

HISTORIC AND DESIGN REVIEW COMMISSION

February 19, 2020

HDRC CASE NO: 2020-070
ADDRESS: 901 MASON ST
LEGAL DESCRIPTION: NCB 1267 BLK 3 LOT S 137.0 OF 9 & 10 & N 50.0 OF E 24.0 FT OF 9 ARB 9C, 10A, & 9B
ZONING: O-2, H
CITY COUNCIL DIST.: 2
DISTRICT: Government Hill Historic District
LANDMARK: House
APPLICANT: Patrick Attwater /One80 Solar
OWNER: Logan Fullmer/901 MASON LLC
TYPE OF WORK: Solar car canopy
APPLICATION RECEIVED: January 31, 2020
60-DAY REVIEW: March 31, 2020
CASE MANAGER: Huy Pham
REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to install 8-vehical, metal carport with solar collectors.

APPLICABLE CITATIONS:

4. Guidelines for New Construction

5. Garages and Outbuildings

A. DESIGN AND CHARACTER

i. *Massing and form*—Design new garages and outbuildings to be visually subordinate to the principal historic structure in terms of their height, massing, and form.

ii. *Building size* – New outbuildings should be no larger in plan than 40 percent of the principal historic structure footprint.

iii. *Character*—Relate new garages and outbuildings to the period of construction of the principal building on the lot through the use of complementary materials and simplified architectural details.

iv. *Windows and doors*—Design window and door openings to be similar to those found on historic garages or outbuildings in the district or on the principle historic structure in terms of their spacing and proportions.

v. *Garage doors*—Incorporate garage doors with similar proportions and materials as those traditionally found in the district.

B. SETBACKS AND ORIENTATION

i. *Orientation*—Match the predominant garage orientation found along the block. Do not introduce front-loaded garages or garages attached to the primary structure on blocks where rear or alley-loaded garages were historically used.

ii. *Setbacks*—Follow historic setback pattern of similar structures along the streetscape or district for new garages and outbuildings. Historic garages and outbuildings are most typically located at the rear of the lot, behind the principal building. In some instances, historic setbacks are not consistent with UDC requirements and a variance may be required.

7. Designing for Energy Efficiency

A. BUILDING DESIGN

i. *Energy efficiency*—Design additions and new construction to maximize energy efficiency.

ii. *Materials*—Utilize green building materials, such as recycled, locally-sourced, and low maintenance materials whenever possible.

iii. *Building elements*—Incorporate building features that allow for natural environmental control – such as operable windows for cross ventilation.

iv. *Roof slopes*—Orient roof slopes to maximize solar access for the installation of future solar collectors where compatible with typical roof slopes and orientations found in the surrounding historic district.

B. SITE DESIGN

i. *Building orientation*—Orient new buildings and additions with consideration for solar and wind exposure in all seasons to the extent possible within the context of the surrounding district.

ii. *Solar access*—Avoid or minimize the impact of new construction on solar access for adjoining properties.

C. SOLAR COLLECTORS

- i. *Location*—Locate solar collectors on side or rear roof pitch of the primary historic structure to the maximum extent feasible to minimize visibility from the public right-of-way while maximizing solar access. Alternatively, locate solar collectors on a garage or outbuilding or consider a ground-mount system where solar access to the primary structure is limited.
- ii. *Mounting (sloped roof surfaces)*—Mount solar collectors flush with the surface of a sloped roof. Select collectors that are similar in color to the roof surface to reduce visibility.
- iii. *Mounting (flat roof surfaces)*—Mount solar collectors flush with the surface of a flat roof to the maximum extent feasible. Where solar access limitations preclude a flush mount, locate panels towards the rear of the roof where visibility from the public right-of-way will be minimized.

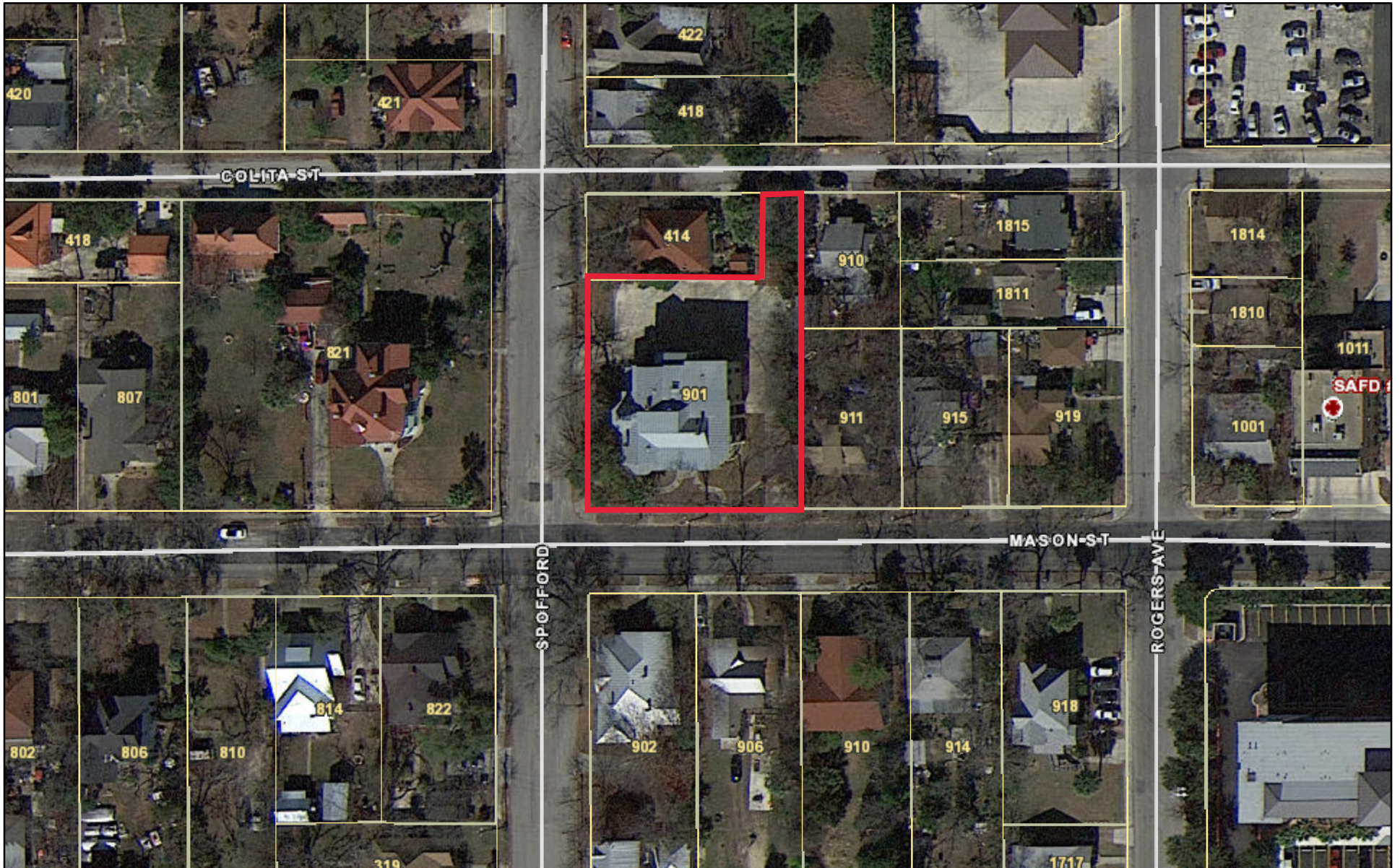
FINDINGS:

