD CENTER, POINT OF INTERCONNECTION
2.	10	CONDUIT
3.	4	DC DISCONNECTS
4.	4	INVERTER
5.	6	AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
6.	4	INVERTER
7.	2	AC DISCONNECT, POINT OF INTERCONNECTION
8.	1	POINT OF INTERCONNECTION
9.	1	COMBINER PANEL
10.	1	POINT OF INTERCONNECTION
11.	1	POINT OF INTERCONNECTION

NOTES: ROOFTOP TRIP HAZARDS ON ROOF SHALL BE IDENTIFIED WITH REFLECTIVE MATERIAL. MARKING CONTENT AND FORMAT RED BACKGROUND WHITE LETTERING MINIMUM 3/8"LETTER HEIGHT ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD. WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT(DURABLE ADHESIVE MATERIALS MUST MEET THIS REQUIREMENT).

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COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

ELECTRICAL PLACARDS

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED | REV:B

DATE:03/22/2024 | E-06

powered by Q.ANTUM DUO Z



Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security



THE IDEAL SOLUTION FOR:

Ground-mounted solar power plants

Engineered in Germany

BIFACIAL ENERGY YIELD GAIN OF UP TO 20%
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.

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 and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

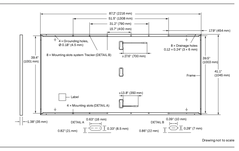
FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400Pa) and wind loads (2400Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	67.2 in × 41.1 in × 1.38 in (including frame) (1216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 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; (+) ≥ 27.6 in (700 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS			470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)										
			BSTC*		BSTC*		BSTC*		BSTC*	
Minimum	Power at MPP[3]	P_{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[3]	I_{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[3]	V_{OC} [V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

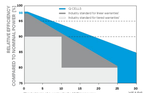
Bifaciality of P_{MPP} and I_{SC}: 70 % ± 5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1] Measurement tolerances P_{MPP} ± 3 %; I_{SC}; V_{OC} ± 5 % at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 % ± 5 %, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[1]								
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1	
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99	
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72	
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37	
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63	

[1] 800 W/m², NMOT, spectrum AM 1.5

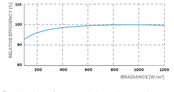
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

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ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
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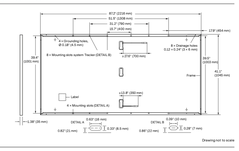
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	Current at MPP	I_{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP} [V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[3]	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

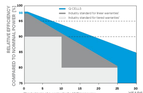
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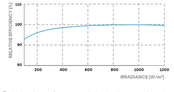
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 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]	108 ± 5.4 (42 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification		Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730		TYPE 29*
Max. Design Load, Push / Pull[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty		−40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)			

[1] See Installation Manual

*New Type is similar to Type 2 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215 (2016, IEC 61730 (2016, U.S. Patent No. 8,993,225 (solar cells), Certification in process.

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 XL-G10.3 / BFG 470-485_2024-05_Rev05_NA

Power Optimizer
For North America
P1101



POWER OPTIMIZER

PV power optimization at the module level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- High efficiency with module-level MPPT, for maximized system energy production and revenue, and fast project ROI
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses, and combiner boxes; over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

solaredge.com

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Power Optimizer
For North America
P1101

Power Optimizer Model (Typical Module Compatibility)		P1101 (for up to 2 x high power or bi-facial modules)	Units
INPUT			
Rated Input DC Power[(1)]		1100	W
Connection Method		Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)		125	Vdc
MPPT Operating Range		12.5 – 105	Vdc
Maximum Short Circuit Current (Isc)		14.1	Adc
Maximum Short Circuit Current per Input (Isc)		-	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.6	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)			
Maximum Output Current		18	Adc
Maximum Output Voltage		80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1 ± 0.1	Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System		Compliant with NEC 2014, 2017, 2020	
EMC		FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety		IEC62109-1 (class II safety), UL1741, UL3741, CSA C22.2#107.1	
Material		UL94 V-0, UV resistant	
RoHS		Yes	
INSTALLATION SPECIFICATIONS			
Compatible SolarEdge Inverters		All commercial three phase inverters	
Maximum Allowed System Voltage		1000	Vdc
Dimensions (W x L x H)		129 x 162 x 59 / 5.1 x 6.4 x 2.32	mm / in
Weight		1064 / 2.34	gr / lb
Input Connector		MC4[(2)]	
Input Wire Length Options	1	1.6 / 5.2	m / ft
	2		
	3		
Output Wire Type / Connector		Double-insulated; MC4	
Output Wire Length		2.4 / 7.8	m / ft
Operating Temperature Range[(3)]		-40 to +85 / -40 to +185	°C / °F
Protection Rating		IP68 / NEMA6P	
Relative Humidity		0 – 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) For other connector types please refer to the Power Optimizer Input Connector Compatibility Technical Note.
(3) For ambient temperatures above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers De-Rating Application Note for more details.

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE10K	208V Grid SE17.3K*	277/480V Grid SE33K	277/480V Grid SE66K*	
Compatible Power Optimizers		P1101				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string – 8400	1 string – 10020	1 string – 17550	2 strings or less – 17550	W
		2 strings or more – 9800	2 strings or more – 12020	2 strings or more – 20300	3 strings or more – 20300	
Parallel Strings of Different Lengths or Orientations		Yes				
Maximum Difference in Number of Power Optimizers Allowed Between the Shortest and Longest String Connected to the Same Inverter Unit		5 Power Optimizers				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1 each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

INVERTER



Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 2 or 3 Synergy units and 1 Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring, ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

*Applicable only for DC and AC SPDs

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Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
OUTPUT					
Rated AC Active Output Power	80000	100000	110000	120000	W
Maximum AC Apparent Output Power	80000	100000	120000	120000	VA
AC Output Line Connections	3W + PE, 4W + PE				
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT				
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-N)	244 – 277 – 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[(1)] (L-L)	422.5 – 480 – 529				Vac
AC Frequency Min-Nom-Max[(1)]	59.5 – 60 – 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	96.5	120		144.3	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/-0.2 to 1				
INPUT					
Maximum DC Power (Module STC) Inverter / Synergy Unit	140000 / 70000	175000 / 58300	210000 / 70000		W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Operating Voltage Range	850 – 1000				Vdc
Maximum Input Current	2 x 48.25	3 x 40	3 x 48.25		Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	167kΩ sensitivity per Synergy Unit[(2)]				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 8	< 12			W
ADDITIONAL FEATURES					
Supported Communication Interfaces[(3)]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)				
Smart Energy Management	Export Limitation				
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection				
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)				
Photovoltaic Rapid Shutdown System	EC 2014, 2017 and 2020, Built-in				
PID Rectifier	Nighttime, built-in				
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated				
AC, DC Surge Protection	Type II, field replaceable, integrated				
DC Fuses (Single Pole)	25A, integrated				
DC SAFETY SWITCH					
DC Disconnect	Built-in				
STANDARD COMPLIANCE					
Safety	UL1699B, UL1741, UL1741 SA, UL1741 SB, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547-2018, Rule 21, Rule 14 (HI)				
Emissions	FCC part 15 class A				

(1) For other regional settings please contact SolarEdge support.
(2) Where permitted by local regulations.
(3) For specifications of the optional communication options, visit the Communication product page or the Resource Library to download the relevant product datasheet.

Three Phase Inverter with Synergy Technology
For the 277/480V Grid for North America
SE80KUS / SE100KUS / SE110KUS / SE120KUS