- a. The primary structure located at 901 Mason St is a 2-story structure designed in the Italianate style with Renaissance and Neoclassical Revival influences. The structure was originally built as a single family residence and features a 2-story wraparound front porch with Corinthian columns, wood lap siding, and prominent bay windows. The structure is contributing to the Government Hill Historic District
- b. PROPOSED CARPORT – The applicant has proposed to construct a 8-vehicle carport featuring approximately 1745 square feet lot coverage, metal construction, and roof mounted solar collectors. The structure measures 20'-4" deep by 85'-10" wide.
- c. DESIGN & CHARACTER – The proposed carport features fully metal framing including columns, beams, with perpendicular purlins. The proposed solar panels are mounted directly onto the rows of purlins effectively acting as both the shade cover and the solar collector. Per the Guidelines for New Construction 5.A.iii., applicants should relate new garages and outbuildings to the period of construction of the principal building on the lot through the use of complementary materials and simplified architectural details. Staff finds that a traditional wood frame carport with corner columns would be more appropriate.
- d. SETBACK & ORIENTATION – The applicant has proposed the carport to be set to the rear of the property. Staff finds that the proposed location and orientation of carport is generally appropriate; the applicant is responsible for meeting any setback requirements.
- e. SOLAR COLLECTORS – The applicant has proposed to install solar collectors on the proposed carport structure. Per the Guidelines for New Construction 7.C.i., applicants should locate solar collectors on a garage or outbuilding or consider a ground-mount system where solar access to the primary structure is limited. Per the Guidelines for New Construction 7.C.ii., applicant should mount solar collectors flush with the surface of a sloped roof; select collectors that are similar in color to the roof surface to reduce visibility. Staff finds that the proposed flush-mounted solar collectors covering the entirety of the carport roof area is generally appropriate.

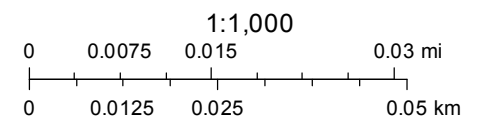
RECOMMENDATION:

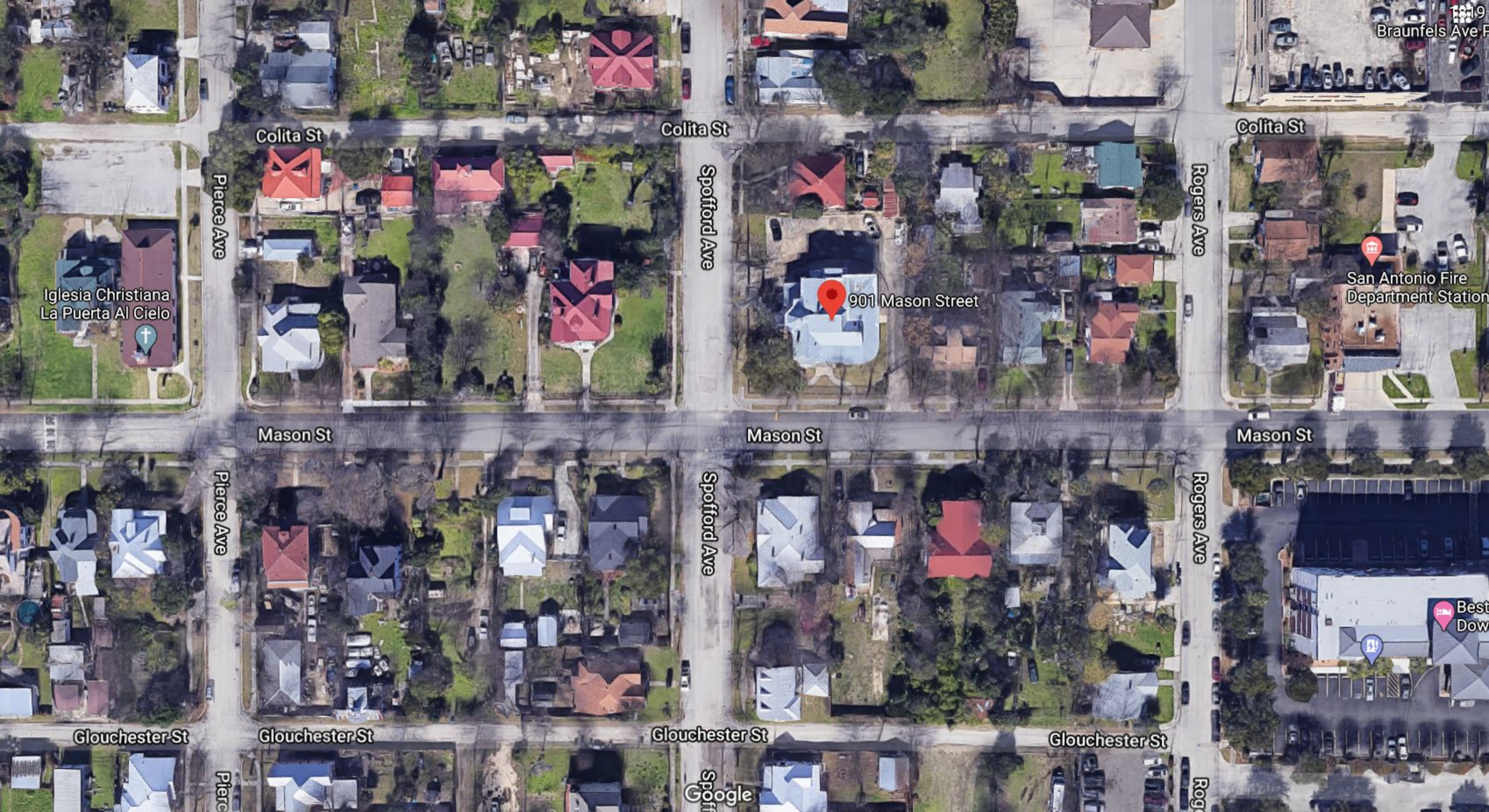
Staff recommends approval to construct a carport with solar collectors based on findings b through e with the stipulation the carport features traditional wood framing with corners columns, instead of the proposed cantilevered metal beam system. Updated drawings should be submitted to staff prior to the issuance of a Certificate of Appropriateness. The applicant is responsible for any setback requirements.