MODEL NUMBER	SE80KUS	SE100KUS	SE110KUS	SE120KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SExxK-USx8IxxxxS				UNITS
INSTALLATION SPECIFICATIONS					
Number of Synergy Units per Inverter	2	3			
Ac Max Conduit Size	2 ½"				in
Max AWG Line / PE	4/0 / 1/0				
DC Max Conduit Size	1 x 3"; 2 x 2"				in
DC Input Inverter/ Synergy Unit	8 / 4 pairs; 6-12 AWG	12 / 4 pairs; 6-12 AWG			
	2 pairs / 1 pair, Max 2 AWG; copper or aluminum	3 pairs / 1 pair, Max 2 AWG; copper or aluminum			
Dimensions (H x W x D)	Synergy Unit: 22 x 12.9 x 10.75 / 558 x 328 x 273 Synergy Manager: 14.17 x 22.4 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 70.4 / 32 Synergy Manager: 39.6 / 18				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[(4)]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 67				dBA
Protection Rating	NEMA 3R				
Mounting	Brackets provided				

(4) For power de-rating information refer to the Temperature De-rating - Technical Note (North America)

FREEDOM SOLAR POWER
4801 FRIEDRICH LN.SUITE 100 AUSTIN, TX 78744
P: 512.640.3864
freedomsolarpower.com

SYSTEM INFORMATION

DC SYSTEM SIZE: 539.32kW
AC SYSTEM SIZE: 400.00kW
MODULES:
(1112)HANWHA Q CELLS Q.PEAK DUO XL-G10.3/BFG 485W
INVERTERS:
(2)SOLAREDGE TECHNOLOGIES SE120KUS (480/277V, 3PH)
(2)SOLAREDGE TECHNOLOGIES SE80K-US (480/277V, 3PH)
OPTIMIZER:
(558)SOLAREDGE P1101 POWER OPTIMIZER
WIND SPEED:105MPH
SNOW LOAD:5PSF
MINIMUM TEMPERATURE: -8°C
MAXIMUM TEMPERATURE: 37°C

SOLAR PV PROJECT
FOR
CTE ENTERTAINMENT, LP COM-41783
1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
32.912126, -96.445302

REVISION

DATE	DESCRIPTION	REV
03/22/2024	PERMIT PLAN	A
05/16/2024	EQUIPMENT UPDATE	B

PROJECT INFORMATION

NAME:CTE ENTERTAINMENT, LP COM-41783

ADDRESS:1290 I-30 FRONTAGE RD, ROCKWALL, TX 75032
ESI ID: 10443720006363900
32.912126, -96.445302
APN:33829

AHJ:TX-CITY OF ROCKWALL

UTILITY:ONCOR

PRN NUMBER:FMS-CU-2023-1688

ILLUMINEI

SPEC SHEETS 01

DRAFTED BY/QC'ED BY:
NAVANEETHAN.C/MANISH A

SCALE:AS NOTED	REV:B
DATE:05/16/2024	SS-01

CITY OF ROCKWALL

ORDINANCE NO. 24-XX

SPECIFIC USE PERMIT NO. S-3XX

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 ENERGY COLLECTOR PANELS* ON THE ROOF OF AN EXISTING BUILDING SITUATED ON A FIVE (5) ACRE PARCEL OF LAND IDENTIFIED AS LOT 2, BLOCK A, PARK PLACE BUSINESS CENTRE 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.

WHEREAS, the City has received a request from Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for *Solar Energy Collector Panels* on the roof of an existing building situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and being more specifically depicted and described 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) allowing *Solar Energy Collector Panels* as stipulated by Subsection 01.02, *Land Use Schedule*, 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, *Conditional Land Use Standards*, of Article 04, *Permissible Uses*, and Subsection 04.01, *General Commercial District Standards*, and Subsection 04.05, *Commercial (C) District*, of Article 05, *District Development Standards*, of the Unified Development Code

PRELIMINARY ORDINANCE 07.09.2024

(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 *Solar Energy Collector Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

(2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

(3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

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 compliance to the following:

(1) Upon obtaining a *Certificate of Occupancy (CO)* and/or building permit, should the business owner operating under the 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.

DRAFT
01.16.2024

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 15th DAY OF JULY, 2024.

Trace Johannesen, *Mayor*

ATTEST:

Kristy Teague, *City Secretary*

APPROVED AS TO FORM:

Frank J. Garza, *City Attorney*

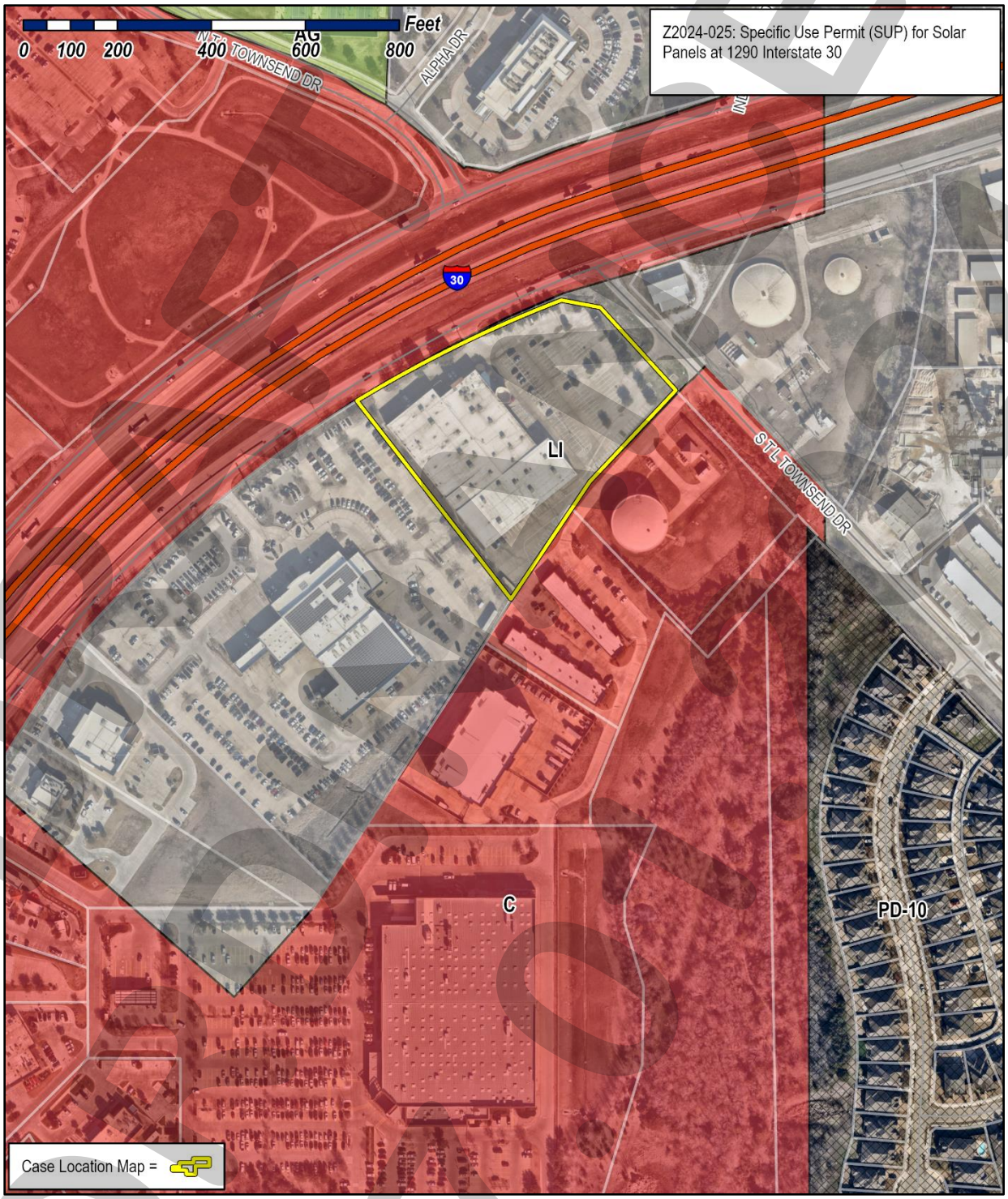
1st Reading: *July 1, 2024*

2nd Reading: *July 15, 2024*

DRAFT ORDINANCE 07.01.2024

Exhibit 'A'
Zoning Exhibit

Address: *1290 E. IH-30*
Legal Description: *Lot 2, Block A, Park Place Business Centre Addition*