901 Mason



February 11, 2020





1819
Braunfels Ave F

Colita St

Colita St

Colita St

Pierce Ave

Iglesia Christiana
La Puerta Al Cielo

Spoifford Ave

901 Mason Street

Rogers Ave

San Antonio Fire
Department Station

Mason St

Mason St

Mason St

Pierce Ave

Gloucester St

Gloucester St

Gloucester St

Spoifford Ave

Gloucester St

Rogers Ave

Best
Down

Pierc

Rog



901 Mason Street

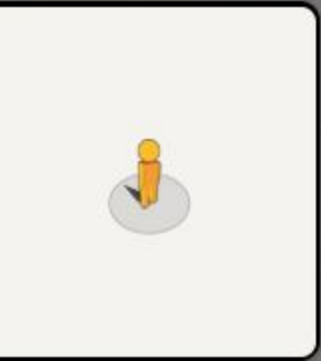
Coltha St

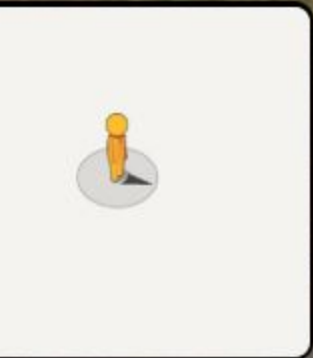
Spofford Ave

Mason St

Mason St

Google









POWER YOUR PASSION™

PROJECT

901 MASON

901 Mason St
San Antonio, TX 78208

SYSTEM OVERVIEW

PARKING
31.2 KW DC
(78) QCELLS QPEAK G5.2 400W MODULES
(78) SolarEdge P505 OPTIMIZERS
(3) SolarEdge SE 7600H-US INVERTERS
23 KW AC

ENGINEER PROFESSIONAL

NABCEP CERTIFICATION



PV INSTALLATION
PROFESSIONAL

REVISIONS

#	DATE	DESCRIPTION	PREP	CHECK
1	1/27/2020	PRELIMINARY	KL	NA
2				
3				
4				
5				
6				

SHEET NAME

SITE PLAN

SCALE: $\frac{3}{32}$ " = 1'
PRINT SIZE: 24x36
SHEET #: PV-1

ONE80 SOLAR

1502 S FLORES STREET
SAN ANTONIO, TX 78204

1 (210) 802-7428

LIC #31318





POWER YOUR PASSION™

PROJECT

901 MASON

901 Mason St
San Antonio, TX 78208

SYSTEM OVERVIEW

PARKING

31.2 KW DC

(78) QCELLS QPEAK G5.2 400W MODULES

(78) SolarEdge P505 OPTIMIZERS

(3) SolarEdge SE 7600H-US INVERTERS

23 KW AC

ENGINEER PROFESSIONAL

NABCEP CERTIFICATION



PV INSTALLATION
PROFESSIONAL

REVISIONS

#	DATE	DESCRIPTION	PREP	CHECK
1	1/27/2020	PRELIMINARY	KL	NA
2				
3				
4				
5				
6				

SHEET NAME

SIDE VIEW

SCALE: NTS

PRINT SIZE: 24x36

SHEET #: PV-1

ONE80 SOLAR

1502 S FLORES STREET
SAN ANTONIO, TX 78204

1 (210) 802-7428

LIC #31318





POWER YOUR PASSION™

PROJECT

901 MASON

901 Mason St
San Antonio, TX 78208

SYSTEM OVERVIEW

PARKING
31.2 KW DC
(78) QCELLS QPEAK G5.2 400W MODULES
(78) SolarEdge P505 OPTIMIZERS
(3) SolarEdge SE 7600H-US INVERTERS
23 KW AC

ENGINEER PROFESSIONAL

NABCEP CERTIFICATION



PV INSTALLATION
PROFESSIONAL

REVISIONS

#	DATE	DESCRIPTION	PREP	CHECK
1	1/27/2020	PRELIMINARY	KL	NA
2				
3				
4				
5				
6				

SHEET NAME

FRONT VIEW

SCALE: NTS
PRINT SIZE: 24x36
SHEET #: PV-1

ONE80 SOLAR

1502 S FLORES STREET
SAN ANTONIO, TX 78204

1 (210) 802-7428

LIC #31318







POWER YOUR PASSION™

PROJECT

901 MASON

901 Mason St
San Antonio, TX 78208

SYSTEM OVERVIEW

PARKING
31.2 KW DC
(78) QCELLS QPEAK G5.2 400W MODULES
(78) SolarEdge P505 OPTIMIZERS
(3) SolarEdge SE 7600H-US INVERTERS
23 KW AC