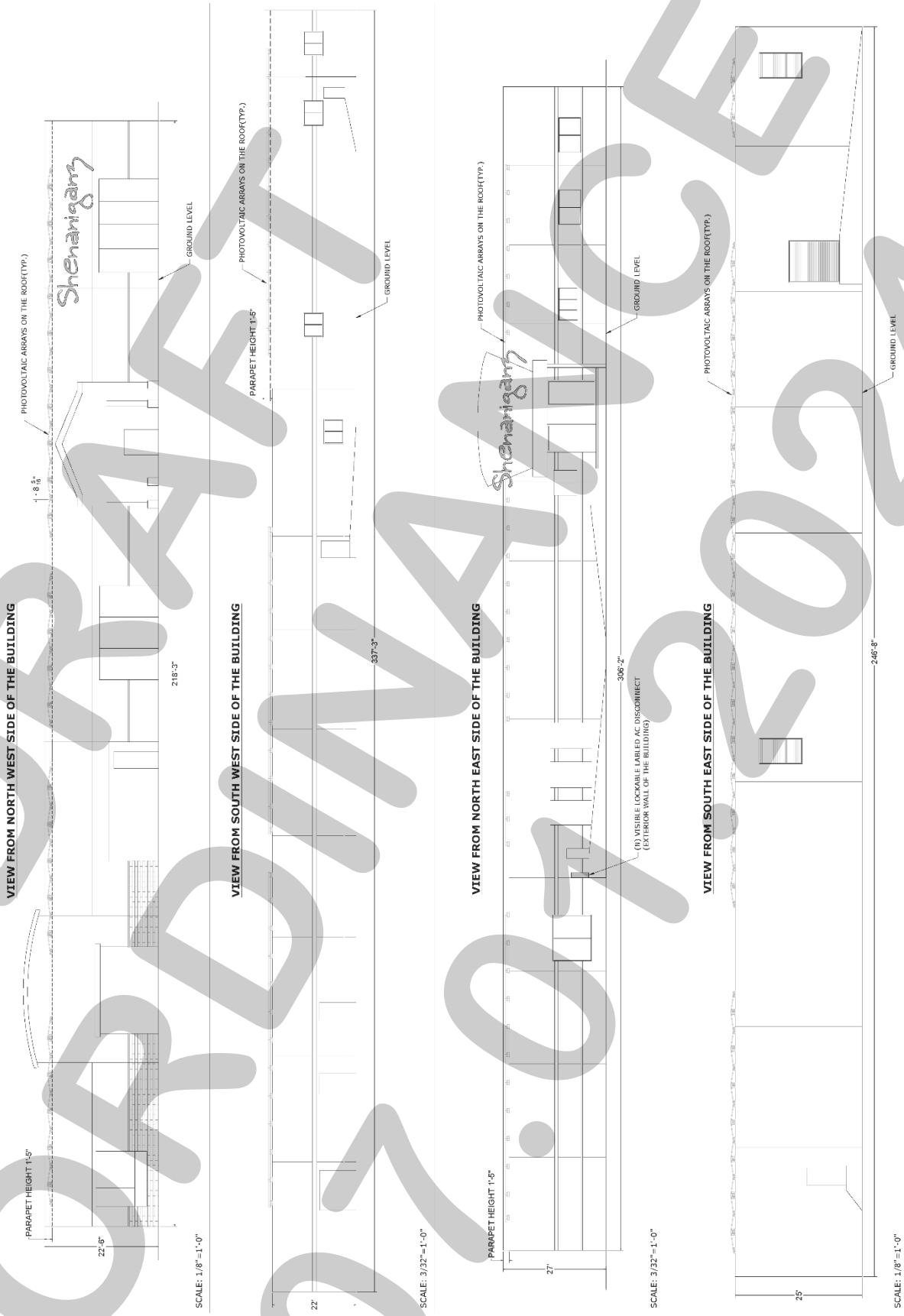
DRAFT 07/01/2024

Exhibit 'B':
Concept Plan



DRAFT ORDINANCE 07.01.2024

Exhibit 'C':
Building Elevations



DRAFT ORDINANCE 07.01.2024

CITY OF ROCKWALL

ORDINANCE NO. 24-28

SPECIFIC USE PERMIT NO. S-337

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 ENERGY COLLECTOR PANELS* ON THE ROOF OF AN EXISTING BUILDING SITUATED ON A FIVE (5) ACRE PARCEL OF LAND IDENTIFIED AS LOT 2, BLOCK A, PARK PLACE BUSINESS CENTRE 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.