ENGINEER PROFESSIONAL

NABCEP CERTIFICATION



REVISIONS

#	DATE	DESCRIPTION	PREP	CHECK
1	1/27/2020	PRELIMINARY	KL	NA
2				
3				
4				
5				
6				

SHEET NAME

SIDE DETAILS

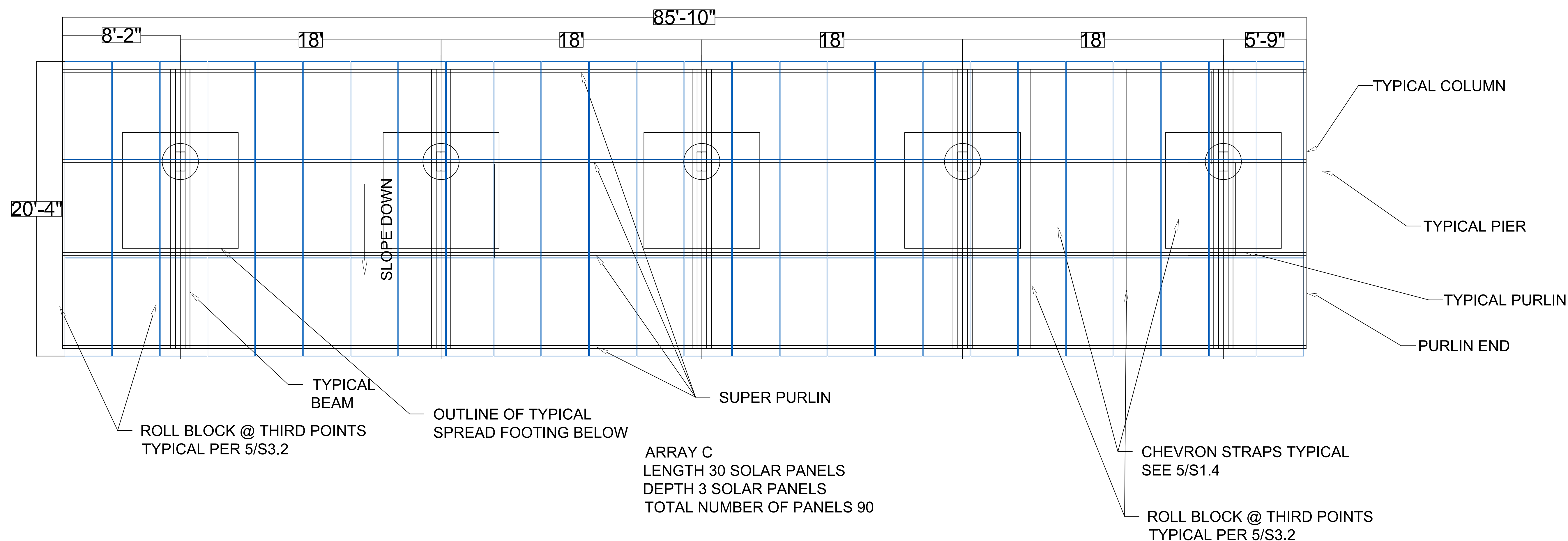
SCALE: NTS
PRINT SIZE: 24x36
SHEET #: PV-1

ONE80 SOLAR

1502 S FLORES STREET
SAN ANTONIO, TX 78204

1 (210) 802-7428

LIC #31318





GENERAL STRUCTURAL NOTES

GOVERNING CODES
2018 INTERNATIONAL BUILDING CODE
NAS-AISI COLD-FORMED STEEL DESIGN MANUAL, 2014 EDITION

LOADS

DEAD LOADS - 4.95 PSF

SNOW - 5.00 PSF GROUND SNOW LOAD

RISK CATEGORY, PER ASCE-7: II

WIND LOADS:

BASED ON ASCE 7-10 FOR AN OPEN STRUCTURE
BASIC WIND SPEED (3 SECOND GUST) V = 115 MPH
EXPOSURE: C
ROOF SLOPE: 5.00 DEGREES

WIND LOADS SHOWN BELOW ARE BEFORE MULTIPLYING BY 0.6 FACTOR IN WIND LOAD COMBINATIONS.

FOR C&C WIND LOADING:

AREA	MAX DOWN	MAX UP
PSF	PSF	PSF
<=a^2	61.0	95.6
> a^2, <= 4.0 a^2	45.7	48.5
> 4.0 a^2	30.5	31.9

FOR MWFRS WIND LOADING:

PSF	MAX DOWN	MAX UP
PSF	PSF	PSF
	24.95	24.95

SEISMIC LOADS:

BASIC SEISMIC FORCE RESISTING SYSTEM IS A CANTILEVERED COLUMN SYSTEM
DETAILED TO CONFORM TO THE REQUIREMENTS FOR ORDINARY STEEL MOMENT FRAME.

ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE.

RESPONSE MODIFICATION FACTOR R = 1.25
SEISMIC IMPORTANCE FACTOR I = 1.0
RISK CATEGORY: II
SITE CLASS: "D"
SEISMIC DESIGN CATEGORY: "A"
Ss = 0.074
S1 = 0.030
SDS = 0.079
SD1 = 0.048
Cs = 0.063

FOUNDATION:

THIS FOUNDATION SYSTEM HAS BEEN DESIGNED IN KEEPING WITH THE
RECOMMENDATIONS OF THE FOLLOWING DOCUMENT

GEOTECHNICAL ENGINEERING STUDY
DESIGNATION: NEW WAREHOUSE
LOCATION: WEST GOLDEN LANE NAR DE ZAVALA
SAN ANTONIO, TEXAS
PREPARED BY: FROST GEOSCIENCES, INC.
PROJECT No. FGS-G08134
DATE: MARCH 27, 2008

THIS DRILLED PIER FOOTING IS DESIGNED IN HE ABSENCE OF ANY SPECIFIC
INSTRUCTIONS PROVIDED IN ABOVE REPORT.

DRILLED PIER FOOTINGS ARE DESIGNED BASED ON IBC SECTION 1806, ASSUMING WORST
CASE CLASS 5 SOILS, WITH AN ALLOWABLE LATERAL BEARING PRESSURE = 100 PSF/FT.
NOTE THAT SINCE THE STRUCTURE WILL NOT BE SENSITIVE TO A LATERAL MOVEMENT OF
½", THIS PRESSURE MAY BE DOUBLED.

THE PIERS ARE DESIGNED AS CONSTRAINED WHERE A CONCRETE SLAB IS PLACED
AROUND THE CONCRETE PIER, IN KEEPING WITH IBC 1807.3.2.2.

THE PIERS ARE DESIGNED AS UNCONSTRAINED WHERE THE PIER IS PLACED IN SOIL WITH
NO CONCRETE OR ASPHALT TOUCHING IT.

WHERE THE PIERS WILL BE SURROUNDED BY ASPHALT, THE PIERS ARE DESIGNED AS
PARTIALLY CONSTRAINED, USING AN AVERAGE OF THE CONSTRAINED AND
UNCONSTRAINED VALUES.

THIS SPREAD FOOTING IS DESIGNED IN THE ABSENCE OF ANY SPECIFIC INSTRUCTIONS
PROVIDED IN ABOVE REPORT.