WHEREAS, the City has received a request from Teshia Brown on behalf of Justin Ripp for the approval of a Specific Use Permit (SUP) for *Solar Energy Collector Panels* on the roof of an existing building situated on a five (5) acre parcel of land identified as Lot 2, Block A, Park Place Business Centre Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, situated within the IH-30 Overlay (IH-30 OV) District, addressed as 1290 E. IH-30, and being more specifically depicted and described 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) allowing *Solar Energy Collector Panels* as stipulated by Subsection 01.02, *Land Use Schedule*, 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, *Conditional Land Use Standards*, of Article 04, *Permissible Uses*, and Subsection 04.01, *General Commercial District Standards*, and Subsection 04.05, *Commercial (C) District*, of Article 05, *District Development Standards*, 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 *Solar Energy Collector Panels* on the *Subject Property* and conformance to these conditions are required for continued operations:

(1) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

(2) Reflective glare of Solar Energy Collector Panels shall be minimized by the positioning of the Solar Collector Panels or by the use of non-glare glazing.

(3) Piping, wiring and other mechanical accessories shall be concealed within a roof mounted Solar Energy Collector Panel. If some portion of the piping, wiring or other mechanical accessories cannot be practically concealed then those portions shall be painted so as to blend with the roofing material.

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 compliance to the following:

(1) Upon obtaining a *Certificate of Occupancy (CO)* and/or building permit, should the business owner operating under the 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 15th DAY OF JULY 2024.

Trace Johannesen, Mayor

ATTEST:

Kristy Teague, City Secretary

APPROVED AS TO FORM:

Frank J. Garza, City Attorney

1st Reading: July 1, 2024

2nd Reading: July 15, 2024

Exhibit 'A'
Zoning Exhibit

Address: *1290 E. IH-30*
Legal Description: *Lot 2, Block A, Park Place Business Centre Addition*

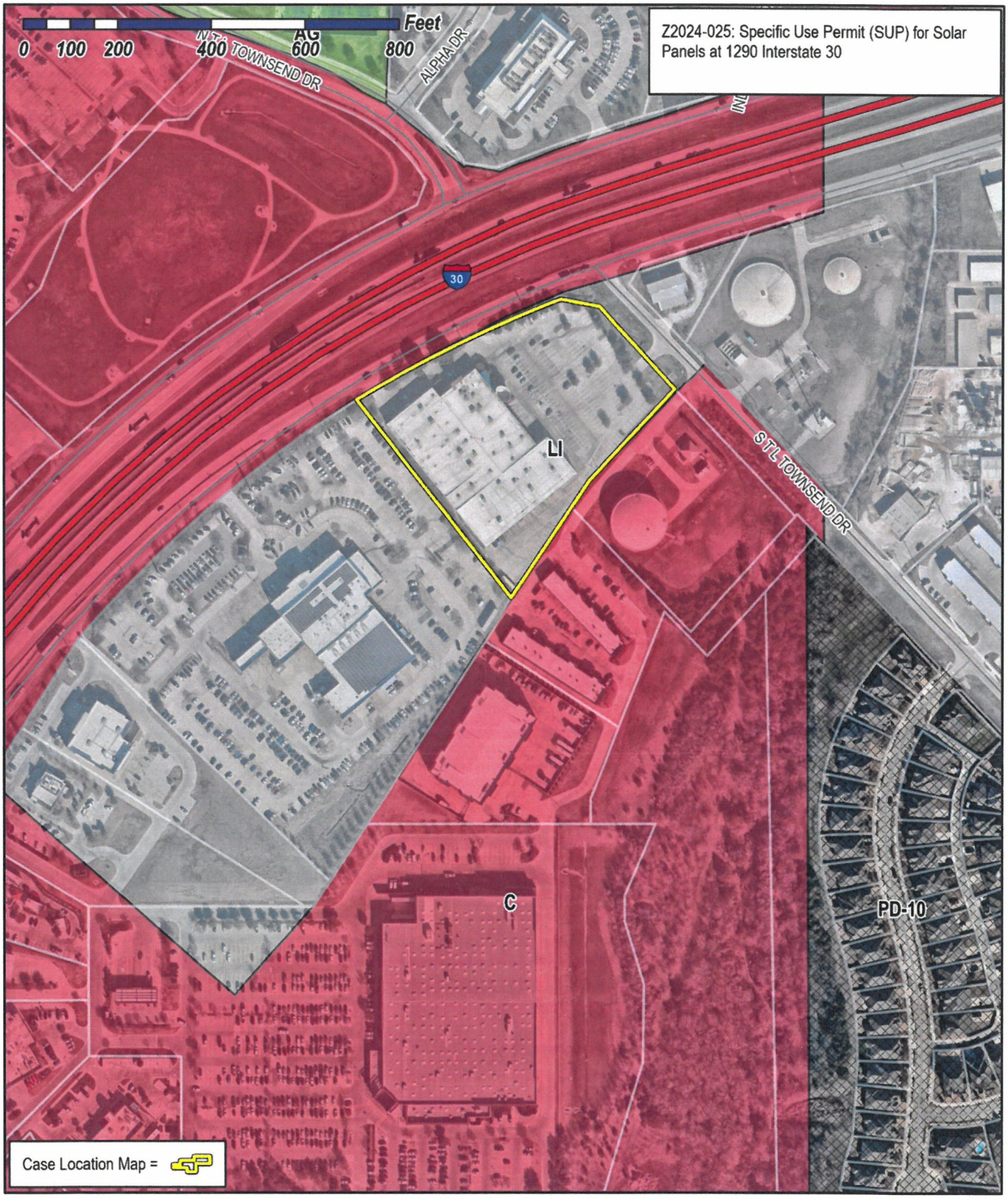
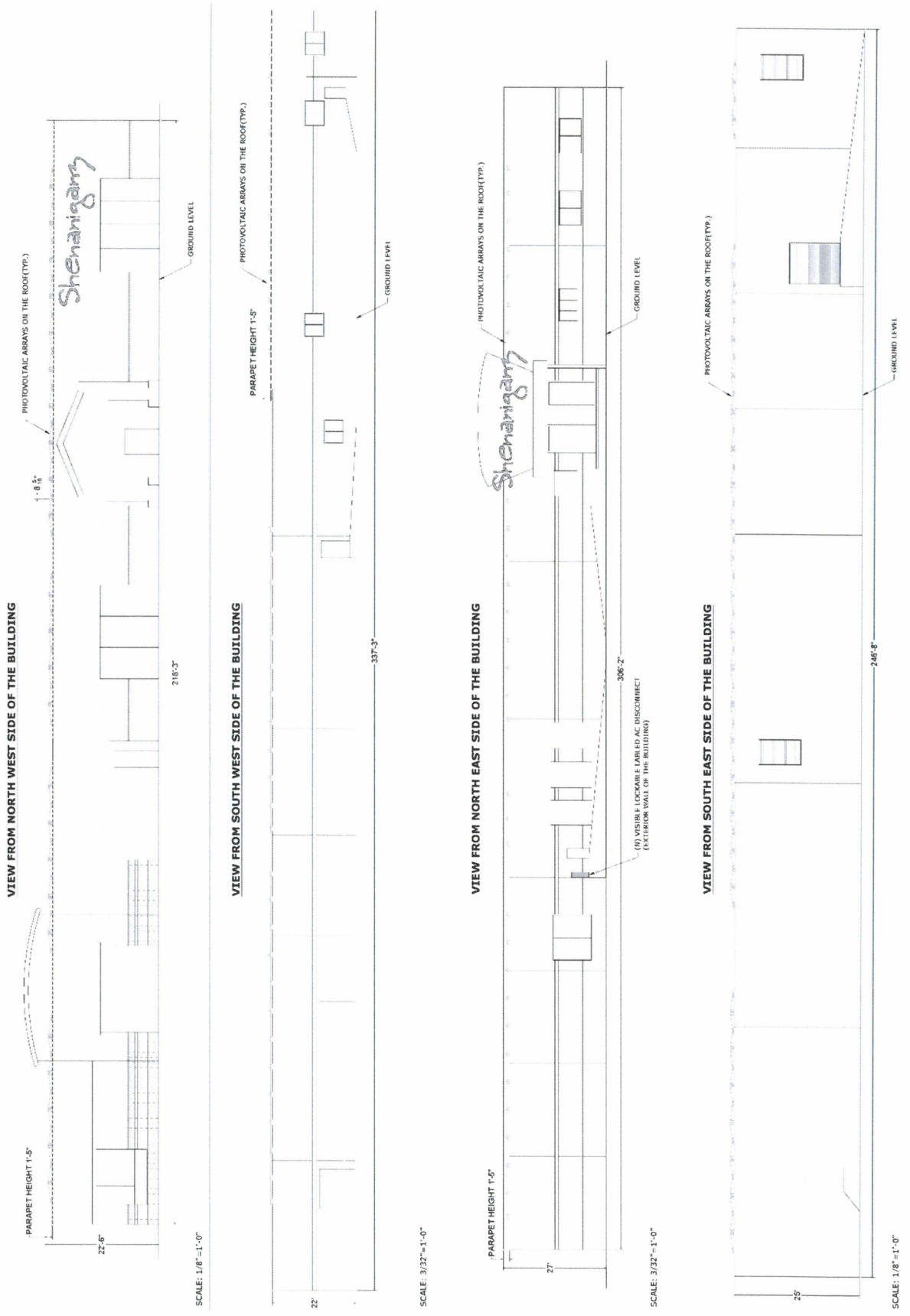