SPREAD FOOTINGS DESIGN IS BASED ON IBC 1806, CLASS 5 SOILS. SPREAD FOOTINGS
SHALL BEAR ON FIRM, UNDISTURBED SOIL A MINIMUM OF 2'-6" BELOW ADJACENT EXISTING
GRADE. DESIGN SOIL BEARING VALUE - 1,500 PSF. REFER TO SOILS REPORT, IF ONE
EXISTS, FOR ADDITIONAL INFORMATION PRIOR TO COMMENCEMENT OF EARTHWORK.
SOILS ENGINEER SHALL INSPECT FOUNDATION EXCAVATIONS PRIOR TO PLACEMENT OF

CONCRETE:

SPECIFIED 28 DAY COMPRESSIVE STRENGTH F'c = 2,500 PSI

ALL CAST IN PLACE CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION
OF THE ACI. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED, UNLESS NOTED
OTHERWISE.

ADMIXTURES CONTAINING CHLORIDES SHALL NOT BE USED. NO OTHER ADMIXTURES
PERMITTED WITHOUT APPROVAL. FOR CONCRETE WITHOUT A PLASTICIZER, MAXIMUM
SLUMP SHALL BE 4" AT POINT OF PLACEMENT, UNLESS NOTED OTHERWISE. IF A
PLASTICIZER IS USED, A HIGHER FINAL SLUMP MAY BE ALLOWED UPON STRUCTURAL
ENGINEER'S APPROVAL.

FLY ASH SHALL BE LIMITED TO 50% OF TOTAL CEMENTITIOUS MATERIALS BY WEIGHT.

TEST DATA FOR EACH CONCRETE MIX SHALL BE SUBMITTED FOR REVIEW PER CHAPTER 5
OF ACI 318. REFERENCE FIGURE R5.3 FOR SUBMITTAL REQUIREMENTS AND OPTIONS.
CONCRETE MIX DESIGNS THAT ARE SUBMITTED WITHOUT THE APPROPRIATE TEST DATA
CANNOT BE REVIEWED.

IT IS ACCEPTABLE AND INTENDED TO USE EARTH CUTS TO FORM THE DRILLED PIER
FOOTING AND SPREAD FOOTING. THE PIER AND FOOTING DESIGNS INDICATED IN THESE
DRAWINGS DO NOT APPLY IF THE EARTH CUTS ARE UNSTABLE AND OR DO NOT STAND ON
THEIR OWN.

THE DRILLED PIER AND SPREAD FOOTING DESIGNS SHOWN IN THESE DRAWINGS DO NOT
APPLY WHERE ORGANIC FILL MATERIALS EXIST.

CONCRETE SHALL BE ADEQUATELY VIBRATED AROUND THE EMBEDDED STEEL COLUMN
TO ENSURE THAT THE CONCRETE HAS COMPLETELY SURROUNDED THE COLUMN.
CONCRETE SHALL SLOPE UP SLIGHTLY TOWARDS THE STEEL COLUMN TO PREVENT
WATER FROM PONDING AROUND THE COLUMN.

IT IS ACCEPTABLE FOR THE CONCRETE TO FREE-FALL INTO THE DRILLED PIER OR SPREAD
FOOTINGS, AS LONG AS THE CONCRETE IS WELL PLACED WITH A MINIMUM OF VOIDS, AND
GOOD CONSOLIDATION IS ACHIEVED, WITH MINIMUM SEGREGATION OF THE AGGREGATE.

REINFORCING:

ALL REINFORCING SHALL BE PER CRSI SPECIFICATIONS AND HANDBOOK.

- FOR #5 BAR AND LARGER: ASTM A615 GRADE 60 (Fy=60 KSI)
- FOR #4 BAR AND SMALLER: ASTM A615 GRADE 40 (Fy=40 KSI)

WHERE WELDING OF REBAR IS SPECIFIED ON THE DRAWINGS, GRADE 60 REINFORCING
SHALL BE ASTM A706.

NO TACK WELDING OF REINFORCING BARS IS ALLOWED WITHOUT PRIOR REVIEW OF
PROCEDURE WITH THE STRUCTURAL ENGINEER.

THE LATEST ACI CODE AND DETAILING MANUAL APPLY.

CLEAR CONCRETE COVER SHALL BE AS FOLLOWS:

CONDITION	CLEAR CONCRETE COVER
CAST AGAINST EARTH, AND PERMANENTLY EXPOSED TO EARTH:	3"
EXPOSED TO EARTH OR WEATHER:	
#6 OR LARGER:	2"
#5 AND SMALLER:	1 ½"

ALL REINFORCING SHALL BE CHAIRED TO ENSURE PROPER CLEARANCES. ALL
DIMENSIONS REFERENCED IN DRAWINGS AS "CLEAR" SHALL BE FROM FACE OF
STRUCTURE TO EDGE OF REINFORCING, AND SHALL NOT BE LESS THAN STATED, NOR
GREATER THAN THE "CLEAR" DIMENSION PLUS 8". ALL OTHER DIMENSIONS SHALL BE PLUS
OR MINUS 4", UNLESS NOTED OTHERWISE.

FIELD BENDING OR STRAIGHTENING OF DEFORMED BARS SHALL BE LIMITED TO #5 BARS
AND SMALLER, AND SHALL BE FIELD BENT OR STRAIGHTENED ONLY ONCE. ANY SUCH
BEND SHALL BE LIMITED TO 90 DEGREES.

STRUCTURAL STEEL:

GENERAL:

ALL STRUCTURAL HOT ROLLED STEEL MEMBERS WITH Fy GREATER THAN 36 KSI ARE TO
BE IDENTIFIED WITH AN ASTM SPECIFICATION MARK OR TAG PER IBC SECTION 2203.1.

SPICES IN STRUCTURAL STEEL MEMBERS ARE NOT PERMITTED WITHOUT SPECIFIC
WRITTEN INSTRUCTIONS FROM THE ENGINEER.

BOLTS:

BOLTS NOTED AS ASTM A325N (TYPE 1) SHALL BE TESTED AND INSTALLED AS SLIP
CRITICAL CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE. BOLT
INSTALLATION SHALL BE PER THE 2010 RCSC SPECIFICATION FOR STRUCTURAL JOINTS
USING HIGH STRENGTH BOLTS. HIGH STRENGTH WASHERS SHALL BE PER ASTM F959.
NUTS SHALL BE PER ASTM A563 GRADE DH OR ASTM A194 GRADE 2H. IT IS ACCEPTABLE
TO USE OVERSIZE OR SLOTTED HOLES PER AISC SPECIFICATIONS.