Exhibit 'B':
Concept Plan



Exhibit 'C':
Building Elevations



July 26, 2024

TO: Teshia Brown
4801 Freidrich Lane, Suite 109
Austin, TX 78744

CC: Justin Ripp
1290 E. I-30
Rockwall, TX 75032

FROM: Henry Lee, AICP
City of Rockwall Planning and Zoning Department
385 S. Goliad Street
Rockwall, TX 75087

SUBJECT: Z2024-025; *Specific Use Permit (SUP) for Solar Enegy Panels at 1290 East IH-30*

Teshia Brown**:**

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 July 15, 2024. The following is a record of all recommendations, voting records and conditions of approval:

Staff Recommendations

(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) The development or redevelopment of the *Subject Property* shall generally conform to the *Site Plan* and *Building Elevations* depicted in *Exhibits 'B' and 'C'* of this ordinance.

(b) The development or redevelopment of the Subject Property shall generally conform to the Site Plan and Building Elevations depicted in Exhibits 'B' and 'C' of this ordinance.

(c) The development or redevelopment of the Subject Property shall generally conform to the Site Plan and Building Elevations depicted in Exhibits 'B' and 'C' of this ordinance.

Planning and Zoning Commission

(1) On June 25, 2024, the Planning and Zoning Commission approved a motion to recommend approval of the Specific Use Permit by a vote of 6-0, with one (1) vacant seat.

City Council

(1) On July 1, 2024, the City Council approved a motion to approve the Specific Use Permit by a vote of 6-0, with Council Member Campbell absent.

(2) On July 15, 2024, the City Council approved a motion to approve the SUP by a vote of 6-0. with Council Member Thompson absent.

Included with this letter is a copy of *Ordinance No. 24-28, S-337*, 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) 772-6434.

Sincerely,

Henry Lee, AICP, *Senior Planner*
City of Rockwall Planning and Zoning Department