WELDING:

UNLESS NOTED OTHERWISE, ALL WELDS SHALL BE PER LATEST EDITION OF THE AWS
STANDARDS. ALL WELDS SHALL BE PERFORMED BY WELDERS HOLDING VALID
CERTIFICATES, AND WHO HAVE CURRENT EXPERIENCE IN THE TYPE OF WELDS SHOWN ON
THE DRAWINGS AND OR NOTES. CERTIFICATES SHALL BE THOSE ISSUED BY AN
ACCEPTED TESTING AGENCY. ALL WELDING SHALL BE DONE WITH E70 SERIES UNLESS
NOTED OTHERWISE. FOR GRADE 60 REINFORCING BARS, USE E90 SERIES. THESE
DRAWINGS DO NOT DISTINGUISH BETWEEN SHOP WELDS AND FIELD WELDS. THE
CONTRACTOR MAY SHOP OR FIELD WELD AT THEIR DISCRETION.

SCREW FASTENERS:

ALL SCREWS SHALL HAVE LENGTH AS REQUIRED TO ACHIEVE THREE THREADS SHOWING
BEYOND THE LAST CONNECTED PLY. ¾" MINIMUM SCREW LENGTH MAY BE USED IF THIS IS
ACHIEVED.

ALL SCREWS SHALL BE IN ACCORDANCE WITH AISI REQUIREMENTS.

MINIMUM SCREW SPACING SHALL NOT BE LESS THAN 3 TIMES THE NOMINAL DIAMETER.

MINIMUM EDGE DISTANCE, MEASURED FROM THE CENTER OF THE SCREW TO THE EDGE
OF THE PART, SHALL NOT BE LESS THAN 3 TIMES THE NOMINAL DIAMETER, UNLESS
REVIEWED BY ENGINEER.

THE HEAD OF THE SCREW SHALL HAVE AN INTEGRAL WASHER WITH A DIAMETER NOT
LESS THAN 66%, AND A THICKNESS OF NOT LESS THAN 0.05".

SCREWS SIZES ARE DESIGNATED ON THE DRAWINGS. SEE SCHEDULE BELOW FOR
NOMINAL SCREW DESIGNATION AND ITS ASSOCIATED NOMINAL DIAMETER.

SCREW DESIGNATION	NOMINAL DIAMETER
#10	0.19"
#12	0.21"
#14	0.25"

COLD-FORMED STRUCTURAL STEEL FRAMING

ALL COLD-FORMED STRUCTURAL STEEL FRAMING AND COMPONENTS INDICATED ON THE
DRAWINGS SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE
MANUFACTURER'S RECOMMENDATIONS, AND WITH AISI S100-07 / S1-10, "NORTH
AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL
MEMBERS", WITH SUPPLEMENT 1, DATED 2010.

SPICES IN COLD FORMED STEEL MEMBERS ARE NOT PERMITTED WITHOUT SPECIFIC
WRITTEN INSTRUCTIONS FROM THE ENGINEER.

COLD FORMED STEEL MEMBERS THAT ARE DAMAGED DURING SHOP FABRICATION
PROCESSES, OR DURING SHIPPING, OR DURING ERECTION SHALL NOT BE REPAIRED OR
REFABRICATED WITHOUT SPECIFIC WRITTEN INSTRUCTIONS FROM THE ENGINEER.

ALL CFS WELDING TO BE PERFORMED BY WELDERS HOLDING A VALID CERTIFICATE, AND
HAVING CURRENT EXPERIENCE IN COLD-FORMED STEEL. CERTIFICATES SHALL BE ISSUED
BY AN ACCEPTED TESTING AGENCY. DO NOT NOTCH FLANGES OF MEMBERS WITHOUT
EXPRESS APPROVAL OF THE ENGINEER OF RECORD. UNLESS SPECIFICALLY NOTED
OTHERWISE ON THE DRAWINGS, ALL WELDING IS TO BE PERFORMED IN AN APPROVED
FABRICATOR SHOP.

COLD-FORMED STRUCTURAL STEEL (CFS) MEMBERS SHALL HAVE A MINIMUM YIELD
STRENGTH AS SPECIFIED ON THE DRAWINGS, AND SHALL BE GALVANIZED PER ASTM A653
WITH A MINIMUM COATING DESIGNATION OF G90. THE GRADE AND THE ASTM
SPECIFICATION NUMBER OR OTHER SPECIFICATION DESIGNATION SHALL BE INDICATED BY
PAINTING, DECAL, TAGGING, OR OTHER SUITABLE MEANS ON EACH BUNDLE OF
FABRICATED ELEMENTS. IT IS ACCEPTABLE TO USE THE Fy SHOWN ON THE MILL
CERTIFICATION IN LIEU OF THE "ORDERED" Fy.

WHERE THE THICKNESS OF THE MATERIAL IS NOT SHOWN ON THE DETAILS OR
SCHEDULES, THE FOLLOWING THICKNESS APPLY:

REFERENCE GAGE NUMBER	MINIMUM DELIVERED THICKNESS	DESIGN THICKNESS
16	0.0561"	0.0590"
14	0.0713"	0.0750"
12	0.0998"	0.1050"
10	0.1283"	0.1350"
9	0.1430"	0.1500"

GENERAL NOTES:

THE STRUCTURAL CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE.
EXCEPT WHERE NOTED, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE
CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE
DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO,
BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. THE
STRUCTURAL ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR THE
CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES FOR PROCEDURE OF
CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND THE PROGRAMS INCIDENT THERETO
(NOR SHALL OBSERVATION VISITS TO THE SITE INCLUDE INSPECTION OF THESE ITEMS).

WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH
STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA. ANY ENGINEERING
DESIGN, PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW, SHALL BEAR THE SEAL OF A
REGISTERED ENGINEER RECOGNIZED BY THE BUILDING CODE JURISDICTION OF THIS
PROJECT.

NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL
STRUCTURAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN,
CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS
PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR
BETWEEN PLANS, DETAILS, GENERAL STRUCTURAL NOTES AND SPECIFICATIONS, THE
GREATER REQUIREMENTS SHALL GOVERN.

CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS WITH
ARCHITECTURAL DRAWINGS PRIOR TO START OF CONSTRUCTION. RESOLVE ANY
DISCREPANCY WITH THE ARCHITECT. ESTABLISH AND VERIFY ALL OPENINGS AND
INSERTS FOR ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL ITEMS
WITH THE APPROPRIATE TRADE DRAWINGS AND SUBCONTRACTORS PRIOR TO
CONSTRUCTION.

TYPICAL DETAILS MAY NOT NECESSARILY BE CUT ON PLANS, BUT APPLY UNLESS NOTED
OTHERWISE.

CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED
CONSTRUCTION. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN LOADS AT ANY
TIME.

OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION IS CHOSEN,
CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES, APPROVALS AND
THE COORDINATION OF THE WORK WITH ALL RELATED TRADES AND SUPPLIERS.

SPECIAL INSPECTION - STRUCTURAL ONLY:

(IF REQUIRED BY THE JURISDICTION HAVING AUTHORITY):

SPECIAL INSPECTIONS SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A
STATE REGISTERED STRUCTURAL ENGINEER WHO IS FAMILIAR WITH THE STRUCTURAL
DESIGN OF THIS PROJECT. THE SUPERVISING STRUCTURAL ENGINEER SHALL SEAL THE
SPECIAL INSPECTION CERTIFICATE.

SPECIAL INSPECTION IS TO BE PROVIDED FOR THE ITEMS LISTED BELOW IN ADDITION TO
THE INSPECTIONS CONDUCTED BY THE BUILDING JURISDICTION. "SPECIAL STRUCTURAL
INSPECTION" SHALL NOT RELIEVE THE OWNER OR THEIR AGENT FROM REQUESTING THE
BUILDING JURISDICTION INSPECTIONS REQUIRED BY SECTION 109 OF THE INTERNATIONAL
BUILDING CODE. SPECIAL INSPECTION IS REQUIRED PER CHAPTER 17 OF THE CBC FOR
THE FOLLOWING:

CONCRETE CONSTRUCTION:

- CONCRETE (SSI EXCEPTION BASED ON F'c = 2,500 PSI):
 - NO INSPECTION IS REQUIRED FOR THE PLACEMENT OF FOUNDATION CONCRETE.
INSPECTION OF FOUNDATION REINFORCING AND ANCHOR BOLTS IS REQUIRED
PER "REINFORCING STEEL" SECTION BELOW.
- REINFORCING STEEL: INSPECTION SHALL BE DONE OF IN-PLACE REINFORCING FOR
CONFORMANCE PRIOR TO THE CLOSING OF FORMS OR THE DELIVERY OF CONCRETE
TO THE JOBSITE FOR THE FOLLOWING:
 - REINFORCING FOR ALL CONCRETE REQUIRED TO HAVE INSPECTION NOTED
ABOVE.
 - REINFORCING FOR SPREAD FOOTING CONCRETE FOUNDATIONS.

STEEL CONSTRUCTION:

- WELDING:
 - PERIODIC VISUAL INSPECTION OF ALL FIELD WELDS.
 - CONTINUOUS INSPECTION OF ALL MULTIPASS FILLET WELDS OR SINGLE PASS
FILLET WELDS LARGER THAN 66%.
 - NON-DESTRUCTIVE TESTING OF ALL COMPLETE PENETRATION WELDS BY AN AWS
CERTIFIED INDEPENDENT TESTING LABORATORY AT THE CONTRACTOR'S
EXPENSE.
 - VERIFICATION OF VALID WELDERS' CERTIFICATES.
 - ALL STRUCTURAL STEEL FABRICATORS SHALL EMPLOY AN AWS CERTIFIED
INDEPENDENT TESTING LAB TO PROVIDE SHOP WELD INSPECTIONS PER CODE.
INSPECTION REPORTS SHALL BE SUBMITTED TO ENGINEER OF RECORD PRIOR TO
STEEL INSTALLATION.
- STEEL FRAMES: VERIFICATION OF BRACING, STIFFENING, MEMBER LOCATIONS, AND
PROPER JOINT DETAIL APPLICATION AT ALL STEEL FRAME CONNECTIONS.
- HIGH STRENGTH BOLTING:
 - VERIFICATION OF SNUG TIGHT BOLT INSTALLATION PER THE TURN OF THE
WRENCH METHOD PER AISC FOR ASTM A325N BOLTS.

MEMBER SCHEDULE FRAME 3 - SOLAR SEMI CANT TIP DOWN		
INTERIOR PURLIN	SUPER PURLIN INTERIOR DESIGN THICKNESS: (14 GA NOMINAL) MINIMUM DELIVERED THICKNESS: MAX CANT = 10'-0"	Fy = 85 KSI 0.0750 0.0713"
EDGE PURLIN	SUPER PURLIN EDGE DESIGN THICKNESS: MINIMUM DELIVERED THICKNESS: MAX CANT = 10'-0"	Fy = 85 KSI 0.0579" 0.0550"
BEAM	(2) 12" DEEP X 3 1/2" FLANGE CEES, BOXED: DESIGN THICKNESS: (12 GA NOMINAL) MINIMUM DELIVERED THICKNESS:	Fy = 55 KSI 0.1050" 0.0998"
COLUMN	(2) 12" DEEP X 3 1/2" FLANGE CEES, BOXED: WITH INSERT DESIGN THICKNESS: (12 GA NOMINAL) MINIMUM DELIVERED THICKNESS:	Fy = 70 KSI 0.1050" 0.0998"
PORTAL BRACE	CEE 7" X 4" DESIGN THICKNESS: (10 GA NOMINAL) MINIMUM DELIVERED THICKNESS:	Fy = 80 0.1350" 0.1283"

DRILLED PIER SCHEDULE SEE 1/S3 FOR PIER DEFINITION	
DIAMETER	2'-0"
EMBEDMENT AT DIRT	11'-3"
EMBEDMENT AT ASPHALT	9'-6"
EMBEDMENT AT CONCRETE	7'-6"

OPTIONAL ALTERNATE SPREAD FOOTING	
8'-0" LONG X 8'-0" WIDE X 30" DEEP	



POWER YOUR PASSION™

PROJECT

901 MASON

901 Mason St
San Antonio, TX 78208

SYSTEM OVERVIEW

PARKING

31.2 KW DC

(78) QCELLS QPEAK G5.2 400W MODULES

(78) SolarEdge P505 OPTIMIZERS

(3) SolarEdge SE 7600H-US INVERTERS

23 KW AC

ENGINEER PROFESSIONAL

NABCEP CERTIFICATION



PV INSTALLATION
PROFESSIONAL

REVISIONS

#	DATE	DESCRIPTION	PREP	CHECK
1	1/27/2020	PRELIMINARY	KL	NA
2				
3				
4				
5				
6				

SHEET NAME

CONSTRUCTION DETAILS

SCALE: NTS

PRINT SIZE: 24x36

SHEET #: PV-1

ONE80 SOLAR

1502 S FLORES STREET
SAN ANTONIO, TX 78204

1 (210) 802-7428

LIC #31318

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking efficiency
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Extremely small
- Built-in module-level monitoring
- Outdoor and indoor installation
- Optional: Revenue grade data, ANSI C12.20 Class 0.5 (0.5% accuracy)

Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

SE3000H-US SE3800H-US SE5000H-US SE6000H-US SE7600H-US SE10000H-US SE11400H-US

OUTPUT

Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5 ⁽¹⁾							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							

INPUT

Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V ⁽²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V ⁽²⁾	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600k Ω Sensitivity							
Maximum Inverter Efficiency	99	99.2						%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

ADDITIONAL FEATURES

Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)	
Revenue Grade Data, ANSI C12.20	Optional ⁽³⁾	
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect	

STANDARD COMPLIANCE

Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07	
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)	
Emissions	FCC Part 15 Class B	

INSTALLATION SPECIFICATIONS

AC Output Conduit Size / AWG Range	3/4" minimum / 14-6 AWG			3/4" minimum /14-4 AWG	
DC Input Conduit Size / # of Strings / AWG Range	3/4" minimum / 1-2 strings / 14-6 AWG			3/4" minimum / 1-3 strings / 14-6 AWG	
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			21.3 x 14.6 x 7.3 / 540 x 370 x 185	in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6	lb / kg
Noise	< 25			<50	dBA
Cooling	Natural Convection				
Operating Temperature Range	-40 to +140 / -25 to +60 ⁽⁴⁾ (-40°F / -40°C option) ⁽⁵⁾				°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)				

⁽¹⁾ For other regional settings please contact SolarEdge support

⁽²⁾ A higher current source may be used; the inverter will limit its input current to the values stated

⁽³⁾ Revenue grade inverter P/N: SExxxH-US000NNC2

⁽⁴⁾ For power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

⁽⁵⁾ -40 version P/N: SExxxH-US000NNJ4

Power Optimizer

P300 / P370 / P404 / P405 / P485 / P500 / P505

POWER OPTIMIZER



PV power optimization at the module level

- Specifically designed to work with SolarEdge inverters
- Superior efficiency (99.5%)
- Up to 25% more energy
- Flexible system design for maximum space utilization
- Next generation maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Mitigates all types of modules mismatch-loss, from manufacturing tolerance to partial shading
- Fast installation with a single bolt

/ Power Optimizer

P300 / P370 / P404 / P405 / P485 / P500 / P505

OPTIMIZER MODEL (typical module compatibility)	P300 (for 60-cell modules)	P370 (for high power 60&72-cell modules)	P404 (for 60/72- cell short strings)	P405 (for high-voltage modules)	P485 (for high-voltage modules)	P500 (for 96-cell modules)	P505 (for higher current modules)	UNIT
INPUT								
Rated Input DC Power ⁽¹⁾	300	370	405	405	485	500	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48	60	80	125		80	83	Vdc
MPPT Operating Range	8 - 48	8 - 60	12.5 - 80	12.5 - 105		8 - 80	12.5-83	Vdc
Maximum Short Circuit Current (Isc)	11		10.1				14	Adc
Maximum Efficiency	99.5							%
Weighted Efficiency	98.8							%
Overvoltage Category	II							
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)								
Maximum Output Current	15							Adc
Maximum Output Voltage	60		85			60	85	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								
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3							
Safety	IEC62109-1 (class II safety), UL1741							
RoHS	Yes							
Fire Safety	VDE-AR-E 2100-712:2013-05							
INSTALLATION SPECIFICATIONS								
Maximum Allowed System Voltage	1000							Vdc
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1		129 x 89 x 42.5 / 5.1 x 3.5 x 1.7	129 x 90 x 49.5 / 5.1 x 3.5 x 1.9		129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	630 / 1.4	655 / 1.5	775 / 1.7	845 / 1.9		750 / 1.7	1064 / 2.3	gr / lb
Input Connector	MC4 ⁽²⁾				Single or Dual MC4 ⁽²⁾⁽³⁾	MC4 ⁽²⁾		
Input Wire Length	0.16 / 0.52							m / ft
Output Connector	MC4							
Output Wire Length	0.9 / 2.95	1.2 / 3.9						m / ft
Operating Temperature Range	-40 - +85 / -40 - +185							°C / °F
Protection Rating	IP68							
Relative Humidity	0 - 100							%

⁽¹⁾ Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.

⁽²⁾ For other connector types please contact SolarEdge.

⁽³⁾ For dual version for parallel connection of two modules use the P485. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module is supported. When connecting a single module, seal the unused input connectors using the supplied pair of seals.

PV SYSTEM DESIGN USING A SOLAREDGE INVERTER ⁽⁴⁾⁽⁵⁾		SINGLE PHASE HD-WAVE	SINGLE PHASE	THREE PHASE	THREE PHASE FOR 277/480V GRID	
Minimum String Length (Power Optimizers)	P300, P370, P500 ⁽⁶⁾	8		16	18	
	P404, P405, P485, P505	6		14 (13 with SE3K ⁽⁷⁾)	14	
Maximum String Length (Power Optimizers)		25		50	50	
Maximum Power per String		5700	5250	11250 ⁽⁸⁾	12750	W
Parallel Strings of Different Lengths or Orientations		Yes				

⁽⁴⁾ It is not allowed to mix P404/P405/P485/P505 with P300/P370/P500/P600/P650/P730/P800p/P850 in one string.

⁽⁵⁾ For SE15k and above, the minimum DC power should be 11KW.

⁽⁶⁾ The P300/P370/P500 cannot be used with the SE3K three phase inverter (available in some countries; refer to the three phase inverter SE3K-SE10K datasheet).

⁽⁷⁾ Exactly 10 when using SE3K-RW010BNN4

⁽⁸⁾ For 230/400V grid: It is allowed to install up to 13,500W per string when 3 strings are connected to the inverter and when the maximum power difference between the strings is up to 2,000W